**[MS-RDPRFX]:**

**Remote Desktop Protocol: RemoteFX Codec Extension**

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**Revision Summary**

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# Introduction

The Remote Desktop Protocol: RemoteFX Codec Extension is an extension to the Remote Desktop Protocol: Basic Connectivity and Graphics Remoting (as specified in [[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf)). The RemoteFX Codec Extension specifies a lossy image codec that can be used to encode screen images by using efficient and effective compression.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in [[RFC2119]](http://go.microsoft.com/fwlink/?LinkId=90317). Sections 1.5 and 1.9 are also normative but do not contain those terms. All other sections and examples in this specification are informative.

## Glossary

The following terms are specific to this document:

**blit**: Also known as block image transfer. An operation in which a rectangular block of pixels in a source image is copied onto a destination image.

**discrete wavelet transform (DWT)**: A mathematical procedure that can be used to derive a discrete representation of a signal.

**entropy coding**: A lossless data compression scheme used to generate compression codes for input symbols based on their statistical properties.

**inverse discrete wavelet transform (IDWT)**: A mathematical procedure that can be used to reconstruct a signal without loss of information.

**little-endian**: Multiple-byte values that are byte-ordered with the least significant byte stored in the memory location with the lowest address.

**quantization**: A technique used to reduce a range of values to a single representative value.

**tile-based transform**: A transform technique in which an input image is segmented into a grid of disjoint tiles and the transform is then applied separately to each individual tile.

**YCbCr color space**: A color space where each color is represented as a triplet (Y,Cb,Cr), where Y stands for the Luma (brightness) component and Cb,Cr stand for the two Chroma (color) components.

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as defined in [[RFC2119]](http://go.microsoft.com/fwlink/?LinkId=90317). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](http://msdn.microsoft.com/en-us/library/dn781092.aspx).

### Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[ARLGR] Malvar, H.S., "Adaptive Run-Length / Golomb-Rice Encoding of Quantized Generalized Gaussian Sources with Unknown Statistics", Proceedings of the Data Compression Conference, 2006 (DCC 2006) pp. 23 - 32, March 2006, [http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=1607237](http://go.microsoft.com/fwlink/?LinkId=187365)

[MS-RDPBCGR] Microsoft Corporation, "[Remote Desktop Protocol: Basic Connectivity and Graphics Remoting](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf)".

[MS-RDPEGDI] Microsoft Corporation, "[Remote Desktop Protocol: Graphics Device Interface (GDI) Acceleration Extensions](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPEGDI%5d.pdf)".

[MS-RDPNSC] Microsoft Corporation, "[Remote Desktop Protocol: NSCodec Extension](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPNSC%5d.pdf)".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, [http://www.rfc-editor.org/rfc/rfc2119.txt](http://go.microsoft.com/fwlink/?LinkId=90317)

[T123] ITU-T, "Network-Specific Data Protocol Stacks for Multimedia Conferencing", Recommendation T.123, May 1999, [http://www.itu.int/rec/T-REC-T.123/en](http://go.microsoft.com/fwlink/?LinkId=90541)

**Note** There is a charge to download the specification.

[T125] ITU-T, "Multipoint Communication Service Protocol Specification", Recommendation T.125, February 1998, [http://www.itu.int/rec/T-REC-T.125-199802-I/en](http://go.microsoft.com/fwlink/?LinkId=90543)

**Note** There is a charge to download the specification.

[X224] ITU-T, "Information technology - Open Systems Interconnection - Protocol for Providing the Connection-Mode Transport Service", Recommendation X.224, November 1995, [http://www.itu.int/rec/T-REC-X.224-199511-I/en](http://go.microsoft.com/fwlink/?LinkId=90588)

**Note** There is a charge to download the specification.

### Informative References

None.

## Protocol Overview (Synopsis)

The Remote Desktop Protocol: RemoteFX Codec Extension reduces the bandwidth associated with desktop remoting by efficiently compressing images. This is achieved by using the RemoteFX codec. The following sections provide an overview of this codec.

### RemoteFX Codec

One of the core requirements of desktop remoting is the ability to efficiently compress server-side screen images so that they can be transported over a network and displayed on a client screen. Any codec used for this purpose needs to be able to deliver effective compression (to reduce network bandwidth requirements) and operate with low-latency (to enable efficient interactions with remoted content). A typical desktop screen contains textual content (synthetic images) along with video and photographic content (natural images). Given the sensitivity of the human eye to the sharp features present in textual content, any applied compression has to be visually lossless; otherwise the text will appear blurred.

The RemoteFX codec has been designed to achieve efficient compression, satisfying the goals of high quality and low latency while using a modest amount of computing resources. It is a [**tile-based transform**](#gt_5a8af140-5ba1-4e15-98e5-c6c5ef795745) codec. The transform chosen was a [**discrete wavelet transform (DWT)**](#gt_55bc1747-bf75-4555-b14c-37d93357c590) because it enables superior compression performance when compressing textual bitmap regions at high quality. The [**entropy coding**](#gt_9857c368-6c77-4d81-8b29-c270cd7c0479) is performed using the Run-Length Golomb-Rice Coder (RLGR) ([[ARLGR]](http://go.microsoft.com/fwlink/?LinkId=187365) section 3), which yields compression gains at relatively low computing requirements. The core functional blocks of the RemoteFX codec are shown in the following diagram.

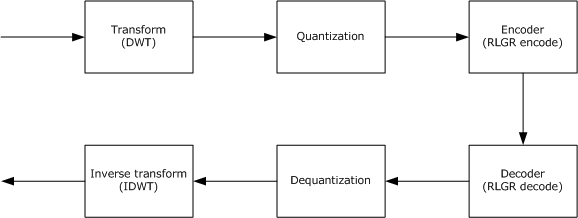


Figure : Core functional blocks of the RemoteFX codec

#### Message Flows

RemoteFX codec messages must be transported in order over a lossless transport such as TCP/IP. The message syntax has been designed with this prerequisite.

There are two types of messages: (1) capability messages sent from the client to the server; and (2) encode stream messages sent from the server to the client. The encode stream messages can be broadly categorized as header or data messages. The syntax of each message is described in detail in section [2](#Section_a77c3fc55d954f248d5791bf75261fc6). Processing events and sequencing rules are described in section [3](#Section_05cf9437b9374928b3057d331ca68bcf).

The message sequence is depicted in the following diagram. Note that the messages in this diagram are encapsulated in RDP wire structures (described in [[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2) when sent on the wire – for the sake of simplicity only the RemoteFX messages are shown. The encapsulating RDP structures are referenced in sections 2 and 3 when describing the structure and processing of the RemoteFX messages.

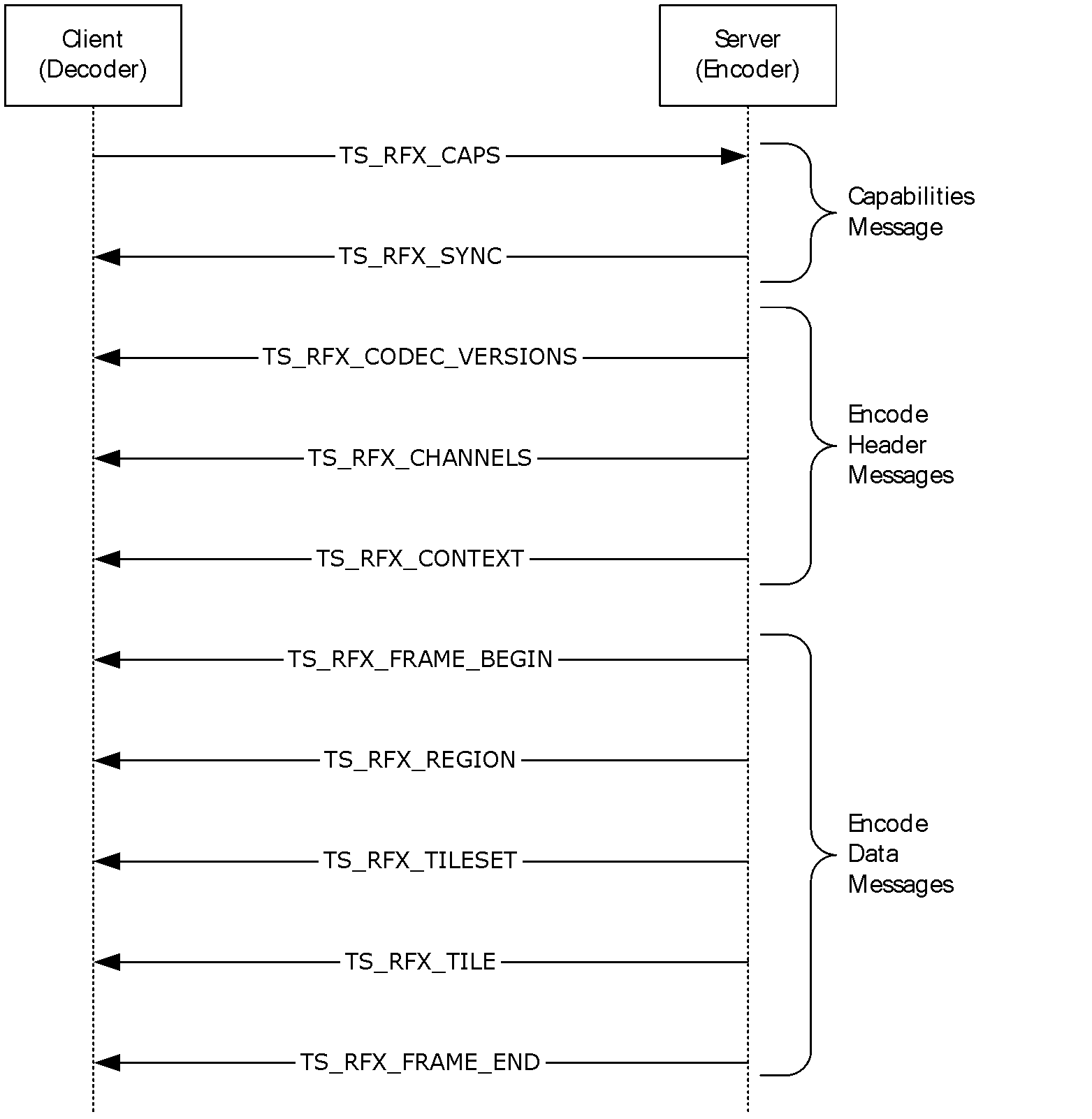


Figure : The RemoteFX message sequence

The client initiates the session by sending a TS\_RFX\_CAPS Capabilities message (section [2.2.1.1](#Section_286655BFBF3440D4B5CB157DD86DF346)). This is the only message sent from the client to the server; it lists the client-side support and preferences for various RemoteFX codec properties.

The server initializes its encoding state based on the client Capabilities message. It starts the encoding stream (section [2.2.2](#Section_EDD6C3684F39420ABF14A0E83C654AB7)) by sending a sequence of Header Messages (section [2.2.2.2](#Section_7A3E6E0060D240009DFD44D43F1CDE82)) that inform the client of the RemoteFX properties selected by the server:

1. The TS\_RFX\_SYNC message (section [2.2.2.2.1](#Section_F01B81B61A8F49FD9543081FBC8E1831)) contains the RemoteFX magic number and the version of the wire format.
2. The TS\_RFX\_CODEC\_VERSIONS message (section [2.2.2.2.2](#Section_2650E6C2FAF74858B169828DB842B663)) contains the version of the RemoteFX codec.
3. The TS\_RFX\_CHANNELS message (section [2.2.2.2.3](#Section_C6EFBA0BF59E4D8E8D76840C41EDCE5B)) lists the channel or multi-monitor information.
4. The TS\_RFX\_CONTEXT message (section [2.2.2.2.4](#Section_BDE1CE785D9E44C18A155843FA12270A)) contains the encoding properties of the stream.

The header messages are followed by the Data messages (section [2.2.2.3](#Section_1C5D9DA189B34C24B1D669398EFA09E1)), which represent the sequence of encoded frames in the stream:

1. The TS\_RFX\_FRAME\_BEGIN and TS\_RFX\_FRAME\_END messages (sections [2.2.2.3.1](#Section_7A938A263FC2436BBC8409DFFF59B5E7) and [2.2.2.3.2](#Section_B4CB26760268450BAD3272F66D0598E8) respectively) are used to demarcate an encoded frame.
2. The TS\_RFX\_REGION message (section [2.2.2.3.3](#Section_23D2A1D61BE0435783EB998B66DDD4D9)) contains the list of rectangles that have been encoded.
3. The TS\_RFX\_TILESET message (section [2.2.2.3.4](#Section_7C9261144BEA4C69A9A1CAA6E88847A6)) encapsulates the list of tiles that have been encoded.

## Relationship to Other Protocols

This protocol extends the Remote Desktop Protocol: Basic Connectivity and Graphics Remoting [[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) by adding advanced compression techniques.

## Prerequisites/Preconditions

The following capabilities are mandatory when used with RemoteFX:

* The client MUST support fast-path graphics output ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.9.1.2) and acknowledge this support by specifying the FASTPATH\_OUTPUT\_SUPPORTED (0x0001) flag in the General Capability Set ([MS-RDPBCGR] section 2.2.7.1.1).
* The client MUST send the Multifragment Update Capability Set ([MS-RDPBCGR] section 2.2.7.2.6). The **MaxRequestSize** field in the client-to-server Multifragment Update Capability Set MUST be set to a value greater than or equal to the value in the **MaxRequestSize** field of the server-to-client Multifragment Update Capability Set. The client-to-server Multifragment Update Capability Set is transported in the Confirm Active PDU as specified in [MS-RDPBCGR] section 2.2.1.13.2, and the server-to-client Multifragment Update Capability Set is transported in the Demand Active PDU as specified in [MS-RDPBCGR] section 2.2.1.13.1.
* The client MUST send the Large Pointer Capability Set ([MS-RDPBCGR] section 2.2.7.2.7) and the LARGE\_POINTER\_FLAG\_96x96 (0x00000001) MUST be present in the **largePointerSupportFlags** field.
* If the Revision 2 Bitmap Cache Capability Set ([MS-RDPBCGR] section 2.2.7.1.4.2) is sent by the client, then the ALLOW\_CACHE\_WAITING\_LIST\_FLAG (0x0002) MUST be present in the **CacheFlags** field.
* The client MUST support the Stream Surface Bits Surface Command ([MS-RDPBCGR] section 2.2.9.2.2). Support for this surface command MUST be advertised in the Surface Commands Capability Set ([MS-RDPBCGR] section 2.2.7.2.9).
* The client MUST support a color depth of 32 bits per pixel. This means that the RNS\_UD\_32BPP\_SUPPORT (0x0008) flag must be set in the **supportedColorDepths** field of the Client Core Data structure ([MS-RDPBCGR] section 2.2.1.3.2).
* The client MUST support either the NSCodec Bitmap Codec ([[MS-RDPNSC]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPNSC%5d.pdf) sections 2 and 3) or the Planar Codec ([[MS-RDPEGDI]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPEGDI%5d.pdf) sections 2.2.2.5.1 and 3.1.9) to handle server fallback scenarios.

The [TS\_FRAME\_ACKNOWLEDGE\_CAPABILITYSET (section 2.2.1.3)](#Section_e4d498fd822b408db8b31c216f21265b) SHOULD[<1>](#Appendix_A_1) be sent by the client. Furthermore, if the **connectionType** field of the Client Core Data ([MS-RDPBCGR] section 2.2.1.3.2) is set to any value other than CONNECTION\_TYPE\_LAN (0x06), then the RemoteFX server SHOULD NOT[<2>](#Appendix_A_2) indicate that the RemoteFX codec is supported, that is, none of the TS\_BITMAPCODEC ([MS-RDPBCGR] section 2.2.7.2.10.1.1) structures included in the **bitmapCodecArray** field of the TS\_BITMAPCODECS ([MS-RDPBCGR] section 2.2.7.2.10) structure have the **codecGUID** field set to CODEC\_GUID\_REMOTEFX.

## Applicability Statement

This protocol is applicable in situations in which it is necessary to optimize the bandwidth required for graphics remoting. The advanced compression techniques specified in this document enable the efficient transfer of server-side images and video.

## Versioning and Capability Negotiation

This protocol builds on the basic Remote Desktop Protocol [[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf). The features provided by this extension are negotiated during the capabilities negotiation phase of the RDP connection sequence (see [MS-RDPBCGR] section 1.3.1.1). In effect, this extension merely expands the set of capabilities used by the base RDP. (RDP versioning and capability negotiation is described in [MS-RDPBCGR] section 1.7.)

Some capabilities, which are specified as optional in [MS-RDPBCGR] section 2.2.7.2, are mandatory when used with RemoteFX. These capabilities are described in detail in section [2.1](#Section_9fe291888aae448fb0d579e6f044e559).

## Vendor-Extensible Fields

None.

## Standards Assignments

None.

# Messages

## Transport

This protocol is an extension to the Remote Desktop Protocol: Basic Connectivity and Graphics Remoting Specification and all packets are tunneled within the RDP transport ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.1).

## Message Syntax

All multiple-byte fields within a message MUST be marshaled in [**little-endian**](#gt_079478cb-f4c5-4ce5-b72b-2144da5d2ce7) byte order, unless otherwise specified.

### Capabilities Messages

#### TS\_RFX\_CLNT\_CAPS\_CONTAINER

The TS\_RFX\_CLNT\_CAPS\_CONTAINER structure is the top-level client capability container that wraps a [TS\_RFX\_CAPS (section 2.2.1.1.1)](#Section_08fa5d70b1444b69ab1a221b6b17caa5) structure and is sent from the client to the server. It is encapsulated in the **codecProperties** field of the Bitmap Codec ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.7.2.10.1.1) structure, which is ultimately encapsulated in the Bitmap Codecs Capability Set ([MS-RDPBCGR] section 2.2.7.2.10), which is encapsulated in a client-to-server Confirm Active PDU ([MS-RDPBCGR] section 2.2.1.13.2).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| captureFlags | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| capsLength | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| capsData (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**length (4 bytes):** A 32-bit, unsigned integer. Specifies the combined size, in bytes, of the **length**, **captureFlags**, **capsLength**, and **capsData** fields.

**captureFlags (4 bytes):** A 32-bit, unsigned integer. A collection of flags that allow a client to control how data is captured and transmitted by the server.

| Flag | Meaning |
| --- | --- |
| CARDP\_CAPS\_CAPTURE\_NON\_CAC  0x00000001 | The client supports mixing RemoteFX data with data compressed by other codecs. The set of other codecs supported by the client will be negotiated using the Bitmap Codecs Capability Set ([MS-RDPBCGR] section 2.2.7.2.10). |

**capsLength (4 bytes):** A 32-bit, unsigned integer. Specifies the size, in bytes, of the **capsData** field.

**capsData (variable):** A variable-sized field that contains a TS\_RFX\_CAPS (section 2.2.1.1.1) structure.

##### TS\_RFX\_CAPS

The TS\_RFX\_CAPS structure contains information about the decoder capabilities.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| blockType | | | | | | | | | | | | | | | | blockLen | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | numCapsets | | | | | | | | | | | | | | | |
| capsetsData (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**blockType (2 bytes):** A 16-bit, unsigned integer. Specifies the data block type. This field MUST be set to CBY\_CAPS (0xCBC0).

**blockLen (4 bytes):** A 32-bit, unsigned integer. Specifies the combined size, in bytes, of the **blockType**, **blockLen**, and **numCapsets** fields. This field MUST be set to 0x0008.

**numCapsets (2 bytes):** A 16-bit, unsigned integer. Specifies the number of [TS\_RFX\_CAPSET (section 2.2.1.1.1.1)](#Section_14a09576a48f4535b27ed99568e39ea5) structures contained in the **capsetsData** field. This field MUST be set to 0x0001.

**capsetsData (variable):** A variable-sized array of TS\_RFX\_CAPSET (section 2.2.1.1.1.1) structures. The structures in this array MUST be packed on byte boundaries. The **blockType** and **blockLen** fields of each TS\_RFX\_CAPSET structure identify the type and size of the structure.

###### TS\_RFX\_CAPSET

The TS\_RFX\_CAPSET structure contains the capability information specific to the RemoteFX codec. It contains a variable number of [TS\_RFX\_ICAP (section 2.2.1.1.1.1.1)](#Section_fc03ad3cd1b04fe4984be6cc023a6925) structures that are used to configure the encoder state.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| blockType | | | | | | | | | | | | | | | | blockLen | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | codecId | | | | | | | | capsetType | | | | | | | |
| ... | | | | | | | | numIcaps | | | | | | | | | | | | | | | | icapLen | | | | | | | |
| ... | | | | | | | | icapsData (variable) | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**blockType (2 bytes):** A 16-bit, unsigned integer. Specifies the data block type. This field MUST be set to CBY\_CAPSET (0xCBC1).

**blockLen (4 bytes):** A 32-bit, unsigned integer. Specifies the combined size, in bytes, of the **blockType**, **blockLen**, **codecId**, **capsetType**, **numIcaps**, **icapLen**, and **icapsData** fields.

**codecId (1 byte):** An 8-bit, unsigned integer. Specifies the codec ID. This field MUST be set to 0x01.

**capsetType (2 bytes):** A 16-bit, unsigned integer. This field MUST be set to CLY\_CAPSET (0xCFC0).

**numIcaps (2 bytes):** A 16-bit, unsigned integer. The number of TS\_RFX\_ICAP structures contained in the **icapsData** field.

**icapLen (2 bytes):** A 16-bit, unsigned integer. Specifies the size, in bytes, of each TS\_RFX\_ICAP structure contained in the **icapsData** field.

**icapsData (variable):** A variable-length array of TS\_RFX\_ICAP (section 2.2.1.1.1.1.1) structures. Each structure MUST be packed on byte boundaries. The size of each TS\_RFX\_ICAP structure within the array is specified in the **icapLen** field.

TS\_RFX\_ICAP

The TS\_RFX\_ICAP structure specifies the set of codec properties that the decoder supports.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| version | | | | | | | | | | | | | | | | tileSize | | | | | | | | | | | | | | | |
| flags | | | | | | | | colConvBits | | | | | | | | transformBits | | | | | | | | entropyBits | | | | | | | |

**version (2 bytes):** A 16-bit, unsigned integer. Specifies the codec version. This field MUST be set to CLW\_VERSION\_1\_0 (0x0100), to indicate protocol version 1.0.

**tileSize (2 bytes):** A 16-bit, signed integer. Specifies the width and height of a tile. This field MUST be set to CT\_TILE\_64x64 (0x0040), indicating that a tile is 64 x 64 pixels.

**flags (1 byte):** An 8-bit, unsigned integer. Specifies operational flags.

| Flag | Meaning |
| --- | --- |
| CODEC\_MODE  0x02 | When this flag is set, it indicates that only image mode is supported by the decoder, and therefore, the codec MUST operate in image mode. When this flag is not set, it indicates that both the image mode and the video mode of the codec are supported by the decoder and the codec MUST operate in video mode. |

When operating in image mode, the encode headers messages (section [2.2.2.2](#Section_7a3e6e0060d240009dfd44d43f1cde82)) MUST always precede an encoded frame. When operating in video mode, the header messages MUST be present at the beginning of the stream and are optional elsewhere.

**colConvBits (1 byte):** An 8-bit, unsigned integer. Specifies the color conversion transform. This field MUST be set to CLW\_COL\_CONV\_ICT (0x1), and the transformation is by the equations in sections [3.1.8.1.3](#Section_b550d1b5f7d94a0c9141b3dca9d7f525) and [3.1.8.2.5](#Section_2e1618ed60d64a64aa5d0608884861bb).

**transformBits (1 byte):** An 8-bit, unsigned integer. Specifies the DWT. This field MUST be set to CLW\_XFORM\_DWT\_53\_A (0x1), the DWT transform given by the lifting equations for the DWT shown in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC) and by the lifting equations for the inverse DWT shown in section [3.1.8.2.4](#Section_210D3967F4FF47F6BF3F7B998FCFCEA1).

**entropyBits (1 byte):** An 8-bit, unsigned integer. Specifies the entropy algorithm. This field MUST be set to one of the following values.

| Value | Meaning |
| --- | --- |
| CLW\_ENTROPY\_RLGR1  0x01 | RLGR algorithm as described in [3.1.8.1.7.1](#Section_f0d06b26a3c04cf3ab36b8f85fa5636d). |
| CLW\_ENTROPY\_RLGR3  0x04 | RLGR algorithm as described in section [3.1.8.1.7.2](#Section_8953871e976e434fb080f72947e88750). |

#### TS\_RFX\_SRVR\_CAPS\_CONTAINER

The TS\_RFX\_SRVR\_CAPS\_CONTAINER structure is the top-level server capability container, which is sent from the server to the client. It is encapsulated in the **codecProperties** field of the Bitmap Codec structure ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.7.2.10.1.1), which is ultimately encapsulated in the Bitmap Codecs Capability Set ([MS-RDPBCGR] section 2.2.7.2.10). The Bitmap Codecs Capability Set is encapsulated in a server-to-client Demand Active PDU ([MS-RDPBCGR] section 2.2.1.13.1).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| reserved (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**reserved (variable):** A variable-sized array of bytes. All the bytes in this field MUST be set to 0. The size of the field is given by the corresponding **codecPropertiesLength** field of the parent TS\_BITMAPCODEC, as specified in [MS-RDPBCGR] section 2.2.7.2.10.1.1 Bitmap Codecs Capability Set.

#### TS\_FRAME\_ACKNOWLEDGE\_CAPABILITYSET

The TS\_FRAME\_ACKNOWLEDGE\_CAPABILITYSET structure advertises support for frame acknowledgment using the [TS\_FRAME\_ACKNOWLEDGE\_PDU (section 2.2.3.1)](#Section_24364aa29a7f4d86bcfb67f5a6c19064) structure. This capability is sent by both the client and the server and is encapsulated in a server-to-client Demand Active PDU ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.1.13.1) or a client-to-server Confirm Active PDU ([MS-RDPBCGR] section 2.2.1.13.2).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| capabilitySetType | | | | | | | | | | | | | | | | lengthCapability | | | | | | | | | | | | | | | |
| maxUnacknowledgedFrameCount | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**capabilitySetType (2 bytes):** A 16-bit unsigned integer. The type of capability set. This field MUST be set to CAPSETTYPE\_FRAME\_ACKNOWLEDGE (0x001E).

**lengthCapability (2 bytes):** A 16-bit unsigned integer. The length, in bytes, of the capability data.

**maxUnacknowledgedFrameCount (4 bytes):** A 32-bit unsigned integer. When sent by the server, it MAY be set to 0, in which case it simply advertises the server's ability to receive and process the TS\_FRAME\_ACKNOWLEDGE\_PDU (section 2.2.3.1). If it is not set to 0, it can be used by the client as a hint that indicates the number of in-flight TS\_FRAME\_ACKNOWLEDGE\_PDUs that the server is prepared to accept. When sent by the client, it provides a hint to the server as to how many in-flight frames the client can buffer. Note that if the server chooses to have more in-flight frames than this number specifies, it is possible that the client could be overloaded with frame data. The client MAY set this field to 0, but this behavior SHOULD be avoided because it provides very little information to the server other than that the client acknowledges frames.

### Encode Messages

An encoded RemoteFX stream comprises a sequence of encode messages. The sequencing and encapsulation of these messages are described in section [3.1.8.3.1](#Section_028ED301385C4B1784EC0A158A22C1B2).

#### Common Data Types

##### TS\_RFX\_BLOCKT

The TS\_RFX\_BLOCKT structure identifies the type of an encode message and specifies the size of the message.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| blockType | | | | | | | | | | | | | | | | blockLen | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | |

**blockType (2 bytes):** A 16-bit, unsigned integer. Specifies the data block type. This field MUST be set to one of the following values.

| Value | Meaning |
| --- | --- |
| CBT\_TILE  0xCAC3 | A TS\_RFX\_TILE (section [2.2.2.3.4.1](#Section_89e669edb6dd4591a26773a72bc6d84e)) structure. |
| CBY\_CAPS  0xCBC0 | A TS\_RFX\_CAPS (section [2.2.1.1.1](#Section_08fa5d70b1444b69ab1a221b6b17caa5)) structure. |
| CBY\_CAPSET  0xCBC1 | A TS\_RFX\_CAPSET (section [2.2.1.1.1.1](#Section_14a09576a48f4535b27ed99568e39ea5)) structure. |
| WBT\_SYNC  0xCCC0 | A TS\_RFX\_SYNC (section [2.2.2.2.1](#Section_f01b81b61a8f49fd9543081fbc8e1831)) structure. |
| WBT\_CODEC\_VERSIONS  0xCCC1 | A TS\_RFX\_CODEC\_VERSIONS (section [2.2.2.2.2](#Section_2650e6c2faf74858b169828db842b663)) structure. |
| WBT\_CHANNELS  0xCCC2 | A TS\_RFX\_CHANNELS (section [2.2.2.2.3](#Section_c6efba0bf59e4d8e8d76840c41edce5b)) structure. |

**blockLen (4 bytes):** A 32-bit, unsigned integer. Specifies the size, in bytes, of the data block. This size includes the size of the **blockType** and **blockLen** fields, as well as all trailing data.

##### TS\_RFX\_CODEC\_CHANNELT

The TS\_RFX\_CODEC\_CHANNELT structure is an extension of the TS\_RFX\_BLOCKT structure. It is present as the first field in messages that are targeted for a specific combination of codec and channel.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| blockType | | | | | | | | | | | | | | | | blockLen | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | codecId | | | | | | | | channelId | | | | | | | |

**blockType (2 bytes):** A 16-bit, unsigned integer. Specifies the data block type. This field MUST be set to one of the following values.

| Value | Meaning |
| --- | --- |
| WBT\_CONTEXT  0xCCC3 | A [TS\_RFX\_CONTEXT (section 2.2.2.2.4)](#Section_bde1ce785d9e44c18a155843fa12270a) structure. |
| WBT\_FRAME\_BEGIN  0xCCC4 | A TS\_RFX\_FRAME\_BEGIN (section [2.2.2.3.1](#Section_7a938a263fc2436bbc8409dfff59b5e7)) structure. |
| WBT\_FRAME\_END  0xCCC5 | A TS\_RFX\_FRAME\_END (section [2.2.2.3.2](#Section_b4cb26760268450bad3272f66d0598e8)) structure. |
| WBT\_REGION  0xCCC6 | A TS\_RFX\_REGION (section [2.2.2.3.3](#Section_23d2a1d61be0435783eb998b66ddd4d9)) structure. |
| WBT\_EXTENSION  0xCCC7 | A TS\_RFX\_TILESET (section [2.2.2.3.4](#Section_7c9261144bea4c69a9a1caa6e88847a6)) structure. |

**blockLen (4 bytes):** A 32-bit, unsigned integer. Specifies the size, in bytes, of the data block. This size includes the size of the **blockType**, **blockLen**, **codecId**, and **channelId** fields, as well as all trailing data.

**codecId (1 byte):** An 8-bit, unsigned integer. Specifies the codec ID. This field MUST be set to 0x01.

**channelId (1 byte):** An 8-bit, unsigned integer. Specifies the channel ID. If the **blockType** is set to WBT\_CONTEXT (0xCCC3), then **channelId** MUST be set to 0xFF. For all other values of **blockType**, **channelId** MUST be set to 0x00.

##### TS\_RFX\_CHANNELT

The TS\_RFX\_CHANNELT structure is used to specify the screen resolution of a channel.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| channelId | | | | | | | | width | | | | | | | | | | | | | | | | height | | | | | | | |
| ... | | | | | | | |

**channelId (1 byte):** An 8-bit, unsigned integer. Specifies the identifier of the channel. This field MUST be set to 0x00.

**width (2 bytes):** A 16-bit, signed integer. Specifies the frame width of the channel. This field SHOULD[<3>](#Appendix_A_3) be within the range of 1 to 4096 (inclusive).

**height (2 bytes):** A 16-bit, signed integer. Specifies the frame height of the channel. This field SHOULD[<4>](#Appendix_A_4) be within the range of 1 to 2048 (inclusive).

##### TS\_RFX\_CODEC\_VERSIONT

The TS\_RFX\_CODEC\_VERSIONT structure is used to specify support for a specific version of the RemoteFX codec.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| codecId | | | | | | | | version | | | | | | | | | | | | | | | |

**codecId (1 byte):** An 8-bit, unsigned integer. Specifies the codec ID. This field MUST be set to 0x01. The decoder SHOULD ignore this field.

**version (2 bytes):** A 16-bit, signed integer. This field MUST be set to 0x0100. The decoder SHOULD ignore this field.

##### TS\_RFX\_CODEC\_QUANT

The TS\_RFX\_CODEC\_QUANT structure holds the scalar [**quantization**](#gt_97f1e788-004c-4d8a-a666-cb12739a61f6) values for the ten sub-bands in the 3-level DWT decomposition. Each field in this structure MUST have a value in the range of 6 to 15.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| LL3 | | | | LH3 | | | | HL3 | | | | HH3 | | | | LH2 | | | | HL2 | | | | HH2 | | | | LH1 | | | |
| HL1 | | | | HH1 | | | |

**LL3 (4 bits):** A 4-bit, unsigned integer. The LL quantization factor for the level-3 DWT sub-band.

**LH3 (4 bits):** A 4-bit, unsigned integer. The LH quantization factor for the level-3 DWT sub-band.

**HL3 (4 bits):** A 4-bit, unsigned integer. The HL quantization factors for the level-3 DWT sub-band.

**HH3 (4 bits):** A 4-bit, unsigned integer. The HH quantization factors for the level-3 DWT sub-band.

**LH2 (4 bits):** A 4-bit, unsigned integer. The LH quantization factor for the level-2 DWT sub-band.

**HL2 (4 bits):** A 4-bit, unsigned integer. The HL quantization factor for the level-2 DWT sub-band.

**HH2 (4 bits):** A 4-bit, unsigned integer. The HH quantization factor for the level-2 DWT sub-band.

**LH1 (4 bits):** A 4-bit, unsigned integer. The LH quantization factors for the level-1 DWT sub-band.

**HL1 (4 bits):** A 4-bit, unsigned integer. The HL quantization factors for the level-1 DWT sub-band.

**HH1 (4 bits):** A 4-bit, unsigned integer. The HH quantization factor for the level-1 DWT sub-band.

##### TS\_RFX\_RECT

The TS\_RFX\_RECT structure is used to specify a rectangle.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| x | | | | | | | | | | | | | | | | y | | | | | | | | | | | | | | | |
| width | | | | | | | | | | | | | | | | height | | | | | | | | | | | | | | | |

**x (2 bytes):** A 16-bit, unsigned integer. The X-coordinate of the rectangle.

**y (2 bytes):** A 16-bit, unsigned integer. The Y-coordinate of the rectangle.

**width (2 bytes):** A 16-bit, unsigned integer. The width of the rectangle.

**height (2 bytes):** A 16-bit, unsigned integer. The height of the rectangle.

#### Encode Header Messages

##### TS\_RFX\_SYNC

The TS\_RFX\_SYNC message MUST be the first message in any encoded stream. The decoder MUST examine this message to determine whether the protocol version is supported.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| BlockT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | magic | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | version | | | | | | | | | | | | | | | |

**BlockT (6 bytes):** A [TS\_RFX\_BLOCKT (section 2.2.2.1.1)](#Section_1e1b69a9c2aa4b13bd4423dcf96d4a74) structure. The **blockType** field MUST be set to WBT\_SYNC (0xCCC0).

**magic (4 bytes):** A 32-bit, unsigned integer. This field MUST be set to WF\_MAGIC (0xCACCACCA).

**version (2 bytes):** A 16-bit, unsigned integer. Indicates the version number. This field MUST be set to WF\_VERSION\_1\_0 (0x0100).

##### TS\_RFX\_CODEC\_VERSIONS

The TS\_RFX\_CODEC\_VERSIONS message indicates the version of the RemoteFX codec that is being used.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| BlockT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | numCodecs | | | | | | | | codecs | | | | | | | |
| ... | | | | | | | | | | | | | | | |

**BlockT (6 bytes):** A [TS\_RFX\_BLOCKT (section 2.2.2.1.1)](#Section_1e1b69a9c2aa4b13bd4423dcf96d4a74) structure. The **blockType** field MUST be set to WBT\_CODEC\_VERSIONS (0xCCC1).

**numCodecs (1 byte):** An 8-bit, unsigned integer. Specifies the number of codec version data blocks in the **codecs** field. This field MUST be set to 0x01.

**codecs (3 bytes):** A [TS\_RFX\_CODEC\_VERSIONT (section 2.2.2.1.4)](#Section_024fee4a197d479ea68f861933a34b06) structure. The **codecId** field MUST be set to 0x01 and the **version** field MUST be set to WF\_VERSION\_1\_0 (0x0100).

##### TS\_RFX\_CHANNELS

The TS\_RFX\_CHANNELS message contains the list of channels. Each active monitor on the server must correspond to an entry in this list. The list can have more entries than the number of active monitors. The decoder endpoint MUST be able to support channels with different frame dimensions.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| BlockT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | numChannels | | | | | | | | Channels (variable) | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**BlockT (6 bytes):** A [TS\_RFX\_BLOCKT (section 2.2.2.1.1)](#Section_1e1b69a9c2aa4b13bd4423dcf96d4a74) structure. The **blockType** field MUST be set to WBT\_CHANNELS (0xCCC2).

**numChannels (1 byte):** An 8-bit, unsigned integer. Specifies the number of channel data blocks in the **channels** field.

**Channels (variable):** A variable-length array of [TS\_RFX\_CHANNELT (section 2.2.2.1.3)](#Section_4060f07e9d73454d841e131a93aca675) structures. The number of elements in this array is specified in the **numChannels** field.

##### TS\_RFX\_CONTEXT

The TS\_RFX\_CONTEXT message contains information regarding the encoding properties being used.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| CodecChannelT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ctxId | | | | | | | | tileSize | | | | | | | | | | | | | | | | properties | | | | | | | |
| ... | | | | | | | |

**CodecChannelT (8 bytes):** A [TS\_RFX\_CODEC\_CHANNELT](#Section_56b78b0c6eef40ccb9da96d21f197c14) structure. The **blockType** field MUST be set to WBT\_CONTEXT (0xCCC3).

**ctxId (1 byte):** An 8-bit unsigned integer. Specifies an identifier for this context message. This field MUST be set to 0x00. The decoder SHOULD ignore this field.

**tileSize (2 bytes):** A 16-bit unsigned integer. Specifies the tile size used by the RemoteFX codec. This field MUST be set to CT\_TILE\_64x64 (0x0040), indicating that a tile is 64 x 64 pixels.

**properties (2 bytes):** A 16-bit unsigned integer. Contains a collection of bit-packed property fields. The format of this field is described by the following bitfield diagram.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| flags | | | cct | | xft | | | | et | | | | qt | | r |

**flags (3 bits):** A 3-bit unsigned integer. Specifies operational flags.

| Flag | Meaning |
| --- | --- |
| CODEC\_MODE  0x02 | The codec is operating in image mode. If this flag is not set, the codec is operating in video mode. |

When operating in image mode, the Encode Headers messages (section [2.2.2.2](#Section_7a3e6e0060d240009dfd44d43f1cde82)) MUST always precede an encoded frame. When operating in video mode, the header messages MUST be present at the beginning of the stream and MAY be present elsewhere.

**cct (2 bits):** A 2-bit unsigned integer. Specifies the color conversion transform. This field MUST be set to COL\_CONV\_ICT (0x1) to specify the transform defined by the equations in sections [3.1.8.1.3](#Section_b550d1b5f7d94a0c9141b3dca9d7f525) and [3.1.8.2.5](#Section_2e1618ed60d64a64aa5d0608884861bb). The decoder SHOULD ignore this field.

**xft (4 bits):** A 4-bit unsigned integer. Specifies the DWT. This field MUST be set to CLW\_XFORM\_DWT\_53\_A (0x1), which indicates the DWT given by the equations in sections [3.1.8.1.4](#Section_0e89cb498b754084b8c3a19c85f4bcac) and [3.1.8.2.4](#Section_210d3967f4ff47f6bf3f7b998fcfcea1).

**et (4 bits):** A 4-bit unsigned integer. Specifies the entropy algorithm. This field MUST be set to one of the following values.

| Value | Meaning |
| --- | --- |
| CLW\_ENTROPY\_RLGR1  0x01 | RLGR algorithm as detailed in [3.1.8.1.7.1](#Section_f0d06b26a3c04cf3ab36b8f85fa5636d). |
| CLW\_ENTROPY\_RLGR3  0x04 | RLGR algorithm as detailed in [3.1.8.1.7.2](#Section_8953871e976e434fb080f72947e88750). |

The decoder SHOULD ignore this value and use the value defined in the properties field of TS\_RFX\_TILESET (section [2.2.2.3.4)](#Section_7c9261144bea4c69a9a1caa6e88847a6).

**qt (2 bits):** A 2-bit unsigned integer. Specifies the quantization type. This field MUST be set to SCALAR\_QUANTIZATION (0x1). The decoder SHOULD ignore this field.

**r (1 bit):** A 1-bit field reserved for future use. This field MUST be ignored when received.

#### Encode Data Messages

##### TS\_RFX\_FRAME\_BEGIN

The TS\_RFX\_FRAME\_BEGIN message indicates the start of a new frame for a specific channel in the encoded stream.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| CodecChannelT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| frameIdx | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| numRegions | | | | | | | | | | | | | | | |

**CodecChannelT (8 bytes):** A [TS\_RFX\_CODEC\_CHANNELT (section 2.2.2.1.2)](#Section_56b78b0c6eef40ccb9da96d21f197c14) structure. The **blockType** field MUST be set to WBT\_FRAME\_BEGIN (0xCCC4).

**frameIdx (4 bytes):** A 32-bit unsigned integer. Specifies the index of the frame in the current video sequence. This field is used when the codec is operating in video mode, as specified using the **flags** field of the [TS\_RFX\_CONTEXT (section 2.2.2.2.4)](#Section_bde1ce785d9e44c18a155843fa12270a) message. If the codec is operating in image mode, this field MUST be ignored. If the codec is operating in video mode, this field SHOULD be ignored.

**numRegions (2 bytes):** A 16-bit signed integer. Specifies the number of [TS\_RFX\_REGION (section 2.2.2.3.3)](#Section_23d2a1d61be0435783eb998b66ddd4d9) messages following this TS\_RFX\_FRAME\_BEGIN message. That is, the number of regions in the frame.

##### TS\_RFX\_FRAME\_END

The TS\_RFX\_FRAME\_END message specifies the end of a frame for a specific channel in the encoded stream.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| CodecChannelT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**CodecChannelT (8 bytes):** A [TS\_RFX\_CODEC\_CHANNELT (section 2.2.2.1.2)](#Section_56b78b0c6eef40ccb9da96d21f197c14) structure. The **blockType** field MUST be set to WBT\_FRAME\_END (0xCCC5).

##### TS\_RFX\_REGION

The TS\_RFX\_REGION message contains information about the list of change rectangles on the screen for a specific channel. It also specifies the number of trailing [TS\_RFX\_TILESET (section 2.2.2.3.4)](#Section_7c9261144bea4c69a9a1caa6e88847a6) messages.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| CodecChannelT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| regionFlags | | | | | | | | numRects | | | | | | | | | | | | | | | | rects (variable) | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| regionType | | | | | | | | | | | | | | | | numTilesets | | | | | | | | | | | | | | | |

**CodecChannelT (8 bytes):** A [TS\_RFX\_CODEC\_CHANNELT (section 2.2.2.1.2)](#Section_56b78b0c6eef40ccb9da96d21f197c14) structure. The **blockType** field MUST be set to WBT\_REGION (0xCCC6).

**regionFlags (1 byte):** An 8-bit, unsigned integer. Contains a collection of bit-packed property fields. The format of this field is described by the following bitfield diagram.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| lrf | reserved | | | | | | |

**lrf (1 bit):** A 1-bit unsigned integer. This field MUST be set to 0x1. The decoder SHOULD ignore this field.

**reserved (7 bits:** A 7-bit integer reserved for future use. This field MUST be ignored.

**numRects (2 bytes):** A 16-bit, unsigned integer. Specifies the number of [TS\_RFX\_RECT (section 2.2.2.1.6)](#Section_26eb819a955b4b08b3a0997231170059) structures present in the **rects** field. If this value is zero, the decoder MUST generate a rectangle with coordinates (0, 0, width, height) that reflects the width and height of the channel's frame (section [2.2.2.1.3](#Section_4060f07e9d73454d841e131a93aca675)).

**rects (variable):** A variable-length array of TS\_RFX\_RECT (section 2.2.2.1.6) structures. This array defines the region. The number of rectangles in the array is specified in the **numRects** field. Processing rules for the rectangles in this array are specified in section [3.1.8.2.6](#Section_1efe8ac988dc438e9388c4424b7a4fcf).

**regionType (2 bytes):** A 16-bit, unsigned integer. Specifies the region type. This field MUST be set to CBT\_REGION (0xCAC1).

**numTilesets (2 bytes):** A 16-bit, unsigned integer. Specifies the number of TS\_RFX\_TILESET (section 2.2.2.3.4) messages following this TS\_RFX\_REGION message. This field MUST be set to 0x0001.

##### TS\_RFX\_TILESET

The TS\_RFX\_TILESET message contains encoding parameters and data for an arbitrary number of encoded tiles.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| CodecChannelT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| subtype | | | | | | | | | | | | | | | | idx | | | | | | | | | | | | | | | |
| properties | | | | | | | | | | | | | | | | numQuant | | | | | | | | tileSize | | | | | | | |
| numTiles | | | | | | | | | | | | | | | | tilesDataSize | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | quantVals (variable) | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tiles (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**CodecChannelT (8 bytes):** A [TS\_RFX\_CODEC\_CHANNELT (section 2.2.2.1.2)](#Section_56b78b0c6eef40ccb9da96d21f197c14) structure. The **blockType** field MUST be set to WBT\_EXTENSION (0xCCC7).

**subtype (2 bytes):** A 16-bit, unsigned integer. Specifies the message type. This field MUST be set to CBT\_TILESET (0xCAC2).

**idx (2 bytes):** A 16-bit, unsigned integer. Specifies the identifier of the TS\_RFX\_CONTEXT (section [2.2.2.2.4](#Section_bde1ce785d9e44c18a155843fa12270a)) message referenced by this TileSet message. This field MUST be set to 0x0000. The decoder SHOULD ignore this field.

**properties (2 bytes):** A 16-bit unsigned integer. Contains a collection of bit-packed property fields. The format of this field is described by the following bitmask diagram.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| A | flags | | | cct | | xft | | | | et | | | | qt | |

**A - lt (1 bit):** A 1-bit field that specifies whether this is the last TS\_RFX\_TILESET in the region. This field MUST be set to TRUE (0x1). The decoder SHOULD ignore this field.

**flags (3 bits):** A 3-bit unsigned integer. Specifies operational flags.

| Flag | Meaning |
| --- | --- |
| CODEC\_MODE  0x02 | The codec is operating in image mode. If this flag is not set, the codec is operating in video mode. |

The encoder MUST set this value to the value of flags that is set in the properties field of TS\_RFX\_CONTEXT. The decoder MUST ignore this flag and MUST use the flags specified in the **flags** field of the TS\_RFX\_CONTEXT.

**cct (2 bits):** A 2-bit unsigned integer. Specifies the color conversion transform. This field MUST be set to COL\_CONV\_ICT (0x1) to specify the transform defined by the equations in sections [3.1.8.1.3](#Section_b550d1b5f7d94a0c9141b3dca9d7f525) and [3.1.8.2.5](#Section_2e1618ed60d64a64aa5d0608884861bb). The decoder SHOULD ignore this field.

**xft (4 bits):** A 4-bit unsigned integer. Specifies the DWT. This field MUST be set to CLW\_XFORM\_DWT\_53\_A (0x1), which indicates the DWT given by the equations in sections [3.1.8.1.4](#Section_0e89cb498b754084b8c3a19c85f4bcac) and [3.1.8.2.4](#Section_210d3967f4ff47f6bf3f7b998fcfcea1). The decoder SHOULD ignore this field.

**et (4 bits):** A 4-bit unsigned integer. Specifies the entropy algorithm. This field MUST be set to one of the following values.

| Value | Meaning |
| --- | --- |
| CLW\_ENTROPY\_RLGR1  0x01 | RLGR algorithm as detailed in [3.1.8.1.7.1](#Section_f0d06b26a3c04cf3ab36b8f85fa5636d). |
| CLW\_ENTROPY\_RLGR3  0x04 | RLGR algorithm as detailed in [3.1.8.1.7.2](#Section_8953871e976e434fb080f72947e88750). |

**qt (2 bits):** A 2-bit unsigned integer. Specifies the quantization type. This field MUST be set to SCALAR\_QUANTIZATION (0x1). The decoder SHOULD ignore this field.

**numQuant (1 byte):** An 8-bit, unsigned integer. Specifies the number of TS\_RFX\_CODEC\_QUANT (section [2.2.2.1.5](#Section_3e9c8af475394c9d95de14b1558b902c)) structures present in the **quantVals** field.

**tileSize (1 byte):** An 8-bit, unsigned integer. Specifies the width and height of a tile. This field MUST be set to 0x40. The decoder SHOULD ignore this field.

**numTiles (2 bytes):** A 16-bit, unsigned integer. Specifies the number of TS\_RFX\_TILE (section [2.2.2.3.4.1](#Section_89e669edb6dd4591a26773a72bc6d84e)) structures present in the **tiles** field.

**tilesDataSize (4 bytes):** A 32-bit, unsigned integer. Specifies the size, in bytes, of the **tiles** field. The **tiles** field contains encoded data for all of the tiles that have changed.

**quantVals (variable):** A variable-length array of TS\_RFX\_CODEC\_QUANT (section 2.2.2.1.5) structures. The number of structures present in the array is indicated in the **numQuant** field.

**tiles (variable):** A variable-length array of TS\_RFX\_TILE (section 2.2.2.3.4.1) structures. The number of structures present in the array is indicated in the **numTiles** field, while the total size, in bytes, of this field is specified by the **tilesDataSize** field.

###### TS\_RFX\_TILE

The TS\_RFX\_TILE structure specifies the position of the tile on the frame and contains the encoded data for the three tile components of Y, Cb, and Cr.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| BlockT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | quantIdxY | | | | | | | | quantIdxCb | | | | | | | |
| quantIdxCr | | | | | | | | xIdx | | | | | | | | | | | | | | | | yIdx | | | | | | | |
| ... | | | | | | | | YLen | | | | | | | | | | | | | | | | CbLen | | | | | | | |
| ... | | | | | | | | CrLen | | | | | | | | | | | | | | | | YData (variable) | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CbData (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CrData (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**BlockT (6 bytes):** A [TS\_RFX\_BLOCKT (section 2.2.2.1.1)](#Section_1e1b69a9c2aa4b13bd4423dcf96d4a74) structure. The **blockType** field MUST be set to CBT\_TILE (0xCAC3).

**quantIdxY (1 byte):** An 8-bit, unsigned integer. Specifies an index into the TS\_RFX\_CODEC\_QUANT array provided in the TS\_RFX\_TILESET message. The specified **TS\_RFX\_CODEC\_QUANT** element MUST be used for de-quantization of the sub-bands for the Y-component.

**quantIdxCb (1 byte):** An 8-bit, unsigned integer. Specifies an index into the TS\_RFX\_CODEC\_QUANT array provided in the TS\_RFX\_TILESET message. The specified **TS\_RFX\_CODEC\_QUANT** element MUST be used for de-quantization of the sub-bands for the Cb-component.

**quantIdxCr (1 byte):** An 8-bit, unsigned integer. Specifies an index into the [TS\_RFX\_CODEC\_QUANT](#Section_3e9c8af475394c9d95de14b1558b902c) array provided in the [TS\_RFX\_TILESET](#Section_7c9261144bea4c69a9a1caa6e88847a6) message. The specified **TS\_RFX\_CODEC\_QUANT** element MUST be used for de-quantization of the sub-bands for the Cr-component.

**xIdx (2 bytes):** A 16-bit, unsigned integer. The X-index of the encoded tile in the screen tile grid.

**yIdx (2 bytes):** A 16-bit, unsigned integer. The Y-index of the encoded tile in the screen tile grid.

**YLen (2 bytes):** A 16-bit, unsigned integer. Specifies the size, in bytes, of the **YData** field.

**CbLen (2 bytes):** A 16-bit, unsigned integer. Specifies the size, in bytes, of the **CbData** field.

**CrLen (2 bytes):** A 16-bit, unsigned integer. Specifies the size, in bytes, of the **CrData** field.

**YData (variable):** A variable-length array. Contains the encoded data for the Y-component of the tile. The size, in bytes, of this field is specified by the **YLen** field.

**CbData (variable):** A variable-length array. Contains the encoded data for the Cb-component of the tile. The size, in bytes, of this field is specified by the **CbLen** field.

**CrData (variable):** A variable-length array. Contains the encoded data for the Cr-component of the tile. The size, in bytes, of this field is specified by the **CrLen** field.

### Control Messages

#### TS\_FRAME\_ACKNOWLEDGE\_PDU

The TS\_FRAME\_ACKNOWLEDGE\_PDU structure is a client-to-server PDU sent to the server whenever the client receives a Frame Marker Command ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.9.2.3) with the **frameAction** field set to SURFACECMD\_FRAMEACTION\_END (0x0001) and it has finished processing this particular frame (that is, the surface bits have been rendered on the screen). The server uses this acknowledgment to throttle the rate at which it generates frames of data to avoid overloading the client with too many updates. The server SHOULD NOT wait for an acknowledgment for each frame before sending the next frame. Instead, the server SHOULD have a "window" mechanism where it allows multiple frames to be unacknowledged before it slows down its frame rate (or stops completely).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3  0 | 1 |
| tpktHeader | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x224Data | | | | | | | | | | | | | | | | | | | | | | | | mcsSDrq (variable) | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| securityHeader (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| shareDataHeader (18 bytes) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | frameID | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | |

**tpktHeader (4 bytes):** A TPKT Header as specified in [[T123]](http://go.microsoft.com/fwlink/?LinkId=90541) section 8.

**x224Data (3 bytes):** An X.224 Class 0 Data TPDU, as specified in [[X224]](http://go.microsoft.com/fwlink/?LinkId=90588) section 13.7.

**mcsSDrq (variable):** Variable-length PER-encoded MCS Domain PDU (DomainMCSPDU) that encapsulates an MCS Send Data Request structure (SDrq, choice 25 from DomainMCSPDU). This is as specified in [[T125]](http://go.microsoft.com/fwlink/?LinkId=90543) section 11.32, and the ASN.1 structure definitions are specified in [T125] section 7, parts 7 and 10. The **userData** field of the MCS Send Data Request PDU contains a Security Header, Share Data Header, and a frame ID.

**securityHeader (variable):** Optional security header. The presence and format of the security header depend on the Encryption Level and Encryption Method selected by the server ([MS-RDPBCGR] sections 5.3.2 and 2.2.1.4.3). If the Encryption Level selected by the server is greater than ENCRYPTION\_LEVEL\_NONE (0) and the Encryption Method selected by the server is greater than ENCRYPTION\_METHOD\_NONE (0), this field MUST contain one of the following headers:

* Non-FIPS Security Header ([MS-RDPBCGR] section 2.2.8.1.1.2.2) if the Encryption Method selected by the server is ENCRYPTION\_METHOD\_40BIT (0x00000001), ENCRYPTION\_METHOD\_56BIT (0x00000008), or ENCRYPTION\_METHOD\_128BIT (0x00000002).
* FIPS Security Header ([MS-RDPBCGR] section 2.2.8.1.1.2.3) if the Encryption Level selected by the server is ENCRYPTION\_METHOD\_FIPS (0x00000010).

If the Encryption Level selected by the server is ENCRYPTION\_LEVEL\_NONE (0) and the Encryption Method selected by the server is ENCRYPTION\_METHOD\_NONE (0), this header MUST NOT be included in the PDU.

**shareDataHeader (18 bytes):** Share Data Header ([MS-RDPBCGR] section 2.2.8.1.1.1.2) containing information about the packet. The type subfield of the **pduType** field of the Share Control Header ([MS-RDPBCGR] section 2.2.8.1.1.1.1) within the Share Data Header MUST be set to PDUTYPE\_DATAPDU (0x0007). The **pduType2** field of the Share Data Header MUST be set to PDUTYPE2\_FRAME\_ACKNOWLEDGE (0x38).

**frameID (4 bytes):** A 32-bit unsigned integer. This field specifies the 32-bit identifier of the frame that was sent to the client using a Frame Marker Command and is being acknowledged as delivered. The **frameID** field MUST be populated with the value of the **frameID** field that was specified in the Frame Marker Command associated with the frame being acknowledged. If the **frameID** field is set to the value 0xFFFFFFFF, the server SHOULD[<5>](#Appendix_A_5) assume that all in-flight frames have been acknowledged.

# Protocol Details

## Common Details

### Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model, as long as their external behavior is consistent with that described in this document.

**OperationalMode:** Stores the operational mode currently in use. Operational modes include video mode, and image mode.

**EntropyAlgorithm:** Stores the entropy algorithm currently in use. Entropy algorithms include RLGR1 and RLGR3.

**FrameIndex:** A 32-bit integer variable. Used by the server to keep track of the current index of the encoded frame within an encoding session. This variable is used only when the **OperationalMode** is video mode. If the **OperationalMode** is image mode, the server does not need to maintain this variable.

In video mode, this variable should be initialized to 0 at the start of the session and then incremented by 1 after every encoded frame. The current value of this variable is stored in the **frameIdx** field of the [TS\_RFX\_FRAME\_BEGIN](#Section_7a938a263fc2436bbc8409dfff59b5e7) message (section 2.2.2.3.1).

#### State Machine

The following figure and table describe the state machine of the codec at the server end.

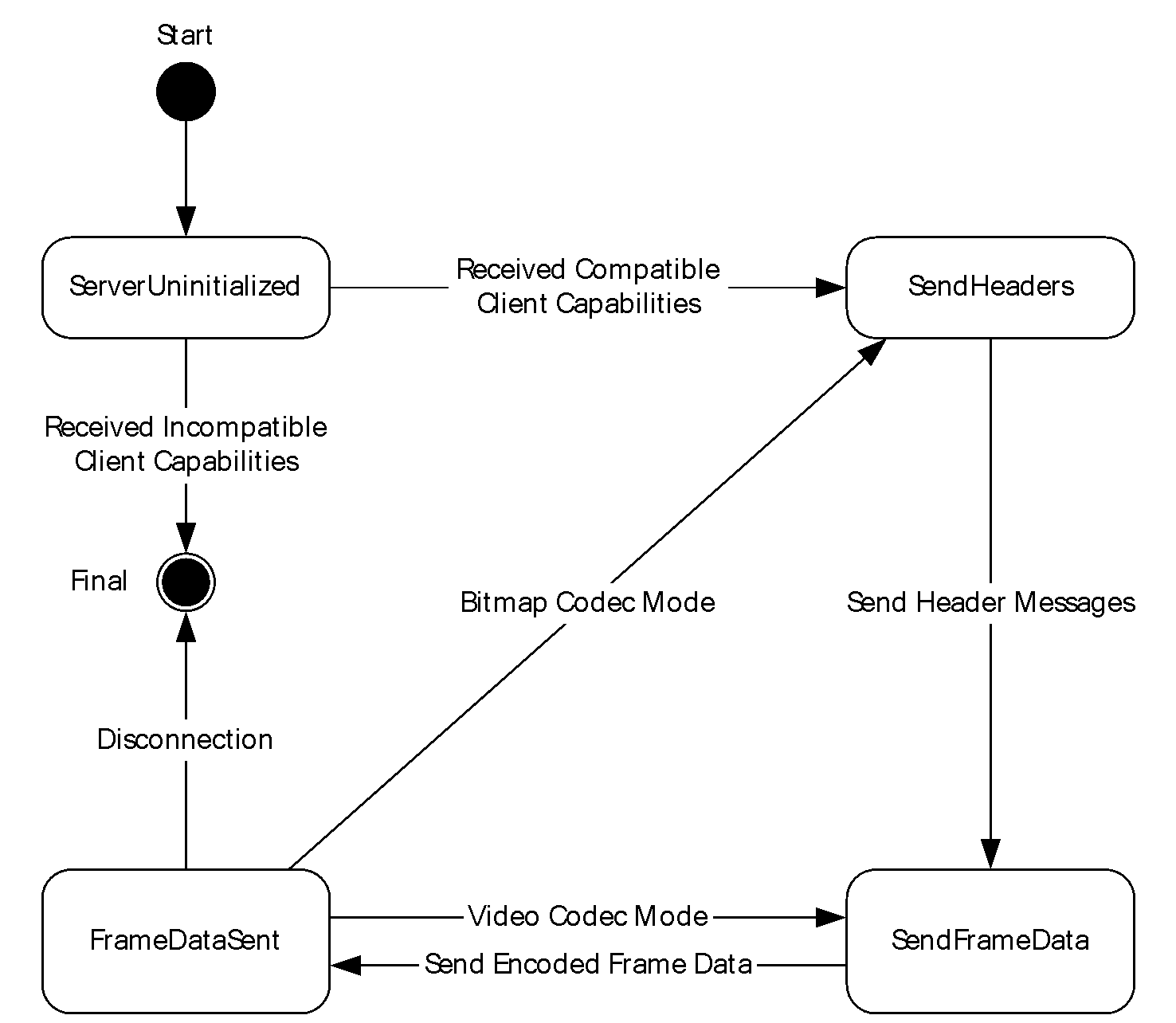


Figure : Server state diagram

| State Name | Description |
| --- | --- |
| ServerUninitialized | This is the initial state of the server. In this state, the server waits for the [TS\_RFX\_CLNT\_CAPS\_CONTAINER](#Section_286655bfbf3440d4b5cb157dd86df346) message from the client. On receiving this message, the server processes it as described in section [3.1.5.1](#Section_b253aeab51204b0580617c51e8e9750f). If it finds a compatible [TS\_RFX\_ICAP](#Section_fc03ad3cd1b04fe4984be6cc023a6925), it initializes itself and gets into the SendHeaders state. Otherwise, the connection is terminated (section 3.1.5.1). |
| SendHeaders | In this state, the server sends the Header message sequence as described in section [3.1.8.3.1](#Section_028ed301385c4b1784ec0a158a22c1b2) and shown in Figure 17. The server then transitions to the SendFrameData state. |
| SendFrameData | In this state, the server sends the encoded frame data messages as described in section 3.1.8.3.1 and shown in Figure 18. The server then transitions to the FrameDataSent state. |
| FrameDataSent | If the **OperationalMode** of the server is image mode, the server transitions to the SendHeaders state. If the **OperationalMode** is video mode, the server transitions to either the SendFrameData state or the SendHeaders state. |

### Timers

None.

### Initialization

The Bitmap Codecs Capability Set message ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.7.2.10) MUST be processed by the server, as specified in section [3.1.5.1](#Section_b253aeab51204b0580617c51e8e9750f), before RemoteFX encoding begins. This establishes the encoding properties that will be used by the server when sending the encoded data stream.

The Bitmap Codecs Capability Set is sent by the client, encapsulating the [TS\_RFX\_CLNT\_CAPS\_CONTAINER (section 2.2.1.1)](#Section_286655bfbf3440d4b5cb157dd86df346). The server ultimately processes the encapsulated TS\_RFX\_CLNT\_CAPS\_CONTAINER (section 2.2.1.1) message as specified in section 3.1.5.1, picking a [TS\_RFX\_ICAP (section 2.2.1.1.1.1.1)](#Section_fc03ad3cd1b04fe4984be6cc023a6925) element. From that point on, the server uses the capability properties listed in that element to encode RemoteFX data streams.

### Higher-Layer Triggered Events

None.

### Processing Events and Sequencing Rules

**Establishing the connection:** RemoteFX capabilities messages are exchanged to establish the encoding properties used by the server, as specified in sections [3.1.3](#Section_af5a9809c6db48d0ba2e270cb04f4f24) and [3.1.5.1](#Section_b253aeab51204b0580617c51e8e9750f). A compliant server MUST process the [TS\_RFX\_CLNT\_CAPS\_CONTAINER](#Section_286655bfbf3440d4b5cb157dd86df346) message as specified in section 3.1.5.1 before RemoteFX encoding can begin.

**Sending RemoteFX encoded data:** RemoteFX encoded data is sent to the client as a sequence of the RemoteFX messages defined in section [2.2.2](#Section_edd6c3684f39420abf14a0e83c654ab7). A compliant server MUST always send the encoded messages in the correct order, as specified in section [3.1.8.3.1](#Section_028ed301385c4b1784ec0a158a22c1b2).

**Header messages:** The encoded message sequence MUST include header messages, as specified in section 3.1.8.3.1.

Header messages contain information about the encoding properties used for encoding data messages, and are used by the client to decode the message stream. Header messages MUST always specify the encoding properties initialized and stored in **OperationalMode** and **EntropyAlgorithm**. The encode header and data message sequences are shown in the figures Generation of RemoteFX encode header messages and Generation of RemoteFX encode data messages (section 3.1.8.3.1).

Header messages can appear multiple times within the message stream, depending on the **OperationalMode** property:

* If the encoder is initialized with **OperationalMode** set to video mode, then it MUST send the encode header message sequence at the start of the stream. The encode header message sequence is then followed by an arbitrary number of encode data message sequences.
* If the encoder is initialized with **OperationalMode** set to image mode, then it MUST send the encode header message sequence before every encode data message sequence.

**Entropy Algorithm:** The server MUST use the entropy algorithm, initialized and stored in **EntropyAlgorithm**, to encode every data message in the encoded data stream.

**Error conditions:** If the client receives an out-of-sequence, unspecified, or malformed message, then the client MUST treat this as an error and terminate the RDP connection.

#### Processing the TS\_RFX\_CLNT\_CAPS\_CONTAINER Message

The structure and fields of the [TS\_RFX\_CLNT\_CAPS\_CONTAINER](#Section_286655bfbf3440d4b5cb157dd86df346), and its constituent members, are specified in section 2.2.1.1.

TS\_RFX\_CLNT\_CAPS\_CONTAINER has a [TS\_RFX\_CAPS](#Section_08fa5d70b1444b69ab1a221b6b17caa5) field. The TS\_RFX\_CAPS field contains a [TS\_RFX\_CAPSET](#Section_14a09576a48f4535b27ed99568e39ea5) sub-field, which is composed of a variable number of [TS\_RFX\_ICAP](#Section_fc03ad3cd1b04fe4984be6cc023a6925) structures.

The encoder parses the TS\_RFX\_CLNT\_CAPS\_CONTAINER message to get to the array of TS\_RFX\_ICAP structures. It processes each element of this array to check whether it can support all the properties listed in that TS\_RFX\_ICAP element. From this set of supported elements, it will arbitrarily pick one element and use only the properties listed in that specific TS\_RFX\_ICAP to encode the data stream.

For example, if the decoder supports both RLGR1 and RLGR3, the client can specify support for both of them. This support is specified using two TS\_RFX\_ICAP elements in the TS\_RFX\_CAPSET message that the client sends to the server. If the encoder also supports both RLGR1 and RLGR3, it then arbitrarily picks one of the TS\_RFX\_CAPSET elements to use for encoding.

Once a TS\_RFX\_ICAP element has been picked, the **OperationalMode** and **EntropyAlgorithm** ADM elements are set as follows.

* If the TS\_RFX\_ICAP element's **flags** field is set to include the 0x02 flag, the **OperationalMode** is set to image mode; otherwise, the **OperationalMode** is set to video mode.
* When the TS\_RFX\_ICAP element's **entropyBits** field is set to 0x01, the **EntropyAlgorithm** is set to RLGR1; when **entropyBits** is set to 0x04, **EntropyAlgorithm** is set to RLGR3.

**Error conditions:** If the server cannot support any of the TS\_RFX\_ICAP elements, it MUST stop sending messages and consider the RDP connection terminated.

### Timer Events

None.

### Other Local Events

None.

### RemoteFX Algorithm

RemoteFX is a tile-based transform codec. It has the same functional stages as those found in most structured compression systems (section [1.3.1](#Section_ee99f7e0bbfe46179b2b0054eeabe48f)). At the encode endpoint, these stages are transform, quantization, and entropy encoding. The inverse of these operations (in the reverse order) takes place at the decode endpoint. RemoteFX uses DWTs and Run-Length Golomb-Rice Coding (RLGR) ([[ARLGR]](http://go.microsoft.com/fwlink/?LinkId=187365) section 3) for transformation and entropy encoding respectively.

#### Encoding

The functional stages involved in the encoding path are illustrated in the following figure. Each of these stages is described in the subsections that follow.

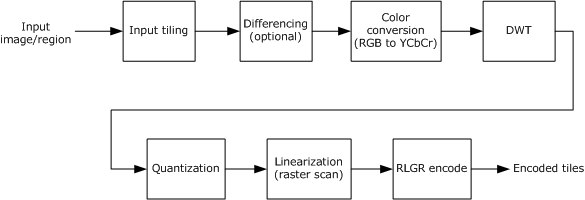


Figure : RemoteFX encoding stages

##### Input Tiling

The input to the encoder is an arbitrary region contained within an image to be encoded. The input image is overlaid with a tile grid anchored to the top left corner of the screen (0, 0) and aligned to the tile size (the tile size MUST be 64 x 64 pixels). The set of tiles that map to the input region are computed. These tiles are candidates for further processing, and each tile is processed independently of the others.

##### Differencing (Optional)

If the RemoteFX codec is to be used as a video codec, the encoder can, optionally, do differencing between current and previous frames to compute the smallest set of tiles that have changed. The differencing is done by comparing the set of input tiles in the current frame with collocated tiles from the previous frame to determine whether any pixels have changed. Only the input tiles with changed pixels in the current frame are processed for compression. Note that the input tile is compressed as is; this algorithm does not compress the tile of difference values formed by subtracting the input tile pixels of the current frame from the collocated tile pixels in the previous frame. This means that the decoder does not need to determine whether the encoder is doing differencing. The encoder can use differencing to reduce the number of tiles that it needs to encode, thereby reducing the bandwidth required to send the compressed tiles to the decoder. If the codec is to be used as an image codec, this stage MUST be skipped.

##### Color Conversion (RGB to YCbCr)

Each input tile is converted from the RGB color space to the [**YCbCr color space**](#gt_2598eae5-115f-4039-8f2e-33d689fc920d). The transform used takes an RGB input value with each component in the range [0-255] and transforms it into Y, Cb, and Cr, in the ranges [0.0, 255.0], [-128.0, 127.0], and [-128.0, 127.0], respectively. The Y-component is level-shifted down by 128, so that it also falls into the [-128.0, 127.0] range. The input tile in this level-shifted symmetric YCbCr color space is used as the input for the next stage of DWT. The matrix equation for this conversion is shown in the following figure.

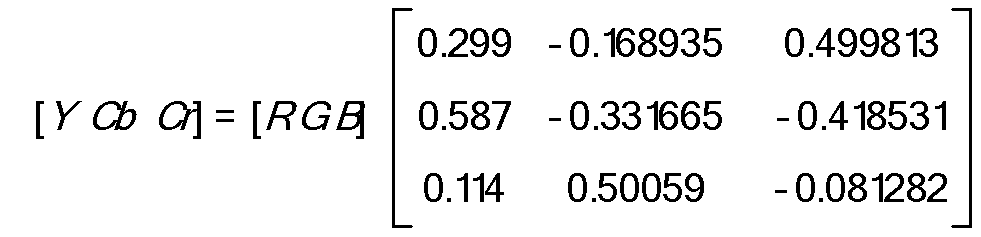


Figure : The RGB to YCbCr conversion matrix

##### DWT

Each tile component (Y, Cb, Cr) is individually transformed by a 2-D DWT using a 5/3 wavelet basis. The filter coefficients used for both of the lifting-based implementations are presented in the following figure.

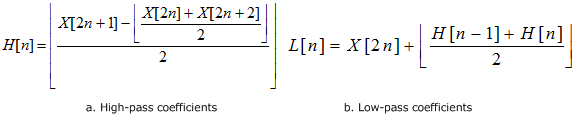


Figure : Lifting equations for the DWT

Filtering at the boundary is done by mirroring the input coefficients. For example, if there are eight input coefficients:

1. [0, 1, 2, 3, 4, 5, 6, 7]

then, after mirroring, the coefficients get logically extended as follows:

1. […, 7, 6, 5, 4, 3, 2, 1, 0, 1, 2, 3, 4, 5, 6, 7, 6, 5, 4, 3, 2, 1, 0, …]

This logical extension should be used when filtering at boundaries where coefficients are required before or after the first and last available coefficient.

For each level of decomposition, we first perform the DWT in the vertical direction, followed by the DWT in the horizontal direction. After the first level of decomposition, there are 4 sub-bands: LL1, LH1, HL1, HH1. For each successive level of decomposition, the LL sub-band of the previous level is used as the input. Each tile component undergoes three levels of decomposition. This results in 10 sub-bands per component. LH1, HL1, and HH1 contain the highest frequency bands present in the image tile, while LL3 contains the lowest frequency band.

The three-level DWT decomposition is illustrated in the following figure.

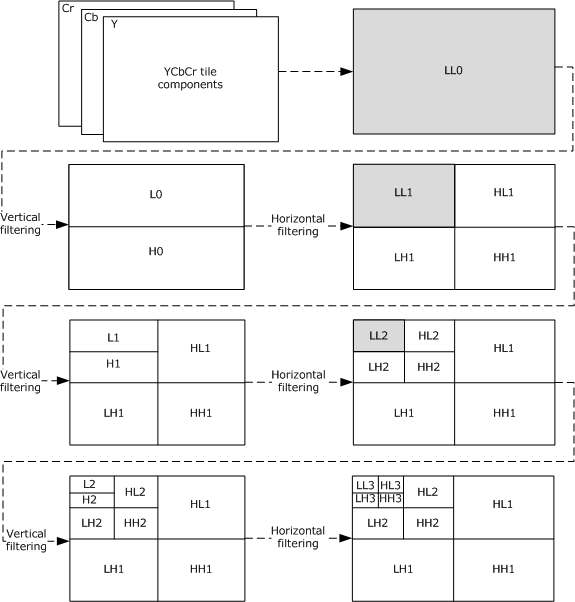


Figure : Three-level DWT decomposition

##### Quantization

The encoder determines a scale value for each sub-band and uses it to quantize all the coefficients in that sub-band, which is done by dividing each coefficient by the scale value and rounding it. These scale values are represented as quantization factors in a [TS\_RFX\_CODEC\_QUANT](#Section_3e9c8af475394c9d95de14b1558b902c) structure, which is embedded in a [TS\_RFX\_TILESET](#Section_7c9261144bea4c69a9a1caa6e88847a6) message. The conversion between a scale value and a quantization factor is given by the following figure.

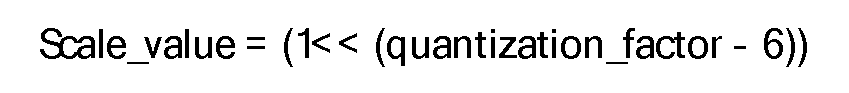


Figure : Quantization factor to scale value conversion

##### Linearization

The quantized tile components are linearized by raster scanning each of the sub-bands. The sub-band coefficient scan and traversal order is illustrated in the following figure.

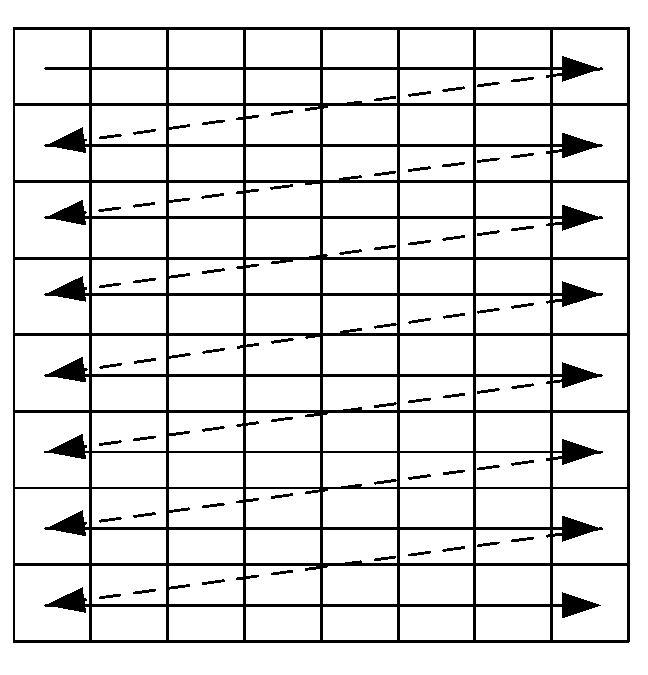


Figure : Raster scan of sub-band coefficients

Linearization of the sub-bands is conducted in the following sequence: HL1, LH1, HH1, HL2, LH2, HH2, HL3, LH3, HH3, and LL3, as shown in the following figure.

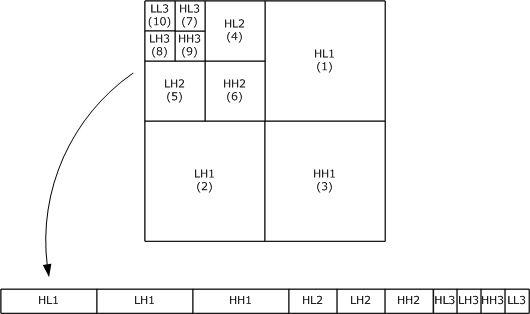


Figure : Sub-band traversal order

The coefficients from LL3 also undergo differential encoding. Except for the first coefficient, every raster-scanned LL3 coefficient is subtracted from its previous neighbor. For example, if the raster-scanned LL3 coefficients are

1. [64, 32, 42, 54, 50, 60, 40, 70]

Then, after differential encoding, they would get converted to

1. [64, -32, 10, 12, -4, -10, -20, 30]

##### RLGR Entropy Encoding

Each 64 x 64-pixel tile contains an array of 4,096 coefficients. This coefficient array is losslessly entropy-encoded using the RLGR algorithm ([[ARLGR]](http://go.microsoft.com/fwlink/?LinkId=187365) section 3). The three tile components are assembled into an encoded tile packet (section [2.2.2.3.4.1](#Section_89e669edb6dd4591a26773a72bc6d84e)). RLGR is an algorithm that adaptively switches between Run-Length encoding of zeros and Golomb-Rice coding of nonzero coefficients. There are two variants of the RLGR algorithm that can be used, RLGR1 and RLGR3. The decoder endpoint specifies its preference through the capabilities negotiation (see the **entropyBits** field in section [2.2.1.1.1.1.1](#Section_fc03ad3cd1b04fe4984be6cc023a6925)). The pseudocode that describes the complete RLGR1/RLGR3 algorithm in detail is given in section [3.1.8.1.7.3](#Section_6dacc5a6c6d94259abf00a27b1f48bac).

###### RLGR1

The RLGR algorithm is described in [[ARLGR]](http://go.microsoft.com/fwlink/?LinkId=187365). In this specification, the parameter adaptation rules, which are central to the algorithm, are detailed in section [ARLGR] section 3. The specific adaptation values used by RLGR1 are given in the following two tables.

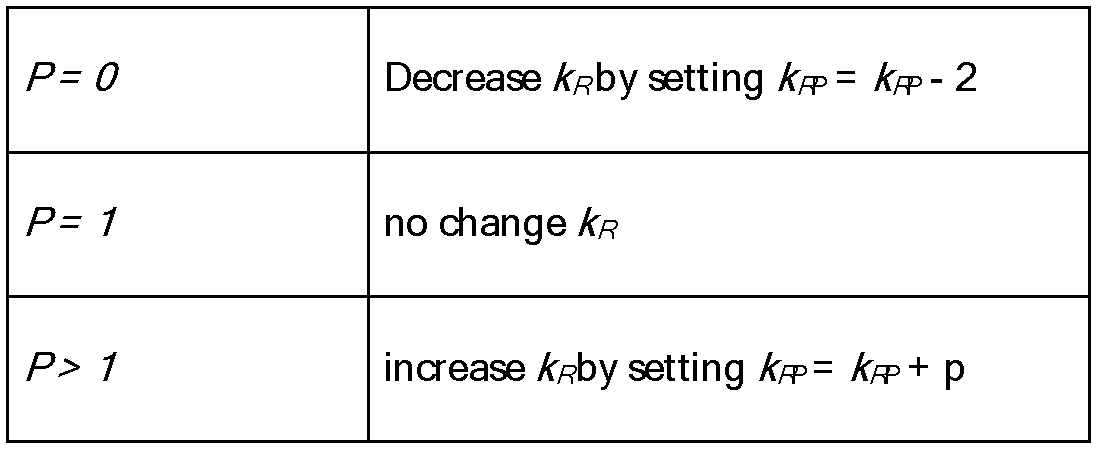


Figure : Adaptation rule for RLGR1/RLGR3 parameter kR

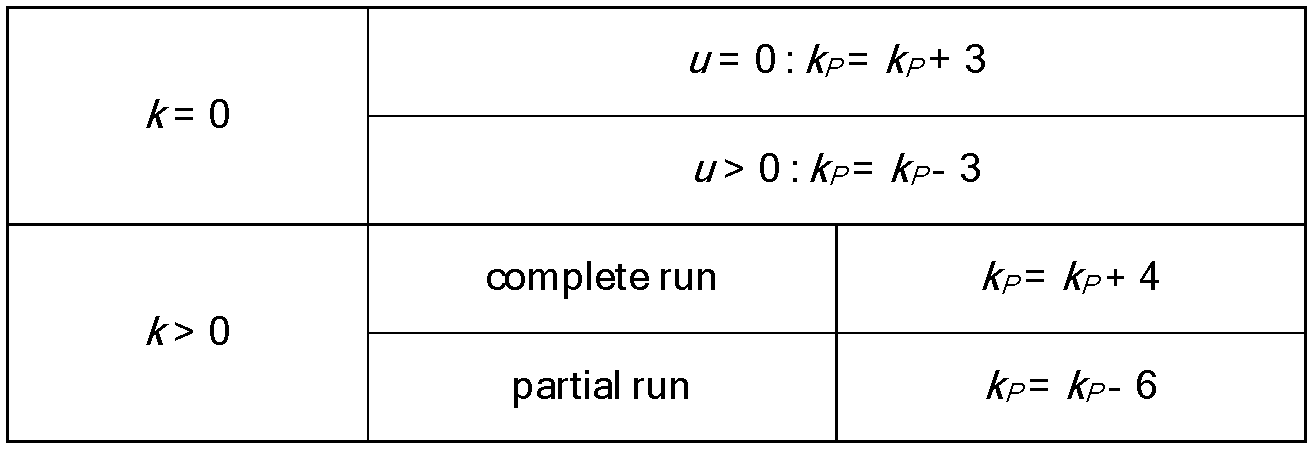


Figure : Adaptation rule for RLGR1/RLGR3 main parameter k

The initial value for the parameters *k*RP and *k*P is 8, and the value of *L* is 8. Both the parameters *k*RP and *k*P are clipped to the range [0, 80] after every update.

###### RLGR3

The core RLGR algorithm [[ARLGR]](http://go.microsoft.com/fwlink/?LinkId=187365) switches between the Run-Length and the Golomb-Rice mode as a stream of data is encoded, based on the Run-Length parameter, k, as shown in figure "Adaptation rule for RLGR1/RLGR3 main parameter k" in section 3.1.8.1.7.2. The Golomb-Rice mode in the RLGR algorithm [ARLGR], operates by encoding one coefficient at a time and updating the Golomb-Rice parameter, kR, as shown in figure "Adaptation rule for RLGR1/RLGR3 parameter kR" in section 3.1.8.1.7.2. In RLGR3, the Run-Length mode parameter, k, and the Golomb-Rice parameter, kR, are updated exactly as in RLGR1, but the Golomb-Rice mode is processed differently. Once the algorithm enters into the Golomb-Rice mode, RLGR3 takes the sum of the next two coefficients and Golomb-Rice encodes the sum and updates the parameters k and kR as with RLGR1. After the sum is encoded, the value of the first coefficient is emitted as binary code in the exact number of bits it takes to represent the sum. Pseudocode for Golomb-Rice mode in RLGR3 encode follows.

1. ENCODER GOLOMB-RICE MODE:
2. SUM = COEFF[n] + COEFF[n+1] // sum of the next two coefficients in the input stream
3. GOLOMB\_RICE\_ENCODE(SUM) // Golomb-Rice encode the value of SUM
4. BINARY\_ENCODE(COEFF[n]) // using LOG2(SUM) bits
5. UPDATE\_RLGR\_PARAMETERS(SUM) // update RLGR parameters (k,kR) based on SUM

The decoder follows the same sequence of steps as the encoder, as it decodes the encoded data. The pseudocode for the decoder in Golomb-Rice mode is given below.

1. DECODER GOLOMB-RICE MODE:
2. SUM = GOLOMB\_RICE\_DECODE() // decode the next value from the encoded stream
3. NBS = LOG2(SUM) // number of bits in binary representation of SUM
4. COEFF[n] = BINARY\_DECODE(NBS) // read next NBS bits from input stream as COEFF[n]
5. COEFF[n+1] = SUM – COEFF[n] // compute COEFF[n+1]
6. UPDATE\_RLGR\_PARAMETERS(SUM) // update RLGR parameters (k,kR) based on SUM

In general, RLGR3 encodes faster than RLGR1 but is marginally worse in terms of compression ratio.

###### RLGR1/RLGR3 Pseudocode

RLGR1/RLGR3 Decode

The following pseudocode sample shows how to decode a stream of bits encoded using the RLGR1/RLGR3 algorithm.

1. // Constants used within the RLGR1/RLGR3 algorithm
2. #define KPMAX (80) // max value for kp or krp
3. #define LSGR (3) // shift count to convert kp to k
4. #define UP\_GR (4) // increase in kp after a zero run in RL mode
5. #define DN\_GR (6) // decrease in kp after a nonzero symbol in RL mode
6. #define UQ\_GR (3) // increase in kp after nonzero symbol in GR mode
7. #define DQ\_GR (3) // decrease in kp after zero symbol in GR mode
8. //
9. // Gets (returns) the next nBits from the bitstream
10. // The layout of N bits in the bitstream with regard to a byte array is:
11. // [0..N] -> [0..7](MSB..LSB),[8..15](MSB..LSB) ...,
12. // where (MSB..LSB) denotes a byte.
13. //
14. UINT GetBits(
15. UINT nBits
16. );
17. //
18. // From current output pointer, write "value", check and update \*termsToDecode
19. //
20. VOID
21. WriteValue(
22. INT value,
23. INT \*termsToDecode
24. );
25. //
26. // From current output pointer, write next nZeroes terms with value 0;
27. // check and update \*termsToDecode
28. //
29. VOID
30. WriteZeroes(
31. UINT nZeroes,
32. INT \*termsToDecode
33. );
34. //
35. // Returns the least number of bits required to represent a given value
36. //
37. UINT
38. GetMinBits(
39. UINT val// returns ceil(log2(val))
40. );
41. //
42. // Converts from (2 \* magnitude - sign) to integer
43. //
44. INT
45. GetIntFrom2MagSign(
46. UINT twoMs
47. );
48. //
49. // Update the passed parameter and clamp it to the range [0,KPMAX]
50. // Return the value of parameter right-shifted by LSGR
51. //
52. INT
53. UpdateParam(
54. INT\* param, // parameter to update
55. INT deltaP // update delta
56. )
57. {
58. \*param += deltaP;// adjust parameter
59. if (\*param > KPMAX) \*param = KPMAX;// max clamp
60. if (\*param < 0) \*param = 0;// min clamp
61. return (\*param >> LSGR);
62. }
63. //
64. // Outputs the Golomb/Rice encoding of a non-negative integer
65. //
66. UINT
67. GetGRCode(
68. INT\* krp,
69. INT\* kr
70. )
71. {
72. INT vk;
73. UINT mag;
74. // chew up/count leading 1s and escape 0
75. for (vk=0;GetBits(1)==1;) {
76. vk++;
77. }
78. // get next \*kr bits, and combine with leading 1s
79. mag = (vk<<\*kr) | GetBits(\*kr);
80. // adjust kpr and kr based on vk
81. if (!vk)
82. {
83. \*kr = UpdateParam(kpr, -2);
84. }
85. else if (vk!=1)// at 1, no change!
86. {
87. \*kr = UpdateParam(kpr, vk);
88. }
89. return (mag);
90. }
91. //
92. // Routine that reads and decodes stream of RLGR data
93. //
94. VOID
95. RLGR\_Decode(
96. RLGR\_MODE rlgrMode, // RLGR1 || RLGR3
97. INT termsToDecode
98. )
99. {
100. // initialize the parameters
101. INT k = 1;
102. INT kp = k << LSGR;
103. INT kr = 1;
104. INT krp = kr << LSGR;
105. while (termsToDecode > 0)
106. {
107. INT run;
108. if (k)
109. {
110. // RL MODE
111. while (GetBits(1) == 0)
112. {
113. // we have an RL escape "0", which translates to a run (1<<k) of zeros
114. WriteZeroes(1<<k, &termsToDecode);
115. k = UpdateParam(&kp,UpGR); // raise k and kp up because of zero run
116. }
117. if (termsToDecode > 0)
118. {
119. // next k bits will contain remaining run of zeros
120. run = GetBits(k);
121. WriteZeroes(run, &termsToDecode);
122. }
123. if (termsToDecode > 0)
124. {
125. // get nonzero value, starting with sign bit and
126. // then GRCode for magnitude - 1
127. UINT sign = GetBits(1);
128. // magnitude - 1 was coded (because it was nonzero)
129. INT mag = (INT)GetGRCode(&krp,&kr) + 1;
130. WriteValue(sign ? -mag : mag, &termsToDecode);
131. k = UpdateParam(&kp, -DnGR); // lower k and kp because of nonzero term
132. }
133. }
134. else
135. {
136. // GR (GOLOMB-RICE) MODE
137. UINT mag = GetGRCode(&krp, &kr); // values coded are 2\*magnitude - sign
138. if (rlgrMode == RLGR1)
139. {
140. if (!mag)
141. {
142. WriteValue(0, &termsToDecode);
143. k = UpdateParam(&kp, UqGR); // raise k and kp due to zero
144. }
145. else
146. {
147. WriteValue(GetIntFrom2MagSign(mag), &termsToDecode);
148. k = UpdateParam(&kp, -DqGR); // lower k and kp due to nonzero
149. }
150. }
151. else // rlgrMode == RLGR3
152. {
153. // In GR mode FOR RLGR3, we have encoded the
154. // sum of two (2\*mag - sign) values
155. // maximum possible bits for first term
156. UINT nIdx = GetMinBits(mag);
157. // decode val1 is first term's (2\*mag - sign) value
158. UINT val1 = GetBits(nIdx);
160. // val2 is second term's (2\*mag - sign) value
161. UINT val2 = mag - val1;
162. if (val1 && val2) {
163. // raise k and kp if both terms nonzero
164. k = UpdateParam(&kp, -2\*DqGR);
165. }
166. else if (!val1 && !val2) {
167. // lower k and kp if both terms zero
168. k = UpdateParam(&kp, 2\*UqGR);
169. }
170. WriteValue(GetIntFrom2MagSign(val1), &termsToDecode);
171. WriteValue(GetIntFrom2MagSign(val2), &termsToDecode);
172. }
173. }
174. }
175. }

RLGR1/RLGR3 Encode

The following pseudocode sample shows how to encode a stream of input symbols using the RLGR1/RLGR3 algorithm.

1. // Constants used within the RLGR1/RLGR3 algorithm
2. #define KPMAX (80) // max value for kp or krp
3. #define LSGR (3) // shift count to convert kp to k
4. #define UP\_GR (4) // increase in kp after a zero run in RL mode
5. #define DN\_GR (6) // decrease in kp after a nonzero symbol in RL mode
6. #define UQ\_GR (3) // increase in kp after nonzero symbol in GR mode
7. #define DQ\_GR (3) // decrease in kp after zero symbol in GR mode
8. //
9. // Returns the next coefficient (a signed int) to encode, from the input stream
10. //
11. INT
12. GetNextInput();
13. //
14. // Emit bitPattern to the output bitstream.
15. // The bitPattern value represents a bit sequence that is generated by shifting
16. // new bits in from the right. If we take the binary representation of bitPattern,
17. // with N(numBits-1) being the leftmost bit position and 0 being the rightmost bit position,
18. // the mapping of bitPattern to the output bytes is as follows:
19. //
20. // bitPattern[N..0] -> byte[MSB..LSB] .. byte[MSB..LSB]
21. //
22. VOID
23. OutputBits(
24. INT numBits, // number of bits in bitPattern
25. INT bitPattern // bit pattern
26. );
27. //
28. // Emit a bit (0 or 1), count number of times, to the output bitstream
29. //
30. VOID
31. OutputBit(
32. INT count, // number of times to emit the bit
33. INT bit // 0 or 1
34. );
35. //
36. // Returns the least number of bits required to represent a given value
37. //
38. UINT
39. GetMinBits(
40. INT val // returns ceil(log2(val))
41. );
42. //
43. // Converts the input value to (2 \* abs(input) - sign(input)),
44. // where sign(input) = (input < 0 ? 1 : 0) and returns it
45. //
46. UINT
47. Get2MagSign(
48. INT input // input value
49. );
50. //
51. // Update the passed parameter and clamp it to the range [0,KPMAX]
52. // Return the value of parameter right-shifted by LSGR
53. //
54. INT
55. UpdateParam(
56. INT\* param, // parameter to update
57. INT deltaP // update delta
58. )
59. {
60. \*param += deltaP;
61. if (\*param > KPMAX) \*param = KPMAX;
62. if (\*param < 0) \*param = 0;
63. return (\*param >> LSGR);
64. }
65. //
66. // Outputs the Golomb/Rice encoding of a non-negative integer
67. //
68. VOID
69. CodeGR(
70. INT\* krp, // GR parameter, used and updated based on the input value
71. UINT val // input non-negative value to be encoded
72. )
73. {
74. INT kr = \*krp >> LSGR;
75. // unary part of GR code
76. UINT vk = val >> kr;
77. OuputBit(vk, 1);
78. OutputBit(1, 0);
79. // remainder part of GR code, if needed
80. if (kr) {
81. OutputBits(kr, val & ((1 << kr) - 1));
82. }
83. // update krp, only if it is not equal to 1
84. if (vk == 0) {
85. UpdateParam(krp, -2);
86. }
87. else if (vk > 1) {
88. UpdateParam(krp, vk);
89. }
90. }
91. //
92. // Routine that outputs a stream of RLGR1/RLGR3-encoded bits
93. //
94. VOID
95. RLGR\_Encode(
96. RLGR\_MODE rlgrMode // RLGR1 || RLGR3
97. )
98. {
99. // initialize the parameters
100. INT k = 1;
101. INT kp = 1 << LSGR;
102. INT kr = 1;
103. INT krp = 1 << LSGR;
104. // process all the input coefficients
105. while (1)
106. {
107. INT input;
108. if (k)
109. {
110. // RUN-LENGTH MODE
111. // collect the run of zeros in the input stream
112. INT numZeros = 0;
113. while ((input = GetNextInput()) == 0) {
114. ++ numZeros;
115. }
116. // emit output zeros
117. INT runmax = 1 << k;
118. while (numZeros >= runmax)
119. {
120. OutputBit(1, 0); // output a zero bit
121. numZeros -= runmax;
122. k = UpdateParam(&kp, UpGR); // update kp, k
123. runmax = 1 << k;
124. }
125. // output a 1 to terminate runs
126. OuputBit(1, 1);
127. // output the remaining run length using k bits
128. OutputBits(k, numZeros);
129. // encode the nonzero value using GR coding
130. INT mag = abs(input); // absolute value of input coefficient
131. INT sign = (input < 0 ? 1 : 0); // sign of input coefficient
132. OutputBit(1, sign); // output the sign bit
133. CodeGR(&krp, mag - 1); // output GR code for (mag - 1)
134. k = UpdateParam(&kp, -DnGR);
135. }
136. else
137. {
138. // GOLOMB-RICE MODE
139. if (rlgrMode == RLGR1)
140. {
141. // RLGR1 variant
142. // convert input to (2\*magnitude - sign), encode using GR code
143. UINT twoMs = Get2MagSign(GetNextInput());
144. CodeGR(&krp, twoMs);
145. // update k, kp
146. if (!twoMs) {
147. k = UpdateParam(&kp, UqGR);
148. }
149. else {
150. k = UpdateParam(&kp, -DqGR);
151. }
152. }
153. else // rlgrMode == RLGR3
154. {
155. // RLGR3 variant
156. // convert the next two input values to (2\*magnitude - sign) and
157. // encode their sum using GR code
158. UINT twoMs1 = Get2MagSign(GetNextInput());
159. UINT twoMs2 = Get2MagSign(GetNextInput());
160. UINT sum2Ms = twoMs1 + twoMs2;
162. CodeGR(&krp, sum2Ms);
163. // encode binary representation of the first input (twoMs1).
164. OutputBits(GetMinBits(sum2Ms), twoMs1);
165. // update k,kp for the two input values
166. if (twoMs1 && twoMs2) {
167. k = UpdateParam(&kp, -2\*DqGR);
168. }
169. else if (!twoMs1 && !twoMs2) {
170. k = UpdateParam(&kp, 2\*UqGR);
171. }
172. }
173. }
174. }
175. }

#### Decoding

The functional stages involved in the decoding path are illustrated in the following figure. Compared to the encoding stages, the decoding stage operations are the operations of the encoding stage in reverse order.

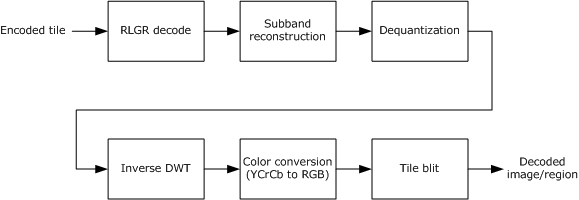


Figure : RemoteFX decoding stages

##### RLGR Entropy Decoding

The three encoded tile components (Y, Cb, and Cr) are entropy decoded independently. The algorithm used is either inverse RLGR1 or RLGR3, depending on which one was used for encoding. For details of the decoding process, refer to [[ARLGR]](http://go.microsoft.com/fwlink/?LinkId=187365) (the encoding process is described in section [3.1.8.1.7](#Section_0a20d8cf588a4194913335a47e2766f6)).

##### Sub-Band Reconstruction

The RLGR entropy decoding stage results in the generation of an array of 4096 coefficients per tile component. The last 64 coefficients (which correspond to the LL3 sub-band) are differentially decoded. After this step, the coefficients are rearranged to form the sub-band structure shown in the figure in section [3.1.8.1.6](#Section_72eadb5133694d82b0eb0407fa689695) that describes the sub-band traversal order.

##### Dequantization

The quantization factors used for each sub-band are specified in the TS\_RFX\_TILE (section [2.2.2.3.4.1](#Section_89e669edb6dd4591a26773a72bc6d84e)) structure. A scale value is computed from the quantization factor using the formula shown in the figure in section [3.1.8.1.5](#Section_ac463a175d15477fa5339ff2927a6008). Each coefficient in the appropriate sub-band is dequantized by multiplying it with this scale value and rounded.

##### Inverse DWT

Each tile component undergoes three levels of inverse discrete wavelet transformation (IDWT). The 5/3 lifting equations used for the IDWT are presented in the following figure.

MS-RDPRFX_pict945ecdf6-797c-fbd6-77c8-8ae93e21da10.png

Figure : Lifting equations for inverse DWT

This stage results in the decoded Y, Cb, and Cr components for the tile.

##### Color Conversion (YCbCr to RGB)

The Y-component is first level shifted up by 128 so that it falls in the [0.0, 255.0] range. The three YCbCr components are then transformed to the RGB color space by using the following transform matrix.

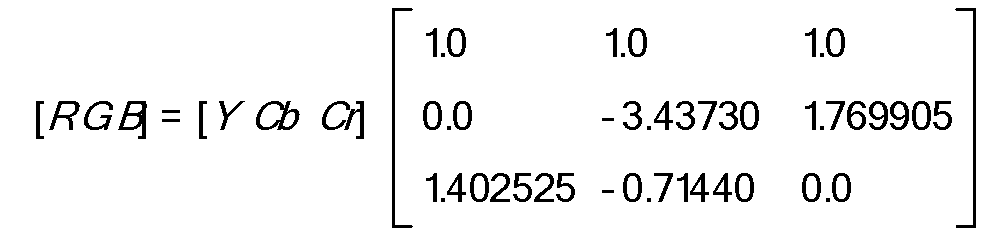


Figure : The YCbCr to RGB conversion matrix

##### Reconstructed Frame

Each decoded RGB tile is intersected and clipped against the set of rectangles from the **rects** field of the [TS\_RFX\_REGION (section 2.2.2.3.3)](#Section_23d2a1d61be0435783eb998b66ddd4d9) message. This gives a set of clipped rectangles, which are blitted to the appropriate location on the screen. Doing this for all the tiles present in the [TS\_RFX\_TILESET (section 2.2.2.3.4)](#Section_7c9261144bea4c69a9a1caa6e88847a6) message will result in the reconstructed frame.

There are two reasons for doing this tile-region intersection. One is that the changed region on the screen, which comprises a set of arbitrary-sized rectangles, is converted to 64x64 tiles (section [3.1.8.1.1](#Section_44B4A1576E024E52A92A51C836FA67F0)) and these tiles can extend beyond the boundary of the rectangles of the change region. The second reason is that the differencing operation (section [3.1.8.1.2](#Section_E444BD18443F4F898530A5FD0D86767C)) could cull some of these tiles and the decoder will not receive these tiles within the TS\_RFX\_TILESET message.

#### RemoteFX Stream

A RemoteFX stream is defined to be the set of all of the codec messages, sent sequentially from an encoder endpoint to a decoder endpoint. There is no message to signify the end of a stream. If the RemoteFX codec is to be used as an image codec, the stream only contains messages pertaining to a single image. If the RemoteFX codec is to be used as a video codec, the stream can contain an arbitrary number of images.

##### Encode Message Sequencing

An encoded RemoteFX stream is composed of a sequence of encode messages that are described in section [2.2.2](#Section_edd6c3684f39420abf14a0e83c654ab7). The sequence of encode messages is encapsulated inside an Extended Bitmap Data structure ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.9.2.1.1), which is encapsulated in a Stream Surface Bits Surface Command ([MS-RDPBCGR] section 2.2.9.2.2).

All encode messages start with a TS\_RFX\_BLOCKT (section [2.2.2.1.1](#Section_1e1b69a9c2aa4b13bd4423dcf96d4a74)) structure. When parsing the message blocks, the **blockLen** field of a TS\_RFX\_BLOCKT MUST be used to obtain the length of the data block. This length MUST NOT be less than the length based on the **blockType** field of the TS\_RFX\_BLOCKT.

The RemoteFX stream is structured as a set of header messages followed by encoded data messages. The header messages contain global information necessary to decompress the data messages. The header messages are described in section [2.2.2.2](#Section_7a3e6e0060d240009dfd44d43f1cde82), and the data messages are described in section [2.2.2.3](#Section_1c5d9da189b34c24b1d669398efa09e1). The stream MUST start with the header messages and any of these headers can appear in the stream at a later stage. The header messages can be repeated.

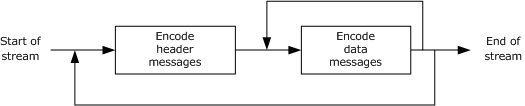


Figure : Message sequencing in the RemoteFX stream

The first message in a RemoteFX stream MUST be the TS\_RFX\_SYNC (section [2.2.2.2.1](#Section_f01b81b61a8f49fd9543081fbc8e1831)) message. This message MUST be followed by the TS\_RFX\_CHANNELS (section [2.2.2.2.3](#Section_c6efba0bf59e4d8e8d76840c41edce5b)), TS\_RFX\_CODEC\_VERSIONS (section [2.2.2.2.2](#Section_2650e6c2faf74858b169828db842b663)), and TS\_RFX\_CONTEXT (section [2.2.2.2.4](#Section_bde1ce785d9e44c18a155843fa12270a)) messages, as shown in the figure that follows. It is permissible for these three messages to occur in any order. These three messages contain all of the information needed to initialize the decoder.

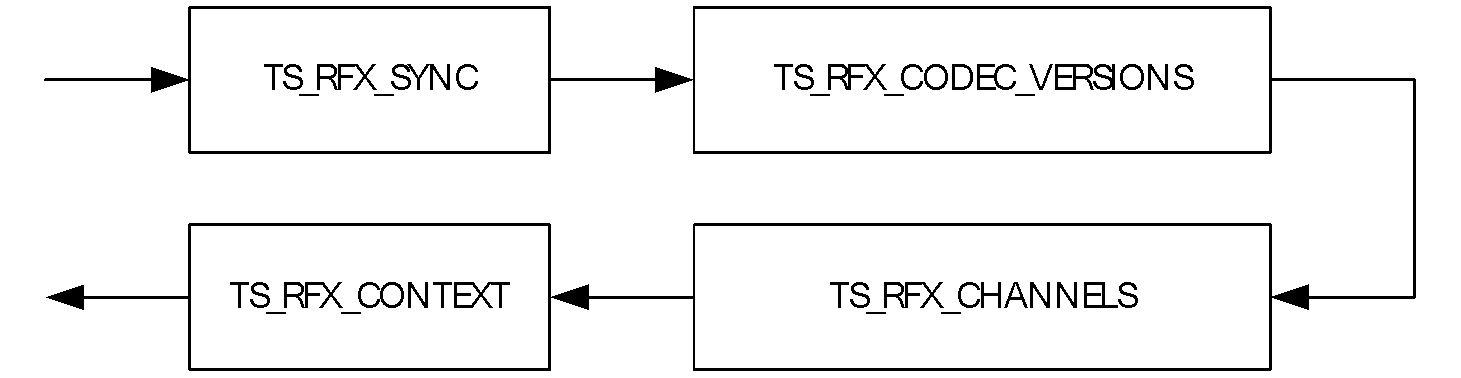


Figure : Generation of RemoteFX encode header messages

The TS\_RFX\_CHANNELS message MUST contain a single channel, and the frame dimensions of this channel are given by the **width** and **height** fields of the corresponding [TS\_RFX\_CHANNELT](#Section_4060f07e9d73454d841e131a93aca675) structure (section 2.2.2.1.3). The decoder MUST check the TS\_RFX\_CODEC\_VERSIONS and TS\_RFX\_CONTEXT messages to determine whether it is compatible with the RemoteFX codec version and the encoding properties listed in these messages. If the decoder cannot support the codec version, the channel frame dimensions, or any of the listed encoding properties, it MUST reject the encoded stream.

The data associated with each encoded frame or image is always bracketed by the TS\_RFX\_FRAME\_BEGIN (section [2.2.2.3.1](#Section_7a938a263fc2436bbc8409dfff59b5e7)) and TS\_RFX\_FRAME\_END (section [2.2.2.3.2](#Section_b4cb26760268450bad3272f66d0598e8)) messages. The sequence of blocks that comprise a frame are described in the figure that follows. There MUST only be one TS\_RFX\_REGION (section [2.2.2.3.3](#Section_23d2a1d61be0435783eb998b66ddd4d9)) message per frame and one TS\_RFX\_TILESET (section [2.2.2.3.4](#Section_7c9261144bea4c69a9a1caa6e88847a6)) message per TS\_RFX\_REGION. All of the messages corresponding to a frame associated with a given channel MUST occur consecutively within the codec byte-stream. The messages corresponding to frames from two different channels MUST NOT be interleaved.

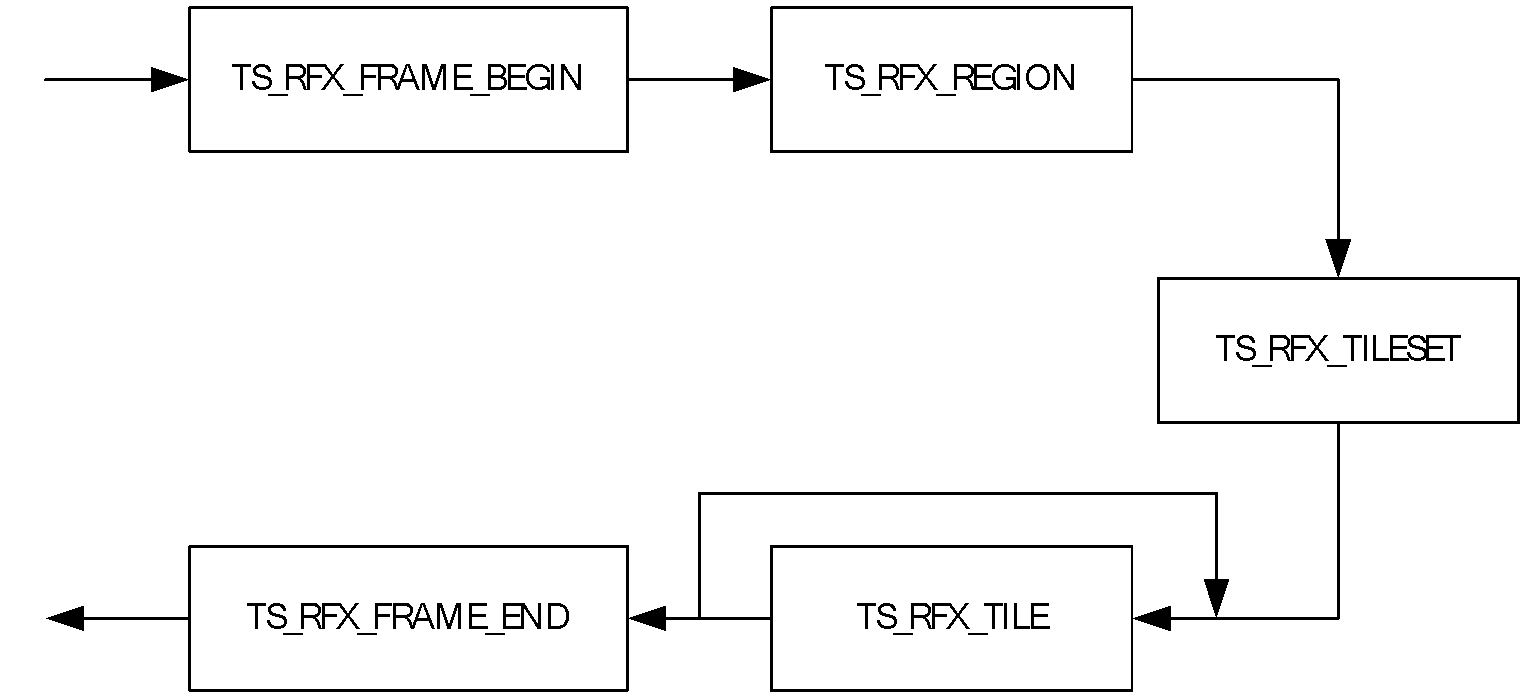


Figure : Generation of RemoteFX encode data messages

# Protocol Examples

## Sample Use Case

Consider the case of a remote endpoint system with one monitor configured to use a display resolution of 1280 x 1024 pixels. In this scenario, there is one instance of the RemoteFX encoder running on the remote system. The encoder is configured to use one channel with frame buffer dimensions of 1280 x 1024. As the contents of the screen are updated over time, the changes are captured, and the affected regions in the frame buffer corresponding to the bounding rectangles of the updated areas are fed as input to the encoder to compress.

The encoder examines the update regions and determines the set of tiles that correspond to those regions. The tile grid is anchored to the frame at (0, 0) and aligned to the tile size. This means that as an update region (for example, a window being dragged) moves around on the screen, the number of tiles corresponding to that update region can vary. In the figure that follows, the regions A and B are the same size (3 x 3) but they correspond to 9 and 16 tiles respectively due to their location on the screen. In the case of border tiles where the update region is not aligned to the tile grid, the area of the tile outside of the actual update region can contain arbitrary data and hence cannot be relied upon to contain valid image data. In the figure that follows, region B is not aligned to the tile grid and hence the perimeter tiles only contain a partial image.

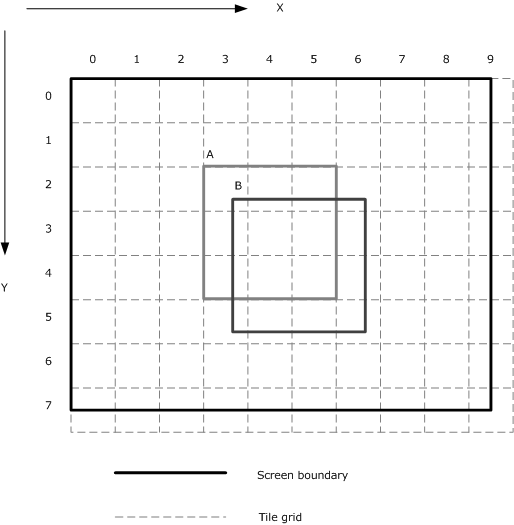


Figure : Update region to tile grid mapping

The single monitor configuration results in a TS\_RFX\_CHANNELS (section [2.2.2.2.3](#Section_c6efba0bf59e4d8e8d76840c41edce5b)) header message that specifies one channel set to 1280 x 1024. For every frame that is encoded due to region updates, the message sequence that results is described in the encode messages diagram in section [3.1.8.3.1](#Section_028ed301385c4b1784ec0a158a22c1b2). The TS\_RFX\_REGION (section [2.2.2.3.3](#Section_23d2a1d61be0435783eb998b66ddd4d9)) message contains the list of updated rectangles, and the accompanying TS\_RFX\_TILESET (section [2.2.2.3.4](#Section_7c9261144bea4c69a9a1caa6e88847a6)) message contains the corresponding set of tiles. The TS\_RFX\_TILE (section [2.2.2.3.4.1](#Section_89e669edb6dd4591a26773a72bc6d84e)) structure contains the location of the tile in the frame. Conceptually, the decoder can decode each tile, [**blit**](#gt_c2d05358-8d39-4fe9-a2ed-613db0f54a7e) it to the proper location in a temporary frame buffer, and then blit all of the updated rectangles to an output frame buffer.

## Annotated RemoteFX Messages

### Capabilities Messages

The following is an annotated network capture of the [TS\_RFX\_CLNT\_CAPS\_CONTAINER](#Section_286655bfbf3440d4b5cb157dd86df346) message (section 2.2.1.1).

1. 00000000 31 00 00 00 01 00 00 00 25 00 00 00 c0 cb 08 00
2. 00000010 00 00 01 00 c1 cb 1d 00 00 00 01 c0 cf 02 00 08
3. 00000020 00 00 01 40 00 00 01 01 01 00 01 40 00 00 01 01
4. 00000030 04

[TS\_RFX\_CAPS](#Section_08fa5d70b1444b69ab1a221b6b17caa5) message (section 2.2.1.1.1):

1. c0 cb –> TS\_RFX\_CAPS::blockType = CBY\_CAPS
2. 08 00 00 00 –> TS\_RFX\_CAPS::blockLen = 8
3. 01 00 –> TS\_RFX\_CAPS::numCapsets = 1

[TS\_RFX\_CAPSET](#Section_14a09576a48f4535b27ed99568e39ea5) message (section 2.2.1.1.1.1):

1. c1 cb –> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::blockType = CBY\_CAPSET
2. 1d 00 00 00 –> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::blockLen = 29
3. 01 –> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::codecId = 1
4. C0 cf –> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::capsetType = CLY\_CAPSET
5. 02 00 –> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::numIcaps = 2
6. 08 00 –> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::icapLen = 8

[TS\_RFX\_ICAP](#Section_fc03ad3cd1b04fe4984be6cc023a6925) message (section 2.2.1.1.1.1.1):

1. 00 01 –> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[0]::version = CLW\_VERSION\_1\_0
2. 40 00 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[0]::tileSize = 64
3. 00 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[0]::flags = VIDEO\_MODE (0)
4. 01 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[0]::colConvBits = CLW\_COL\_CONV\_ICT
5. 01 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[0]::transformBits = CLW\_XFORM\_DWT\_53\_A
6. 01 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[0]::entropyBits = CLW\_ENTROPY\_RLGR1
7. 00 01 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[1]::version = CLW\_VERSION\_1\_0
8. 40 00 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[1]::tileSize = 64
9. 00 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[1]::flags = VIDEO\_MODE (0)
10. 01 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[1]::colConvBits = CLW\_COL\_CONV\_ICT
11. 01 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[1]::transformBits = CLW\_XFORM\_DWT\_53\_A
12. 04 -> TS\_RFX\_CAPS::TS\_RFX\_CAPSET[0]::TS\_RFX\_ICAP[1]::entropyBits = CLW\_ENTROPY\_RLGR3

The client has specified support for both RLGR1 and RLGR3, by including two TS\_RFX\_ICAP elements. The server can pick either of the two and use the corresponding encoding properties, as described in section [3.1.5.1](#Section_b253aeab51204b0580617c51e8e9750f).

The following is an annotated dump of the [TS\_RFX\_SRVR\_CAPS\_CONTAINER](#Section_100eb76c157747979fa3978fb9eaef86) message (section 2.2.1.2).

1. 00000000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
2. 00000010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
3. 00000020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
4. 00000030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

The server has sent an array of bytes set to zero as described in section 2.2.1.2.

### Encode Header Messages

The following is an annotated network capture of the [Encode Header Messages (section 2.2.2.2)](#Section_7a3e6e0060d240009dfd44d43f1cde82).

1. 00000000 c0 cc 0c 00 00 00 ca ac cc ca 00 01 c3 cc 0d 00
2. 00000010 00 00 01 ff 00 40 00 28 a8 c1 cc 0a 00 00 00 01
3. 00000020 01 00 01 c2 cc 0c 00 00 00 01 00 40 00 40 00

[TS\_RFX\_SYNC](#Section_f01b81b61a8f49fd9543081fbc8e1831) message (section 2.2.2.2.1):

1. c0 cc –> TS\_RFX\_SYNC::BlockT::blockType = WBT\_SYNC
2. 0c 00 00 00 –> TS\_RFX\_SYNC::BlockT::blockLen = 12
3. ca ac cc ca –> TS\_RFX\_SYNC::magic = WF\_MAGIC
4. 00 01 –> TS\_RFX\_SYNC::version = 0x0100

[TS\_RFX\_CONTEXT](#Section_bde1ce785d9e44c18a155843fa12270a) message (section 2.2.2.2.4):

1. c3 cc –> TS\_RFX\_CONTEXT::CodecChannelT::BlockT::blockType = WBT\_CONTEXT
2. 0d 00 00 00 –> TS\_RFX\_CONTEXT::CodecChannelT::BlockT::blockLen = 13
3. 01 –> TS\_RFX\_CONTEXT::CodecChannelT::codecId = 1
4. ff –> TS\_RFX\_CONTEXT::CodecChannelT::channelId = 255
5. 00 –> TS\_RFX\_CONTEXT::ctxId = 0
6. 40 00 –> TS\_RFX\_CONTEXT::tileSize = 64
7. 28 a8 –> TS\_RFX\_CONTEXT::properties
8. TS\_RFX\_CONTEXT::properties::flags = VIDEO\_MODE (0)
9. TS\_RFX\_CONTEXT::properties::cct = COL\_CONV\_ICT (1)
10. TS\_RFX\_CONTEXT::properties::xft = CLW\_XFORM\_DWT\_53\_A (1)
11. TS\_RFX\_CONTEXT::properties::et = CLW\_ENTROPY\_RLGR3 (4)
12. TS\_RFX\_CONTEXT::properties::qt = SCALAR\_QUANTIZATION (1)
13. TS\_RFX\_CONTEXT::properties::r = RESERVED

[TS\_RFX\_CODEC\_VERSIONS](#Section_2650e6c2faf74858b169828db842b663) message (section 2.2.2.2.2):

1. c1 cc –> TS\_RFX\_CODEC\_VERSIONS::BlockT::blockType = WBT\_CODEC\_VERSION
2. 0a 00 00 00 –> TS\_RFX\_CODEC\_VERSIONS::BlockT::blockLen = 10
3. 01 -> TS\_RFX\_CODEC\_VERSIONS::numCodecs = 1
4. 01 –> TS\_RFX\_CODEC\_VERSIONS::TS\_RFX\_CODEC\_VERSIONT::codecId = 1
5. 00 01 –> TS\_RFX\_CODEC\_VERSIONS::TS\_RFX\_CODEC\_VERSIONT::version 0x0100

[TS\_RFX\_CHANNELS](#Section_c6efba0bf59e4d8e8d76840c41edce5b) message (section 2.2.2.2.3):

1. c2 cc –> TS\_RFX\_CHANNELS::BLockT::blockType = WBT\_CHANNELS
2. 0c 00 00 00 –> TS\_RFX\_CHANNELS::BlockT::blockLen = 12
3. 01 -> TS\_RFX\_CHANNELS::numChannels = 1
4. 00 –> TS\_RFX\_CHANNELS::TS\_RFX\_CHANNELT::channelId = 0
5. 40 00 –> TS\_RFX\_CHANNELS::TS\_RFX\_CHANNELT::width = 64
6. 40 00 –> TS\_RFX\_CHANNELS::TS\_RFX\_CHANNELT::height = 64

The server has chosen to encode using RLGR3 (TS\_RFX\_CONTEXT) and specified one channel with dimensions of 64x64 (TS\_RFX\_CHANNELS).

### Encode Data Messages

The following is an annotated network capture of the [Encode Data Messages (section 2.2.2.3)](#Section_1c5d9da189b34c24b1d669398efa09e1).

1. 00000000 c4 cc 0e 00 00 00 01 00 00 00 00 00 01 00 c6 cc
2. 00000010 17 00 00 00 01 00 cd 01 00 00 00 00 00 40 00 40
3. 00000020 00 c1 ca 01 00 c7 cc d9 03 00 00 01 00 c2 ca 00
4. 00000030 00 51 50 01 40 01 00 be 03 00 00 66 66 77 88 98
5. 00000040 c3 ca be 03 00 00 00 00 00 00 00 00 00 26 01 3d
6. 00000050 01 48 01 19 82 1d 10 62 9d 28 85 2c a2 14 b2 88
7. 00000060 52 ca 21 4b 28 85 2c a2 14 b2 88 52 ca 21 4b 28
8. 00000070 85 2c a2 14 b2 88 52 ca 21 4b 28 85 2c a2 14 b2
9. 00000080 88 52 ca 21 4b 28 85 2c a2 14 b2 88 52 ca 21 4b
10. 00000090 28 85 2c a2 14 b2 88 52 ca 21 4b 28 85 2c a2 14
11. 000000A0 b2 88 52 ca 21 4b 28 85 2c a2 14 b0 00 20 f4 40
12. 000000B0 0c c1 1e 20 26 22 20 33 23 c4 23 88 86 50 f1 22
13. 000000C0 68 4c 91 85 10 34 4c 84 78 a2 0d 13 21 1e 29 06
14. 000000D0 89 90 8f 14 83 44 f4 23 c5 20 d1 3d 08 f1 48 34
15. 000000E0 4f 42 3c 52 0d 13 d0 8f 14 83 44 f4 23 c5 20 d1
16. 000000F0 3d 08 f1 48 34 4f 42 3c 52 0d 13 d0 8f 14 83 44
17. 00000100 f4 23 c5 20 00 08 47 70 15 02 e0 7f e4 9d c2 51
18. 00000110 71 f4 99 c9 57 ff 32 87 9d 17 d6 50 6e 06 2f ac
19. 00000120 a0 9c 0c 5f 59 41 38 18 be b2 82 70 31 7d 65 00
20. 00000130 00 10 ff 9c 33 41 f1 c4 b0 3c ff a2 15 bd 7b ea
21. 00000140 86 9b 5f fc 78 8c f5 ed a8 68 da fd 3c 45 7a f4
22. 00000150 d4 34 6d 7e 9e 22 bd 7a 6a 1a 36 bf 4f 11 5e bd
23. 00000160 35 0d 1b 5f a7 88 af 5e 9a 86 8d af d3 c4 57 af
24. 00000170 4d 43 46 d7 e9 e2 20 30 00 1b 04 7f 04 31 5f c2
25. 00000180 94 af 05 29 5e 0a 52 bc 14 a5 78 29 25 78 29 25
26. 00000190 78 29 25 68 52 4a f0 52 4a f0 52 4a d0 a4 95 e0
27. 000001A0 a4 95 e0 a4 95 a1 49 2b c1 49 2b c1 49 2b 42 92
28. 000001B0 57 82 92 57 82 92 56 85 24 af 05 24 af 05 24 ad
29. 000001C0 0a 49 5e 0a 49 5e 0a 49 5a 14 92 bc 14 92 bc 14
30. 000001D0 92 b4 29 25 78 29 25 78 00 02 0f 02 00 ac 13 fc
31. 000001E0 c0 0a 20 10 2b 27 f9 80 b0 08 aa 3d 60 8c 0b 24
32. 000001F0 ff 30 80 c0 aa 13 fc c2 03 05 90 9f e6 10 18 2c
33. 00000200 84 ff 30 81 82 c8 4f f3 08 18 2c 84 ff 31 03 05
34. 00000210 90 9f ff d8 40 60 59 09 fe 61 01 81 64 27 f9 84
35. 00000220 06 0b 21 3f cc 20 30 59 09 fe 61 03 05 90 9f e6
36. 00000230 10 30 59 09 fe 62 00 00 42 15 00 10 15 01 fe 20
37. 00000240 84 d5 01 0a 8f f1 40 33 78 17 f9 c2 03 83 01 78
38. 00000250 e1 01 c1 00 bc 70 80 e0 80 5e 38 40 70 40 2f 1c
39. 00000260 20 38 20 17 8e 10 00 00 87 d5 08 70 ef 81 a2 d8
40. 00000270 ff ff ff fb d1 2d 4e a6 ce 20 a4 ef 05 78 35 3a
41. 00000280 9b 38 82 93 bc 15 e0 d4 ea 66 71 05 27 78 2b c1
42. 00000290 29 d4 cc e2 0a 4e f0 57 82 53 a9 99 c4 14 9d e0
43. 000002A0 af 04 a7 53 33 88 29 3b c1 5e 09 4e a6 67 10 52
44. 000002B0 77 82 bc 00 18 00 1b fc 11 c1 0f 4a c1 4f 4a c1
45. 000002C0 4f 4a a1 4d 95 42 9e 95 42 9e 95 42 9b 2a 85 3d
46. 000002D0 2a 85 3d 2a 85 36 55 0a 7a 55 0a 7a 55 0a 6c aa
47. 000002E0 14 f4 aa 14 f4 aa 14 d9 54 29 e9 54 29 e9 54 29
48. 000002F0 b2 a8 53 d2 a8 53 d2 a8 53 65 50 a7 a5 50 a7 a5
49. 00000300 50 a6 ca a1 4f 4a a1 4f 4a a1 4d 95 42 9e 95 42
50. 00000310 9e 95 42 9b 2a 80 00 41 e3 80 3f e2 09 9c 00 22
51. 00000320 07 03 e1 26 70 06 07 1f 04 67 00 61 df 02 67 00
52. 00000330 0c 3b fe 01 33 80 06 1d ff 00 99 c0 03 0e ff 80
53. 00000340 4c e0 01 87 7f c0 26 70 00 c3 bf e0 13 38 00 61
54. 00000350 df f0 09 9c 00 30 ef f8 04 ce 00 18 77 fc 02 67
55. 00000360 00 0c 3b fe 01 33 80 06 1d ff 00 99 c0 03 0e ff
56. 00000370 80 4c e0 01 87 7f c0 26 70 00 00 08 3c 20 1f f1
57. 00000380 00 f0 05 02 93 84 3d 20 f0 52 81 c7 ff ff ea 54
58. 00000390 01 80 05 f5 4a 80 30 00 b6 a5 40 18 00 5f 54 a8
59. 000003A0 03 00 0b ea 95 00 60 01 6d 4a 80 30 00 00 22 3f
60. 000003B0 ba 08 10 2b 1f f2 20 3e 49 9c 1f 6e 0f 5a 0f fb
61. 000003C0 18 46 ae 27 9b 83 cb 41 f3 18 46 ae 27 9b 83 c5
62. 000003D0 a0 f9 8c 22 d7 13 8d c1 e2 d0 7c c6 11 6b 89 c6
63. 000003E0 e0 f1 68 3e 63 08 b5 c4 e3 70 78 b4 1f 31 84 5a
64. 000003F0 e2 71 b8 3c 5a 0f 98 c2 2d 71 30 83 c0 00 c5 cc
65. 00000400 08 00 00 00 01 00

[TS\_RFX\_FRAME\_BEGIN](#Section_7a938a263fc2436bbc8409dfff59b5e7) message (section 2.2.2.3.1):

1. c4 cc –> TS\_RFX\_FRAME\_BEGIN::CodecChannelT::blockType = WBT\_FRAME\_BEGIN
2. 0e 00 00 00 –> TS\_RFX\_FRAME\_BEGIN::CodecChannelT::blockLen = 14
3. 01 –> TS\_RFX\_FRAME\_BEGIN::CodecChannelT::codecId = 1
4. 00 –> TS\_RFX\_FRAME\_BEGIN::CodecChannelT::channelId = 0
5. 00 00 00 00 –> TS\_RFX\_FRAME\_BEGIN::frameIdx = 0
6. 01 00 –> TS\_RFX\_FRAME\_BEGIN::numRegions = 1

[TS\_RFX\_REGION](#Section_23d2a1d61be0435783eb998b66ddd4d9) message (section 2.2.2.3.3):

1. c6 cc –> TS\_RFX\_REGION::CodecChannelT::blockType = WBT\_REGION
2. 17 00 00 00 –> TS\_RFX\_REGION::CodecChannelT::blockLen = 23
3. 01 –> TS\_RFX\_REGION::CodecChannelT::codecId = 1
4. 00 –> TS\_RFX\_REGION::CodecChannelT::channelId = 0
5. 0d –> TS\_RFX\_REGION::regionFlags
6. TS\_RFX\_REGION::regionFlags::lrf = 1
7. 01 00 –> TS\_RFX\_REGION::numRects = 1
8. 00 00 –> TS\_RFX\_REGION::TS\_RFX\_RECT::x = 0
9. 00 00 –> TS\_RFX\_REGION::TS\_RFX\_RECT::y = 0
10. 40 00 –> TS\_RFX\_REGION::TS\_RFX\_RECT::width = 64
11. 40 00 –> TS\_RFX\_REGION::TS\_RFX\_RECT::height = 64
12. c1 ca –> TS\_RFX\_REGION::regionType = CBT\_REGION
13. 01 00 –> TS\_RFX\_REGION::numTilesets = 1

[TS\_RFX\_TILESET](#Section_7c9261144bea4c69a9a1caa6e88847a6) message (section 2.2.2.3.4):

1. c7 cc -> TS\_RFX\_TILESET::CodecChannelT::blockType = WBT\_EXTENSION
2. d9 03 00 00 -> TS\_RFX\_TILESET::CodecChannelT::blockLen = 985
3. 01 -> TS\_RFX\_TILESET::codecId = 1
4. 00 -> TS\_RFX\_TILESET::channelId = 0
5. c2 ca -> TS\_RFX\_TILESET::subtype = CBT\_TILESET
6. 00 00 -> TS\_RFX\_TILESET::idx = 0x00
7. 51 50 -> TS\_RFX\_TILESET::properties
8. TS\_RFX\_TILESET::properties::lt = TRUE (1)
9. TS\_RFX\_TILESET::properties::flags = VIDEO\_MODE (0)
10. TS\_RFX\_TILESET::properties::cct = COL\_CONV\_ICT (1)
11. TS\_RFX\_TILESET::properties::xft = CLW\_XFORM\_DWT\_53\_A (1)
12. TS\_RFX\_TILESET::properties::et = CLW\_ENTROPY\_RLGR3 (4)
13. TS\_RFX\_TILESET::properties::qt = SCALAR\_QUANTIZATION (1)
14. 01 -> TS\_RFX\_TILESET::numQuant = 1
15. 40 -> TS\_RFX\_TILESET::tileSize = 64
16. 01 00 -> TS\_RFX\_TILESET::numTiles = 1
17. df 03 00 00 -> TS\_RFX\_TILESET::tilesDataSize = 991
18. 66 66 77 88 98 -> TS\_RFX\_TILESET::quantVals
19. TS\_RFX\_TILESET::quantVals::LL3 = 6
20. TS\_RFX\_TILESET::quantVals::LH3 = 6
21. TS\_RFX\_TILESET::quantVals::HL3 = 6
22. TS\_RFX\_TILESET::quantVals::HH3 = 6
23. TS\_RFX\_TILESET::quantVals::LH2 = 7
24. TS\_RFX\_TILESET::quantVals::HL2 = 7
25. TS\_RFX\_TILESET::quantVals::HH2 = 8
26. TS\_RFX\_TILESET::quantVals::LH1 = 8
27. TS\_RFX\_TILESET::quantVals::HL1 = 8
28. TS\_RFX\_TILESET::quantVals::HH1 = 9

[TS\_RFX\_TILE](#Section_89e669edb6dd4591a26773a72bc6d84e) message (section 2.2.2.3.4.1):

1. c3 ca -> TS\_RFX\_TILE::BlockT::blockType = CBT\_TILE
2. be 03 -> TS\_RFX\_TILE::BlockT::blockLen = 958
3. 00 -> TS\_RFX\_TILE::quantIdxY = 0
4. 00 -> TS\_RFX\_TILE::quantIdxCb = 0
5. 00 -> TS\_RFX\_TILE::quantIdxCr = 0
6. 00 00 -> TS\_RFX\_TILE::xIdx = 0
7. 00 00 -> TS\_RFX\_TILE::yIdx = 0
8. 26 01 -> TS\_RFX\_TILE::YLen = 294
9. 3d 01 -> TS\_RFX\_TILE::CbLen = 317
10. 48 01 -> TS\_RFX\_TILE::CrLen = 328
11. 00000053:00000178 -> TS\_RFX\_TILE::YData
12. 00000179:000002b5 -> TS\_RFX\_TILE::CbData
13. 000002b6:000003fd -> TS\_RFX\_TILE::CrData

[TS\_RFX\_FRAME\_END](#Section_b4cb26760268450bad3272f66d0598e8) message (section 2.2.2.3.2):

1. c5 cc –> TS\_RFX\_FRAME\_END::CodecChannelT::blockType = WBT\_FRAME\_END
2. 08 00 00 00 –> TS\_FRAME\_END::CodecChannelT::blockLen = 14
3. 01 –> TS\_FRAME\_END::CodecChannelT::codecId = 1
4. 00 –> TS\_FRAME\_END::CodecChannelT::channelId = 0

The server has sent a frame that is delineated by TS\_RFX\_FRAME\_BEGIN and TS\_RFX\_FRAME\_END messages. The frame contains a single region, which has a single tileset. This tileset, in turn, consists of one 64x64 tile. The compressed sizes, in bytes, for the YCbCr components of this tile are (294, 317, 328).

### Sample Decode Data Flow Sequence

The following sections present a sequence of annotated dumps of an encoded tile as it goes through the steps of the decoding algorithm. The sequence starts with the [TS\_RFX\_TILESET (section 2.2.2.3.4)](#Section_7C9261144BEA4C69A9A1CAA6E88847A6) message, which contains the encoded tile data, and ends with the resulting decoded 64x64 XRGB image.

#### Input TS\_RFX\_TILESET Message

The following is an annotated dump of a TS\_RFX\_TILESET (section [2.2.2.3.4](#Section_7C9261144BEA4C69A9A1CAA6E88847A6)) message containing a single encoded 64x64 tile.

1. 00000000 c7 cc 3e 0b 00 00 01 01 c2 ca 00 00 51 50 01 40
2. 00000010 01 00 23 0b 00 00 66 66 77 88 98 c3 ca 23 0b 00
3. 00000020 00 00 00 00 00 00 00 00 ae 03 cf 03 93 03 c0 01
4. 00000030 01 15 48 99 c7 41 a1 12 68 11 dc 22 29 74 ef fd
5. 00000040 20 92 e0 4e a8 69 3b fd 41 83 bf 28 53 0c 1f e2
6. 00000050 54 0c 77 7c a3 05 7c 30 d0 9c e8 09 39 1a 5d ff
7. 00000060 e2 01 22 13 80 90 87 d2 9f fd fd 50 09 0d 24 a0
8. 00000070 8f ab fe 3c 04 84 c6 9c de f8 80 c3 22 50 af 4c
9. 00000080 2a 7f fe e0 5c a9 52 8a 06 7d 3d 09 03 65 a3 af
10. 00000090 d2 61 1f 72 04 50 8d 3e 16 4a 3f ff fd 41 42 87
11. 000000A0 24 37 06 17 2e 56 05 9c 1c b3 84 6a ff fb 43 8b
12. 000000B0 a3 7a 32 43 28 e1 1f 50 54 fc ca a5 df ff 08 04
13. 000000C0 48 15 61 d9 76 43 f8 2a 07 e9 65 f7 c6 89 2d 40
14. 000000D0 a1 c3 35 8d f5 ed f5 91 ae 2f cc 01 ce 03 48 c0
15. 000000E0 8d 63 f4 fd 50 20 2d 0c 9b b0 8d 13 c0 8a 09 52
16. 000000F0 1b 02 6e 42 3b d0 13 4e 84 01 26 88 6a 04 84 34
17. 00000100 2a a5 00 ba 54 48 58 ea 54 02 b4 1d a7 fa 47 82
18. 00000110 ec 7a 77 fd 00 92 66 62 04 a6 9b ff f6 80 c0 69
19. 00000120 01 c2 3e 90 14 20 2f fc 40 96 59 58 0c b1 13 68
20. 00000130 20 2e b5 f5 df ff f8 fc 56 88 60 24 53 b5 41 46
21. 00000140 5f f8 f1 7e de 4a 08 97 e0 55 03 8f e5 75 61 03
22. 00000150 f2 e1 90 01 a2 8e 88 04 98 05 93 6b ff ea c0 60
23. 00000160 a1 88 04 49 bf f7 ff 8c b4 59 90 80 30 64 53 ff
24. 00000170 f5 c4 48 da da cb 80 38 61 57 b2 af 00 e8 7b 46
25. 00000180 e6 d8 02 03 8a 06 18 14 32 83 d0 8a ee bc 81 b4
26. 00000190 28 c4 7f f9 a1 69 00 91 c5 51 ff fe 3f e9 f1 70
27. 000001A0 30 24 10 a7 cb 1f 8a 24 93 ed 83 00 36 20 d1 50
28. 000001B0 e7 d8 ad 58 20 09 22 80 d0 ca 5d 1a d7 f1 60 75
29. 000001C0 2a f2 d7 f8 c0 32 45 86 00 43 01 fe 80 f7 42 81
30. 000001D0 74 84 4c a1 60 4c cb 14 58 01 4d 18 a1 aa 47 0e
31. 000001E0 11 1a 40 7d 41 02 e3 30 cd 33 81 34 06 46 83 a2
32. 000001F0 47 1c 04 aa 20 12 a2 8b 81 c4 9c a0 2e 06 32 f8
33. 00000200 86 85 01 e8 70 f9 46 09 6a bf e0 f5 a4 c8 78 e7
34. 00000210 d2 97 0b bc 3c 97 ff d5 40 94 b2 c1 18 18 11 1f
35. 00000220 43 c1 18 c3 83 7f 9a 31 c4 8e 70 56 da f6 17 de
36. 00000230 d1 02 0d 42 21 13 dc 3a 3c 40 9e f4 01 43 ea 0c
37. 00000240 46 73 a2 7b 0c 80 ff e4 ad 2e 09 b4 63 b0 8c 54
38. 00000250 59 fa ac 76 36 10 05 f0 98 88 83 42 00 20 71 cc
39. 00000260 c1 a9 97 3e 5a 0d 04 50 92 23 20 0d 0a 1c 57 d7
40. 00000270 ff 10 f2 03 0f 58 1b a5 11 f8 f1 b4 12 db 1a 48
41. 00000280 56 1f e3 c7 50 e9 16 b4 bc b0 40 93 ea b5 5b 2f
42. 00000290 fc 50 0a 6f cc 25 e0 06 ab 5f 24 fe 8b cb 42 43
43. 000002A0 7e 69 02 25 c7 38 00 6e e5 80 a8 a4 30 44 15 8f
44. 000002B0 e9 0c d3 a6 c2 14 34 4a fe 03 7f 06 a5 91 02 54
45. 000002C0 f1 a1 a1 53 bf 11 f2 8f 83 67 80 09 08 12 3f fd
46. 000002D0 44 91 c2 83 30 50 07 02 82 4d 31 34 06 41 79 6f
47. 000002E0 f0 cc 03 79 00 2c 05 24 ec 8d 29 15 af 44 c8 eb
48. 000002F0 4f e1 fd f1 41 48 81 08 af fe 51 48 ce e7 f9 b6
49. 00000300 0a 30 83 11 f0 0c 3b d2 a6 24 24 ef 25 fa 5a 3e
50. 00000310 92 3e 79 0e 35 61 c8 aa 1c 2e 9a 27 7f ff f0 7d
51. 00000320 30 5b bc 91 ff fe 43 24 28 66 a7 70 99 28 6e 2b
52. 00000330 18 2b d4 a1 77 3b 96 9f f7 eb be 1f 04 34 75 84
53. 00000340 31 42 4c 65 aa 09 50 a0 c4 51 31 d3 26 3a 1b f4
54. 00000350 6e 4a 4e 17 25 84 78 7d 2c 3f 46 18 ca 5f f9 e5
55. 00000360 38 2f d8 71 94 94 e2 cc a3 15 b0 da a9 cb 58 e4
56. 00000370 18 77 93 8a 51 c6 23 c4 4e 6d d9 14 1e 9b 8d bc
57. 00000380 cb 9d c4 18 05 f5 a9 29 f8 6d 29 38 c7 44 e5 3a
58. 00000390 cd ba 61 98 4a 57 02 96 42 02 d9 37 11 de 2d d4
59. 000003A0 3f fe 61 e7 33 d7 89 4a dd b0 34 47 f4 dc ad aa
60. 000003B0 c9 9d 7e 6d 4b cc dc 17 89 57 fd bb 37 75 47 5a
61. 000003C0 ec 2c 6e 3c 15 92 54 64 2c ab 9e ab 2b dd 3c 66
62. 000003D0 a0 8f 47 5e 93 1a 37 16 f4 89 23 00 00 b0 33 56
63. 000003E0 fa 14 1e ff 48 7a 7e 0f 10 1f f4 91 c8 10 56 84
64. 000003F0 ff 08 ec b4 ac 0e 0f ff ad c5 e0 1a 2f 82 04 9f
65. 00000400 91 c2 0e fe 48 36 79 01 42 14 ff fe 30 f0 08 18
66. 00000410 f1 81 45 9a 60 c1 79 f0 14 12 10 ce ea 31 5a ff
67. 00000420 fc 20 13 82 2f c9 02 1f 81 cb 00 e1 10 d2 b4 be
68. 00000430 87 ff b0 1e 27 81 b7 04 06 3c c2 04 f6 06 0e 28
69. 00000440 bc 40 bf 12 1e 86 d4 6a 7f 18 1b 96 85 4c 16 80
70. 00000450 df 2c a5 8d 86 a3 4a 8a b4 1b a1 38 a9 d5 ff ff
71. 00000460 ea 06 20 d2 95 1e f4 2f b2 12 0e 61 78 4a 17 52
72. 00000470 5d e4 25 1f fe c0 b3 1f ff ff ec 02 82 80 90 41
73. 00000480 88 de 48 2c 42 52 0b 2f 43 7e 50 78 f2 67 78 41
74. 00000490 34 3d c8 0f 67 a1 eb 21 fe c0 1f 22 60 41 6c 00
75. 000004A0 92 4b 60 10 d0 0d 01 35 05 0e 87 a2 a0 5d 1f a3
76. 000004B0 af 7f f1 be 8f cd a5 00 1c 10 40 15 76 81 05 ef
77. 000004C0 ee 00 60 84 00 99 40 4a 82 17 e9 fc c4 7f ff fd
78. 000004D0 04 80 06 06 dc af a7 7e 94 75 74 01 00 e0 91 00
79. 000004E0 85 7f 8e d6 0b 20 21 30 ca 62 8e 07 04 e9 45 40
80. 000004F0 5f 47 4a 30 15 41 cb df ff fc bf c3 b4 46 6a 01
81. 00000500 40 d0 a7 34 18 24 1c 2a 45 fe a8 05 08 61 fd a8
82. 00000510 80 71 01 25 9c c1 47 17 37 02 7a 15 ff f3 01 45
83. 00000520 7f d6 80 60 83 67 f8 9d 2f f4 dd 8c 30 01 51 42
84. 00000530 bc 43 7a 6b 9f 84 1e 00 48 c1 e0 b7 e0 7e 99 f2
85. 00000540 4a e9 40 02 81 c3 00 24 3a c5 52 0f 91 c8 68 25
86. 00000550 40 99 a4 25 1a 04 d0 a2 91 dd eb 93 00 21 49 24
87. 00000560 8b 40 75 38 14 a1 fd 3f 88 25 bf 32 00 e3 19 fc
88. 00000570 b9 f8 6f 81 c0 01 b3 93 20 09 08 25 84 e1 34 d4
89. 00000580 1b 48 88 11 a0 15 59 d7 07 81 81 3b a1 40 2e 2f
90. 00000590 48 70 09 c4 76 49 0f 2e 50 2e 46 19 a4 16 a2 1b
91. 000005A0 84 a2 89 58 fc 4f 3f 40 90 4c a3 01 32 09 02 80
92. 000005B0 9c 91 13 2c ba de 5d 99 f2 ff ff 3d 5a 1f a9 02
93. 000005C0 90 8f f3 08 bd 01 f8 d0 2a 95 41 0c 40 0a 20 c4
94. 000005D0 d4 cc 6b 0f f0 80 b1 5d 28 3d 08 c2 f8 31 02 49
95. 000005E0 88 14 28 ed e8 86 3b 00 9f 95 06 37 15 a4 59 c8
96. 000005F0 80 b6 10 f0 e5 b8 18 00 56 1c ff 95 21 0e 7f 2b
97. 00000600 c5 08 59 10 e1 46 31 8d ec e0 a1 99 bb 21 ff fe
98. 00000610 30 10 d0 05 e3 08 50 fc f3 0e 00 8d 68 8e 07 a6
99. 00000620 80 34 42 ed 1f 88 00 f0 8a 21 ae f7 fb 80 28 86
100. 00000630 0f ff ff 82 ea 47 95 91 e0 04 01 44 0c 29 ff 0e
101. 00000640 33 e8 c0 54 04 23 fc 81 5b f0 3c 07 10 70 30 d8
102. 00000650 21 6f ef de 46 09 43 fa 5f ff 0d 72 30 dd 00 db
103. 00000660 e4 48 24 97 08 46 b1 49 c4 4d 80 12 60 ff a4 a6
104. 00000670 ff f6 8c 00 40 05 02 b4 0f f0 3e fc 84 38 81 94
105. 00000680 8b fe 49 ef c0 10 49 88 28 a2 1c 2a 8b 64 d4 86
106. 00000690 d7 ff ff ff eb 91 6b 11 10 00 69 4c bf b4 1c d8
107. 000006A0 00 07 16 80 60 0a 1c 82 42 27 82 43 c9 0a 64 20
108. 000006B0 5a 5f 4e bf 8c 38 82 36 02 07 72 79 07 23 b4 bb
109. 000006C0 57 5f e8 04 dd 39 e9 07 95 be 04 2b dd 8e 22 dc
110. 000006D0 14 2c 61 a3 a9 cd 4f 82 5d a0 44 df f4 96 ff f5
111. 000006E0 2b ff fe 01 19 d2 a2 9e 43 a5 7f f0 4c 4c 2b 3c
112. 000006F0 33 e2 55 ff 04 06 29 2c 0d 22 5d 7c 93 ba 18 af
113. 00000700 f9 32 a6 c3 99 46 79 e3 06 a6 38 8b 92 22 4b db
114. 00000710 1b 36 20 b0 6c 20 ce 37 42 e1 66 d4 49 34 42 8b
115. 00000720 fa 9c 12 99 dc 06 87 fa 46 f8 2f 04 a9 d8 82 07
116. 00000730 a6 30 0f c0 df 35 e8 90 f0 ff ff a8 e0 d7 02 60
117. 00000740 1a c3 20 28 a2 31 29 3c eb 04 a5 dd 48 0e 82 a4
118. 00000750 b6 56 22 06 57 e0 da 10 27 31 0e 11 77 fe 02 60
119. 00000760 16 48 81 8c 0d 05 17 7f cb bb 7e 25 2a 41 fd 8a
120. 00000770 7f c9 36 7c e0 98 7e 92 ef 7e 06 03 13 3e 20 3a
121. 00000780 bf 4c c3 0f 2e 80 74 bf 39 3c f0 a6 b2 e9 3f 41
122. 00000790 55 1f 2c f5 d2 7e 8c ae 4e aa 61 3c bc 3f c4 c7
123. 000007A0 36 dc 23 c8 b8 52 e2 8a 80 18 00 00 b2 46 a2 56
124. 000007B0 0d 12 94 aa bd 01 07 ff fa 34 0c 5f f8 0c 12 50
125. 000007C0 af d6 d1 89 40 a4 ff e0 ce c4 49 25 9d c1 ff 7e
126. 000007D0 60 24 5d cc 10 c0 be 5a 12 d3 c3 fe 2d 40 7c 28
127. 000007E0 9e 71 01 d2 6e 86 0b c8 f2 9b 45 08 4c 04 52 7e
128. 000007F0 f2 7e d9 cc 0b 1c 20 80 ae af fe b0 6d 23 f2 41
129. 00000800 e3 2e 20 11 4b 74 89 dd ff a8 38 a3 95 82 15 f0
130. 00000810 d0 d5 f1 92 8e ee c0 26 81 e9 47 ff ee 0d 20 34
131. 00000820 31 3a ef 40 b2 29 47 19 7f 04 27 f1 90 85 09 86
132. 00000830 7d 42 e2 54 5d 5f e8 0e d0 2c aa 16 bf 04 a7 f8
133. 00000840 a2 46 0b 08 7a 79 e9 28 62 7c 33 f4 0b 14 82 fa
134. 00000850 61 eb c1 ff 4c a4 11 7f 03 68 44 c1 1f 81 3a 6c
135. 00000860 77 95 02 2b 53 80 e5 10 1e 90 e8 fd 1f a6 40 0b
136. 00000870 13 ff 4e 4d 7f 52 e8 af 9a c1 80 0f 0a 14 02 3c
137. 00000880 c0 09 13 e7 dc c0 1a 28 a0 e4 83 8e 03 88 d5 af
138. 00000890 1a bd 91 00 b7 4e ba df f8 db cc 02 43 c4 14 2a
139. 000008A0 3f c8 0d 09 1c 44 f4 01 3c ca 28 56 80 a6 85 00
140. 000008B0 ea 3e 8f eb 9f fc 6e 07 c4 e0 30 78 a0 1e 6f 54
141. 000008C0 78 51 ff 56 4a 01 47 02 4c 21 3b fb 90 0a cc 1d
142. 000008D0 d2 47 ff fc 70 18 22 c0 b9 2f e9 7f 91 d3 66 2f
143. 000008E0 80 2c 24 a7 fa 84 51 ab 6b 72 00 ab 33 04 cf 43
144. 000008F0 ff 17 51 84 0c 01 50 10 8f 90 34 41 44 84 8e 08
145. 00000900 19 04 48 50 84 38 3d 02 52 f9 7c d2 d0 1f 13 42
146. 00000910 a0 21 41 c4 02 02 3d 09 c8 fd 60 7d 35 4f 7f ff
147. 00000920 f9 97 6a d8 00 c3 83 00 09 50 4b 90 8a c7 94 4d
148. 00000930 47 c1 62 32 28 24 09 52 2e 2e 1c 96 44 a0 09 c8
149. 00000940 ce 64 a9 1c 19 0e 52 3e 3e 19 93 a0 36 26 22 08
150. 00000950 9a 00 dd 66 3a 93 d5 89 d1 40 06 d4 a8 22 73 7b
151. 00000960 3d 3f e3 04 94 ff ff ff ff 0c 56 77 ac e0 c4 06
152. 00000970 1f b8 a5 80 fd 68 1c 32 16 03 de 71 2a 3d 14 19
153. 00000980 be c2 88 d9 24 92 5f c5 90 0a 85 c2 3f 87 03 a8
154. 00000990 26 17 c4 06 86 12 87 76 0a 48 16 ed 96 93 ec 1b
155. 000009A0 30 73 e8 1a 3f ff 4d ce 40 f3 0c 51 4b 84 9e 67
156. 000009B0 2b 15 40 1a a0 fc 10 0f d8 81 35 87 ff 98 0f 40
157. 000009C0 00 ba c0 71 e2 00 18 28 b3 82 cc 80 6a a0 43 ff
158. 000009D0 2d d6 04 8a 68 ff ff ff fc 1a f3 1a 2a 06 c0 01
159. 000009E0 40 0c 30 c1 d0 d7 4f cb 74 1f 07 d3 b4 0d 88 98
160. 000009F0 ea da 9f ce 2b 3c 55 b3 40 14 ff ff ff ea db 9b
161. 00000A00 92 d8 68 08 0b 41 09 26 40 8c f1 b0 9a 98 c0 80
162. 00000A10 8b f0 3d e7 ec 19 68 21 03 29 7f e1 6d 4c 0f 01
163. 00000A20 d1 51 01 1a 50 2a 59 27 80 c1 6e 33 f1 80 e1 49
164. 00000A30 08 e9 17 ff ff ff 80 5a 10 10 36 5e ca f8 3a 00
165. 00000A40 1e b0 06 84 01 f3 07 1b 4a c0 1e 21 43 8e a5 55
166. 00000A50 77 c7 65 7c c2 df 5e 0c 42 20 d2 48 61 c8 1c 65
167. 00000A60 f8 fe 4c 88 71 1f 82 50 81 a3 54 09 13 28 52 f5
168. 00000A70 e0 82 c3 06 7f fa 2c cf f8 f4 7f ff fd 01 49 a4
169. 00000A80 b8 de 62 84 fe ed 65 1f 3c 3c b2 50 76 30 5b 03
170. 00000A90 c0 08 a6 64 90 c8 cd 14 6e 69 46 7a c6 1c 87 d7
171. 00000AA0 48 7b 49 05 2d 5e 7f cb 67 f0 d9 0d 1e 9e 53 b7
172. 00000AB0 64 a5 a5 10 39 06 11 3f b1 a9 a6 e8 4d 47 77 da
173. 00000AC0 43 76 89 45 09 70 c2 38 0f 09 6f e7 2d 82 35 07
174. 00000AD0 fe 64 18 2e b8 04 42 54 80 43 12 6c 9a 55 c9 0a
175. 00000AE0 a0 79 47 52 65 2a ff 50 11 c9 4e fe 5b 30 a4 e8
176. 00000AF0 30 63 ff 21 12 1b dc 1c 01 41 51 1f ff fa c3 e3
177. 00000B00 55 f1 66 e2 d5 78 5e fa 4d f2 61 01 26 15 a9 f9
178. 00000B10 d9 32 41 90 36 4e ae e3 0b 16 56 8c 6e 42 5d d8
179. 00000B20 1e fe 1d 40 3a 50 9f 09 14 eb 6e 48 7a 91 88 7b
180. 00000B30 7d 8f 72 42 39 b0 1c 65 18 23 8b 60 30 00

TS\_RFX\_TILESET message (section 4.2.4.1).

1. c7 cc -> TS\_RFX\_TILESET::CodecChannelT::blockType = WBT\_EXTENSION
2. 3e 0b 00 00 -> TS\_RFX\_TILESET::CodecChannelT::blockLen = 2878
3. 01 -> TS\_RFX\_TILESET::codecId = 1
4. 00 -> TS\_RFX\_TILESET::channelId = 0
5. c2 ca -> TS\_RFX\_TILESET::subtype = CBT\_TILESET
6. 00 00 -> TS\_RFX\_TILESET::idx = 0x00
7. 51 50 -> TS\_RFX\_TILESET::properties
8. TS\_RFX\_TILESET::properties::lt = TRUE (1)
9. TS\_RFX\_TILESET::properties::flags = VIDEO\_MODE (0)
10. TS\_RFX\_TILESET::properties::cct = COL\_CONV\_ICT (1)
11. TS\_RFX\_TILESET::properties::xft = CLW\_XFORM\_DWT\_53\_A (1)
12. TS\_RFX\_TILESET::properties::et = CLW\_ENTROPY\_RLGR3 (4)
13. TS\_RFX\_TILESET::properties::qt = SCALAR\_QUANTIZATION (1)
14. 01 -> TS\_RFX\_TILESET::numQuant = 1
15. 40 -> TS\_RFX\_TILESET::tileSize = 64
16. 01 00 -> TS\_RFX\_TILESET::numTiles = 1
17. 23 0b 00 00 -> TS\_RFX\_TILESET::tilesDataSize = 2851
18. 66 66 77 88 98 -> TS\_RFX\_TILESET::quantVals
19. TS\_RFX\_TILESET::quantVals::LL3 = 6
20. TS\_RFX\_TILESET::quantVals::LH3 = 6
21. TS\_RFX\_TILESET::quantVals::HL3 = 6
22. TS\_RFX\_TILESET::quantVals::HH3 = 6
23. TS\_RFX\_TILESET::quantVals::LH2 = 7
24. TS\_RFX\_TILESET::quantVals::HL2 = 7
25. TS\_RFX\_TILESET::quantVals::HH2 = 8
26. TS\_RFX\_TILESET::quantVals::LH1 = 8
27. TS\_RFX\_TILESET::quantVals::HL1 = 8
28. TS\_RFX\_TILESET::quantVals::HH1 = 9

TS\_RFX\_TILE message (section [2.2.2.3.4.1](#Section_89e669edb6dd4591a26773a72bc6d84e)).

1. c3 ca -> TS\_RFX\_TILE::BlockT::blockType = CBT\_TILE
2. 23 0b -> TS\_RFX\_TILE::BlockT::blockLen = 2851
3. 00 -> TS\_RFX\_TILE::quantIdxY = 0
4. 00 -> TS\_RFX\_TILE::quantIdxCb = 0
5. 00 -> TS\_RFX\_TILE::quantIdxCr = 0
6. 00 00 -> TS\_RFX\_TILE::xIdx = 0
7. 00 00 -> TS\_RFX\_TILE::yIdx = 0
8. ae 03 -> TS\_RFX\_TILE::YLen = 942
9. cf 03 -> TS\_RFX\_TILE::CbLen = 975
10. 93 03 -> TS\_RFX\_TILE::CrLen = 915
11. 0000002e:000003db -> TS\_RFX\_TILE::YData
12. 000003dc:000007aa -> TS\_RFX\_TILE::CbData
13. 000007ab:00000b3d -> TS\_RFX\_TILE::CrData

#### Entropy Decoded Data

The following are dumps of the Y, Cb, and Cr components of the tile after they are decoded using the [RLGR3 (section 3.1.8.1.7.2)](#Section_8953871E976E434FB080F72947E88750) algorithm. The decoded data for each component has 4,096 (64x64) coefficients, and they contain the quantized DWT sub-bands (see the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC)) at the following ranges.

1. 00000000:000003FF -> HL1 (32x32 coefficients)
2. 00000400:000007FF -> LH1 (32x32 coefficients)
3. 00000800:00000BFF -> HH1 (32x32 coefficients)
4. 00000C00:00000CFF -> HL2 (16x16 coefficients)
5. 00000D00:00000DFF -> LH2 (16x16 coefficients)
6. 00000E00:00000EFF -> HH2 (16x16 coefficients)
7. 00000F00:00000F3F -> HL3 (8x8 coefficients)
8. 00000F40:00000F7F -> LH3 (8x8 coefficients)
9. 00000F80:00000FBF -> HH3 (8x8 coefficients)
10. 00000FC0:00000FFF -> LL3 (8x8 coefficients)

##### Y Component Data

The following is a dump of the Y component data, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

1. 00000000 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000010 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000020 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000030 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000040 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000050 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000060 +1 +0 +2 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000070 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0
9. 00000080 +0 +0 +1 +0 +0 +0 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000090 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
11. 000000A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0
12. 000000B0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0
13. 000000C0 +0 +0 +0 +0 +0 +0 -3 +0 +0 +0 +1 +0 +0 +0 +0 +0
14. 000000D0 +0 +2 +0 +0 +0 +0 +0 +0 +0 +1 +0 -2 +4 -5 -1 +0
15. 000000E0 +0 +0 +0 +0 +0 -1 -3 +0 +0 +0 +0 +0 +0 +0 +0 +0
16. 000000F0 +0 -3 +0 +3 +0 +0 +0 +0 +0 +0 -1 +4 +4 -5 -1 +0
17. 00000100 +0 +0 +0 +0 +0 -2 +5 +0 +0 +0 +0 +0 +0 +2 +1 +0
18. 00000110 +2 -5 -4 +1 +0 +0 +0 +0 +0 +0 +1 +3 -1 +5 +0 -1
19. 00000120 +0 +0 +0 +0 +0 -2 -2 -3 +0 +0 +0 +0 +0 +3 +0 +0
20. 00000130 +7 +0 -4 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 -1 +2 -1
21. 00000140 +0 +0 +0 +0 +0 -3 +1 +5 +0 +0 +0 +0 +0 +0 -1 +0
22. 00000150 +0 +1 +7 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
23. 00000160 +0 +0 +0 +0 +2 +0 +0 +0 -2 +0 +0 +0 +0 +0 +1 +0
24. 00000170 -9 -3 +5 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
25. 00000180 +0 +0 +0 +0 +0 +0 -1 -1 -1 +0 +0 +0 +0 +0 +0 +6
26. 00000190 -2 -8 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
27. 000001A0 +0 +0 +0 +0 -3 +0 +0 +0 +0 +0 +0 -1 +0 -1 +0 +5
28. 000001B0 +2 +3 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +2 +0 +0 +0
29. 000001C0 +0 +0 +0 -1 +1 +0 +0 -1 +2 +0 +0 +1 +0 +0 -1 +0
30. 000001D0 -1 +7 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 -2 +0 +0
31. 000001E0 +0 +0 +0 +3 -1 +0 -1 +0 +1 +0 +0 +0 +1 +2 -1 +0
32. 000001F0 -5 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 -4 +0 +0 +0
33. 00000200 +0 +0 -1 -6 +1 +0 -1 +0 +0 +0 +0 +0 +0 +0 +6 +0
34. 00000210 -1 +0 +1 +0 +0 +1 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000220 +0 +0 +3 -5 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 -1 +1
36. 00000230 +10 +0 +0 +0 -1 +1 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0
37. 00000240 +0 +0 +7 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -5 -5
38. 00000250 +3 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 -1 +0 +0 +0 +0
39. 00000260 +0 -1 -2 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +3 -1 -7
40. 00000270 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -6 +0 +0 +0 +0
41. 00000280 +0 +0 -8 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +3 +2 +4
42. 00000290 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +6 -1 +0 +0 +0 +0
43. 000002A0 -1 +7 -1 +0 +0 +0 -1 -1 +0 +0 +0 +0 +0 -3 -1 +6
44. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +3 +1 +0 +0 +0 +0
45. 000002C0 +0 +4 +1 +2 -2 -2 +0 -1 +0 +0 +0 +0 +1 -1 -7 +1
46. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -6 +0 +0 +0 +0 +0
47. 000002E0 -1 -10 +3 +1 +2 +0 -2 +1 +1 +0 +0 +0 +0 +0 -1 +0
48. 000002F0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +3 -2 +0 +0 +0 +0 +0
49. 00000300 +6 -8 -2 +0 -2 +1 +0 +0 -1 -1 -1 +1 +1 +1 +6 +0
50. 00000310 +0 +0 +0 +0 +0 +0 +0 +0 +0 +4 +1 +0 +0 +0 +0 +0
51. 00000320 +3 +2 +0 +1 +0 +0 +1 +1 +0 +0 +1 -2 +5 -3 +2 +0
52. 00000330 +0 +0 +0 +1 +0 +0 +0 +0 +0 -2 +0 +0 +0 +0 +0 +0
53. 00000340 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 -3 +0 +1
54. 00000350 +0 +0 +1 +1 +0 +0 +0 +0 +0 -4 +0 +0 +0 +0 +0 +0
55. 00000360 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1
56. 00000370 -1 -1 +0 +0 +1 +0 +0 +0 +3 +0 +0 +0 +0 +0 +0 +0
57. 00000380 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
58. 00000390 +0 +0 +1 +1 +1 -2 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0
59. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
60. 000003B0 -1 +0 -2 +1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
61. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
62. 000003D0 +0 +0 +0 +3 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
63. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
64. 000003F0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
65. 00000400 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
66. 00000410 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
67. 00000420 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
68. 00000430 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000440 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 -1 -1 +0 +0 -1 -1
70. 00000450 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
71. 00000460 -1 -1 -1 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0
72. 00000470 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
73. 00000480 -1 -1 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000490 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
75. 000004A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
76. 000004B0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 -2 -8 +2 +0
77. 000004C0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0
78. 000004D0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +1 +0 -2 +4 +4 -1 +0
79. 000004E0 +0 +0 +0 +0 +0 -1 +3 -1 +0 +0 +0 +0 +0 +0 +1 +0
80. 000004F0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 -1 +3 +3 -7 -1 +0
81. 00000500 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0
82. 00000510 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +6 +3
83. 00000520 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0
84. 00000530 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -8 +0
85. 00000540 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -2 -2 +2 -1
86. 00000550 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
87. 00000560 +0 +0 +0 +0 +0 -1 +0 +0 +1 +1 +3 +1 +0 +0 +0 +0
88. 00000570 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0
89. 00000580 +0 +0 +0 +0 +0 -1 +0 -1 -5 -3 -4 -6 -6 +7 +1 +1
90. 00000590 -1 +0 +0 +0 +0 +0 +0 +0 -1 -2 -3 +0 +1 +0 +0 +0
91. 000005A0 +0 +0 +0 +0 +0 +1 +0 +2 -1 +0 -2 -3 +1 +1 -8 +6
92. 000005B0 +0 -1 +1 +0 +0 +0 +0 +1 +1 +0 +0 +6 -3 -1 +0 +0
93. 000005C0 +0 +0 +0 -1 +5 +2 -6 -2 +0 +0 +0 +2 +7 -6 -1 +0
94. 000005D0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 -1 -1 +1 +6 +0 +0
95. 000005E0 +0 +0 +0 +0 -2 +1 +0 +0 +0 +0 +0 +0 +0 -1 +6 -1
96. 000005F0 +1 -6 +7 +0 +0 +0 +0 +0 +0 +0 +0 +1 -1 -1 +0 +0
97. 00000600 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
98. 00000610 -1 -2 +0 -8 +6 +6 +4 +3 +3 +4 -1 -2 +0 +0 +0 +0
99. 00000620 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +2 -1
100. 00000630 -1 +7 -8 +0 +1 -2 -4 -3 -1 +1 -3 -4 +1 +0 +0 +0
101. 00000640 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +1 -3 -5 +0
102. 00000650 +1 +0 +0 +8 -1 -7 -9 -7 -2 +6 +3 +0 +0 +0 +0 +0
103. 00000660 +0 +0 +1 +0 +0 +0 -1 -1 +0 +0 +0 +0 +0 +1 -1 +0
104. 00000670 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
105. 00000680 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 -1
106. 00000690 +1 +0 +0 +0 +0 +0 -1 +1 +0 +0 +1 -1 +0 +0 +0 +0
107. 000006A0 -1 +1 -1 +1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
108. 000006B0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 -1 +0 +0 +0 +0 +0
109. 000006C0 +0 +1 +1 +3 +3 +0 +1 +1 -1 +1 +0 +0 +0 +0 +0 +0
110. 000006D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +1 +0
111. 000006E0 +0 +0 +2 +1 -4 -5 -8 -6 -4 +1 +0 +0 -1 +0 +0 +0
112. 000006F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0
113. 00000700 +3 -9 -5 +10 +2 +2 +0 -1 +2 +6 -4 -1 +0 +0 +0 +0
114. 00000710 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
115. 00000720 -1 +2 -1 -1 +1 +0 +0 +0 +0 +0 -1 +4 -2 -1 +1 -1
116. 00000730 +1 -1 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0
117. 00000740 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1
118. 00000750 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
119. 00000760 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 -1
120. 00000770 +0 -1 +1 +1 +0 +1 +0 -1 +3 -1 +0 +0 +0 +0 +0 +0
121. 00000780 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1
122. 00000790 -1 -1 +1 +1 +1 +0 -2 -3 +0 +0 +0 +0 +0 +0 +0 +0
123. 000007A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
124. 000007B0 +0 +0 -1 +4 +2 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
125. 000007C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000007D0 +0 +0 +0 +0 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
127. 000007E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
128. 000007F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
129. 00000800 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
130. 00000810 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
131. 00000820 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
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133. 00000840 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
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136. 00000870 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
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138. 00000890 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
139. 000008A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
140. 000008B0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0
141. 000008C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
142. 000008D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -2 -1 +1 +0 +0
143. 000008E0 +0 +0 +0 +0 +0 -1 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0
144. 000008F0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 -2 +0 +0 +0
145. 00000900 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
146. 00000910 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +1 -1
147. 00000920 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
148. 00000930 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
149. 00000940 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
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151. 00000960 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
152. 00000970 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
153. 00000980 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +1
154. 00000990 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
155. 000009A0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1
156. 000009B0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0
157. 000009C0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
158. 000009D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +1 +0 +0 +0
159. 000009E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
160. 000009F0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0
161. 00000A00 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
162. 00000A10 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
163. 00000A20 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
164. 00000A30 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0
165. 00000A40 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0
166. 00000A50 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0
167. 00000A60 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0
168. 00000A70 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
169. 00000A80 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1
170. 00000A90 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0
171. 00000AA0 +0 +1 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
172. 00000AB0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
173. 00000AC0 +0 +0 -1 +0 +0 +1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0
174. 00000AD0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
175. 00000AE0 +0 -1 -1 +2 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
176. 00000AF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
177. 00000B00 +1 -1 +0 +0 +0 +0 +0 +0 +0 +1 -1 +0 +0 +0 +0 +0
178. 00000B10 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
179. 00000B20 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0
180. 00000B30 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
181. 00000B40 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
182. 00000B50 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
183. 00000B60 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
184. 00000B70 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
185. 00000B80 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
186. 00000B90 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
187. 00000BA0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
188. 00000BB0 +0 +0 -1 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
189. 00000BC0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
190. 00000BD0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
191. 00000BE0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
192. 00000BF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
193. 00000C00 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
194. 00000C10 +1 +0 +0 +1 +0 +0 +1 +0 +0 +0 +0 +0 +0 -1 +0 +0
195. 00000C20 -1 -1 +0 -5 +3 -2 +1 +0 -1 +0 +0 +0 +0 +1 -4 -1
196. 00000C30 +0 +0 +1 -5 -2 +1 +1 +1 +6 -2 -1 +0 +1 -4 +21 +6
197. 00000C40 +0 +0 -5 -1 +1 +2 +4 +4 +3 +5 +0 +0 -1 +4 -8 -11
198. 00000C50 +0 +0 -2 +8 -1 +0 +3 +1 -18 +16 +1 -1 +2 +0 -4 -4
199. 00000C60 +0 +0 -6 +1 -3 -1 +1 +14 -23 +1 +0 +1 +0 +1 -3 -1
200. 00000C70 +0 +0 +0 -5 -2 +3 -1 +11 -8 -3 +0 +1 +0 -1 -3 +1
201. 00000C80 +0 +14 +1 +0 -1 +0 +0 -15 -2 +7 +1 -1 +1 -3 -1 -1
202. 00000C90 -2 -14 +0 +1 +0 +0 +5 -18 +14 -7 -1 -1 -2 +13 +1 -1
203. 00000CA0 +3 -14 +1 -2 +2 -1 +11 -16 -2 +2 -1 +1 +0 -9 +0 -1
204. 00000CB0 +19 +1 +1 +1 +0 +2 +2 +8 +0 +0 +0 +0 +1 -13 +0 +0
205. 00000CC0 -6 -3 -1 +0 -2 -2 +6 +13 +0 +0 +0 +1 +9 +1 +0 +0
206. 00000CD0 -1 +2 +0 +0 +1 +0 -5 +0 +0 -1 +0 +0 +1 +1 +0 +0
207. 00000CE0 +0 +0 +0 +0 +0 +0 +1 -2 -4 +1 +4 +4 -2 +0 +0 -1
208. 00000CF0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 -4 -1 +0 +0 +0 +0
209. 00000D00 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
210. 00000D10 -2 -1 +1 +1 -1 -3 +0 -2 -3 +0 +0 +0 +0 +0 +0 +0
211. 00000D20 -2 -2 +0 +1 -1 +2 +0 +0 +0 +1 -1 +1 +0 +1 -8 -1
212. 00000D30 +0 +0 +1 -3 +0 +0 -1 +3 +0 +0 +1 -3 -3 -3 +3 -4
213. 00000D40 +0 +0 +0 +1 +0 +0 +3 -3 +3 -1 +1 +1 +0 +1 -5 +20
214. 00000D50 +0 +0 +0 -1 +2 +7 -1 +0 +3 -2 +1 +0 +4 -1 +0 +1
215. 00000D60 +0 +1 -3 +2 -9 -12 -19 +10 -1 +2 +0 -1 +1 +9 -13 +0
216. 00000D70 +0 +1 -4 -13 +0 +0 +16 -7 +0 +16 -3 +1 -2 -1 +2 -1
217. 00000D80 +0 +0 +0 +1 +1 +0 +0 +4 -3 -17 -14 +2 -4 -14 -1 +0
218. 00000D90 -1 +1 +0 -1 +0 +1 +1 -2 +1 +3 +17 +13 +15 +9 -2 +0
219. 00000DA0 +2 -3 +2 +2 -2 +2 +1 -1 +1 +0 +0 -2 +5 +7 -1 +0
220. 00000DB0 +1 +4 -7 -14 -7 +2 -2 +0 +0 +0 +0 +0 +0 -1 +1 +0
221. 00000DC0 -3 +17 +8 -1 +4 +8 -9 +6 +0 +1 +0 +0 +0 +0 +0 +0
222. 00000DD0 -1 +1 +0 +0 +0 +0 +0 -2 -2 +2 +0 +0 +5 -1 +0 +0
223. 00000DE0 -1 +0 +0 +0 +0 +0 +0 +0 -5 -4 -2 -6 -1 +0 +0 +0
224. 00000DF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -7 +1 +0 +0 +0 +0
225. 00000E00 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
226. 00000E10 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
227. 00000E20 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 -4 -1
228. 00000E30 +0 +0 +0 +0 +0 +0 -1 -1 +1 -1 +0 +0 +0 +0 +2 +2
229. 00000E40 +0 +0 +0 +3 +0 +0 +1 +1 -1 +1 +0 +0 +0 +0 -4 -8
230. 00000E50 +0 +0 +0 -1 +0 +0 -1 -1 -1 +0 +0 +0 +0 +0 +0 +0
231. 00000E60 +0 +0 +0 +1 +1 -1 -3 +3 +0 +0 +0 -1 +1 +0 +0 +0
232. 00000E70 +0 +1 -2 +0 +0 -1 +3 +1 +2 -1 +0 +0 +0 -2 -1 +0
233. 00000E80 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +1 +1 +0 -3 +0 +0
234. 00000E90 +0 +0 +0 +0 +0 +0 +1 +0 -1 +2 +0 -1 +1 +0 +0 +0
235. 00000EA0 +1 +1 +0 +0 +0 +0 +0 -1 +0 +0 +0 -1 +0 -2 +0 +0
236. 00000EB0 +2 +2 +1 -1 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
237. 00000EC0 -2 +2 +0 +0 +1 -2 +1 -1 -1 +0 +0 +0 +0 +0 +0 +0
238. 00000ED0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 -1 -2 +0 +0 +0
239. 00000EE0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +1 -1 -1 +0 +0 +0 +0
240. 00000EF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0
241. 00000F00 +0 +0 -2 -2 +1 +0 -1 -2 +0 -1 +8 +6 +3 +0 -1 -6
242. 00000F10 +0 +4 +5 -13 -53 -3 -2 +0 -2 -15 -7 +25 +8 +3 +7 -25
243. 00000F20 +26 -12 +5 +20 +6 +7 -5 -13 +2 -2 +5 -54 +10 -2 +30 +3
244. 00000F30 -46 +11 -9 -1 -2 +1 -18 -2 +8 -3 +3 -5 -4 -1 -5 -2
245. 00000F40 -3 +0 +1 -10 -3 +1 -1 +1 -5 -1 -3 +3 +7 -14 -13 +10
246. 00000F50 +0 -1 +11 +2 +5 +2 +12 +0 -8 +24 -21 -49 -4 +10 +9 +31
247. 00000F60 -1 +5 +10 +1 +13 -57 -52 +9 +12 -6 -18 +5 +1 -3 -4 -1
248. 00000F70 +13 +21 +8 +11 +3 +7 +7 -2 -3 -1 +0 +2 -14 -19 -7 +1
249. 00000F80 -1 -1 -3 -2 +0 +0 -1 -1 -1 -7 +3 +4 +7 -1 -6 -14
250. 00000F90 -1 -7 +3 -12 -16 -2 +2 -1 -9 +1 +7 -21 +25 -4 -2 -23
251. 00000FA0 +2 +2 +3 -4 +22 -4 +5 -4 -2 -2 +4 -7 +0 +0 +3 +2
252. 00000FB0 +17 -6 +7 +5 +3 +1 -5 +0 +1 +0 +0 +6 +1 -4 +2 +0
253. 00000FC0 -1 +1 -1 -14 +3 +0 -7 -4 +50 -13 -11 +34 -26 -23 -3 -1
254. 00000FD0 +45 -4 +21 +57 -17 -43 -17 -15 +27 -7 +25 +30 -23 +65 -13 -88
255. 00000FE0 +45 -103 +85 +71 -116 +88 -30 -57 +57 -101 +94 +25 +17 +5 +6 -107
256. 00000FF0 +15 -31 +20 -26 +142 -18 -23 -95 +69 -7 -13 -9 +5 +18 -38 -18

##### Cb Component Data

The following is a dump of the Cb component data, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000010 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000020 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000030 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000040 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0
6. 00000050 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000060 +0 +0 -1 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0
8. 00000070 -1 +1 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000080 +0 +0 +0 +0 +0 +0 +9 -1 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000090 +0 -1 +7 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
11. 000000A0 +0 +0 +0 +0 +0 +0 +1 +1 +0 +0 +0 +0 +0 +0 +0 +0
12. 000000B0 +0 -6 +3 +2 +2 +0 +0 +0 +0 +0 +0 +0 +1 -1 +1 +0
13. 000000C0 +0 +0 +0 +0 +0 +0 -8 +0 +0 +0 +0 +0 +0 +0 +0 +0
14. 000000D0 +0 -6 -2 -1 -1 +1 +0 +1 +0 +0 +0 +3 -7 +7 -8 +1
15. 000000E0 +0 +0 +0 +0 +0 +5 -4 +0 +0 +0 +0 +0 +0 +0 +0 +0
16. 000000F0 +1 +6 +0 -10 +0 +0 +0 -1 +0 +1 +0 +0 +0 -2 -5 -2
17. 00000100 +0 +0 +0 +0 +0 +5 +4 +0 +0 +0 +0 +0 +0 +1 +1 +0
18. 00000110 -2 +6 +9 -2 +0 +0 +0 +0 +0 +0 +0 +1 +0 +2 +6 +0
19. 00000120 +0 +0 +0 +0 -1 -6 -2 -2 +0 +0 +0 +0 +0 +1 +0 +0
20. 00000130 -7 +0 +5 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
21. 00000140 +0 +0 +0 +0 +2 -6 +0 +4 +0 +0 +0 +0 +0 +1 -1 +1
22. 00000150 +0 -1 -7 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -9 +0 +0
23. 00000160 +0 +0 +0 +0 +8 +0 +0 +0 -2 +0 +0 +0 +0 +1 +1 +0
24. 00000170 +6 +3 -4 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +2 +0 +0
25. 00000180 +0 +0 +0 +0 +0 +0 -1 -2 -1 +0 +0 +0 +0 +0 +0 -4
26. 00000190 +1 +6 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +9 +0 +0
27. 000001A0 +0 +0 +0 +0 -8 +1 +0 +1 +0 +0 +0 +0 +0 +1 +0 -3
28. 000001B0 -1 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -8 +1 +0 +0
29. 000001C0 +0 +0 +0 +0 +1 +0 +0 +0 -1 +0 +0 +0 +0 +0 +1 +0
30. 000001D0 +0 -4 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 -5 +0 +0 +0
31. 000001E0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0
32. 000001F0 +3 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +8 +0 +0 +0
33. 00000200 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 +0
34. 00000210 +0 +0 +0 +0 -1 +1 +0 +0 -1 +0 -1 +0 +1 +0 +0 +0
35. 00000220 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
36. 00000230 -5 +0 +0 +0 +0 +0 -1 +0 +0 +0 +1 -2 +0 +0 +0 +0
37. 00000240 +0 +0 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +3 +2
38. 00000250 -1 +0 +0 +0 +0 +0 +0 +0 +0 +2 +0 +2 +0 +0 +0 +0
39. 00000260 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -2 +1 +4
40. 00000270 +0 +0 +0 +0 +0 +2 +0 +0 +0 -1 -1 +10 +0 +0 +0 +0
41. 00000280 +0 +0 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 -1 -2
42. 00000290 +0 +0 +0 +0 +0 -2 +2 +0 +0 +0 -10 +1 +0 +0 +0 +0
43. 000002A0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +2 +1 -4
44. 000002B0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 -3 -1 +0 +0 +0 +0
45. 000002C0 +0 -1 +0 -1 +1 +1 +0 +0 +0 +0 +0 +0 -1 +1 +6 +0
46. 000002D0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +1 +12 +0 +0 +0 +0 +0
47. 000002E0 +0 +1 -1 +0 -1 +0 +1 +0 -1 +0 +0 +0 +0 +0 +2 +0
48. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -7 +5 +0 +0 +0 +0 +0
49. 00000300 -1 +1 +1 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 -1 -8 +0
50. 00000310 +0 +0 +0 +0 +0 +0 +0 +0 +0 -11 -1 +0 +0 +0 +0 +0
51. 00000320 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 -1 +5 -4 +0
52. 00000330 +0 +0 +0 +0 +0 +0 +0 +0 +1 +6 +0 +0 +0 +0 +0 +0
53. 00000340 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +7 +1 +0
54. 00000350 +0 +0 +0 +0 +0 +0 +0 +0 -2 +10 +0 +0 +0 +0 +0 +0
55. 00000360 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +4 -1 +0
56. 00000370 +0 +0 +0 +0 +0 +0 +0 +0 -10 +1 +0 +0 +0 +0 +0 +0
57. 00000380 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +3 +0
58. 00000390 +1 +0 +0 +0 +0 +1 -2 +0 +1 +0 +0 +0 +0 +0 +0 +0
59. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
60. 000003B0 +1 +0 +1 +0 -1 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0
61. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
62. 000003D0 +0 +0 +0 -2 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
63. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
64. 000003F0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
65. 00000400 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
66. 00000410 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
67. 00000420 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +2 +4 +5 +2 -1
68. 00000430 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000440 +0 +0 +0 +0 +0 +0 +0 -1 +7 +4 -8 -7 -4 -4 -6 -7
70. 00000450 +7 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
71. 00000460 +1 +1 +1 +0 +0 +0 +0 -3 -3 +1 +0 +0 +0 +0 +0 +0
72. 00000470 +1 -8 +6 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
73. 00000480 +1 +1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000490 +0 +0 -1 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
75. 000004A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
76. 000004B0 +0 -1 +1 +1 -6 +8 -1 +0 +0 +0 +0 +0 +2 +8 +2 +2
77. 000004C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
78. 000004D0 +0 +0 +0 +1 +0 +0 -8 +7 +7 +4 +5 +8 +1 -1 -7 +0
79. 000004E0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +1 +0
80. 000004F0 +0 -1 +1 +0 +0 +0 +0 +1 -2 -4 -4 -1 +1 -1 +0 +0
81. 00000500 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0
82. 00000510 +0 +0 +1 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +2 -2
83. 00000520 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0
84. 00000530 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0
85. 00000540 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -2 -1 +2 -1
86. 00000550 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
87. 00000560 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 -3 -1 +1 +0 +1 +0
88. 00000570 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0
89. 00000580 +0 +0 +0 +0 +1 -4 -6 +4 +7 +5 +4 +6 +5 -5 +0 +0
90. 00000590 +1 +0 +0 +0 +0 +0 +0 +0 -1 -4 -3 +0 +0 +0 +0 +0
91. 000005A0 +0 +0 +0 +0 +1 +5 -1 +0 +1 +1 +1 +2 +0 -1 +5 -4
92. 000005B0 +0 +0 +0 +0 +0 +0 +0 +1 +2 +0 +1 +5 -3 +2 +0 +0
93. 000005C0 +0 +0 +0 +0 -1 +0 +1 +0 +0 +0 +0 -1 -3 +3 +0 +0
94. 000005D0 +0 +0 +0 +0 +0 +0 +1 +0 -1 +0 -1 -1 +1 -2 +0 +0
95. 000005E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 +1
96. 000005F0 -1 +3 -4 +0 +0 +0 +0 +0 +0 +0 +1 -2 -7 +2 +0 +0
97. 00000600 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
98. 00000610 +1 +1 +0 +5 -5 -4 -3 -3 -7 -9 +3 +8 -1 +0 +0 +0
99. 00000620 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
100. 00000630 +1 -4 +4 +0 -1 +1 +3 +4 +2 -2 +4 +8 -2 +0 +0 +0
101. 00000640 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +2 +2 +0
102. 00000650 -1 +0 +0 -4 +0 +5 +6 +7 +2 -9 -7 +0 +1 +0 +0 +0
103. 00000660 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0
104. 00000670 +0 +0 +0 +0 +0 +0 +1 +0 +0 +1 +0 +0 +0 +0 +0 +0
105. 00000680 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1
106. 00000690 +0 +0 +0 +0 +0 +0 -2 +4 +0 +0 +0 +2 +0 +0 +0 +0
107. 000006A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
108. 000006B0 +0 +0 +0 +0 +0 +0 +0 -1 -5 +2 -1 +0 +0 +0 +0 +0
109. 000006C0 +0 +0 +0 -1 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
110. 000006D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0
111. 000006E0 +0 +0 +0 +0 +1 +1 +2 +1 +1 +0 +0 +0 +0 +0 +0 +0
112. 000006F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 -1 +0 +0 +0 +0
113. 00000700 +0 +1 +1 -2 +0 -1 +0 +1 -1 -1 +1 +0 +0 +0 +1 +0
114. 00000710 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
115. 00000720 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +1 -1 +0
116. 00000730 +0 -1 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0 +0
117. 00000740 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 -3 +0
118. 00000750 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
119. 00000760 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +8 -7
120. 00000770 +0 +0 +0 +0 +0 +0 +1 -2 -11 +2 +0 +0 +0 +0 +0 +0
121. 00000780 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +2
122. 00000790 +5 +0 -9 -10 -7 -4 +7 +9 +0 +0 +0 +0 +0 +0 +0 +0
123. 000007A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
124. 000007B0 +0 +0 +0 -4 -2 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
125. 000007C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000007D0 +0 +0 +0 +0 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
127. 000007E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
128. 000007F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
129. 00000800 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
130. 00000810 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
131. 00000820 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
132. 00000830 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
133. 00000840 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0
134. 00000850 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
135. 00000860 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0
136. 00000870 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
137. 00000880 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
138. 00000890 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
139. 000008A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
140. 000008B0 +0 -1 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +1 -2 +1 +0
141. 000008C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
142. 000008D0 +0 +0 +0 -1 +0 +0 +0 +1 +0 +0 +0 +2 +0 -1 +0 +0
143. 000008E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
144. 000008F0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
145. 00000900 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
146. 00000910 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
147. 00000920 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
148. 00000930 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0
149. 00000940 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
150. 00000950 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
151. 00000960 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
152. 00000970 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0
153. 00000980 +0 +0 +0 +0 +0 -1 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0
154. 00000990 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
155. 000009A0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
156. 000009B0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
157. 000009C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
158. 000009D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0
159. 000009E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
160. 000009F0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +1 +0 +0 +0
161. 00000A00 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
162. 00000A10 +1 +0 +0 +0 -1 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0
163. 00000A20 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
164. 00000A30 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -2 +0 +0 +0 +0
165. 00000A40 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
166. 00000A50 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +1 +0 +0 +0 +0
167. 00000A60 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
168. 00000A70 +0 +0 +0 +0 +0 +0 -1 -1 +0 +0 +0 +0 +0 +0 +0 +0
169. 00000A80 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
170. 00000A90 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0
171. 00000AA0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
172. 00000AB0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0
173. 00000AC0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
174. 00000AD0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
175. 00000AE0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
176. 00000AF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0
177. 00000B00 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
178. 00000B10 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
179. 00000B20 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
180. 00000B30 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0
181. 00000B40 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -2 +0 +0
182. 00000B50 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
183. 00000B60 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0
184. 00000B70 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0
185. 00000B80 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
186. 00000B90 +1 +0 +0 +1 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0
187. 00000BA0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
188. 00000BB0 +0 +0 +1 +1 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
189. 00000BC0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
190. 00000BD0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
191. 00000BE0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
192. 00000BF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
193. 00000C00 +0 +0 +0 +1 +0 +0 +1 -1 +0 +0 +0 +0 +0 +0 +0 +0
194. 00000C10 -1 +0 +0 +2 +0 -1 -2 +1 +1 -2 +0 +0 +0 +0 +0 +0
195. 00000C20 +1 +1 -2 -8 -1 +1 +0 -1 -5 +9 +2 +0 +0 -1 +2 +0
196. 00000C30 +0 +0 +1 -17 +0 +0 -1 -1 -18 +20 -1 +1 +0 +5 -8 +8
197. 00000C40 +0 +0 +17 +1 +0 +0 +2 +3 -6 -10 +3 -1 +1 +0 +3 +32
198. 00000C50 +0 -1 +5 +5 -1 +0 +5 +4 +14 -16 +1 +0 +0 -1 -17 +2
199. 00000C60 +0 -1 -17 -3 -2 +1 -1 -9 +15 -1 +0 +1 -1 -1 -8 -4
200. 00000C70 +0 +1 +0 +3 +1 -1 +1 -6 +3 +2 +0 +2 -1 +2 +11 +0
201. 00000C80 +0 -3 +0 +1 +1 +0 +0 +7 +1 -3 +0 -1 -4 +0 +4 +0
202. 00000C90 +0 +3 +0 +0 +0 +0 -2 +10 -7 +4 +0 -1 +3 -24 -2 +0
203. 00000CA0 -1 +4 +0 +2 -1 +0 -5 +10 +2 -1 -3 +4 -1 +11 -1 +0
204. 00000CB0 -4 +1 +0 -1 +0 +0 -2 -6 +0 +0 +1 -2 +0 +24 +0 +0
205. 00000CC0 +1 +2 +1 +0 +0 +0 -1 -17 +0 +0 +0 -1 -26 +0 +0 +0
206. 00000CD0 +0 -1 +0 +0 +0 +0 +22 -2 -1 +0 +0 +2 -7 -3 +0 +0
207. 00000CE0 +0 +0 +0 +0 +0 +0 -1 +2 +1 -1 -2 -4 +8 +0 +0 +0
208. 00000CF0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +3 +2 +0 +0 +0 +0
209. 00000D00 +0 +0 +0 +0 -2 +0 +10 +6 -2 +0 +0 +0 +0 +0 +0 +0
210. 00000D10 +1 +1 +0 +2 -3 -19 -9 -13 -13 +14 -2 +0 +0 +0 +0 +0
211. 00000D20 +1 +1 +0 +0 +1 -1 +0 +0 +0 -2 +14 +2 -2 -2 +6 +8
212. 00000D30 +0 +0 +1 -2 +0 +0 +0 +1 +0 +1 +0 -17 -6 +1 -8 -9
213. 00000D40 +0 +0 +1 -1 +0 +1 +1 -1 +0 +0 +0 -2 -1 +0 +0 -2
214. 00000D50 +0 +0 +1 +1 -1 -8 +0 +3 -1 +0 +1 +1 +3 +1 +0 +0
215. 00000D60 +0 +1 -7 +13 +13 +12 +14 -7 +0 +0 +0 -1 +1 +9 -7 +2
216. 00000D70 +0 +0 -1 +2 +0 +0 -8 +4 +0 -9 +2 +2 +0 +1 -12 +3
217. 00000D80 +0 +0 +0 +0 +0 +0 +0 -2 +1 +9 +10 -4 +2 +35 +4 +0
218. 00000D90 +0 +0 +0 +1 +0 +0 -1 +1 +0 -1 -10 -8 -21 -13 +3 +0
219. 00000DA0 -1 +1 -1 +0 +1 -1 +0 +1 +0 +1 +1 -5 +14 +14 -2 +0
220. 00000DB0 +0 +0 +2 +3 +2 +0 +1 +1 +0 +1 +0 +0 +1 +1 -1 +0
221. 00000DC0 +0 -3 -1 +0 +0 -2 +2 +0 -1 -1 +0 +0 -1 +1 +0 +0
222. 00000DD0 +0 -1 +0 +0 +0 +0 +2 -12 -4 +1 +1 +2 -20 +4 +0 +0
223. 00000DE0 +0 +0 +0 +0 +0 +0 +0 -3 +19 +16 +15 +24 +3 +0 +0 +0
224. 00000DF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +6 -1 +0 +0 +0 +0
225. 00000E00 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0
226. 00000E10 +0 +0 +0 +4 -1 +0 +0 -1 +3 -2 +0 +0 +0 +0 +0 +0
227. 00000E20 +0 +0 +0 -1 +0 +0 +0 +0 +0 -1 +3 +0 +0 -1 +2 +0
228. 00000E30 +0 +0 +1 +0 +0 +0 +0 +0 -1 +2 +2 -1 +1 -1 +3 +4
229. 00000E40 +0 +0 +1 +2 +0 +0 +0 +1 +2 -1 +0 +0 +0 +0 +1 +0
230. 00000E50 +0 +0 -2 -1 -1 +0 +0 +1 +1 +0 +0 +0 +0 +0 -1 +0
231. 00000E60 +0 +1 -2 +0 +0 +0 +2 -2 +0 +0 +0 -1 +1 -1 +4 +0
232. 00000E70 +0 +0 +0 +0 +0 +0 -2 +0 -1 +0 -1 -1 +1 -1 +3 +0
233. 00000E80 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 -1 +0 +6 +0 +0
234. 00000E90 +0 +0 +0 +0 +0 +0 +0 +0 +1 -1 +0 -2 -2 +0 +0 +0
235. 00000EA0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +1 -2 +0 -2 +0 +0
236. 00000EB0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0
237. 00000EC0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0
238. 00000ED0 +0 +0 +0 +0 +0 +0 +2 -3 +0 +0 +0 +2 +6 +0 +0 +0
239. 00000EE0 +0 +0 +0 +0 +0 +0 +0 -1 +0 -1 +0 +2 +0 +0 +0 +0
240. 00000EF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0
241. 00000F00 +0 -9 -1 -2 +5 +1 +1 +0 +1 +33 -2 -2 +5 +1 +2 -3
242. 00000F10 -4 -14 -3 +2 +76 +4 +5 +17 +3 -37 +1 -15 -8 +3 -1 +80
243. 00000F20 -5 +14 -2 -11 +2 +7 -16 +15 -2 +3 -2 +29 -2 +1 -51 -8
244. 00000F30 +6 -4 +3 +4 +6 +4 +35 -1 -1 +1 -2 +8 -3 -7 +17 +1
245. 00000F40 +1 -4 +35 -4 +34 -5 +2 -1 +3 +0 +0 +2 +3 -17 +46 +10
246. 00000F50 -2 +4 -9 -5 -2 +3 +4 +0 +1 +4 +28 +33 +2 -3 +14 -6
247. 00000F60 -1 +0 -4 -1 -7 +38 +60 -5 -3 +2 +6 +1 +4 +4 -3 +1
248. 00000F70 -1 -3 -2 -7 -28 -5 -31 +8 +2 +0 +0 -8 +56 +85 +24 -3
249. 00000F80 +0 -10 +3 -4 +4 +2 +1 +0 +1 +4 +2 +4 +15 +10 +6 -9
250. 00000F90 -1 -1 -4 +1 +5 +2 +0 +4 +1 +13 -3 +10 -11 -4 +2 +7
251. 00000FA0 -1 +0 -2 +1 -14 -3 +2 +2 +0 -1 -1 +3 +0 -5 -9 -4
252. 00000FB0 -2 +2 -5 -28 +1 +7 +17 +1 +0 +0 +0 -18 +5 +15 -6 +0
253. 00000FC0 +55 -4 +34 -14 +18 -33 +7 -1 -16 +19-109 -29 +19+123 +10 -6
254. 00000FD0 -31 +13-129 +32 +31 -43 +7 +9 +83 -29 -34 +15 +32 -44 -12 -18
255. 00000FE0 +79 +31 -21 -40 +58 -51 -33 +63 -8 +35 -31 -13 -10 -20 -44+102
256. 00000FF0 -11 +9 +2 +17-136 +4 -58+208 -49 +6 +4 +11 -83 -38 +84 +54

##### Cr Component Data

The following is a dump of the Cr component data, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000010 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000020 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000030 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000040 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 -1 +0 +0 +1 -1 +0
6. 00000050 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000060 +0 +0 +1 +0 +0 +0 +0 +0 +2 +0 +0 +0 +0 +0 +1 +0
8. 00000070 +2 -1 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000080 +0 +0 +1 +0 +0 +0 -13 +2 -1 +0 +0 +0 +0 +0 +0 +0
10. 00000090 +0 +1 -10 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
11. 000000A0 +0 +0 +0 +0 +0 +1 -1 -1 +0 +0 +0 +0 +0 +0 +0 +0
12. 000000B0 +0 +7 -4 -1 -1 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0
13. 000000C0 +0 +0 +0 +0 +0 +1 +12 +0 +0 +0 +0 +0 +0 +0 +0 +0
14. 000000D0 +0 +8 +2 +0 +0 +0 +0 +0 +0 +0 +0 -1 +3 -3 +3 -1
15. 000000E0 +0 +0 +0 +0 +0 -7 +6 +0 +0 +0 +0 +0 +0 +0 +0 +0
16. 000000F0 -1 -6 +0 +4 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +2 +1
17. 00000100 +0 +0 +0 +0 +0 -7 -4 +0 +0 +0 +0 +0 +0 -2 -1 +0
18. 00000110 +2 -6 -4 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 +0
19. 00000120 +0 +0 +0 +0 +1 +9 +1 +2 +0 +0 +0 +0 +0 -2 +0 +0
20. 00000130 +6 +0 -3 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
21. 00000140 +0 +0 +0 +0 -3 +9 -1 -3 +0 +0 +0 +0 +0 +0 +1 +0
22. 00000150 +0 +1 +5 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +4 +0 +0
23. 00000160 +0 +0 +0 +0 -12 +0 +0 +0 +2 +0 +0 +0 +0 +0 +0 +0
24. 00000170 -6 -3 +3 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
25. 00000180 +0 +0 +0 +1 +0 +0 +1 +1 +0 +0 +0 +0 +0 +0 +0 +4
26. 00000190 -1 -6 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -4 +0 +0
27. 000001A0 +0 +0 +0 +0 +13 -1 +0 +0 +0 +0 +0 +0 +0 -1 +0 +3
28. 000001B0 +1 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +4 +0 +0 +0
29. 000001C0 +0 +0 +0 +0 -2 +0 +0 -1 +2 +0 +0 +0 +0 +0 -1 +0
30. 000001D0 -1 +5 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -1 +0 +0
31. 000001E0 +0 +0 +0 -1 +0 +0 -1 +0 +1 +0 +0 +0 +0 +1 -1 +0
32. 000001F0 -3 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 -5 +0 +0 +0
33. 00000200 +0 +0 +0 +2 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +4 +0
34. 00000210 -1 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000220 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 -1 +1
36. 00000230 +7 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0
37. 00000240 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -3 -3
38. 00000250 +2 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 -1 +0 +0 +0 +0
39. 00000260 +0 +0 +1 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +2 +0 -5
40. 00000270 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -7 +0 +0 +0 +0
41. 00000280 +0 +0 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +2 +1 +3
42. 00000290 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +6 -1 +0 +0 +0 +0
43. 000002A0 +0 -2 +0 +0 +0 +0 -1 -1 +0 +0 +0 +0 +0 -2 -1 +4
44. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +3 +1 +0 +0 +0 +0
45. 000002C0 +0 -1 +0 +0 -1 -1 +0 +0 +0 +0 +0 +0 +0 -1 -6 +0
46. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 -8 +0 +0 +0 +0 +0
47. 000002E0 +1 +2 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 -1 +0
48. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +5 -4 +0 +0 +0 +0 +0
49. 00000300 -1 +2 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +1 +6 +0
50. 00000310 +0 +0 +0 +0 +0 +0 +0 +0 +0 +7 +1 +0 +0 +0 +0 +0
51. 00000320 -1 +0 +0 +0 +0 +0 +1 +1 +0 +0 +0 +0 +0 -4 +3 +0
52. 00000330 +0 +0 +0 +0 +0 +0 +0 +0 -1 -4 +0 +0 +0 +0 +0 +0
53. 00000340 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -5 -2 +0
54. 00000350 +0 +0 +1 +1 +0 +0 +0 +0 +1 -7 +0 +0 +0 +0 +0 +0
55. 00000360 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +1
56. 00000370 +0 -1 +0 +1 +0 +0 +0 +0 +7 +0 +0 +0 +0 +0 +0 +0
57. 00000380 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -2 +0
58. 00000390 -1 +0 +0 +1 +0 -1 +1 +1 -1 +0 +0 +0 +0 +0 +0 +0
59. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
60. 000003B0 -1 +0 -1 +0 +1 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0
61. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
62. 000003D0 +0 +0 +0 +2 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
63. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
64. 000003F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
65. 00000400 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
66. 00000410 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
67. 00000420 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -3 -6 -6 -3 +1
68. 00000430 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000440 +0 +0 +0 +0 +0 +0 +0 +1 -10 -5 +11 +9 +6 +5 +9 +11
70. 00000450 -11 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
71. 00000460 -1 -1 -1 +0 +0 +0 +0 +4 +4 -1 +0 +0 +0 +0 +0 +0
72. 00000470 -1 +11 -10 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
73. 00000480 -1 -1 -1 +0 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000490 +0 +0 +1 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
75. 000004A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
76. 000004B0 +0 +1 -2 +0 +3 -4 +0 +0 +0 +0 +0 +0 -1 -4 -1 -1
77. 000004C0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0
78. 000004D0 +0 +0 +0 +0 +0 +0 +4 -3 -3 -2 -2 -4 -1 +1 +3 +0
79. 000004E0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 -1 +0
80. 000004F0 +0 +1 -1 +0 +0 +0 +0 -1 +1 +2 +2 +0 +0 +0 +0 +0
81. 00000500 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0
82. 00000510 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +2
83. 00000520 +0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0
84. 00000530 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 +0
85. 00000540 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +2 +1 -1 +1
86. 00000550 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
87. 00000560 +0 +0 +0 +0 +0 +0 +0 +0 +0 +3 +2 +1 +0 +0 +0 +0
88. 00000570 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
89. 00000580 +0 +0 +0 +0 -1 +6 +8 -5 -7 -5 -4 -5 -4 +5 +0 +0
90. 00000590 -1 +0 +0 +0 +0 +0 +0 +0 +0 -1 -1 +0 +0 +0 +0 +0
91. 000005A0 +0 +0 +0 +0 -2 -8 +1 +0 -1 +0 -1 -2 +0 +1 -6 +4
92. 000005B0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 -1 +0 +0
93. 000005C0 +0 +0 +0 +0 -1 +0 +1 +0 +0 +0 +0 +1 +4 -4 +0 +0
94. 000005D0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +3 +0 +0
95. 000005E0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +4 -1
96. 000005F0 +1 -4 +5 +0 +0 +0 +0 +0 +0 +0 +0 +1 +2 -1 +0 +0
97. 00000600 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
98. 00000610 -1 -1 +0 -5 +4 +4 +3 +3 +4 +4 -1 -4 +0 +0 +0 +0
99. 00000620 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -1
100. 00000630 -1 +4 -5 +0 +1 -1 -3 -3 -1 +1 -3 -5 +1 +0 +0 +0
101. 00000640 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -2 -3 +0
102. 00000650 +1 +0 +0 +5 +0 -5 -6 -5 -1 +6 +4 +0 -1 +0 +0 +0
103. 00000660 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
104. 00000670 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
105. 00000680 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 -1
106. 00000690 +1 +0 +0 +0 +0 +0 +0 -1 +0 +0 +1 -1 +0 +0 +0 +0
107. 000006A0 -1 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0
108. 000006B0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0
109. 000006C0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0
110. 000006D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
111. 000006E0 +0 +0 +0 +0 +1 +2 +1 +1 +1 +0 +0 +0 -1 +0 +0 +0
112. 000006F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0
113. 00000700 -1 +2 +1 -2 -2 +1 +0 -1 +0 -1 +1 +0 +0 +0 +0 +0
114. 00000710 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
115. 00000720 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 -1 +1 +0
116. 00000730 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -1 +0 +0 +0 +0 +0
117. 00000740 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +1 +0
118. 00000750 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
119. 00000760 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -4 +2
120. 00000770 +0 +0 +0 +0 +0 +0 +0 +1 +7 -2 +0 +0 +0 +0 +0 +0
121. 00000780 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1
122. 00000790 -2 -1 +5 +6 +4 +3 -5 -6 +1 +0 +0 +0 +0 +0 +0 +0
123. 000007A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
124. 000007B0 +0 +0 +0 +4 +2 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
125. 000007C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000007D0 +0 +0 +0 +0 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
127. 000007E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
128. 000007F0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
129. 00000800 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
130. 00000810 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
131. 00000820 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
132. 00000830 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
133. 00000840 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +1 +0 +0 +0 +0 +0
134. 00000850 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
135. 00000860 +0 +0 +0 +0 +0 +0 +0 +2 -1 +0 +0 +0 +0 +0 +0 +0
136. 00000870 +0 +0 +2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
137. 00000880 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0
138. 00000890 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
139. 000008A0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
140. 000008B0 +0 +1 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 -1 +0
141. 000008C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
142. 000008D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +1 +0 +0
143. 000008E0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
144. 000008F0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
145. 00000900 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
146. 00000910 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 -1
147. 00000920 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
148. 00000930 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
149. 00000940 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
150. 00000950 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
151. 00000960 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
152. 00000970 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
153. 00000980 +0 +0 +0 +0 +0 +1 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0
154. 00000990 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
155. 000009A0 +0 +0 +0 +0 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1
156. 000009B0 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0
157. 000009C0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
158. 000009D0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
159. 000009E0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
160. 000009F0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0
161. 00000A00 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
162. 00000A10 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
163. 00000A20 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0
164. 00000A30 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0
165. 00000A40 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0
166. 00000A50 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0
167. 00000A60 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0
168. 00000A70 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
169. 00000A80 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1
170. 00000A90 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0
171. 00000AA0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
172. 00000AB0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
173. 00000AC0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
174. 00000AD0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
175. 00000AE0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
176. 00000AF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
177. 00000B00 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
178. 00000B10 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
179. 00000B20 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
180. 00000B30 +0 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0
181. 00000B40 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0
182. 00000B50 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
183. 00000B60 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
184. 00000B70 +0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0
185. 00000B80 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
186. 00000B90 -1 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0 +0
187. 00000BA0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
188. 00000BB0 +0 +0 -1 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
189. 00000BC0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
190. 00000BD0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
191. 00000BE0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
192. 00000BF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
193. 00000C00 +0 +0 +0 -1 +0 +0 -1 +1 -1 +0 +0 +0 +0 +0 +0 +0
194. 00000C10 +1 +0 +0 -4 +0 +1 +2 +0 -2 +3 +0 +0 +0 +0 +0 +0
195. 00000C20 -1 -1 +3 +13 -2 +1 -2 +2 +7 -15 -1 +0 +0 +1 -1 +0
196. 00000C30 +0 +0 -3 +25 +2 -1 +0 +0 +20 -7 +1 -1 +0 -2 +6 -3
197. 00000C40 +0 +0 -20 +0 -1 -1 -2 -4 +5 +5 -1 +0 -1 +1 -3 -17
198. 00000C50 +0 +1 -5 -7 +2 +0 -3 -3 -13 +12 +0 +0 +1 +0 +7 -2
199. 00000C60 +0 +1 +28 +0 +1 -1 +2 +10 -16 +1 +0 +1 -1 +0 +3 +1
200. 00000C70 +0 -1 +0 -3 -2 +2 +0 +7 -5 -2 +0 +0 +0 -1 -6 +0
201. 00000C80 +0 -2 +1 -3 -1 -1 +0 -10 -2 +4 +0 +0 +1 -1 -2 +0
202. 00000C90 +0 +3 -1 +0 +0 +1 +3 -12 +9 -5 +0 +0 -2 +16 +1 +0
203. 00000CA0 -1 +2 +0 -4 +2 +0 +7 -11 -2 +1 +0 -1 +0 -7 +0 +0
204. 00000CB0 -3 -1 +0 +1 -1 +0 +2 +6 +0 +0 +0 +0 +0 -16 +0 +0
205. 00000CC0 +1 -1 -1 -1 +1 +0 +1 +12 +0 +0 +0 +0 +18 +0 +0 +0
206. 00000CD0 +0 +0 +0 +0 +0 +0 -14 +1 +0 +0 +0 -2 +4 +2 +0 +0
207. 00000CE0 +0 +0 +0 +0 +0 +0 +1 -1 -1 +3 +1 +3 -5 +0 +0 +0
208. 00000CF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -3 -1 +0 +0 +0 +0
209. 00000D00 +0 +0 +0 +0 +2 +0 -13 -8 +3 +0 +0 +0 +0 +0 +0 +0
210. 00000D10 -1 -1 +0 -3 +3 +27 +12 +19 +20 -21 +3 +0 +0 +0 +0 +0
211. 00000D20 -1 -1 +0 -1 +0 -1 +0 +0 +0 +0 -5 -1 +1 +1 -3 -4
212. 00000D30 +0 +0 -1 +5 -1 +0 +0 -2 +0 -1 -2 +7 +2 +0 +5 +3
213. 00000D40 +0 +0 -1 +0 -1 +0 -2 +1 -1 -1 +1 +1 -1 +0 -2 +7
214. 00000D50 +0 +0 -1 -1 +3 +5 +1 -2 +2 -1 +0 +0 +1 +0 +0 +0
215. 00000D60 +0 -1 +11 -17 -14 -10 -14 +7 -1 +1 +0 +0 +0 +2 -3 +0
216. 00000D70 +0 +0 +3 +2 +0 +0 +9 -5 +0 +11 -2 -1 -1 -2 +5 -1
217. 00000D80 +0 +0 +0 +0 +1 +0 +0 +3 -2 -11 -10 +2 -2 -18 -3 +0
218. 00000D90 +0 +0 -1 -2 +0 +0 +0 -2 +1 +2 +11 +9 +12 +9 -2 +0
219. 00000DA0 +0 +0 +1 -1 -3 +2 +0 -1 +0 +0 +0 +1 -3 -3 +0 +0
220. 00000DB0 +0 -1 +1 +2 +1 -4 -2 +0 +0 +0 +0 +0 +0 +0 +0 +0
221. 00000DC0 +1 -4 -2 -1 -1 +0 +3 +1 +0 +0 +0 +0 +0 -1 +0 +0
222. 00000DD0 -1 +1 +0 +0 +0 +0 +0 +4 +3 +0 -1 +0 +14 -3 +0 +0
223. 00000DE0 -1 +0 +0 +0 +0 +0 +0 +2 -11 -11 -9 -15 -2 +0 +0 +0
224. 00000DF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 -6 +1 +0 +0 +0 +0
225. 00000E00 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 +0 +0 +0 +0 +0 +0
226. 00000E10 +0 +0 +0 -6 +1 +0 -1 +2 -4 +3 +0 +0 +0 +0 +0 +0
227. 00000E20 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 -1 +0 +0 +0 -1 +0
228. 00000E30 +0 +0 -1 -1 +0 +0 +0 +0 +0 -1 -1 +0 +0 +0 -1 -2
229. 00000E40 +0 +0 -2 -2 +0 +0 +0 -1 -2 +1 +0 +0 +0 +0 -2 -3
230. 00000E50 +0 +0 +3 +1 +1 +0 +0 -1 -1 +0 +0 +0 +0 +0 +0 +0
231. 00000E60 +0 -1 +3 +0 +1 -1 -2 +2 +0 +0 +0 +0 +0 +0 -1 +0
232. 00000E70 +0 +0 +1 -1 +0 -1 +2 +1 +2 -1 +0 +0 +0 -1 -1 +0
233. 00000E80 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +1 +0 -4 +0 +0
234. 00000E90 +0 +0 +0 +0 +0 +0 +0 +0 -1 +1 +0 +0 +1 +0 +0 +0
235. 00000EA0 +0 +0 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +0 +0 +0
236. 00000EB0 -1 +0 +1 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0
237. 00000EC0 +1 +0 +0 +0 +0 +0 -1 +0 +0 +0 +0 +0 +1 +0 +0 +0
238. 00000ED0 +0 +0 +0 +0 +0 +0 +0 +2 +0 +0 +0 -1 -4 +0 +0 +0
239. 00000EE0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 -1 +0 +0 +0 +0
240. 00000EF0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +1 +0 +0 +0 +0 +0
241. 00000F00 +0 +13 +4 +5 -8 -2 +0 +1 -1 -43 -7 -3 -4 +1 -1 +1
242. 00000F10 +5 +22 -1 -1 -54 -2 -2 -4 -4 +52 -5 +17 +7 +1 -3 -33
243. 00000F20 -4 -25 +1 +15 +3 +2 +2 -11 +4 -14 +5 -34 +6 -1 +35 +6
244. 00000F30 +11 +4 -2 -5 -4 -7 -21 +1 -2 +0 +1 -6 +1 +3 -11 +0
245. 00000F40 -2 +6 -45 +14 -45 +4 -1 +1 -3 +1 +1 -7 -7 +5 -19 -4
246. 00000F50 +2 -4 +8 +4 -1 +3 +0 +0 +2 -15 -27 -36 -2 +5 -1 +14
247. 00000F60 +2 -5 +7 +0 +8 -39 -41 +6 +1 +4 -12 -6 +0 -2 -2 -1
248. 00000F70 -4 -5 -3 +6 +14 -2 +22 -5 -2 -1 +0 +5 -33 -51 -15 +2
249. 00000F80 +0 +14 -1 +8 -5 -1 +0 +0 -1 -2 -5 -5 -10 -5 -3 +2
250. 00000F90 +2 +5 +5 -4 -8 -1 +0 -3 +2 -13 +5 -14 +15 -1 -1 -12
251. 00000FA0 +1 -1 +2 -3 +15 -1 +3 -3 +1 +5 -4 -2 +0 +2 +6 +2
252. 00000FB0 -4 +0 +2 +15 +0 -5 -12 +0 +0 +0 +0 +12 -3 -10 +4 +0
253. 00000FC0 -68 +7 -44 +27 -28 +42 -3 +3 +1 -23+147 +12 +8-162 +6 +3
254. 00000FD0 +10 -12+147 -60 -13 -24 -1 +1 -44 +40 +33 -24 -22 +48 -14 -22
255. 00000FE0 -38 -3 -1 +61 -68 +60 -4 -37 +1 -18 +2 +29 +29 +8 +18 -74
256. 00000FF0 +10 +5 -17 -22+108 -16 +33-124 +22 -7 +0 -4 +48 +26 -46 -33

#### Inverse Quantization/DWT

The following sections present the three-level inverse DWT of the Y component data. The inverse DWT process follows the steps shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC), in reverse order. The inverse DWT steps for the Cb and Cr components are the same as for the Y component, so the intermediate data dumps for these two components have been omitted, but their final reconstructed data is presented in sections [4.2.4.4](#Section_3e2a70db97fd4b4ea4fc6711e70ba57b) and [4.2.4.5](#Section_28382084c75d4447a6a85e137b410cb1).

Microsoft RDP 7.1 and Microsoft RDP 8.0 both use 11.5 fixed-point integers for [**IDWT**](#gt_069378e8-01b3-4f9c-8624-44b70b1b70a9) and color conversion, while Microsoft RDP 8.1 uses 12.4 fixed-point integers. This is due to differences in dequantization (section [3.1.8.2.3](#Section_d196974f6da749c58dae089bc2acddc8)). The example data in the following sections is shown for both 11.5 and 12.4 fixed-point integers.

##### Level-3 Sub-bands

The following are annotated dumps of the four level-3 dequantized sub-bands (LL3, LH3, HL3, and HH3). The LL3 sub-band first gives inverse differential encoding before being de-quantized (section [3.1.8.1.6](#Section_72EADB5133694D82B0EB0407FA689695)). The level-3 sub-bands have dimensions of 8 x 8.

###### LL3

The following is a dump of the LL3 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -32 +0 -32 -480 -384 -384 -608 -736
2. 00000008 +864 +448 +96 +1184 +352 -384 -480 -512
3. 00000010 +928 +800 +1472 +3296 +2752 +1376 +832 +352
4. 00000018 +1216 +992 +1792 +2752 +2016 +4096 +3680 +864
5. 00000020 +2304 -992 +1728 +4000 +288 +3104 +2144 +320
6. 00000028 +2144 -1088 +1920 +2720 +3264 +3424 +3616 +192
7. 00000030 +672 -320 +320 -512 +4032 +3456 +2720 -320
8. 00000038 +1888 +1664 +1248 +960 +1120 +1696 +480 -96

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -16 +0 -16 -240 -192 -192 -304 -368
2. 00000008 +432 +224 +48 +592 +176 -192 -240 -256
3. 00000010 +464 +400 +736 +1648 +1376 +688 +416 +176
4. 00000018 +608 +496 +896 +1376 +1008 +2048 +1840 +432
5. 00000020 +1152 -496 +864 +2000 +144 +1552 +1072 +160
6. 00000028 +1072 -544 +960 +1360 +1632 +1712 +1808 +96
7. 00000030 +336 -160 +160 -256 +2016 +1728 +1360 -160
8. 00000038 +944 +832 +624 +480 +560 +848 +240 -48

###### HL3

The following is a dump of the HL3 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +0 -64 -64 +32 +0 -32 -64
2. 00000008 +0 -32 +256 +192 +96 +0 -32 -192
3. 00000010 +0 +128 +160 -416 -1696 -96 -64 +0
4. 00000018 -64 -480 -224 +800 +256 +96 +224 -800
5. 00000020 +832 -384 +160 +640 +192 +224 -160 -416
6. 00000028 +64 -64 +160 -1728 +320 -64 +960 +96
7. 00000030 -1472 +352 -288 -32 -64 +32 -576 -64
8. 00000038 +256 -96 +96 -160 -128 -32 -160 -64

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +0 -32 -32 +16 +0 -16 -32
2. 00000008 +0 -16 +128 +96 +48 +0 -16 -96
3. 00000010 +0 +64 +80 -208 -848 -48 -32 +0
4. 00000018 -32 -240 -112 +400 +128 +48 +112 -400
5. 00000020 +416 -192 +80 +320 +96 +112 -80 -208
6. 00000028 +32 -32 +80 -864 +160 -32 +480 +48
7. 00000030 -736 +176 -144 -16 -32 +16 -288 -32
8. 00000038 +128 -48 +48 -80 -64 -16 -80 -32

###### LH3

The following is a dump of the LH3 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -96 +0 +32 -320 -96 +32 -32 +32
2. 00000008 -160 -32 -96 +96 +224 -448 -416 +320
3. 00000010 +0 -32 +352 +64 +160 +64 +384 +0
4. 00000018 -256 +768 -672 -1568 -128 +320 +288 +992
5. 00000020 -32 +160 +320 +32 +416 -1824 -1664 +288
6. 00000028 +384 -192 -576 +160 +32 -96 -128 -32
7. 00000030 +416 +672 +256 +352 +96 +224 +224 -64
8. 00000038 -96 -32 +0 +64 -448 -608 -224 +32

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -48 +0 +16 -160 -48 +16 -16 +16
2. 00000008 -80 -16 -48 +48 +112 -224 -208 +160
3. 00000010 +0 -16 +176 +32 +80 +32 +192 +0
4. 00000018 -128 +384 -336 -784 -64 +160 +144 +496
5. 00000020 -16 +80 +160 +16 +208 -912 -832 +144
6. 00000028 +192 -96 -288 +80 +16 -48 -64 -16
7. 00000030 +208 +336 +128 +176 +48 +112 +112 -32
8. 00000038 -48 -16 +0 +32 -224 -304 -112 +16

###### HH3

The following is a dump of the HH3 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -32 -32 -96 -64 +0 +0 -32 -32
2. 00000008 -32 -224 +96 +128 +224 -32 -192 -448
3. 00000010 -32 -224 +96 -384 -512 -64 +64 -32
4. 00000018 -288 +32 +224 -672 +800 -128 -64 -736
5. 00000020 +64 +64 +96 -128 +704 -128 +160 -128
6. 00000028 -64 -64 +128 -224 +0 +0 +96 +64
7. 00000030 +544 -192 +224 +160 +96 +32 -160 +0
8. 00000038 +32 +0 +0 +192 +32 -128 +64 +0

The sample data for 12.4 fixed-point (RDP 8.1) is:

1. 00000000 -16 -16 -48 -32 +0 +0 -16 -16
2. 00000008 -16 -112 +48 +64 +112 -16 -96 -224
3. 00000010 -16 -112 +48 -192 -256 -32 +32 -16
4. 00000018 -144 +16 +112 -336 +400 -64 -32 -368
5. 00000020 +32 +32 +48 -64 +352 -64 +80 -64
6. 00000028 -32 -32 +64 -112 +0 +0 +48 +32
7. 00000030 +272 -96 +112 +80 +48 +16 -80 +0
8. 00000038 +16 +0 +0 +96 +16 -64 +32 +0

###### Inverse DWT-X (LL3 - HL3)

The following is a dump of the L2 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -32 -16 +0 +0 +0 -336 -416 -520
2. 00000008 -368 -320 -400 -496 -592 -704 -688 -816
3. 00000010 +864 +664 +464 +160 -16 +984 +960 +968
4. 00000018 +208 +80 -432 -448 -464 -496 -400 -784
5. 00000020 +928 +832 +736 +1288 +1328 +2696 +3424 +2784
6. 00000028 +3808 -352 +2272 +1400 +912 +520 +384 +384
7. 00000030 +1280 +1144 +1264 +744 +2144 +1856 +2464 +3576
8. 00000038 +1488 +3216 +3920 +3912 +3520 +2784 +1152 -448
9. 00000040 +1472 +1792 -1216 -456 +1840 +3040 +3600 +3016
10. 00000048 -128 +1768 +2896 +2952 +2112 +1040 +608 -224
11. 00000050 +2080 +624 -1088 +264 +1872 +3008 +3504 +280
12. 00000058 +3968 +4272 +3296 +3104 +3168 +3336 -336 -144
13. 00000060 +2144 -1752 +240 +968 +288 -608 -352 +1800
14. 00000068 +4080 +3648 +3472 +3296 +2992 +344 +0 -128
15. 00000070 +1632 +2120 +1584 +1224 +1248 +1312 +992 +808
16. 00000078 +1264 +1264 +1776 +1112 +576 -24 +16 -112

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -16 -8 +0 +0 +0 -168 -208 -260
2. 00000008 -184 -160 -200 -248 -296 -352 -344 -408
3. 00000010 +432 +332 +232 +80 -8 +492 +480 +484
4. 00000018 +104 +40 -216 -224 -232 -248 -200 -392
5. 00000020 +464 +416 +368 +644 +664 +1348 +1712 +1392
6. 00000028 +1904 -176 +1136 +700 +456 +260 +192 +192
7. 00000030 +640 +572 +632 +372 +1072 +928 +1232 +1788
8. 00000038 +744 +1608 +1960 +1956 +1760 +1392 +576 -224
9. 00000040 +736 +896 -608 -228 +920 +1520 +1800 +1508
10. 00000048 -64 +884 +1448 +1476 +1056 +520 +304 -112
11. 00000050 +1040 +312 -544 +132 +936 +1504 +1752 +140
12. 00000058 +1984 +2136 +1648 +1552 +1584 +1668 -168 -72
13. 00000060 +1072 -876 +120 +484 +144 -304 -176 +900
14. 00000068 +2040 +1824 +1736 +1648 +1496 +172 +0 -64
15. 00000070 +816 +1060 +792 +612 +624 +656 +496 +404
16. 00000078 +632 +632 +888 +556 +288 -12 +8 -56

###### Inverse DWT-X (LH3 – HH3)

The following is a dump of the H2 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -64 -80 +32 +0 +96 -264 -240 -280
2. 00000008 -64 -16 +32 +8 -16 -40 +64 +0
3. 00000010 -128 -80 +96 -416 -32 +168 -16 +272
4. 00000018 +48 +200 -544 -488 -304 -216 +640 -256
5. 00000020 +32 +0 +96 -192 +416 +504 +208 -360
6. 00000028 +608 -544 +352 +240 +384 +312 -16 -80
7. 00000030 +32 -112 +896 +112 -800 -624 -1344 -2112
8. 00000038 -192 +1496 -16 -72 +384 +760 +1392 -80
9. 00000040 -96 +128 +96 +296 +240 +336 +48 -168
10. 00000048 +128 +416 -2112 -2152 -1680 -384 +272 +16
11. 00000050 +448 +32 -128 -496 -608 +56 +208 -272
12. 00000058 +144 +24 -96 -136 -176 +48 -112 +16
13. 00000060 -128 +1272 +496 -16 +240 +648 +160 +384
14. 00000068 -32 +256 +160 +288 +288 -168 +16 +16
15. 00000070 -128 -24 -48 -24 +0 -16 -32 +88
16. 00000078 -560 -496 -560 -632 -192 +32 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -32 -40 +16 +0 +48 -132 -120 -140
2. 00000008 -32 -8 +16 +4 -8 -20 +32 +0
3. 00000010 -64 -40 +48 -208 -16 +84 -8 +136
4. 00000018 +24 +100 -272 -244 -152 -108 +320 -128
5. 00000020 +16 +0 +48 -96 +208 +252 +104 -180
6. 00000028 +304 -272 +176 +120 +192 +156 -8 -40
7. 00000030 +16 -56 +448 +56 -400 -312 -672 -1056
8. 00000038 -96 +748 -8 -36 +192 +380 +696 -40
9. 00000040 -48 +64 +48 +148 +120 +168 +24 -84
10. 00000048 +64 +208 -1056 -1076 -840 -192 +136 +8
11. 00000050 +224 +16 -64 -248 -304 +28 +104 -136
12. 00000058 +72 +12 -48 -68 -88 +24 -56 +8
13. 00000060 -64 +636 +248 -8 +120 +324 +80 +192
14. 00000068 -16 +128 +80 +144 +144 -84 +8 +8
15. 00000070 -64 -12 -24 -12 +0 -8 -16 +44
16. 00000078 -280 -248 -280 -316 -96 +16 +0 +0

###### Inverse DWT-Y (L2 – H2)

The following is a dump of the LL2 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +32 +64 -32 +0 -96 -72 -176 -240
2. 00000008 -304 -304 -432 -504 -576 -664 -752 -816
3. 00000010 +368 +244 +248 +184 +120 -48 -24 -194
4. 00000018 -172 -190 -240 -340 -472 -596 -624 -736
5. 00000020 +960 +744 +400 +368 -48 +1032 +1088 +972
6. 00000028 +216 -12 -176 -208 -304 -368 -752 -656
7. 00000030 +712 +648 +712 +148 +480 +2032 +2176 +2444
8. 00000038 +1944 +304 +8 -318 -324 -380 +940 -564
9. 00000040 +976 +872 +640 +1592 +1136 +2360 +3328 +2828
10. 00000048 +3480 -180 +2368 +1524 +872 +472 +72 +552
11. 00000050 +1176 +1036 +896 +804 +2568 +3146 +3596 +3100
12. 00000058 +3596 +192 +3764 +3156 +2772 +1984 +236 -68
13. 00000060 +1248 +1200 +768 +784 +2336 +1916 +3032 +4812
14. 00000068 +1280 +2740 +3752 +3828 +3136 +2248 +464 -368
15. 00000070 +1440 +1268 +1320 +286 +628 +1302 +952 +260
16. 00000078 +208 +4768 +3824 +3802 +3716 +3070 +2904 -440
17. 00000080 +1504 +1784 -1712 -660 +2120 +3184 +4248 +4156
18. 00000088 -96 +812 +3960 +4064 +2760 +852 -224 -192
19. 00000090 +1512 +1420 -1200 +444 +2568 +3670 +3908 +1992
20. 00000098 +2124 +3264 -44 -148 +68 +1410 +224 -144
21. 000000A0 +1904 +544 -1072 +364 +2056 +2812 +3376 +500
22. 000000A8 +3832 +4052 +4400 +4248 +4096 +3504 -416 -160
23. 000000B0 +2840 -866 -764 -198 +48 +1038 +1836 +578
24. 000000B8 +4216 +3828 +3728 +3462 +3164 +2050 -408 -120
25. 000000C0 +1984 -2404 +56 +1224 +472 -960 -536 +1744
26. 000000C8 +4024 +3508 +3440 +3220 +2936 +404 +48 -144
27. 000000D0 +1616 +2090 +1700 +1202 +1280 +1314 +516 +1926
28. 000000D8 +2728 +2958 +3028 +2828 +2308 -112 +60 -100
29. 000000E0 +1760 +1496 +1360 +1244 +1128 +996 +928 +572
30. 000000E8 +1560 +1384 +1976 +1284 +528 +44 +8 -120
31. 000000F0 +1504 +1448 +1264 +1196 +1128 +964 +864 +748
32. 000000F8 +440 +392 +856 +20 +144 +108 +8 -120

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +16 +32 -16 +0 -48 -36 -88 -120
2. 00000008 -152 -152 -216 -252 -288 -332 -376 -408
3. 00000010 +184 +122 +124 +92 +60 -24 -12 -97
4. 00000018 -86 -95 -120 -170 -236 -298 -312 -368
5. 00000020 +480 +372 +200 +184 -24 +516 +544 +486
6. 00000028 +108 -6 -88 -104 -152 -184 -376 -328
7. 00000030 +356 +324 +356 +74 +240 +1016 +1088 +1222
8. 00000038 +972 +152 +4 -159 -162 -190 +470 -282
9. 00000040 +488 +436 +320 +796 +568 +1180 +1664 +1414
10. 00000048 +1740 -90 +1184 +762 +436 +236 +36 +276
11. 00000050 +588 +518 +448 +402 +1284 +1573 +1798 +1550
12. 00000058 +1798 +96 +1882 +1578 +1386 +992 +118 -34
13. 00000060 +624 +600 +384 +392 +1168 +958 +1516 +2406
14. 00000068 +640 +1370 +1876 +1914 +1568 +1124 +232 -184
15. 00000070 +720 +634 +660 +143 +314 +651 +476 +130
16. 00000078 +104 +2384 +1912 +1901 +1858 +1535 +1452 -220
17. 00000080 +752 +892 -856 -330 +1060 +1592 +2124 +2078
18. 00000088 -48 +406 +1980 +2032 +1380 +426 -112 -96
19. 00000090 +756 +710 -600 +222 +1284 +1835 +1954 +996
20. 00000098 +1062 +1632 -22 -74 +34 +705 +112 -72
21. 000000a0 +952 +272 -536 +182 +1028 +1406 +1688 +250
22. 000000a8 +1916 +2026 +2200 +2124 +2048 +1752 -208 -80
23. 000000b0 +1420 -433 -382 -99 +24 +519 +918 +289
24. 000000b8 +2108 +1914 +1864 +1731 +1582 +1025 -204 -60
25. 000000c0 +992 -1202 +28 +612 +236 -480 -268 +872
26. 000000c8 +2012 +1754 +1720 +1610 +1468 +202 +24 -72
27. 000000d0 +808 +1045 +850 +601 +640 +657 +258 +963
28. 000000d8 +1364 +1479 +1514 +1414 +1154 -56 +30 -50
29. 000000e0 +880 +748 +680 +622 +564 +498 +464 +286
30. 000000e8 +780 +692 +988 +642 +264 +22 +4 -60
31. 000000f0 +752 +724 +632 +598 +564 +482 +432 +374
32. 000000f8 +220 +196 +428 +10 +72 +54 +4 -60

##### Level-2 Sub-bands

The following are the dumps of the four level-2 dequantized sub-bands (LL2, LH2, HL2, and HH2). LL2 is reconstructed from level-3 sub-bands. LH2, HL2, and HH2 are generated by dequantizing the corresponding decoded sub-bands, as shown in sections [4.2.4.2](#Section_be70e4f3c03048b79df10e41f2b51251) and [4.2.4.2.1](#Section_a3bc50293a1641ae987664fb91bb88f4).

###### LL2

The LL2 sub-band is the same as that shown in section [4.2.4.3.1.7](#Section_c965cb29245c4d24a332a6d7321da8dc).

###### HL2

The following is a dump of the HL2 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +64 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +64 +0 +0 +64 +0 +0 +64 +0
4. 00000018 +0 +0 +0 +0 +0 -64 +0 +0
5. 00000020 -64 -64 +0 -320 +192 -128 +64 +0
6. 00000028 -64 +0 +0 +0 +0 +64 -256 -64
7. 00000030 +0 +0 +64 -320 -128 +64 +64 +64
8. 00000038 +384 -128 -64 +0 +64 -256 +1344 +384
9. 00000040 +0 +0 -320 -64 +64 +128 +256 +256
10. 00000048 +192 +320 +0 +0 -64 +256 -512 -704
11. 00000050 +0 +0 -128 +512 -64 +0 +192 +64
12. 00000058 -1152 +1024 +64 -64 +128 +0 -256 -256
13. 00000060 +0 +0 -384 +64 -192 -64 +64 +896
14. 00000068 -1472 +64 +0 +64 +0 +64 -192 -64
15. 00000070 +0 +0 +0 -320 -128 +192 -64 +704
16. 00000078 -512 -192 +0 +64 +0 -64 -192 +64
17. 00000080 +0 +896 +64 +0 -64 +0 +0 -960
18. 00000088 -128 +448 +64 -64 +64 -192 -64 -64
19. 00000090 -128 -896 +0 +64 +0 +0 +320 -1152
20. 00000098 +896 -448 -64 -64 -128 +832 +64 -64
21. 000000A0 +192 -896 +64 -128 +128 -64 +704 -1024
22. 000000A8 -128 +128 -64 +64 +0 -576 +0 -64
23. 000000B0 +1216 +64 +64 +64 +0 +128 +128 +512
24. 000000B8 +0 +0 +0 +0 +64 -832 +0 +0
25. 000000C0 -384 -192 -64 +0 -128 -128 +384 +832
26. 000000C8 +0 +0 +0 +64 +576 +64 +0 +0
27. 000000D0 -64 +128 +0 +0 +64 +0 -320 +0
28. 000000D8 +0 -64 +0 +0 +64 +64 +0 +0
29. 000000E0 +0 +0 +0 +0 +0 +0 +64 -128
30. 000000E8 -256 +64 +256 +256 -128 +0 +0 -64
31. 000000F0 +0 +0 +0 +0 +0 +0 +0 +0
32. 000000F8 +64 +0 -256 -64 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +32 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +32 +0 +0 +32 +0 +0 +32 +0
4. 00000018 +0 +0 +0 +0 +0 -32 +0 +0
5. 00000020 -32 -32 +0 -160 +96 -64 +32 +0
6. 00000028 -32 +0 +0 +0 +0 +32 -128 -32
7. 00000030 +0 +0 +32 -160 -64 +32 +32 +32
8. 00000038 +192 -64 -32 +0 +32 -128 +672 +192
9. 00000040 +0 +0 -160 -32 +32 +64 +128 +128
10. 00000048 +96 +160 +0 +0 -32 +128 -256 -352
11. 00000050 +0 +0 -64 +256 -32 +0 +96 +32
12. 00000058 -576 +512 +32 -32 +64 +0 -128 -128
13. 00000060 +0 +0 -192 +32 -96 -32 +32 +448
14. 00000068 -736 +32 +0 +32 +0 +32 -96 -32
15. 00000070 +0 +0 +0 -160 -64 +96 -32 +352
16. 00000078 -256 -96 +0 +32 +0 -32 -96 +32
17. 00000080 +0 +448 +32 +0 -32 +0 +0 -480
18. 00000088 -64 +224 +32 -32 +32 -96 -32 -32
19. 00000090 -64 -448 +0 +32 +0 +0 +160 -576
20. 00000098 +448 -224 -32 -32 -64 +416 +32 -32
21. 000000a0 +96 -448 +32 -64 +64 -32 +352 -512
22. 000000a8 -64 +64 -32 +32 +0 -288 +0 -32
23. 000000b0 +608 +32 +32 +32 +0 +64 +64 +256
24. 000000b8 +0 +0 +0 +0 +32 -416 +0 +0
25. 000000c0 -192 -96 -32 +0 -64 -64 +192 +416
26. 000000c8 +0 +0 +0 +32 +288 +32 +0 +0
27. 000000d0 -32 +64 +0 +0 +32 +0 -160 +0
28. 000000d8 +0 -32 +0 +0 +32 +32 +0 +0
29. 000000e0 +0 +0 +0 +0 +0 +0 +32 -64
30. 000000e8 -128 +32 +128 +128 -64 +0 +0 -32
31. 000000f0 +0 +0 +0 +0 +0 +0 +0 +0
32. 000000f8 +32 +0 -128 -32 +0 +0 +0 +0

###### LH2

The following is a dump of the HL2 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 -128 -64 +64 +64 -64 -192 +0 -128
4. 00000018 -192 +0 +0 +0 +0 +0 +0 +0
5. 00000020 -128 -128 +0 +64 -64 +128 +0 +0
6. 00000028 +0 +64 -64 +64 +0 +64 -512 -64
7. 00000030 +0 +0 +64 -192 +0 +0 -64 +192
8. 00000038 +0 +0 +64 -192 -192 -192 +192 -256
9. 00000040 +0 +0 +0 +64 +0 +0 +192 -192
10. 00000048 +192 -64 +64 +64 +0 +64 -320 +1280
11. 00000050 +0 +0 +0 -64 +128 +448 -64 +0
12. 00000058 +192 -128 +64 +0 +256 -64 +0 +64
13. 00000060 +0 +64 -192 +128 -576 -768 -1216 +640
14. 00000068 -64 +128 +0 -64 +64 +576 -832 +0
15. 00000070 +0 +64 -256 -832 +0 +0 +1024 -448
16. 00000078 +0 +1024 -192 +64 -128 -64 +128 -64
17. 00000080 +0 +0 +0 +64 +64 +0 +0 +256
18. 00000088 -192 -1088 -896 +128 -256 -896 -64 +0
19. 00000090 -64 +64 +0 -64 +0 +64 +64 -128
20. 00000098 +64 +192 +1088 +832 +960 +576 -128 +0
21. 000000A0 +128 -192 +128 +128 -128 +128 +64 -64
22. 000000A8 +64 +0 +0 -128 +320 +448 -64 +0
23. 000000B0 +64 +256 -448 -896 -448 +128 -128 +0
24. 000000B8 +0 +0 +0 +0 +0 -64 +64 +0
25. 000000C0 -192 +1088 +512 -64 +256 +512 -576 +384
26. 000000C8 +0 +64 +0 +0 +0 +0 +0 +0
27. 000000D0 -64 +64 +0 +0 +0 +0 +0 -128
28. 000000D8 -128 +128 +0 +0 +320 -64 +0 +0
29. 000000E0 -64 +0 +0 +0 +0 +0 +0 +0
30. 000000E8 -320 -256 -128 -384 -64 +0 +0 +0
31. 000000F0 +0 +0 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 -448 +64 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 -64 -32 +32 +32 -32 -96 +0 -64
4. 00000018 -96 +0 +0 +0 +0 +0 +0 +0
5. 00000020 -64 -64 +0 +32 -32 +64 +0 +0
6. 00000028 +0 +32 -32 +32 +0 +32 -256 -32
7. 00000030 +0 +0 +32 -96 +0 +0 -32 +96
8. 00000038 +0 +0 +32 -96 -96 -96 +96 -128
9. 00000040 +0 +0 +0 +32 +0 +0 +96 -96
10. 00000048 +96 -32 +32 +32 +0 +32 -160 +640
11. 00000050 +0 +0 +0 -32 +64 +224 -32 +0
12. 00000058 +96 -64 +32 +0 +128 -32 +0 +32
13. 00000060 +0 +32 -96 +64 -288 -384 -608 +320
14. 00000068 -32 +64 +0 -32 +32 +288 -416 +0
15. 00000070 +0 +32 -128 -416 +0 +0 +512 -224
16. 00000078 +0 +512 -96 +32 -64 -32 +64 -32
17. 00000080 +0 +0 +0 +32 +32 +0 +0 +128
18. 00000088 -96 -544 -448 +64 -128 -448 -32 +0
19. 00000090 -32 +32 +0 -32 +0 +32 +32 -64
20. 00000098 +32 +96 +544 +416 +480 +288 -64 +0
21. 000000a0 +64 -96 +64 +64 -64 +64 +32 -32
22. 000000a8 +32 +0 +0 -64 +160 +224 -32 +0
23. 000000b0 +32 +128 -224 -448 -224 +64 -64 +0
24. 000000b8 +0 +0 +0 +0 +0 -32 +32 +0
25. 000000c0 -96 +544 +256 -32 +128 +256 -288 +192
26. 000000c8 +0 +32 +0 +0 +0 +0 +0 +0
27. 000000d0 -32 +32 +0 +0 +0 +0 +0 -64
28. 000000d8 -64 +64 +0 +0 +160 -32 +0 +0
29. 000000e0 -32 +0 +0 +0 +0 +0 +0 +0
30. 000000e8 -160 -128 -64 -192 -32 +0 +0 +0
31. 000000f0 +0 +0 +0 +0 +0 +0 +0 +0

000000f8 +0 +0 -224 +32 +0 +0 +0 +0

###### HH2

The following is a dump of the HH2 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +128 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 -128 +0 -512 -128
7. 00000030 +0 +0 +0 +0 +0 +0 -128 -128
8. 00000038 +128 -128 +0 +0 +0 +0 +256 +256
9. 00000040 +0 +0 +0 +384 +0 +0 +128 +128
10. 00000048 -128 +128 +0 +0 +0 +0 -512 -1024
11. 00000050 +0 +0 +0 -128 +0 +0 -128 -128
12. 00000058 -128 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +0 +0 +0 +128 +128 -128 -384 +384
14. 00000068 +0 +0 +0 -128 +128 +0 +0 +0
15. 00000070 +0 +128 -256 +0 +0 -128 +384 +128
16. 00000078 +256 -128 +0 +0 +0 -256 -128 +0
17. 00000080 +0 +0 +0 +0 +0 +0 +0 +0
18. 00000088 +128 +0 +128 +128 +0 -384 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +128 +0
20. 00000098 -128 +256 +0 -128 +128 +0 +0 +0
21. 000000A0 +128 +128 +0 +0 +0 +0 +0 -128
22. 000000A8 +0 +0 +0 -128 +0 -256 +0 +0
23. 000000B0 +256 +256 +128 -128 +0 -128 +0 +0
24. 000000B8 +0 +0 +0 +0 +0 +0 +0 +0
25. 000000C0 -256 +256 +0 +0 +128 -256 +128 -128
26. 000000C8 -128 +0 +0 +0 +0 +0 +0 +0
27. 000000D0 +0 +0 +0 +0 +0 +0 +128 +0
28. 000000D8 +0 +0 +0 -128 -256 +0 +0 +0
29. 000000E0 +0 +0 +0 +0 +0 +0 +0 +0
30. 000000E8 +128 +128 -128 -128 +0 +0 +0 +0
31. 000000F0 +0 +0 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 +128 +0 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +64 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 -64 +0 -256 -64
7. 00000030 +0 +0 +0 +0 +0 +0 -64 -64
8. 00000038 +64 -64 +0 +0 +0 +0 +128 +128
9. 00000040 +0 +0 +0 +192 +0 +0 +64 +64
10. 00000048 -64 +64 +0 +0 +0 +0 -256 -512
11. 00000050 +0 +0 +0 -64 +0 +0 -64 -64
12. 00000058 -64 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +0 +0 +0 +64 +64 -64 -192 +192
14. 00000068 +0 +0 +0 -64 +64 +0 +0 +0
15. 00000070 +0 +64 -128 +0 +0 -64 +192 +64
16. 00000078 +128 -64 +0 +0 +0 -128 -64 +0
17. 00000080 +0 +0 +0 +0 +0 +0 +0 +0
18. 00000088 +64 +0 +64 +64 +0 -192 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +64 +0
20. 00000098 -64 +128 +0 -64 +64 +0 +0 +0
21. 000000a0 +64 +64 +0 +0 +0 +0 +0 -64
22. 000000a8 +0 +0 +0 -64 +0 -128 +0 +0
23. 000000b0 +128 +128 +64 -64 +0 -64 +0 +0
24. 000000b8 +0 +0 +0 +0 +0 +0 +0 +0
25. 000000c0 -128 +128 +0 +0 +64 -128 +64 -64
26. 000000c8 -64 +0 +0 +0 +0 +0 +0 +0
27. 000000d0 +0 +0 +0 +0 +0 +0 +64 +0
28. 000000d8 +0 +0 +0 -64 -128 +0 +0 +0
29. 000000e0 +0 +0 +0 +0 +0 +0 +0 +0
30. 000000e8 +64 +64 -64 -64 +0 +0 +0 +0
31. 000000f0 +0 +0 +0 +0 +0 +0 +0 +0
32. 000000f8 +0 +0 +64 +0 +0 +0 +0 +0

###### Inverse DWT-X (LL2 – HL2)

The following is a dump of the L1 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -32 +128 +32 +0 -32 -16 +0 -48
2. 00000008 -96 -84 -72 -124 -176 -208 -240 -272
3. 00000010 -304 -304 -304 -368 -432 -468 -504 -540
4. 00000018 -576 -620 -664 -708 -752 -784 -816 -816
5. 00000020 +304 +386 +212 +230 +248 +200 +152 +248
6. 00000028 +88 +20 -48 -52 -56 -13 -226 -199
7. 00000030 -172 -181 -190 -215 -240 -290 -340 -406
8. 00000038 -472 -518 -564 -706 -592 -664 -736 -736
9. 00000040 +1024 +788 +808 +492 +432 +480 +528 -368
10. 00000048 +16 +892 +1000 +804 +1120 +1158 +940 +594
11. 00000050 +248 +6 +20 -78 -176 -192 -208 -256
12. 00000058 -304 -352 -400 -400 -656 -1088 -496 -624
13. 00000060 +712 +680 +648 +664 +680 +606 +276 -150
14. 00000068 +704 +1128 +2064 +2216 +2112 +2374 +2380 +2178
15. 00000070 +1720 +1716 +176 -116 +104 -219 -286 -321
16. 00000078 -356 -192 -284 -456 +396 +2172 -1428 -660
17. 00000080 +976 +924 +872 +836 +800 +652 +1784 +1332
18. 00000088 +1136 +1828 +2264 +2956 +3136 +3366 +2572 +3426
19. 00000090 +3256 +1794 -436 +1526 +2208 +1866 +1524 +1214
20. 00000098 +904 +512 +376 +800 +200 -344 +1160 -248
21. 000000A0 +1176 +1106 +1036 +998 +960 +530 +612 +2502
22. 000000A8 +2344 +2633 +3178 +3339 +3500 +3620 +2972 +3684
23. 000000B0 +4140 -106 +256 +3786 +3220 +3316 +3156 +2820
24. 000000B8 +2740 +2586 +1920 +1142 +364 -236 +188 -324
25. 000000C0 +1248 +1224 +1200 +1080 +960 +184 +944 +1800
26. 000000C8 +2400 +1838 +2044 +2410 +3032 +3810 +4332 +4742
27. 000000D0 +1568 -438 +3444 +3710 +3720 +3758 +3796 +3578
28. 000000D8 +3104 +2660 +2216 +1500 +528 -240 -240 -368
29. 000000E0 +1440 +1354 +1268 +1294 +1320 +883 +446 +9
30. 000000E8 +852 +805 +1270 +1463 +888 +286 -60 +1434
31. 000000F0 +112 +1592 +5120 +4136 +3920 +3845 +3770 +3855
32. 000000F8 +3684 +3393 +3102 +2939 +3032 +944 -376 -248
33. 00000100 +1504 +1420 +1336 +1364 -2192 -1314 -692 +730
34. 00000108 +2152 +2556 +3216 +3732 +4248 +4442 +4636 +622
35. 00000110 +448 +294 +652 +3074 +3704 +4012 +4064 +3284
36. 00000118 +2760 +1966 +916 +26 -96 -240 -128 -256
37. 00000120 +1640 +1530 +1932 -1202 -752 -170 +412 +1602
38. 00000128 +2536 +3103 +3670 +3709 +3748 +3718 +2408 +26
39. 00000130 +2252 +4438 +3040 +730 +212 -64 -84 -88
40. 00000138 +164 +355 +1058 +2081 -224 -56 -144 -272
41. 00000140 +1712 +1688 +896 -1672 -656 -2 +396 +970
42. 00000148 +2056 +2674 +2780 +2790 +3056 +3266 +660 +486
43. 00000150 +4408 +3974 +4052 +4466 +4368 +4180 +4248 +4284
44. 00000158 +4064 +3928 +3792 +680 -128 -128 -128 -256
45. 00000160 +1624 +2491 -1506 -1039 -828 -417 -262 +5
46. 00000168 +16 +495 +974 +1597 +1708 +1239 +258 +3133
47. 00000170 +3960 +3894 +3828 +3778 +3728 +3595 +3462 +3297
48. 00000178 +3132 +2911 +2434 -443 +8 -56 -120 -120
49. 00000180 +2368 -642 -2116 -1350 +184 +592 +1256 +896
50. 00000188 +536 -404 -832 -1004 -664 +1004 +1136 +4036
51. 00000190 +3608 +3558 +3508 +3474 +3440 +3314 +3188 +3030
52. 00000198 +2616 +2502 +84 +178 +16 -64 -144 -144
53. 000001A0 +1680 +1741 +2058 +2103 +1636 +1419 +1202 +1225
54. 000001A8 +1248 +1393 +1282 +979 +676 +741 +2086 +2407
55. 000001B0 +2728 +2859 +2990 +2897 +3060 +2944 +2828 +2552
56. 000001B8 +2276 +1178 -176 +54 +28 -36 -100 -100
57. 000001C0 +1760 +1628 +1496 +1428 +1360 +1302 +1244 +1186
58. 000001C8 +1128 +1062 +996 +946 +896 +878 +604 +922
59. 000001D0 +1752 +1104 +1480 +1776 +1816 +1934 +1028 +1258
60. 000001D8 +464 +30 +108 +58 +8 -40 -88 -216
61. 000001E0 +1504 +1476 +1448 +1356 +1264 +1230 +1196 +1162
62. 000001E8 +1128 +1046 +964 +914 +864 +806 +748 +578
63. 000001F0 +408 +512 +360 +672 +984 +70 +180 +50
64. 000001F8 +176 +142 +108 +58 +8 -56 -120 -120

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -16 +64 +16 +0 -16 -8 +0 -24
2. 00000008 -48 -42 -36 -62 -88 -104 -120 -136
3. 00000010 -152 -152 -152 -184 -216 -234 -252 -270
4. 00000018 -288 -310 -332 -354 -376 -392 -408 -408
5. 00000020 +152 +193 +106 +115 +124 +100 +76 +124
6. 00000028 +44 +10 -24 -26 -28 -6 -113 -99
7. 00000030 -86 -90 -95 -107 -120 -145 -170 -203
8. 00000038 -236 -259 -282 -353 -296 -332 -368 -368
9. 00000040 +512 +394 +404 +246 +216 +240 +264 -184
10. 00000048 +8 +446 +500 +402 +560 +579 +470 +297
11. 00000050 +124 +3 +10 -39 -88 -96 -104 -128
12. 00000058 -152 -176 -200 -200 -328 -544 -248 -312
13. 00000060 +356 +340 +324 +332 +340 +303 +138 -75
14. 00000068 +352 +564 +1032 +1108 +1056 +1187 +1190 +1089
15. 00000070 +860 +858 +88 -58 +52 -109 -143 -160
16. 00000078 -178 -96 -142 -228 +198 +1086 -714 -330
17. 00000080 +488 +462 +436 +418 +400 +326 +892 +666
18. 00000088 +568 +914 +1132 +1478 +1568 +1683 +1286 +1713
19. 00000090 +1628 +897 -218 +763 +1104 +933 +762 +607
20. 00000098 +452 +256 +188 +400 +100 -172 +580 -124
21. 000000a0 +588 +553 +518 +499 +480 +265 +306 +1251
22. 000000a8 +1172 +1316 +1589 +1669 +1750 +1810 +1486 +1842
23. 000000b0 +2070 -53 +128 +1893 +1610 +1658 +1578 +1410
24. 000000b8 +1370 +1293 +960 +571 +182 -118 +94 -162
25. 000000c0 +624 +612 +600 +540 +480 +92 +472 +900
26. 000000c8 +1200 +919 +1022 +1205 +1516 +1905 +2166 +2371
27. 000000d0 +784 -219 +1722 +1855 +1860 +1879 +1898 +1789
28. 000000d8 +1552 +1330 +1108 +750 +264 -120 -120 -184
29. 000000e0 +720 +677 +634 +647 +660 +441 +223 +4
30. 000000e8 +426 +402 +635 +731 +444 +143 -30 +717
31. 000000f0 +56 +796 +2560 +2068 +1960 +1922 +1885 +1927
32. 000000f8 +1842 +1696 +1551 +1469 +1516 +472 -188 -124
33. 00000100 +752 +710 +668 +682 -1096 -657 -346 +365
34. 00000108 +1076 +1278 +1608 +1866 +2124 +2221 +2318 +311
35. 00000110 +224 +147 +326 +1537 +1852 +2006 +2032 +1642
36. 00000118 +1380 +983 +458 +13 -48 -120 -64 -128
37. 00000120 +820 +765 +966 -601 -376 -85 +206 +801
38. 00000128 +1268 +1551 +1835 +1854 +1874 +1859 +1204 +13
39. 00000130 +1126 +2219 +1520 +365 +106 -32 -42 -44
40. 00000138 +82 +177 +529 +1040 -112 -28 -72 -136
41. 00000140 +856 +844 +448 -836 -328 -1 +198 +485
42. 00000148 +1028 +1337 +1390 +1395 +1528 +1633 +330 +243
43. 00000150 +2204 +1987 +2026 +2233 +2184 +2090 +2124 +2142
44. 00000158 +2032 +1964 +1896 +340 -64 -64 -64 -128
45. 00000160 +812 +1245 -753 -519 -414 -208 -131 +2
46. 00000168 +8 +247 +487 +798 +854 +619 +129 +1566
47. 00000170 +1980 +1947 +1914 +1889 +1864 +1797 +1731 +1648
48. 00000178 +1566 +1455 +1217 -221 +4 -28 -60 -60
49. 00000180 +1184 -321 -1058 -675 +92 +296 +628 +448
50. 00000188 +268 -202 -416 -502 -332 +502 +568 +2018
51. 00000190 +1804 +1779 +1754 +1737 +1720 +1657 +1594 +1515
52. 00000198 +1308 +1251 +42 +89 +8 -32 -72 -72
53. 000001a0 +840 +870 +1029 +1051 +818 +709 +601 +612
54. 000001a8 +624 +696 +641 +489 +338 +370 +1043 +1203
55. 000001b0 +1364 +1429 +1495 +1448 +1530 +1472 +1414 +1276
56. 000001b8 +1138 +589 -88 +27 +14 -18 -50 -50
57. 000001c0 +880 +814 +748 +714 +680 +651 +622 +593
58. 000001c8 +564 +531 +498 +473 +448 +439 +302 +461
59. 000001d0 +876 +552 +740 +888 +908 +967 +514 +629
60. 000001d8 +232 +15 +54 +29 +4 -20 -44 -108
61. 000001e0 +752 +738 +724 +678 +632 +615 +598 +581
62. 000001e8 +564 +523 +482 +457 +432 +403 +374 +289
63. 000001f0 +204 +256 +180 +336 +492 +35 +90 +25
64. 000001f8 +88 +71 +54 +29 +4 -28 -60 -60

###### Inverse DWT-X (LH2 - HH2)

The following is a dump of the H1 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 -128 -96 -64 +0 +64 +32 +0 +192
6. 00000028 -128 -160 -192 -96 +0 -64 -128 -160
7. 00000030 -192 -96 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 -128 -128 -128 -64 +0 +32 +64 +0
10. 00000048 -64 +32 +128 +64 +0 +0 +0 +0
11. 00000050 +0 +32 +64 +0 -64 +0 +64 +64
12. 00000058 +64 -160 +128 -64 -256 -1024 +256 +0
13. 00000060 +0 +0 +0 +32 +64 -64 -192 -96
14. 00000068 +0 +0 +0 +0 +0 -96 +320 -96
15. 00000070 +0 +256 +0 -192 +128 -32 -192 -192
16. 00000078 -192 -192 -192 -64 +64 +288 -512 +0
17. 00000080 +0 +0 +0 +0 +0 -64 -128 +608
18. 00000088 -192 -96 +0 +64 +128 +160 -320 +192
19. 00000090 +192 -192 -64 +224 +0 +32 +64 +32
20. 00000098 +0 +32 +64 +0 -64 -32 +2048 +0
21. 000000A0 +0 +0 +0 +0 +0 +0 +0 -160
22. 000000A8 +192 +320 +448 +224 +0 -192 +128 -32
23. 000000B0 +320 -128 -64 +0 +64 +32 +0 +128
24. 000000B8 +256 +96 -64 -32 +0 +32 +64 +64
25. 000000C0 +0 +32 +64 -64 -192 -64 +64 -64
26. 000000C8 -704 -480 -768 -1120 -960 -928 +640 +960
27. 000000D0 -256 -64 +128 +64 +0 +0 +0 -224
28. 000000D8 +64 +544 +512 -160 -832 -416 +0 +0
29. 000000E0 +0 +0 +0 +160 -192 -960 -704 -352
30. 000000E8 +0 +32 +64 +224 +896 +864 -704 -192
31. 000000F0 -192 +896 +960 +160 -128 -32 +64 -32
32. 000000F8 -128 -32 +64 -320 +320 -96 +0 +0
33. 00000100 +0 +0 +0 +0 +0 +32 +64 +64
34. 00000108 +64 +32 +0 +0 +0 +128 +256 +0
35. 00000110 -256 -448 -1152 -1056 -960 -224 +0 +96
36. 00000118 -320 -512 -704 -1056 +128 +64 +0 +0
37. 00000120 -64 +0 +64 +32 +0 -32 -64 -32
38. 00000128 +0 +32 +64 +32 +0 +160 -192 -32
39. 00000130 +128 -128 +128 +1056 +960 +928 +896 +672
40. 00000138 +960 +992 +512 +192 -128 -64 +0 +0
41. 00000140 +0 +96 -320 +128 +64 +96 +128 +0
42. 00000148 -128 +0 +128 +96 +64 +32 +0 -192
43. 00000150 +128 +64 +0 +0 +0 -32 -64 -96
44. 00000158 +384 +480 +576 -192 +64 +32 +0 +0
45. 00000160 -192 +416 +0 +192 -640 -512 -896 -896
46. 00000168 -384 -96 +192 -192 -64 -32 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 +0
48. 00000178 +0 -32 -64 +0 +64 +32 +0 +0
49. 00000180 +64 +64 +1088 +1248 +384 +160 -64 +64
50. 00000188 +192 +640 +576 -480 -512 +192 +384 +0
51. 00000190 +128 -128 +128 +64 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 +0 +0 +0
53. 000001A0 -64 +0 +64 +32 +0 +0 +0 +0
54. 000001A8 +0 +0 +0 -32 -64 +128 -192 -160
55. 000001B0 -128 +0 +128 +64 +0 +32 +64 +32
56. 000001B8 +512 -224 +64 +32 +0 +0 +0 +0
57. 000001C0 -64 -32 +0 +0 +0 +0 +0 +0
58. 000001C8 +0 +0 +0 +0 +0 +0 +0 -192
59. 000001D0 -384 -128 -384 +0 -128 -448 -256 -384
60. 000001D8 +0 +0 +0 +0 +0 +0 +0 +0
61. 000001E0 +0 +0 +0 +0 +0 +0 +0 +0
62. 000001E8 +0 +0 +0 +0 +0 +0 +0 +0
63. 000001F0 +0 +0 +0 -256 -512 +0 +0 +0
64. 000001F8 +0 +0 +0 +0 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 -64 -48 -32 +0 +32 +16 +0 +96
6. 00000028 -64 -80 -96 -48 +0 -32 -64 -80
7. 00000030 -96 -48 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 -64 -64 -64 -32 +0 +16 +32 +0
10. 00000048 -32 +16 +64 +32 +0 +0 +0 +0
11. 00000050 +0 +16 +32 +0 -32 +0 +32 +32
12. 00000058 +32 -80 +64 -32 -128 -512 +128 +0
13. 00000060 +0 +0 +0 +16 +32 -32 -96 -48
14. 00000068 +0 +0 +0 +0 +0 -48 +160 -48
15. 00000070 +0 +128 +0 -96 +64 -16 -96 -96
16. 00000078 -96 -96 -96 -32 +32 +144 -256 +0
17. 00000080 +0 +0 +0 +0 +0 -32 -64 +304
18. 00000088 -96 -48 +0 +32 +64 +80 -160 +96
19. 00000090 +96 -96 -32 +112 +0 +16 +32 +16
20. 00000098 +0 +16 +32 +0 -32 -16 +1024 +0
21. 000000a0 +0 +0 +0 +0 +0 +0 +0 -80
22. 000000a8 +96 +160 +224 +112 +0 -96 +64 -16
23. 000000b0 +160 -64 -32 +0 +32 +16 +0 +64
24. 000000b8 +128 +48 -32 -16 +0 +16 +32 +32
25. 000000c0 +0 +16 +32 -32 -96 -32 +32 -32
26. 000000c8 -352 -240 -384 -560 -480 -464 +320 +480
27. 000000d0 -128 -32 +64 +32 +0 +0 +0 -112
28. 000000d8 +32 +272 +256 -80 -416 -208 +0 +0
29. 000000e0 +0 +0 +0 +80 -96 -480 -352 -176
30. 000000e8 +0 +16 +32 +112 +448 +432 -352 -96
31. 000000f0 -96 +448 +480 +80 -64 -16 +32 -16
32. 000000f8 -64 -16 +32 -160 +160 -48 +0 +0
33. 00000100 +0 +0 +0 +0 +0 +16 +32 +32
34. 00000108 +32 +16 +0 +0 +0 +64 +128 +0
35. 00000110 -128 -224 -576 -528 -480 -112 +0 +48
36. 00000118 -160 -256 -352 -528 +64 +32 +0 +0
37. 00000120 -32 +0 +32 +16 +0 -16 -32 -16
38. 00000128 +0 +16 +32 +16 +0 +80 -96 -16
39. 00000130 +64 -64 +64 +528 +480 +464 +448 +336
40. 00000138 +480 +496 +256 +96 -64 -32 +0 +0
41. 00000140 +0 +48 -160 +64 +32 +48 +64 +0
42. 00000148 -64 +0 +64 +48 +32 +16 +0 -96
43. 00000150 +64 +32 +0 +0 +0 -16 -32 -48
44. 00000158 +192 +240 +288 -96 +32 +16 +0 +0
45. 00000160 -96 +208 +0 +96 -320 -256 -448 -448
46. 00000168 -192 -48 +96 -96 -32 -16 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 +0
48. 00000178 +0 -16 -32 +0 +32 +16 +0 +0
49. 00000180 +32 +32 +544 +624 +192 +80 -32 +32
50. 00000188 +96 +320 +288 -240 -256 +96 +192 +0
51. 00000190 +64 -64 +64 +32 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 +0 +0 +0
53. 000001a0 -32 +0 +32 +16 +0 +0 +0 +0
54. 000001a8 +0 +0 +0 -16 -32 +64 -96 -80
55. 000001b0 -64 +0 +64 +32 +0 +16 +32 +16
56. 000001b8 +256 -112 +32 +16 +0 +0 +0 +0
57. 000001c0 -32 -16 +0 +0 +0 +0 +0 +0
58. 000001c8 +0 +0 +0 +0 +0 +0 +0 -96
59. 000001d0 -192 -64 -192 +0 -64 -224 -128 -192
60. 000001d8 +0 +0 +0 +0 +0 +0 +0 +0
61. 000001e0 +0 +0 +0 +0 +0 +0 +0 +0
62. 000001e8 +0 +0 +0 +0 +0 +0 +0 +0
63. 000001f0 +0 +0 +0 -128 -256 +0 +0 +0
64. 000001f8 +0 +0 +0 +0 +0 +0 +0 +0

###### Inverse DWT-Y (L1 – H1)

The following is a dump of the LL1 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -32 +128 +32 +0 -32 -16 +0 -48
2. 00000008 -96 -84 -72 -124 -176 -208 -240 -272
3. 00000010 -304 -304 -304 -368 -432 -468 -504 -540
4. 00000018 -576 -620 -664 -708 -752 -784 -816 -816
5. 00000020 +168 +281 +138 +115 +92 +84 +76 +52
6. 00000028 +28 +8 -12 -64 -116 -95 -201 -195
7. 00000030 -190 -218 -247 -291 -336 -379 -422 -473
8. 00000038 -524 -569 -614 -707 -672 -724 -776 -776
9. 00000040 +368 +434 +244 +230 +216 +184 +152 +152
10. 00000048 +152 +100 +48 -4 -56 +19 -162 -119
11. 00000050 -76 -133 -190 -215 -240 -290 -340 -406
12. 00000058 -472 -518 -564 -706 -592 -664 -736 -736
13. 00000060 +504 +475 +446 +377 +436 +380 +324 +228
14. 00000068 -124 +208 +156 +216 +532 +476 +165 -42
15. 00000070 -250 -239 -101 -146 -192 -241 -290 -347
16. 00000078 -404 -395 -514 -537 -560 -620 -680 -680
17. 00000080 +1152 +900 +904 +524 +400 +448 +496 -464
18. 00000088 +112 +956 +1032 +820 +1120 +1190 +1004 +674
19. 00000090 +344 +38 -12 -78 -144 -192 -240 -288
20. 00000098 -336 -272 -464 -368 -528 -576 -624 -624
21. 000000A0 +708 +566 +552 +474 +524 +599 +546 -283
22. 000000A8 +296 +1098 +1772 +1630 +1616 +1806 +1612 +1450
23. 000000B0 +1032 +869 +194 -49 -164 -197 -103 -144
24. 000000B8 -186 -464 -102 -508 -530 -1066 -450 -642
25. 000000C0 +776 +744 +712 +680 +648 +622 +340 -102
26. 000000C8 +736 +1112 +2000 +2184 +2112 +2422 +2220 +2226
27. 000000D0 +1720 +1572 +144 -20 +72 -203 -222 -257
28. 000000D8 -292 -16 -252 -392 +492 +2540 -1300 -660
29. 000000E0 +876 +834 +792 +814 +836 +541 +758 +295
30. 000000E8 +984 +1494 +2132 +2554 +2592 +2686 +3036 +2610
31. 000000F0 +2440 +2179 -130 +361 +1364 +768 +299 +135
32. 000000F8 -30 -96 -290 +92 +474 +1610 -1478 -454
33. 00000100 +976 +924 +872 +820 +768 +716 +1944 +1076
34. 00000108 +1232 +1876 +2264 +2924 +3072 +3334 +2572 +3378
35. 00000110 +3160 +1762 -404 +1510 +2144 +1866 +1588 +1294
36. 00000118 +1000 +592 +440 +832 +200 -472 +392 -248
37. 00000120 +1076 +1015 +954 +909 +864 +511 +1054 +2893
38. 00000128 +1404 +2006 +2609 +3187 +3510 +3805 +2180 +3875
39. 00000130 +3906 +524 -170 +3040 +2666 +2639 +2484 +2081
40. 00000138 +1806 +1621 +1308 +995 +170 -418 +3858 -302
41. 00000140 +1176 +1106 +1036 +998 +960 +562 +676 +2278
42. 00000148 +2344 +2521 +2954 +3195 +3436 +3636 +3068 +3604
43. 00000150 +3884 +54 +320 +3674 +3188 +3284 +3124 +2740
44. 00000158 +2612 +2522 +1920 +1158 +396 -236 -868 -356
45. 00000160 +1212 +1157 +1102 +1055 +1008 +389 +794 +1775
46. 00000168 +2884 +2859 +3475 +3474 +3474 +3619 +3764 +3877
47. 00000170 +3350 -400 +1738 +3676 +3566 +3577 +3460 +3439
48. 00000178 +3290 +2623 +1828 +1313 +670 -78 -442 -250
49. 00000180 +1248 +1208 +1168 +1112 +1056 +216 +912 +1912
50. 00000188 +2656 +1918 +2204 +2858 +3512 +4370 +3948 +4278
51. 00000190 +1536 -342 +3412 +3678 +3688 +3742 +3796 +3626
52. 00000198 +2944 +2340 +1992 +1596 +944 -48 -272 -400
53. 000001A0 +1344 +1337 +1330 +1051 +900 +677 +967 +936
54. 000001A8 +522 +513 +377 +144 +296 +488 +3240 +4584
55. 000001B0 +424 +289 +4250 +3979 +3836 +3801 +3767 +3356
56. 000001B8 +3458 +3826 +3427 +2067 +452 -256 -324 -324
57. 000001C0 +1440 +1338 +1236 +1246 +1512 +1395 +766 +217
58. 000001C8 +1204 +1029 +1622 +1911 +920 +318 -28 +1050
59. 000001D0 +336 +1176 +4576 +4024 +3984 +3861 +3738 +3983
60. 000001D8 +3716 +3137 +2814 +3179 +3288 +1200 -376 -248
61. 000001E0 +1472 +1379 +1286 +1585 -676 -1648 -1211 -159
62. 000001E8 +1662 +1840 +2531 +3213 +4152 +3860 +1008 +500
63. 000001F0 +120 +2415 +4582 +4093 +3860 +3936 +4013 +3553
64. 000001F8 +3094 +2623 +2153 +1306 +2124 +296 -252 -252
65. 00000200 +1504 +1420 +1336 +1284 -2096 -850 -372 +874
66. 00000208 +2120 +2524 +3184 +3620 +3800 +3946 +4860 +718
67. 00000210 +672 +70 +748 +3522 +4248 +4140 +4032 +3252
68. 00000218 +2984 +2238 +1236 +714 -320 -224 -128 -256
69. 00000220 +1588 +1475 +1618 +33 -1424 -446 +148 +1358
70. 00000228 +2440 +2861 +3411 +3656 +3774 +4016 +4130 +380
71. 00000230 +982 +1502 -154 +14 +310 +1414 +1750 +1582
72. 00000238 +774 +152 -213 -499 -16 -12 -136 -264
73. 00000240 +1672 +1530 +1900 -1218 -752 -170 +412 +1586
74. 00000248 +2504 +3071 +3638 +3693 +3748 +3574 +2376 +42
75. 00000250 +2316 +4726 +3552 +730 +212 -416 -532 -472
76. 00000258 -156 +115 +1154 +2513 -224 -56 -144 -272
77. 00000260 +1580 +1585 +1590 -1421 -720 -166 +260 +1222
78. 00000268 +2312 +2928 +3289 +3273 +3386 +3692 +1182 +256
79. 00000270 +3554 +4110 +4026 +4446 +3970 +3514 +3442 +3106
80. 00000278 +3538 +3637 +3225 +1980 -416 -212 -136 -264
81. 00000280 +1744 +1640 +1024 -1752 -688 -34 +364 +986
82. 00000288 +2120 +2658 +2684 +2726 +3024 +3170 +756 +598
83. 00000290 +4280 +4006 +3988 +3938 +3888 +3732 +3832 +3996
84. 00000298 +3392 +3192 +3248 +680 -96 -112 -128 -256
85. 000002A0 +1732 +2129 -801 -1219 -486 +71 +499 +719
86. 000002A8 +940 +1600 +2005 +2377 +2494 +2268 +507 +1529
87. 000002B0 +4344 +4062 +3908 +3858 +3808 +3607 +3535 +3478
88. 000002B8 +3934 +3899 +3865 -217 +52 -36 -124 -188
89. 000002C0 +1720 +2235 -1346 -1199 -540 -209 +122 +453
90. 000002C8 +272 +543 +814 +1645 +1708 +1239 +258 +3229
91. 000002D0 +3896 +3862 +3828 +3778 +3728 +3611 +3494 +3345
92. 000002D8 +2940 +2687 +2178 -347 -56 -88 -120 -120
93. 000002E0 +1692 +1508 -2003 -1250 -1394 -744 -863 -910
94. 000002E8 -316 -259 +183 +104 +538 +1017 +601 +3632
95. 000002F0 +3720 +3742 +3636 +3610 +3584 +3462 +3341 +3187
96. 000002F8 +2778 +2538 +1019 -84 +92 -20 -132 -132
97. 00000300 +2432 -882 -2660 -2070 +312 +768 +1736 +1312
98. 00000308 +632 -676 -1216 -668 -376 +924 +944 +4036
99. 00000310 +3544 +3622 +3444 +3442 +3440 +3314 +3188 +3030
100. 00000318 +2616 +2518 +116 +178 -16 -80 -144 -144
101. 00000320 +2184 +541 +1587 +2192 +1646 +1373 +1357 +1380
102. 00000328 +1276 +1478 +1041 -677 -730 +1136 +2235 +3261
103. 00000330 +3392 +3016 +3409 +3265 +3250 +3121 +2992 +2783
104. 00000338 +2318 +1904 -46 +108 +6 -58 -122 -122
105. 00000340 +1680 +1709 +1482 +1463 +1444 +1339 +1234 +1193
106. 00000348 +1152 +1073 +994 +1235 +964 +581 +1990 +2487
107. 00000350 +2728 +2923 +2862 +2833 +3060 +2928 +2796 +2536
108. 00000358 +2020 +1290 -208 +38 +28 -36 -100 -100
109. 00000360 +1624 +1676 +1601 +1501 +1402 +1320 +1239 +1189
110. 00000368 +1140 +1067 +995 +1034 +818 +953 +961 +1472
111. 00000370 +2112 +2045 +2491 +2416 +2470 +2599 +2088 +2049
112. 00000378 +2138 +268 +62 +104 +18 -38 -94 -158
113. 00000380 +1824 +1644 +1464 +1412 +1360 +1302 +1244 +1186
114. 00000388 +1128 +1062 +996 +962 +928 +814 +700 +1098
115. 00000390 +2008 +1168 +1608 +1744 +1880 +2142 +1124 +1434
116. 00000398 +208 +142 +76 +42 +8 -40 -88 -216
117. 000003A0 +1552 +1504 +1456 +1384 +1312 +1266 +1220 +1174
118. 000003A8 +1128 +1054 +980 +938 +896 +810 +724 +502
119. 000003B0 +536 +616 +312 +1272 +1336 +322 +204 +70
120. 000003B8 +192 +142 +92 +50 +8 -48 -104 -168
121. 000003C0 +1536 +1492 +1448 +1356 +1264 +1230 +1196 +1162
122. 000003C8 +1128 +1046 +964 +914 +864 +806 +748 +674
123. 000003D0 +600 +576 +552 +800 +1304 +294 +308 +242
124. 000003D8 +176 +142 +108 +58 +8 -56 -120 -120
125. 000003E0 +1536 +1492 +1448 +1356 +1264 +1230 +1196 +1162
126. 000003E8 +1128 +1046 +964 +914 +864 +806 +748 +674
127. 000003F0 +600 +576 +552 +288 +280 +294 +308 +242
128. 000003F8 +176 +142 +108 +58 +8 -56 -120 -120
129. 00000400 +0 +128 +0 +0 +0 +0 +0 +0
130. 00000408 +0 +0 +0 +0 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -16 +64 +16 +0 -16 -8 +0 -24
2. 00000008 -48 -42 -36 -62 -88 -104 -120 -136
3. 00000010 -152 -152 -152 -184 -216 -234 -252 -270
4. 00000018 -288 -310 -332 -354 -376 -392 -408 -408
5. 00000020 +84 +140 +69 +57 +46 +42 +38 +26
6. 00000028 +14 +4 -6 -32 -58 -47 -100 -97
7. 00000030 -95 -109 -123 -145 -168 -189 -211 -236
8. 00000038 -262 -284 -307 -353 -336 -362 -388 -388
9. 00000040 +184 +217 +122 +115 +108 +92 +76 +76
10. 00000048 +76 +50 +24 -2 -28 +9 -81 -59
11. 00000050 -38 -66 -95 -107 -120 -145 -170 -203
12. 00000058 -236 -259 -282 -353 -296 -332 -368 -368
13. 00000060 +252 +237 +223 +188 +218 +190 +162 +114
14. 00000068 -62 +104 +78 +108 +266 +238 +82 -21
15. 00000070 -125 -119 -50 -73 -96 -120 -145 -173
16. 00000078 -202 -197 -257 -268 -280 -310 -340 -340
17. 00000080 +576 +450 +452 +262 +200 +224 +248 -232
18. 00000088 +56 +478 +516 +410 +560 +595 +502 +337
19. 00000090 +172 +19 -6 -39 -72 -96 -120 -144
20. 00000098 -168 -136 -232 -184 -264 -288 -312 -312
21. 000000A0 +354 +283 +276 +237 +262 +299 +273 -141
22. 000000A8 +148 +549 +886 +815 +808 +903 +806 +725
23. 000000B0 +516 +434 +97 -24 -82 -98 -51 -72
24. 000000B8 -93 -232 -51 -254 -265 -533 -225 -321
25. 000000C0 +388 +372 +356 +340 +324 +311 +170 -51
26. 000000C8 +368 +556 +1000 +1092 +1056 +1211 +1110 +1113
27. 000000D0 +860 +786 +72 -10 +36 -101 -111 -128
28. 000000D8 -146 -8 -126 -196 +246 +1270 -650 -330
29. 000000E0 +438 +417 +396 +407 +418 +270 +379 +147
30. 000000E8 +492 +747 +1066 +1277 +1296 +1343 +1518 +1305
31. 000000F0 +1220 +1089 -65 +180 +682 +384 +149 +67
32. 000000F8 -15 -48 -145 +46 +237 +805 -739 -227
33. 00000100 +488 +462 +436 +410 +384 +358 +972 +538
34. 00000108 +616 +938 +1132 +1462 +1536 +1667 +1286 +1689
35. 00000110 +1580 +881 -202 +755 +1072 +933 +794 +647
36. 00000118 +500 +296 +220 +416 +100 -236 +196 -124
37. 00000120 +538 +507 +477 +454 +432 +255 +527 +1446
38. 00000128 +702 +1003 +1304 +1593 +1755 +1902 +1090 +1937
39. 00000130 +1953 +262 -85 +1520 +1333 +1319 +1242 +1040
40. 00000138 +903 +810 +654 +497 +85 -209 +1929 -151
41. 00000140 +588 +553 +518 +499 +480 +281 +338 +1139
42. 00000148 +1172 +1260 +1477 +1597 +1718 +1818 +1534 +1802
43. 00000150 +1942 +27 +160 +1837 +1594 +1642 +1562 +1370
44. 00000158 +1306 +1261 +960 +579 +198 -118 -434 -178
45. 00000160 +606 +578 +551 +527 +504 +194 +397 +887
46. 00000168 +1442 +1429 +1737 +1737 +1737 +1809 +1882 +1938
47. 00000170 +1675 -200 +869 +1838 +1783 +1788 +1730 +1719
48. 00000178 +1645 +1311 +914 +656 +335 -39 -221 -125
49. 00000180 +624 +604 +584 +556 +528 +108 +456 +956
50. 00000188 +1328 +959 +1102 +1429 +1756 +2185 +1974 +2139
51. 00000190 +768 -171 +1706 +1839 +1844 +1871 +1898 +1813
52. 00000198 +1472 +1170 +996 +798 +472 -24 -136 -200
53. 000001A0 +672 +668 +665 +525 +450 +338 +483 +468
54. 000001A8 +261 +256 +188 +72 +148 +244 +1620 +2292
55. 000001B0 +212 +144 +2125 +1989 +1918 +1900 +1883 +1678
56. 000001B8 +1729 +1913 +1713 +1033 +226 -128 -162 -162
57. 000001C0 +720 +669 +618 +623 +756 +697 +383 +108
58. 000001C8 +602 +514 +811 +955 +460 +159 -14 +525
59. 000001D0 +168 +588 +2288 +2012 +1992 +1930 +1869 +1991
60. 000001D8 +1858 +1568 +1407 +1589 +1644 +600 -188 -124
61. 000001E0 +736 +689 +643 +792 -338 -824 -605 -79
62. 000001E8 +831 +920 +1265 +1606 +2076 +1930 +504 +250
63. 000001F0 +60 +1207 +2291 +2046 +1930 +1968 +2006 +1776
64. 000001F8 +1547 +1311 +1076 +653 +1062 +148 -126 -126
65. 00000200 +752 +710 +668 +642 -1048 -425 -186 +437
66. 00000208 +1060 +1262 +1592 +1810 +1900 +1973 +2430 +359
67. 00000210 +336 +35 +374 +1761 +2124 +2070 +2016 +1626
68. 00000218 +1492 +1119 +618 +357 -160 -112 -64 -128
69. 00000220 +794 +737 +809 +16 -712 -223 +74 +679
70. 00000228 +1220 +1430 +1705 +1828 +1887 +2008 +2065 +190
71. 00000230 +491 +751 -77 +7 +155 +707 +875 +791
72. 00000238 +387 +76 -106 -249 -8 -6 -68 -132
73. 00000240 +836 +765 +950 -609 -376 -85 +206 +793
74. 00000248 +1252 +1535 +1819 +1846 +1874 +1787 +1188 +21
75. 00000250 +1158 +2363 +1776 +365 +106 -208 -266 -236
76. 00000258 -78 +57 +577 +1256 -112 -28 -72 -136
77. 00000260 +790 +792 +795 -710 -360 -83 +130 +611
78. 00000268 +1156 +1464 +1644 +1636 +1693 +1846 +591 +128
79. 00000270 +1777 +2055 +2013 +2223 +1985 +1757 +1721 +1553
80. 00000278 +1769 +1818 +1612 +990 -208 -106 -68 -132
81. 00000280 +872 +820 +512 -876 -344 -17 +182 +493
82. 00000288 +1060 +1329 +1342 +1363 +1512 +1585 +378 +299
83. 00000290 +2140 +2003 +1994 +1969 +1944 +1866 +1916 +1998
84. 00000298 +1696 +1596 +1624 +340 -48 -56 -64 -128
85. 000002A0 +866 +1064 -400 -609 -243 +35 +249 +359
86. 000002A8 +470 +800 +1002 +1188 +1247 +1134 +253 +764
87. 000002B0 +2172 +2031 +1954 +1929 +1904 +1803 +1767 +1739
88. 000002B8 +1967 +1949 +1932 -108 +26 -18 -62 -94
89. 000002C0 +860 +1117 -673 -599 -270 -104 +61 +226
90. 000002C8 +136 +271 +407 +822 +854 +619 +129 +1614
91. 000002D0 +1948 +1931 +1914 +1889 +1864 +1805 +1747 +1672
92. 000002D8 +1470 +1343 +1089 -173 -28 -44 -60 -60
93. 000002E0 +846 +754 -1001 -625 -697 -372 -431 -455
94. 000002E8 -158 -129 +91 +52 +269 +508 +300 +1816
95. 000002F0 +1860 +1871 +1818 +1805 +1792 +1731 +1670 +1593
96. 000002F8 +1389 +1269 +509 -42 +46 -10 -66 -66
97. 00000300 +1216 -441 -1330 -1035 +156 +384 +868 +656
98. 00000308 +316 -338 -608 -334 -188 +462 +472 +2018
99. 00000310 +1772 +1811 +1722 +1721 +1720 +1657 +1594 +1515
100. 00000318 +1308 +1259 +58 +89 -8 -40 -72 -72
101. 00000320 +1092 +270 +793 +1096 +823 +686 +678 +690
102. 00000328 +638 +739 +520 -338 -365 +568 +1117 +1630
103. 00000330 +1696 +1508 +1704 +1632 +1625 +1560 +1496 +1391
104. 00000338 +1159 +952 -23 +54 +3 -29 -61 -61
105. 00000340 +840 +854 +741 +731 +722 +669 +617 +596
106. 00000348 +576 +536 +497 +617 +482 +290 +995 +1243
107. 00000350 +1364 +1461 +1431 +1416 +1530 +1464 +1398 +1268
108. 00000358 +1010 +645 -104 +19 +14 -18 -50 -50
109. 00000360 +812 +838 +800 +750 +701 +660 +619 +594
110. 00000368 +570 +533 +497 +517 +409 +476 +480 +736
111. 00000370 +1056 +1022 +1245 +1208 +1235 +1299 +1044 +1024
112. 00000378 +1069 +134 +31 +52 +9 -19 -47 -79
113. 00000380 +912 +822 +732 +706 +680 +651 +622 +593
114. 00000388 +564 +531 +498 +481 +464 +407 +350 +549
115. 00000390 +1004 +584 +804 +872 +940 +1071 +562 +717
116. 00000398 +104 +71 +38 +21 +4 -20 -44 -108
117. 000003A0 +776 +752 +728 +692 +656 +633 +610 +587
118. 000003A8 +564 +527 +490 +469 +448 +405 +362 +251
119. 000003B0 +268 +308 +156 +636 +668 +161 +102 +35
120. 000003B8 +96 +71 +46 +25 +4 -24 -52 -84
121. 000003C0 +768 +746 +724 +678 +632 +615 +598 +581
122. 000003C8 +564 +523 +482 +457 +432 +403 +374 +337
123. 000003D0 +300 +288 +276 +400 +652 +147 +154 +121
124. 000003D8 +88 +71 +54 +29 +4 -28 -60 -60
125. 000003E0 +768 +746 +724 +678 +632 +615 +598 +581
126. 000003E8 +564 +523 +482 +457 +432 +403 +374 +337
127. 000003F0 +300 +288 +276 +144 +140 +147 +154 +121
128. 000003F8 +88 +71 +54 +29 +4 -28 -60 -60
129. 00000400 +0 +64 +0 +0 +0 +0 +0 +0
130. 00000408 +0 +0 +0 +0 +0 +0 +0 +0

##### Level-1 Sub-bands

The following are the dumps of the four level-1 dequantized sub-bands (LL1, LH1, HL1, and HH1). LL1 is reconstructed from level-2 sub-bands. LH1, HL1, and HH1 are generated by dequantizing the corresponding decoded sub-bands, as shown in sections [4.2.4.2](#Section_be70e4f3c03048b79df10e41f2b51251) and [4.2.4.2.1](#Section_a3bc50293a1641ae987664fb91bb88f4).

###### LL1

The LL1 sub-band is the same as that shown in section [4.2.4.3.2.7](#Section_65f70cbe9a3e49b896da137b5ff55c40).

###### HL1

The following is a dump of the HL1 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +128 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +0 +0 +0 +0 +0 +0 +0 +0
11. 00000050 +0 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +128 +0 +256 +0 +0 +0 +0 -128
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 +0 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +128 +0 +0 +0 +0
17. 00000080 +0 +0 +128 +0 +0 +0 +256 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +0 +0
20. 00000098 +0 +0 +0 +0 +0 +0 +0 +0
21. 000000A0 +0 +0 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +128 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 -128 +0 +0 +0 +0 +0
24. 000000B8 +0 +0 +0 +0 -128 +128 +0 +0
25. 000000C0 +0 +0 +0 +0 +0 +0 -384 +0
26. 000000C8 +0 +0 +128 +0 +0 +0 +0 +0
27. 000000D0 +0 +256 +0 +0 +0 +0 +0 +0
28. 000000D8 +0 +128 +0 -256 +512 -640 -128 +0
29. 000000E0 +0 +0 +0 +0 +0 -128 -384 +0
30. 000000E8 +0 +0 +0 +0 +0 +0 +0 +0
31. 000000F0 +0 -384 +0 +384 +0 +0 +0 +0
32. 000000F8 +0 +0 -128 +512 +512 -640 -128 +0
33. 00000100 +0 +0 +0 +0 +0 -256 +640 +0
34. 00000108 +0 +0 +0 +0 +0 +256 +128 +0
35. 00000110 +256 -640 -512 +128 +0 +0 +0 +0
36. 00000118 +0 +0 +128 +384 -128 +640 +0 -128
37. 00000120 +0 +0 +0 +0 +0 -256 -256 -384
38. 00000128 +0 +0 +0 +0 +0 +384 +0 +0
39. 00000130 +896 +0 -512 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 -128 +0 -128 +256 -128
41. 00000140 +0 +0 +0 +0 +0 -384 +128 +640
42. 00000148 +0 +0 +0 +0 +0 +0 -128 +0
43. 00000150 +0 +128 +896 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 -128 +0 +0
45. 00000160 +0 +0 +0 +0 +256 +0 +0 +0
46. 00000168 -256 +0 +0 +0 +0 +0 +128 +0
47. 00000170 -1152 -384 +640 +0 +0 +0 +0 +0
48. 00000178 +0 +0 +0 +0 +0 -128 +0 +0
49. 00000180 +0 +0 +0 +0 +0 +0 -128 -128
50. 00000188 -128 +0 +0 +0 +0 +0 +0 +768
51. 00000190 -256 -1024 -128 +0 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 -128 +0 +0
53. 000001A0 +0 +0 +0 +0 -384 +0 +0 +0
54. 000001A8 +0 +0 +0 -128 +0 -128 +0 +640
55. 000001B0 +256 +384 +0 +0 +0 +0 +0 +0
56. 000001B8 +0 +0 +128 +0 +256 +0 +0 +0
57. 000001C0 +0 +0 +0 -128 +128 +0 +0 -128
58. 000001C8 +256 +0 +0 +128 +0 +0 -128 +0
59. 000001D0 -128 +896 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 +0 +0 -384 -256 +0 +0
61. 000001E0 +0 +0 +0 +384 -128 +0 -128 +0
62. 000001E8 +128 +0 +0 +0 +128 +256 -128 +0
63. 000001F0 -640 +128 +0 +0 +0 +0 +0 +0
64. 000001F8 +0 +0 +0 -384 -512 +0 +0 +0
65. 00000200 +0 +0 -128 -768 +128 +0 -128 +0
66. 00000208 +0 +0 +0 +0 +0 +0 +768 +0
67. 00000210 -128 +0 +128 +0 +0 +128 -128 +0
68. 00000218 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000220 +0 +0 +384 -640 +0 +0 +0 +0
70. 00000228 +0 +0 +0 +0 +0 -128 -128 +128
71. 00000230 +1280 +0 +0 +0 -128 +128 +0 +0
72. 00000238 +0 +0 -128 +128 +0 +0 +0 +0
73. 00000240 +0 +0 +896 +0 +0 +0 +0 +0
74. 00000248 +0 +0 +0 +0 +0 +128 -640 -640
75. 00000250 +384 +0 +0 +0 +0 +0 +0 +0
76. 00000258 +0 -128 +0 -128 +0 +0 +0 +0
77. 00000260 +0 -128 -256 +0 +0 +0 -128 +0
78. 00000268 +0 +0 +0 +0 +0 +384 -128 -896
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +128 -768 +0 +0 +0 +0
81. 00000280 +0 +0 -1024 +0 +0 +0 +0 +0
82. 00000288 +0 +0 +0 +0 +0 +384 +256 +512
83. 00000290 +0 +0 +0 +0 +0 -128 +0 +0
84. 00000298 +0 +0 +768 -128 +0 +0 +0 +0
85. 000002A0 -128 +896 -128 +0 +0 +0 -128 -128
86. 000002A8 +0 +0 +0 +0 +0 -384 -128 +768
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 +0 +0 +384 +128 +0 +0 +0 +0
89. 000002C0 +0 +512 +128 +256 -256 -256 +0 -128
90. 000002C8 +0 +0 +0 +0 +128 -128 -896 +128
91. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0
92. 000002D8 +0 +0 -768 +0 +0 +0 +0 +0
93. 000002E0 -128 -1280 +384 +128 +256 +0 -256 +128
94. 000002E8 +128 +0 +0 +0 +0 +0 -128 +0
95. 000002F0 +0 +0 -128 +0 +0 +0 +0 +0
96. 000002F8 +0 +384 -256 +0 +0 +0 +0 +0
97. 00000300 +768 -1024 -256 +0 -256 +128 +0 +0
98. 00000308 -128 -128 -128 +128 +128 +128 +768 +0
99. 00000310 +0 +0 +0 +0 +0 +0 +0 +0
100. 00000318 +0 +512 +128 +0 +0 +0 +0 +0
101. 00000320 +384 +256 +0 +128 +0 +0 +128 +128
102. 00000328 +0 +0 +128 -256 +640 -384 +256 +0
103. 00000330 +0 +0 +0 +128 +0 +0 +0 +0
104. 00000338 +0 -256 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 +0
106. 00000348 +0 +0 -128 +0 +0 -384 +0 +128
107. 00000350 +0 +0 +128 +128 +0 +0 +0 +0
108. 00000358 +0 -512 +0 +0 +0 +0 +0 +0
109. 00000360 +0 +0 +0 +0 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +0 -128 +128
111. 00000370 -128 -128 +0 +0 +128 +0 +0 +0
112. 00000378 +384 +0 +0 +0 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 +0 +0 +0
114. 00000388 +0 +0 +0 +0 +0 +0 -128 +0
115. 00000390 +0 +0 +128 +128 +128 -256 +0 +128
116. 00000398 +0 +0 +0 +0 +0 +0 +0 +0
117. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 -128 +0 -256 +128 +128 +0 +0 +0
120. 000003B8 +0 +0 +0 +0 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0
122. 000003C8 +0 +0 +0 +0 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 +384 -128 +0 +0 +0
124. 000003D8 +0 +0 +0 +0 +0 +0 +0 +0
125. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 -128 +0 +0 +0 +0
128. 000003F8 +0 +0 +0 +0 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +64 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +0 +0 +0 +0 +0 +0 +0 +0
11. 00000050 +0 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +64 +0 +128 +0 +0 +0 +0 -64
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 +0 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +64 +0 +0 +0 +0
17. 00000080 +0 +0 +64 +0 +0 +0 +128 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +0 +0
20. 00000098 +0 +0 +0 +0 +0 +0 +0 +0
21. 000000A0 +0 +0 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +64 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 -64 +0 +0 +0 +0 +0
24. 000000B8 +0 +0 +0 +0 -64 +64 +0 +0
25. 000000C0 +0 +0 +0 +0 +0 +0 -192 +0
26. 000000C8 +0 +0 +64 +0 +0 +0 +0 +0
27. 000000D0 +0 +128 +0 +0 +0 +0 +0 +0
28. 000000D8 +0 +64 +0 -128 +256 -320 -64 +0
29. 000000E0 +0 +0 +0 +0 +0 -64 -192 +0
30. 000000E8 +0 +0 +0 +0 +0 +0 +0 +0
31. 000000F0 +0 -192 +0 +192 +0 +0 +0 +0
32. 000000F8 +0 +0 -64 +256 +256 -320 -64 +0
33. 00000100 +0 +0 +0 +0 +0 -128 +320 +0
34. 00000108 +0 +0 +0 +0 +0 +128 +64 +0
35. 00000110 +128 -320 -256 +64 +0 +0 +0 +0
36. 00000118 +0 +0 +64 +192 -64 +320 +0 -64
37. 00000120 +0 +0 +0 +0 +0 -128 -128 -192
38. 00000128 +0 +0 +0 +0 +0 +192 +0 +0
39. 00000130 +448 +0 -256 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 -64 +0 -64 +128 -64
41. 00000140 +0 +0 +0 +0 +0 -192 +64 +320
42. 00000148 +0 +0 +0 +0 +0 +0 -64 +0
43. 00000150 +0 +64 +448 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 -64 +0 +0
45. 00000160 +0 +0 +0 +0 +128 +0 +0 +0
46. 00000168 -128 +0 +0 +0 +0 +0 +64 +0
47. 00000170 -576 -192 +320 +0 +0 +0 +0 +0
48. 00000178 +0 +0 +0 +0 +0 -64 +0 +0
49. 00000180 +0 +0 +0 +0 +0 +0 -64 -64
50. 00000188 -64 +0 +0 +0 +0 +0 +0 +384
51. 00000190 -128 -512 -64 +0 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 -64 +0 +0
53. 000001A0 +0 +0 +0 +0 -192 +0 +0 +0
54. 000001A8 +0 +0 +0 -64 +0 -64 +0 +320
55. 000001B0 +128 +192 +0 +0 +0 +0 +0 +0
56. 000001B8 +0 +0 +64 +0 +128 +0 +0 +0
57. 000001C0 +0 +0 +0 -64 +64 +0 +0 -64
58. 000001C8 +128 +0 +0 +64 +0 +0 -64 +0
59. 000001D0 -64 +448 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 +0 +0 -192 -128 +0 +0
61. 000001E0 +0 +0 +0 +192 -64 +0 -64 +0
62. 000001E8 +64 +0 +0 +0 +64 +128 -64 +0
63. 000001F0 -320 +64 +0 +0 +0 +0 +0 +0
64. 000001F8 +0 +0 +0 -192 -256 +0 +0 +0
65. 00000200 +0 +0 -64 -384 +64 +0 -64 +0
66. 00000208 +0 +0 +0 +0 +0 +0 +384 +0
67. 00000210 -64 +0 +64 +0 +0 +64 -64 +0
68. 00000218 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000220 +0 +0 +192 -320 +0 +0 +0 +0
70. 00000228 +0 +0 +0 +0 +0 -64 -64 +64
71. 00000230 +640 +0 +0 +0 -64 +64 +0 +0
72. 00000238 +0 +0 -64 +64 +0 +0 +0 +0
73. 00000240 +0 +0 +448 +0 +0 +0 +0 +0
74. 00000248 +0 +0 +0 +0 +0 +64 -320 -320
75. 00000250 +192 +0 +0 +0 +0 +0 +0 +0
76. 00000258 +0 -64 +0 -64 +0 +0 +0 +0
77. 00000260 +0 -64 -128 +0 +0 +0 -64 +0
78. 00000268 +0 +0 +0 +0 +0 +192 -64 -448
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +64 -384 +0 +0 +0 +0
81. 00000280 +0 +0 -512 +0 +0 +0 +0 +0
82. 00000288 +0 +0 +0 +0 +0 +192 +128 +256
83. 00000290 +0 +0 +0 +0 +0 -64 +0 +0
84. 00000298 +0 +0 +384 -64 +0 +0 +0 +0
85. 000002A0 -64 +448 -64 +0 +0 +0 -64 -64
86. 000002A8 +0 +0 +0 +0 +0 -192 -64 +384
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 +0 +0 +192 +64 +0 +0 +0 +0
89. 000002C0 +0 +256 +64 +128 -128 -128 +0 -64
90. 000002C8 +0 +0 +0 +0 +64 -64 -448 +64
91. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0
92. 000002D8 +0 +0 -384 +0 +0 +0 +0 +0
93. 000002E0 -64 -640 +192 +64 +128 +0 -128 +64
94. 000002E8 +64 +0 +0 +0 +0 +0 -64 +0
95. 000002F0 +0 +0 -64 +0 +0 +0 +0 +0
96. 000002F8 +0 +192 -128 +0 +0 +0 +0 +0
97. 00000300 +384 -512 -128 +0 -128 +64 +0 +0
98. 00000308 -64 -64 -64 +64 +64 +64 +384 +0
99. 00000310 +0 +0 +0 +0 +0 +0 +0 +0
100. 00000318 +0 +256 +64 +0 +0 +0 +0 +0
101. 00000320 +192 +128 +0 +64 +0 +0 +64 +64
102. 00000328 +0 +0 +64 -128 +320 -192 +128 +0
103. 00000330 +0 +0 +0 +64 +0 +0 +0 +0
104. 00000338 +0 -128 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 +0
106. 00000348 +0 +0 -64 +0 +0 -192 +0 +64
107. 00000350 +0 +0 +64 +64 +0 +0 +0 +0
108. 00000358 +0 -256 +0 +0 +0 +0 +0 +0
109. 00000360 +0 +0 +0 +0 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +0 -64 +64
111. 00000370 -64 -64 +0 +0 +64 +0 +0 +0
112. 00000378 +192 +0 +0 +0 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 +0 +0 +0
114. 00000388 +0 +0 +0 +0 +0 +0 -64 +0
115. 00000390 +0 +0 +64 +64 +64 -128 +0 +64
116. 00000398 +0 +0 +0 +0 +0 +0 +0 +0
117. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 -64 +0 -128 +64 +64 +0 +0 +0
120. 000003B8 +0 +0 +0 +0 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0
122. 000003C8 +0 +0 +0 +0 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 +192 -64 +0 +0 +0
124. 000003D8 +0 +0 +0 +0 +0 +0 +0 +0
125. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 -64 +0 +0 +0 +0
128. 000003F8 +0 +0 +0 +0 +0 +0 +0 +0

###### LH1

The following is a dump of the LH1 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +128 +0 -128 -128 +0 +0 -128 -128
11. 00000050 +128 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 -128 -128 -128 +0 +0 +0 +0 -128
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 -128 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +0 +0 +0 +0 +0
17. 00000080 -128 -128 -128 +0 +0 +0 +0 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +0 +0
20. 00000098 +0 +0 +0 +0 +0 +0 +0 +0
21. 000000A0 +0 +0 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +0 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 +0 +0 -128 +128 +0 +0
24. 000000B8 +0 +0 +0 +0 -256 -1024 +256 +0
25. 000000C0 +0 +0 +0 +0 +0 +0 -128 +0
26. 000000C8 +0 +0 +0 +0 +0 +0 +0 +0
27. 000000D0 +0 +0 +0 +0 +0 +0 -128 +0
28. 000000D8 +0 +128 +0 -256 +512 +512 -128 +0
29. 000000E0 +0 +0 +0 +0 +0 -128 +384 -128
30. 000000E8 +0 +0 +0 +0 +0 +0 +128 +0
31. 000000F0 +0 +128 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 -128 +384 +384 -896 -128 +0
33. 00000100 +0 +0 +0 +0 +0 +0 +0 +128
34. 00000108 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000110 +0 +0 -128 +128 +0 +0 +0 +0
36. 00000118 +0 +0 +0 +128 +0 +0 +768 +384
37. 00000120 +0 +0 +0 +0 +0 +0 +0 +0
38. 00000128 +0 +0 +0 +128 +0 +0 +0 +0
39. 00000130 +128 +0 +0 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 +0 +0 +0 -1024 +0
41. 00000140 +0 +0 +0 +0 +0 +0 +0 +0
42. 00000148 +0 +0 +0 +128 -256 -256 +256 -128
43. 00000150 +0 +0 -128 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 +0 +0 +0
45. 00000160 +0 +0 +0 +0 +0 -128 +0 +0
46. 00000168 +128 +128 +384 +128 +0 +0 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 +128
48. 00000178 +0 +0 +0 +0 +0 +0 +0 +0
49. 00000180 +0 +0 +0 +0 +0 -128 +0 -128
50. 00000188 -640 -384 -512 -768 -768 +896 +128 +128
51. 00000190 -128 +0 +0 +0 +0 +0 +0 +0
52. 00000198 -128 -256 -384 +0 +128 +0 +0 +0
53. 000001A0 +0 +0 +0 +0 +0 +128 +0 +256
54. 000001A8 -128 +0 -256 -384 +128 +128 -1024 +768
55. 000001B0 +0 -128 +128 +0 +0 +0 +0 +128
56. 000001B8 +128 +0 +0 +768 -384 -128 +0 +0
57. 000001C0 +0 +0 +0 -128 +640 +256 -768 -256
58. 000001C8 +0 +0 +0 +256 +896 -768 -128 +0
59. 000001D0 +0 +128 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 -128 -128 +128 +768 +0 +0
61. 000001E0 +0 +0 +0 +0 -256 +128 +0 +0
62. 000001E8 +0 +0 +0 +0 +0 -128 +768 -128
63. 000001F0 +128 -768 +896 +0 +0 +0 +0 +0
64. 000001F8 +0 +0 +0 +128 -128 -128 +0 +0
65. 00000200 +0 +0 +0 +128 +0 +0 +0 +0
66. 00000208 +0 +0 +0 +0 +0 +0 +0 +0
67. 00000210 -128 -256 +0 -1024 +768 +768 +512 +384
68. 00000218 +384 +512 -128 -256 +0 +0 +0 +0
69. 00000220 +0 +0 +0 +0 +0 +0 +0 +0
70. 00000228 +0 +0 +0 +0 +0 +0 +256 -128
71. 00000230 -128 +896 -1024 +0 +128 -256 -512 -384
72. 00000238 -128 +128 -384 -512 +128 +0 +0 +0
73. 00000240 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000248 +0 +0 +128 +0 +128 -384 -640 +0
75. 00000250 +128 +0 +0 +1024 -128 -896 -1152 -896
76. 00000258 -256 +768 +384 +0 +0 +0 +0 +0
77. 00000260 +0 +0 +128 +0 +0 +0 -128 -128
78. 00000268 +0 +0 +0 +0 +0 +128 -128 +0
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +0 +0 +0 +0 +0 +0
81. 00000280 +0 +0 +0 +0 +0 +0 +128 +0
82. 00000288 +0 +0 +0 +0 +0 +0 +0 -128
83. 00000290 +128 +0 +0 +0 +0 +0 -128 +128
84. 00000298 +0 +0 +128 -128 +0 +0 +0 +0
85. 000002A0 -128 +128 -128 +128 +128 +0 +0 +0
86. 000002A8 +0 +0 +0 +0 +0 +0 +0 +0
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 -128 +128 -128 +0 +0 +0 +0 +0
89. 000002C0 +0 +128 +128 +384 +384 +0 +128 +128
90. 000002C8 -128 +128 +0 +0 +0 +0 +0 +0
91. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0
92. 000002D8 +0 +0 +128 +0 +0 +0 +128 +0
93. 000002E0 +0 +0 +256 +128 -512 -640 -1024 -768
94. 000002E8 -512 +128 +0 +0 -128 +0 +0 +0
95. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0
96. 000002F8 +0 +0 +0 +128 +0 +0 +0 +0
97. 00000300 +384 -1152 -640 +1280 +256 +256 +0 -128
98. 00000308 +256 +768 -512 -128 +0 +0 +0 +0
99. 00000310 +0 +0 +0 +0 +0 +0 +0 +0
100. 00000318 +0 +0 +0 +0 +0 +0 +0 +0
101. 00000320 -128 +256 -128 -128 +128 +0 +0 +0
102. 00000328 +0 +0 -128 +512 -256 -128 +128 -128
103. 00000330 +128 -128 +0 +0 +0 +0 +0 +0
104. 00000338 +0 +128 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 +0
106. 00000348 +0 +0 +0 +0 +0 +0 +0 +128
107. 00000350 -128 +128 +0 +0 +0 +0 +0 +0
108. 00000358 +0 +0 +0 +0 +0 +0 +0 +0
109. 00000360 +0 +128 +0 +0 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +0 -128 -128
111. 00000370 +0 -128 +128 +128 +0 +128 +0 -128
112. 00000378 +384 -128 +0 +0 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 +0 +0 +0
114. 00000388 +0 +0 +0 +0 +0 +0 +0 -128
115. 00000390 -128 -128 +128 +128 +128 +0 -256 -384
116. 00000398 +0 +0 +0 +0 +0 +0 +0 +0
117. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 +0 +0 -128 +512 +256 +128 +0 +0
120. 000003B8 +0 +0 +0 +0 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0
122. 000003C8 +0 +0 +0 +0 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 +0 -256 +0 +0 +0
124. 000003D8 +0 +0 +0 +0 +0 +0 +0 +0
125. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 +0 +0 +0 +0 +0
128. 000003F8 +0 +0 +0 +0 +0 +0 +0 +0
129. 00000400 +0 +0 +0 +0 +0 +0 +0 +0
130. 00000408 +0 +0 +0 +0 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +64 +0 -64 -64 +0 +0 -64 -64
11. 00000050 +64 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 -64 -64 -64 +0 +0 +0 +0 -64
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 -64 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +0 +0 +0 +0 +0
17. 00000080 -64 -64 -64 +0 +0 +0 +0 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +0 +0
20. 00000098 +0 +0 +0 +0 +0 +0 +0 +0
21. 000000A0 +0 +0 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +0 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 +0 +0 -64 +64 +0 +0
24. 000000B8 +0 +0 +0 +0 -128 -512 +128 +0
25. 000000C0 +0 +0 +0 +0 +0 +0 -64 +0
26. 000000C8 +0 +0 +0 +0 +0 +0 +0 +0
27. 000000D0 +0 +0 +0 +0 +0 +0 -64 +0
28. 000000D8 +0 +64 +0 -128 +256 +256 -64 +0
29. 000000E0 +0 +0 +0 +0 +0 -64 +192 -64
30. 000000E8 +0 +0 +0 +0 +0 +0 +64 +0
31. 000000F0 +0 +64 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 -64 +192 +192 -448 -64 +0
33. 00000100 +0 +0 +0 +0 +0 +0 +0 +64
34. 00000108 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000110 +0 +0 -64 +64 +0 +0 +0 +0
36. 00000118 +0 +0 +0 +64 +0 +0 +384 +192
37. 00000120 +0 +0 +0 +0 +0 +0 +0 +0
38. 00000128 +0 +0 +0 +64 +0 +0 +0 +0
39. 00000130 +64 +0 +0 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 +0 +0 +0 -512 +0
41. 00000140 +0 +0 +0 +0 +0 +0 +0 +0
42. 00000148 +0 +0 +0 +64 -128 -128 +128 -64
43. 00000150 +0 +0 -64 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 +0 +0 +0
45. 00000160 +0 +0 +0 +0 +0 -64 +0 +0
46. 00000168 +64 +64 +192 +64 +0 +0 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 +64
48. 00000178 +0 +0 +0 +0 +0 +0 +0 +0
49. 00000180 +0 +0 +0 +0 +0 -64 +0 -64
50. 00000188 -320 -192 -256 -384 -384 +448 +64 +64
51. 00000190 -64 +0 +0 +0 +0 +0 +0 +0
52. 00000198 -64 -128 -192 +0 +64 +0 +0 +0
53. 000001A0 +0 +0 +0 +0 +0 +64 +0 +128
54. 000001A8 -64 +0 -128 -192 +64 +64 -512 +384
55. 000001B0 +0 -64 +64 +0 +0 +0 +0 +64
56. 000001B8 +64 +0 +0 +384 -192 -64 +0 +0
57. 000001C0 +0 +0 +0 -64 +320 +128 -384 -128
58. 000001C8 +0 +0 +0 +128 +448 -384 -64 +0
59. 000001D0 +0 +64 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 -64 -64 +64 +384 +0 +0
61. 000001E0 +0 +0 +0 +0 -128 +64 +0 +0
62. 000001E8 +0 +0 +0 +0 +0 -64 +384 -64
63. 000001F0 +64 -384 +448 +0 +0 +0 +0 +0
64. 000001F8 +0 +0 +0 +64 -64 -64 +0 +0
65. 00000200 +0 +0 +0 +64 +0 +0 +0 +0
66. 00000208 +0 +0 +0 +0 +0 +0 +0 +0
67. 00000210 -64 -128 +0 -512 +384 +384 +256 +192
68. 00000218 +192 +256 -64 -128 +0 +0 +0 +0
69. 00000220 +0 +0 +0 +0 +0 +0 +0 +0
70. 00000228 +0 +0 +0 +0 +0 +0 +128 -64
71. 00000230 -64 +448 -512 +0 +64 -128 -256 -192
72. 00000238 -64 +64 -192 -256 +64 +0 +0 +0
73. 00000240 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000248 +0 +0 +64 +0 +64 -192 -320 +0
75. 00000250 +64 +0 +0 +512 -64 -448 -576 -448
76. 00000258 -128 +384 +192 +0 +0 +0 +0 +0
77. 00000260 +0 +0 +64 +0 +0 +0 -64 -64
78. 00000268 +0 +0 +0 +0 +0 +64 -64 +0
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +0 +0 +0 +0 +0 +0
81. 00000280 +0 +0 +0 +0 +0 +0 +64 +0
82. 00000288 +0 +0 +0 +0 +0 +0 +0 -64
83. 00000290 +64 +0 +0 +0 +0 +0 -64 +64
84. 00000298 +0 +0 +64 -64 +0 +0 +0 +0
85. 000002A0 -64 +64 -64 +64 +64 +0 +0 +0
86. 000002A8 +0 +0 +0 +0 +0 +0 +0 +0
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 -64 +64 -64 +0 +0 +0 +0 +0
89. 000002C0 +0 +64 +64 +192 +192 +0 +64 +64
90. 000002C8 -64 +64 +0 +0 +0 +0 +0 +0
91. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0
92. 000002D8 +0 +0 +64 +0 +0 +0 +64 +0
93. 000002E0 +0 +0 +128 +64 -256 -320 -512 -384
94. 000002E8 -256 +64 +0 +0 -64 +0 +0 +0
95. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0
96. 000002F8 +0 +0 +0 +64 +0 +0 +0 +0
97. 00000300 +192 -576 -320 +640 +128 +128 +0 -64
98. 00000308 +128 +384 -256 -64 +0 +0 +0 +0
99. 00000310 +0 +0 +0 +0 +0 +0 +0 +0
100. 00000318 +0 +0 +0 +0 +0 +0 +0 +0
101. 00000320 -64 +128 -64 -64 +64 +0 +0 +0
102. 00000328 +0 +0 -64 +256 -128 -64 +64 -64
103. 00000330 +64 -64 +0 +0 +0 +0 +0 +0
104. 00000338 +0 +64 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 +0
106. 00000348 +0 +0 +0 +0 +0 +0 +0 +64
107. 00000350 -64 +64 +0 +0 +0 +0 +0 +0
108. 00000358 +0 +0 +0 +0 +0 +0 +0 +0
109. 00000360 +0 +64 +0 +0 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +0 -64 -64
111. 00000370 +0 -64 +64 +64 +0 +64 +0 -64
112. 00000378 +192 -64 +0 +0 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 +0 +0 +0
114. 00000388 +0 +0 +0 +0 +0 +0 +0 -64
115. 00000390 -64 -64 +64 +64 +64 +0 -128 -192
116. 00000398 +0 +0 +0 +0 +0 +0 +0 +0
117. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 +0 +0 -64 +256 +128 +64 +0 +0
120. 000003B8 +0 +0 +0 +0 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0
122. 000003C8 +0 +0 +0 +0 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 +0 -128 +0 +0 +0
124. 000003D8 +0 +0 +0 +0 +0 +0 +0 +0
125. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 +0 +0 +0 +0 +0
128. 000003F8 +0 +0 +0 +0 +0 +0 +0 +0
129. 00000400 +0 +0 +0 +0 +0 +0 +0 +0
130. 00000408 +0 +0 +0 +0 +0 +0 +0 +0

###### HH1

The following is a dump of the HL1 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +0 +0 +0 +0 +0 +0 +0 +0
11. 00000050 +0 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +0 +0 +0 +0 +0 +0 +0 +0
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 +0 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +0 +0 +0 +0 +0
17. 00000080 +0 +0 +0 +0 +0 +0 +0 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +0 +0
20. 00000098 +0 +0 +0 +0 +0 +0 +0 +0
21. 000000A0 +0 +0 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +0 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 +0 +0 +0 +0 +0 +0
24. 000000B8 +0 +0 +0 +0 -256 +256 +0 +0
25. 000000C0 +0 +0 +0 +0 +0 +0 +0 +0
26. 000000C8 +0 +0 +0 +0 +0 +0 +0 +0
27. 000000D0 +0 +0 +0 +0 +0 +0 +0 +0
28. 000000D8 +0 +0 +0 -512 -256 +256 +0 +0
29. 000000E0 +0 +0 +0 +0 +0 -256 -256 +0
30. 000000E8 +0 +0 +0 +0 +0 +0 +0 +0
31. 000000F0 +0 -256 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 -256 +256 -512 +0 +0 +0
33. 00000100 +0 +0 +0 +0 +0 +0 +0 +0
34. 00000108 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000110 +0 +0 -256 +0 +0 +0 +0 +0
36. 00000118 +0 +0 +0 -256 +0 +0 +256 -256
37. 00000120 +0 +0 +0 +0 +0 -256 +0 +0
38. 00000128 +0 +0 +0 +0 +0 +0 +0 +0
39. 00000130 +0 +0 +0 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 +0 +0 +0 +0 +0
41. 00000140 +0 +0 +0 +0 +0 +0 +0 +0
42. 00000148 +0 +0 +0 +0 +0 +0 +0 +0
43. 00000150 +0 +0 +0 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 +0 +0 +0
45. 00000160 +0 +0 +0 +0 +0 +0 +0 +0
46. 00000168 +0 +0 +0 +0 +0 +0 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 +0
48. 00000178 +0 +0 +0 +0 +0 +0 +0 +0
49. 00000180 +0 +0 +0 +0 +0 +0 +0 +0
50. 00000188 +0 +0 +0 -256 +0 +0 +0 +256
51. 00000190 +0 +0 +0 +0 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 +0 +0 +0
53. 000001A0 +0 +0 +0 +0 +256 +0 +0 +0
54. 000001A8 +0 +0 +0 +0 +0 +0 +0 -256
55. 000001B0 +0 +256 +0 +0 +0 +0 +0 +0
56. 000001B8 +0 +0 +0 +0 +256 +0 +0 +0
57. 000001C0 +0 +0 +0 +0 +256 +0 +0 +0
58. 000001C8 +0 +0 +0 +0 +0 -256 +0 +0
59. 000001D0 +0 +0 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 +0 +256 +256 +0 +0 +0
61. 000001E0 +0 +0 +0 +0 +0 +0 +0 +0
62. 000001E8 +0 +0 +0 +0 +0 +0 -256 +0
63. 000001F0 +256 +0 +0 +0 +0 +0 +0 +0
64. 000001F8 +0 +0 +0 +256 +0 +0 +0 +0
65. 00000200 +0 +0 +0 -256 +0 +0 +0 +0
66. 00000208 +0 +0 +0 +0 +0 +0 +0 +0
67. 00000210 -512 +0 +0 +0 +0 +0 +0 +0
68. 00000218 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000220 +0 +0 +0 +0 +0 +0 +0 +0
70. 00000228 +0 +0 +0 +0 +0 +0 -256 +0
71. 00000230 -256 +0 +0 +0 +0 +0 +0 +0
72. 00000238 +0 +0 +0 +256 +0 +0 +0 +0
73. 00000240 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000248 +0 +0 +0 +0 +0 -256 +256 +0
75. 00000250 +0 +0 +0 +0 +0 +0 +0 +0
76. 00000258 +0 +0 +0 -256 +0 +0 +0 +0
77. 00000260 +0 +0 +0 +0 +0 +0 +0 +0
78. 00000268 +0 +0 +0 +0 +0 +256 +0 +0
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +0 +0 +0 +0 +0 +0
81. 00000280 +0 +0 +0 +0 +0 +0 +0 +0
82. 00000288 +0 +0 +0 +0 +0 +0 +0 +256
83. 00000290 +0 +0 +0 +0 +0 +0 +0 +0
84. 00000298 +0 +0 +256 +0 +0 +0 +0 +0
85. 000002A0 +0 +256 +0 +0 +0 +256 +0 +0
86. 000002A8 +0 +0 +0 +0 +0 +0 +0 +0
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 +0 +0 +0 +0 +0 +0 +0 +0
89. 000002C0 +0 +0 -256 +0 +0 +256 +256 +0
90. 000002C8 +0 +0 +0 +0 +0 +0 +0 +0
91. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0
92. 000002D8 +0 +0 +0 +0 +0 +0 +0 +0
93. 000002E0 +0 -256 -256 +512 +0 -256 +0 +0
94. 000002E8 +0 +0 +0 +0 +0 +0 +0 +0
95. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0
96. 000002F8 +0 +0 +0 +0 +0 +0 +0 +0
97. 00000300 +256 -256 +0 +0 +0 +0 +0 +0
98. 00000308 +0 +256 -256 +0 +0 +0 +0 +0
99. 00000310 +0 +0 +0 +0 +0 +0 +0 +0
100. 00000318 +0 +0 +0 +0 +0 +0 +0 +0
101. 00000320 +0 +0 +0 +0 +0 +0 +0 +0
102. 00000328 +0 +0 +0 +0 +0 +0 +256 +0
103. 00000330 +0 +0 +0 +0 +0 +0 +0 +0
104. 00000338 +0 +0 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 +0
106. 00000348 +0 +0 +0 +0 +0 +0 +0 +0
107. 00000350 +0 +0 +0 +0 +0 +0 +0 +0
108. 00000358 +0 +0 +0 +0 +0 +0 +0 +0
109. 00000360 +0 +0 +0 +0 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +0 +0 +0
111. 00000370 -256 +0 +0 +0 +0 +0 +0 +0
112. 00000378 +0 +0 +0 +0 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 +0 +0 +0
114. 00000388 +0 +0 +0 +0 +0 +0 +0 +0
115. 00000390 -256 +0 +0 +0 +0 +0 +0 +0
116. 00000398 +0 +0 +0 +0 +0 +0 +0 +0
117. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 +0 +0 -256 -256 +256 +0 +0 +0
120. 000003B8 +0 +0 +0 +0 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0
122. 000003C8 +0 +0 +0 +0 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 -256 +0 +0 +0 +0
124. 000003D8 +0 +0 +0 +0 +0 +0 +0 +0
125. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 +0 +0 +0 +0 +0
128. 000003F8 +0 +0 +0 +0 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +0 +0 +0 +0 +0 +0 +0 +0
11. 00000050 +0 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +0 +0 +0 +0 +0 +0 +0 +0
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 +0 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +0 +0 +0 +0 +0
17. 00000080 +0 +0 +0 +0 +0 +0 +0 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +0
19. 00000090 +0 +0 +0 +0 +0 +0 +0 +0
20. 00000098 +0 +0 +0 +0 +0 +0 +0 +0
21. 000000A0 +0 +0 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +0 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 +0 +0 +0 +0 +0 +0
24. 000000B8 +0 +0 +0 +0 -128 +128 +0 +0
25. 000000C0 +0 +0 +0 +0 +0 +0 +0 +0
26. 000000C8 +0 +0 +0 +0 +0 +0 +0 +0
27. 000000D0 +0 +0 +0 +0 +0 +0 +0 +0
28. 000000D8 +0 +0 +0 -256 -128 +128 +0 +0
29. 000000E0 +0 +0 +0 +0 +0 -128 -128 +0
30. 000000E8 +0 +0 +0 +0 +0 +0 +0 +0
31. 000000F0 +0 -128 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 -128 +128 -256 +0 +0 +0
33. 00000100 +0 +0 +0 +0 +0 +0 +0 +0
34. 00000108 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000110 +0 +0 -128 +0 +0 +0 +0 +0
36. 00000118 +0 +0 +0 -128 +0 +0 +128 -128
37. 00000120 +0 +0 +0 +0 +0 -128 +0 +0
38. 00000128 +0 +0 +0 +0 +0 +0 +0 +0
39. 00000130 +0 +0 +0 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 +0 +0 +0 +0 +0
41. 00000140 +0 +0 +0 +0 +0 +0 +0 +0
42. 00000148 +0 +0 +0 +0 +0 +0 +0 +0
43. 00000150 +0 +0 +0 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 +0 +0 +0
45. 00000160 +0 +0 +0 +0 +0 +0 +0 +0
46. 00000168 +0 +0 +0 +0 +0 +0 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 +0
48. 00000178 +0 +0 +0 +0 +0 +0 +0 +0
49. 00000180 +0 +0 +0 +0 +0 +0 +0 +0
50. 00000188 +0 +0 +0 -128 +0 +0 +0 +128
51. 00000190 +0 +0 +0 +0 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 +0 +0 +0
53. 000001A0 +0 +0 +0 +0 +128 +0 +0 +0
54. 000001A8 +0 +0 +0 +0 +0 +0 +0 -128
55. 000001B0 +0 +128 +0 +0 +0 +0 +0 +0
56. 000001B8 +0 +0 +0 +0 +128 +0 +0 +0
57. 000001C0 +0 +0 +0 +0 +128 +0 +0 +0
58. 000001C8 +0 +0 +0 +0 +0 -128 +0 +0
59. 000001D0 +0 +0 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 +0 +128 +128 +0 +0 +0
61. 000001E0 +0 +0 +0 +0 +0 +0 +0 +0
62. 000001E8 +0 +0 +0 +0 +0 +0 -128 +0
63. 000001F0 +128 +0 +0 +0 +0 +0 +0 +0
64. 000001F8 +0 +0 +0 +128 +0 +0 +0 +0
65. 00000200 +0 +0 +0 -128 +0 +0 +0 +0
66. 00000208 +0 +0 +0 +0 +0 +0 +0 +0
67. 00000210 -256 +0 +0 +0 +0 +0 +0 +0
68. 00000218 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000220 +0 +0 +0 +0 +0 +0 +0 +0
70. 00000228 +0 +0 +0 +0 +0 +0 -128 +0
71. 00000230 -128 +0 +0 +0 +0 +0 +0 +0
72. 00000238 +0 +0 +0 +128 +0 +0 +0 +0
73. 00000240 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000248 +0 +0 +0 +0 +0 -128 +128 +0
75. 00000250 +0 +0 +0 +0 +0 +0 +0 +0
76. 00000258 +0 +0 +0 -128 +0 +0 +0 +0
77. 00000260 +0 +0 +0 +0 +0 +0 +0 +0
78. 00000268 +0 +0 +0 +0 +0 +128 +0 +0
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +0 +0 +0 +0 +0 +0
81. 00000280 +0 +0 +0 +0 +0 +0 +0 +0
82. 00000288 +0 +0 +0 +0 +0 +0 +0 +128
83. 00000290 +0 +0 +0 +0 +0 +0 +0 +0
84. 00000298 +0 +0 +128 +0 +0 +0 +0 +0
85. 000002A0 +0 +128 +0 +0 +0 +128 +0 +0
86. 000002A8 +0 +0 +0 +0 +0 +0 +0 +0
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 +0 +0 +0 +0 +0 +0 +0 +0
89. 000002C0 +0 +0 -128 +0 +0 +128 +128 +0
90. 000002C8 +0 +0 +0 +0 +0 +0 +0 +0
91. 000002D0 +0 +0 +0 +0 +0 +0 +0 +0
92. 000002D8 +0 +0 +0 +0 +0 +0 +0 +0
93. 000002E0 +0 -128 -128 +256 +0 -128 +0 +0
94. 000002E8 +0 +0 +0 +0 +0 +0 +0 +0
95. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0
96. 000002F8 +0 +0 +0 +0 +0 +0 +0 +0
97. 00000300 +128 -128 +0 +0 +0 +0 +0 +0
98. 00000308 +0 +128 -128 +0 +0 +0 +0 +0
99. 00000310 +0 +0 +0 +0 +0 +0 +0 +0
100. 00000318 +0 +0 +0 +0 +0 +0 +0 +0
101. 00000320 +0 +0 +0 +0 +0 +0 +0 +0
102. 00000328 +0 +0 +0 +0 +0 +0 +128 +0
103. 00000330 +0 +0 +0 +0 +0 +0 +0 +0
104. 00000338 +0 +0 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 +0
106. 00000348 +0 +0 +0 +0 +0 +0 +0 +0
107. 00000350 +0 +0 +0 +0 +0 +0 +0 +0
108. 00000358 +0 +0 +0 +0 +0 +0 +0 +0
109. 00000360 +0 +0 +0 +0 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +0 +0 +0
111. 00000370 -128 +0 +0 +0 +0 +0 +0 +0
112. 00000378 +0 +0 +0 +0 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 +0 +0 +0
114. 00000388 +0 +0 +0 +0 +0 +0 +0 +0
115. 00000390 -128 +0 +0 +0 +0 +0 +0 +0
116. 00000398 +0 +0 +0 +0 +0 +0 +0 +0
117. 000003A0 +0 +0 +0 +0 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 +0 +0 -128 -128 +128 +0 +0 +0
120. 000003B8 +0 +0 +0 +0 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 +0
122. 000003C8 +0 +0 +0 +0 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 -128 +0 +0 +0 +0
124. 000003D8 +0 +0 +0 +0 +0 +0 +0 +0
125. 000003E0 +0 +0 +0 +0 +0 +0 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 +0 +0 +0 +0 +0
128. 000003F8 +0 +0 +0 +0 +0 +0 +0 +0

###### Inverse DWT-X (LL1 - HL1)

The following is a dump of the L0 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -32 +16 +64 +272 -32 -16 +0 -16
2. 00000008 -32 -24 -16 -8 +0 -24 -48 -72
3. 00000010 -96 -90 -84 -78 -72 -98 -124 -150
4. 00000018 -176 -192 -208 -224 -240 -256 -272 -288
5. 00000020 -304 -304 -304 -304 -304 -336 -368 -400
6. 00000028 -432 -450 -468 -486 -504 -522 -540 -558
7. 00000030 -576 -598 -620 -642 -664 -686 -708 -730
8. 00000038 -752 -768 -784 -800 -816 -816 -816 -816
9. 00000040 +168 +224 +281 +209 +138 +126 +115 +103
10. 00000048 +92 +88 +84 +80 +76 +64 +52 +40
11. 00000050 +28 +18 +8 -2 -12 -38 -64 -90
12. 00000058 -116 -105 -95 -148 -201 -198 -195 -192
13. 00000060 -190 -204 -218 -232 -247 -269 -291 -313
14. 00000068 -336 -357 -379 -400 -422 -447 -473 -498
15. 00000070 -524 -546 -569 -591 -614 -660 -707 -689
16. 00000078 -672 -698 -724 -750 -776 -776 -776 -776
17. 00000080 +368 +401 +434 +339 +244 +237 +230 +223
18. 00000088 +216 +200 +184 +168 +152 +152 +152 +152
19. 00000090 +152 +126 +100 +74 +48 +22 -4 -30
20. 00000098 -56 -18 +19 -71 -162 -140 -119 -97
21. 000000A0 -76 -104 -133 -161 -190 -202 -215 -227
22. 000000A8 -240 -265 -290 -315 -340 -373 -406 -439
23. 000000B0 -472 -495 -518 -541 -564 -635 -706 -649
24. 000000B8 -592 -628 -664 -700 -736 -736 -736 -736
25. 000000C0 +376 +649 +411 +364 +318 +795 +249 +342
26. 000000C8 +436 +408 +380 +352 +324 +308 +292 -140
27. 000000D0 -60 +74 +208 +182 +156 +186 +216 +374
28. 000000D8 +532 +504 +476 +320 +165 +61 -42 -146
29. 000000E0 -250 -244 -239 -170 -101 -123 -146 -169
30. 000000E8 -192 -216 -241 -265 -290 -318 -347 -375
31. 000000F0 -404 -399 -395 -454 -514 -557 -601 -356
32. 000000F8 -624 -622 -620 -650 -680 -680 -680 -680
33. 00000100 +1152 +1026 +900 +870 +840 +906 +460 +430
34. 00000108 +400 +424 +448 +408 +368 +400 -592 -240
35. 00000110 +112 +534 +956 +994 +1032 +926 +820 +970
36. 00000118 +1120 +1155 +1190 +1097 +1004 +839 +674 +509
37. 00000120 +344 +191 +38 +13 -12 -45 -78 -111
38. 00000128 -144 -168 -192 -216 -240 -264 -288 -312
39. 00000130 -336 -304 -272 -368 -464 -416 -368 -448
40. 00000138 -528 -552 -576 -600 -624 -624 -624 -624
41. 00000140 +708 +637 +566 +559 +552 +513 +474 +499
42. 00000148 +524 +561 +599 +572 +546 +131 -283 +6
43. 00000150 +296 +665 +1034 +1627 +1708 +1669 +1630 +1623
44. 00000158 +1616 +1711 +1806 +1709 +1612 +1531 +1450 +1241
45. 00000160 +1032 +950 +869 +563 +258 -120 +15 -74
46. 00000168 -164 -180 -197 -150 -103 -123 -144 -165
47. 00000170 -186 -325 -464 -283 -102 -305 -508 -487
48. 00000178 -466 -1022 -1066 -534 -514 -578 -642 -642
49. 00000180 +776 +760 +744 +728 +712 +696 +680 +664
50. 00000188 +648 +635 +622 +577 +532 -457 +90 +413
51. 00000190 +736 +924 +1112 +1524 +1936 +2284 +2120 +2116
52. 00000198 +2112 +2267 +2422 +2321 +2220 +2223 +2226 +1973
53. 000001A0 +1720 +1582 +1444 +1242 +16 -2 -20 +26
54. 000001A8 +72 -65 -203 -212 -222 -239 -257 -274
55. 000001B0 -292 -186 -80 +58 -316 -290 -264 -462
56. 000001B8 +364 +2508 +2604 -436 -916 -1012 -596 -596
57. 000001C0 +876 +855 +834 +813 +792 +803 +814 +825
58. 000001C8 +836 +720 +605 +553 +1014 -18 +487 +735
59. 000001D0 +984 +1239 +1494 +1813 +2132 +2343 +2554 +2573
60. 000001D8 +2592 +2639 +2686 +2861 +3036 +2823 +2610 +2525
61. 000001E0 +2440 +2405 +2371 +448 +62 +115 +169 +1438
62. 000001E8 +1172 +970 +768 +533 +299 +217 +135 +52
63. 000001F0 -30 -63 -96 -161 -226 -419 -100 +955
64. 000001F8 -38 +1842 +1674 -990 -1094 -998 -390 -390
65. 00000200 +976 +950 +924 +898 +872 +846 +820 +794
66. 00000208 +768 +806 +844 +786 +1752 +2534 +756 +994
67. 00000210 +1232 +1554 +1876 +2070 +2264 +2594 +2924 +2998
68. 00000218 +3072 +3139 +3206 +3305 +2380 +3103 +3314 +3173
69. 00000220 +3032 +3005 +1954 -217 +172 -87 +1702 +2147
70. 00000228 +2080 +1973 +1866 +1727 +1588 +1441 +1294 +1147
71. 00000230 +1000 +796 +592 +484 +376 +732 +576 +1092
72. 00000238 +72 -584 -728 +952 +72 -56 -184 -440
73. 00000240 +1076 +1045 +1015 +984 +954 +931 +909 +886
74. 00000248 +864 +751 +639 +462 +1310 +1749 +3213 +1636
75. 00000250 +1596 +1801 +2006 +2307 +2609 +2898 +3187 +3348
76. 00000258 +3510 +3561 +3613 +3568 +1988 +2931 +3875 +3666
77. 00000260 +3458 +3559 +76 +81 +86 +667 +3296 +2981
78. 00000268 +2666 +2652 +2639 +2561 +2484 +2282 +2081 +1943
79. 00000270 +1806 +1713 +1621 +1464 +1308 +1183 +1059 +390
80. 00000278 +234 -60 -354 +1464 +3794 +2226 -366 -622
81. 00000280 +1176 +1141 +1106 +1071 +1036 +1017 +998 +979
82. 00000288 +960 +857 +754 +11 +804 +1605 +1894 +3239
83. 00000290 +2024 +2272 +2521 +2737 +2954 +3074 +3195 +3315
84. 00000298 +3436 +3536 +3636 +3384 +3132 +3144 +3668 +3776
85. 000002A0 +3884 +1937 -10 +155 -192 +3309 +3226 +3207
86. 000002A8 +3188 +3236 +3284 +3204 +3124 +2932 +2740 +2676
87. 000002B0 +2612 +2567 +2522 +2221 +1920 +1539 +1158 +777
88. 000002B8 +396 +112 -172 -744 -804 -580 -356 -356
89. 000002C0 +1212 +1184 +1157 +1129 +1102 +1078 +1055 +967
90. 000002C8 +880 +1082 +261 +527 +794 +1284 +1775 +2393
91. 000002D0 +3012 +2487 +2987 +3231 +3475 +3474 +3474 +3474
92. 000002D8 +3474 +3546 +3619 +3659 +3700 +4012 +3813 +3869
93. 000002E0 +3926 -157 +368 +221 +1610 +3763 +3356 +3461
94. 000002E8 +3566 +3571 +3577 +3518 +3460 +3449 +3439 +3364
95. 000002F0 +3290 +2956 +2623 +2225 +1828 +1570 +1313 +991
96. 000002F8 +670 +328 -14 -452 -378 -314 -250 -250
97. 00000300 +1248 +1228 +1208 +1188 +1168 +1140 +1112 +1084
98. 00000308 +1056 +636 +216 +596 +976 +1252 +2040 +2156
99. 00000310 +2784 +2127 +1982 +2093 +2204 +2531 +2858 +3185
100. 00000318 +3512 +3941 +4370 +4159 +3948 +3921 +3894 +4123
101. 00000320 +1280 +277 +298 +95 +3988 +3609 +3742 +3715
102. 00000328 +3688 +3715 +3742 +3769 +3796 +3711 +3626 +3285
103. 00000330 +2944 +2642 +2340 +2166 +1992 +1794 +1596 +1270
104. 00000338 +944 +480 +16 -352 -208 -304 -400 -400
105. 00000340 +1344 +1340 +1337 +1333 +1330 +1190 +1051 +1071
106. 00000348 +1092 +212 +869 +918 +967 +951 +936 +729
107. 00000350 +522 +517 +513 +445 +377 +292 +208 +28
108. 00000358 +360 +456 +552 +1672 +3304 +3784 +4264 +3400
109. 00000360 -24 +485 -31 +2781 +4058 +4018 +3979 +3907
110. 00000368 +3836 +3818 +3801 +3784 +3767 +3561 +3356 +3407
111. 00000370 +3458 +3642 +3826 +3594 +3363 +2939 +2003 +1163
112. 00000378 +324 +482 -384 -354 -324 -324 -324 -324
113. 00000380 +1440 +1389 +1338 +1287 +1236 +1273 +1310 +1155
114. 00000388 +1512 +1677 +1331 +1048 +766 +523 +281 +454
115. 00000390 +1140 +1532 +901 +1261 +1622 +1734 +1847 +1607
116. 00000398 +856 +587 +318 +177 +36 +319 +1114 +757
117. 000003A0 +400 +340 +792 +4252 +4128 +4076 +4024 +4004
118. 000003A8 +3984 +3922 +3861 +3799 +3738 +3860 +3983 +3849
119. 000003B0 +3716 +3426 +3137 +2975 +2814 +2996 +3179 +3329
120. 000003B8 +3480 +1732 +1520 +124 -248 -248 -248 -248
121. 000003C0 +1472 +1425 +1379 +1332 +1286 +1339 +1393 +1062
122. 000003C8 -804 -1450 -1584 -1365 -1147 -877 -95 +751
123. 000003D0 +1598 +1943 +1776 +2153 +2531 +2872 +3213 +3650
124. 000003D8 +4088 +4134 +3668 +2818 +944 +498 +564 +502
125. 000003E0 +440 +275 +2671 +3850 +4518 +4305 +4093 +3976
126. 000003E8 +3860 +3898 +3936 +3974 +4013 +3783 +3553 +3323
127. 000003F0 +3094 +2858 +2623 +2388 +2153 +1825 +1498 +1267
128. 000003F8 +2572 +538 +552 +150 -252 -252 -252 -252
129. 00000400 +1504 +1462 +1420 +1410 +1400 +1310 +1732 -1558
130. 00000408 -1776 -1089 -914 -611 -308 +59 +938 +1529
131. 00000410 +2120 +2322 +2524 +2854 +3184 +3402 +3620 +3710
132. 00000418 +3800 +3873 +3946 +4211 +4476 +3941 +334 +535
133. 00000420 +736 +179 +134 +409 +684 +2327 +3458 +3853
134. 00000428 +4248 +4162 +4076 +4310 +4032 +3418 +3316 +3150
135. 00000430 +2984 +2611 +2238 +1737 +1236 +975 +714 +197
136. 00000438 -320 -272 -224 -176 -128 -192 -256 -256
137. 00000440 +1588 +1531 +1475 +1450 +1426 +1561 +161 -1751
138. 00000448 -1104 -775 -446 -149 +148 +753 +1358 +1899
139. 00000450 +2440 +2650 +2861 +3136 +3411 +3533 +3656 +3715
140. 00000458 +3774 +3927 +4080 +3913 +4258 +2063 +380 +585
141. 00000460 +278 +3130 +862 +354 -154 -70 +14 +194
142. 00000468 +374 +638 +1414 +1806 +1686 +1634 +1582 +1178
143. 00000470 +774 +463 +152 +1 -149 -580 -499 -33
144. 00000478 -80 -46 -12 -74 -136 -200 -264 -264
145. 00000480 +1672 +1601 +1530 +1491 +1452 +1685 -1666 -1209
146. 00000488 -752 -461 -170 +121 +412 +999 +1586 +2045
147. 00000490 +2504 +2787 +3071 +3354 +3638 +3665 +3693 +3720
148. 00000498 +3748 +3629 +3510 +3327 +2632 +377 +682 +283
149. 000004A0 +2444 +4257 +4534 +4043 +3552 +2141 +730 +471
150. 000004A8 +212 -102 -416 -474 -532 -502 -472 -314
151. 000004B0 -156 +11 +179 +442 +1218 +1897 +2577 +952
152. 000004B8 -160 -108 -56 -100 -144 -208 -272 -272
153. 000004C0 +1580 +1614 +1649 +1459 +1782 -268 -1293 -1006
154. 000004C8 -720 -443 -166 +79 +324 +549 +1286 +1799
155. 000004D0 +2312 +2620 +2928 +3108 +3289 +3281 +3273 +3329
156. 000004D8 +3386 +3443 +3500 +3045 +1054 +655 +768 +593
157. 000004E0 +4002 +4056 +4110 +4068 +4026 +4236 +4446 +4208
158. 000004E8 +3970 +3742 +3514 +3478 +3442 +3274 +3106 +3322
159. 000004F0 +3538 +3587 +3637 +3399 +3161 +2986 +2300 -402
160. 000004F8 -32 -122 -212 -174 -136 -200 -264 -264
161. 00000500 +1744 +1692 +1640 +1588 +1536 -1900 -1240 -964
162. 00000508 -688 -361 -34 +165 +364 +675 +986 +1553
163. 00000510 +2120 +2389 +2658 +2671 +2684 +2705 +2726 +2875
164. 00000518 +3024 +3001 +2978 +2475 +436 +837 +214 +3143
165. 00000520 +4024 +4015 +4006 +3997 +3988 +3963 +3938 +3913
166. 00000528 +3888 +3842 +3796 +3590 +3896 +3946 +3996 +3694
167. 00000530 +3392 +3292 +3192 +3028 +2864 +3148 +360 -92
168. 00000538 -32 -72 -112 -120 -128 -192 -256 -256
169. 00000540 +1860 +1546 +1745 +2072 -1185 -1426 -1155 -820
170. 00000548 -486 -207 +71 +317 +563 +449 +847 +669
171. 00000550 +1004 +1302 +1600 +1802 +2005 +2191 +2377 +2435
172. 00000558 +2494 +2477 +2460 +843 +763 +730 +1209 +4120
173. 00000560 +3960 +4011 +4062 +3985 +3908 +3883 +3858 +3833
174. 00000568 +3808 +3707 +3607 +3571 +3535 +3506 +3478 +3706
175. 00000570 +3934 +3916 +3899 +3786 +3673 +2368 -473 +14
176. 00000578 -12 -24 -36 -80 -124 -156 -188 -188
177. 00000580 +1720 +1849 +1979 +1180 -1666 -1272 -1391 -453
178. 00000588 -540 -758 +47 -364 +250 +383 +517 +170
179. 00000590 +336 +439 +543 +678 +814 +1229 +1645 +1644
180. 00000598 +1644 +1697 +1239 +748 +770 +399 +3613 +3978
181. 000005A0 +3832 +3847 +3862 +3845 +3828 +3803 +3778 +3753
182. 000005A8 +3728 +3669 +3611 +3552 +3494 +3419 +3345 +3142
183. 000005B0 +2940 +2813 +2687 +2624 +2562 -237 +37 -9
184. 000005B8 -56 -72 -88 -104 -120 -120 -120 -120
185. 000005C0 +1820 +1760 +2212 -2232 -1555 -762 -1506 -1290
186. 000005C8 -1586 -717 -872 -803 -735 -1302 -846 -389
187. 000005D0 -444 -127 -323 -70 +183 +143 +104 +321
188. 000005D8 +538 +777 +1017 +841 +665 +1924 +3696 +3708
189. 000005E0 +3720 +3731 +3742 +3721 +3700 +3431 +3674 +3629
190. 000005E8 +3584 +3523 +3462 +3401 +3341 +3264 +3187 +2982
191. 000005F0 +2778 +2562 +2346 +2418 +955 -13 +44 +68
192. 000005F8 +92 +36 -20 -76 -132 -132 -132 -132
193. 00000600 +1664 +1991 -754 -3435 -2020 -2493 -1942 -751
194. 00000608 +440 +124 +832 +1508 +1672 +1492 +1312 +1004
195. 00000610 +696 -182 -548 -1074 -1088 -1134 -668 -330
196. 00000618 -504 +402 +796 +902 +496 +3610 +3652 +3598
197. 00000620 +3544 +3583 +3622 +3533 +3444 +3443 +3442 +3441
198. 00000628 +3440 +3377 +3314 +3251 +3188 +3109 +3030 +2823
199. 00000630 +2616 +2439 +2262 +2053 -204 +211 +114 +49
200. 00000638 -16 -48 -80 -112 -144 -144 -144 -144
201. 00000640 +1800 +1778 +221 +1352 +1459 +1793 +2128 +2111
202. 00000648 +1582 +1477 +1373 +1333 +1293 +1528 +1252 +1488
203. 00000650 +1212 +1345 +1478 +1227 +977 +438 -613 -1279
204. 00000658 -922 +1323 +1008 +885 +2299 +3228 +3133 +3262
205. 00000660 +3392 +3204 +3016 +3212 +3409 +3305 +3201 +3449
206. 00000668 +3186 +3153 +3121 +3056 +2992 +2887 +2783 +2550
207. 00000670 +2318 +2175 +2032 +545 +82 +95 +108 +57
208. 00000678 +6 -26 -58 -90 -122 -122 -122 -122
209. 00000680 +1680 +1694 +1709 +1595 +1482 +1472 +1463 +1453
210. 00000688 +1444 +1391 +1339 +1286 +1234 +1213 +1193 +1172
211. 00000690 +1152 +1112 +1073 +1065 +1058 +922 +1299 +1131
212. 00000698 +964 +868 +773 +709 +2182 +2302 +2423 +2799
213. 000006A0 +2664 +2793 +2923 +2860 +2798 +3007 +2705 +3106
214. 000006A8 +2996 +2962 +2928 +2862 +2796 +2666 +2536 +2278
215. 000006B0 +2020 +1783 +1546 -227 +48 +43 +38 +33
216. 000006B8 +28 -4 -36 -68 -100 -100 -100 -100
217. 000006C0 +1624 +1650 +1676 +1638 +1601 +1551 +1501 +1451
218. 000006C8 +1402 +1361 +1320 +1279 +1239 +1214 +1189 +1164
219. 000006D0 +1140 +1103 +1067 +1031 +995 +1014 +1034 +926
220. 000006D8 +818 +885 +953 +989 +1025 +992 +1472 +2048
221. 000006E0 +2112 +1886 +2173 +2108 +2555 +2485 +2416 +2411
222. 000006E8 +2406 +2726 +2535 +2311 +2088 +2068 +2049 +1997
223. 000006F0 +1946 +1779 +76 +69 +62 +83 +104 +61
224. 000006F8 +18 -10 -38 -66 -94 -126 -158 -158
225. 00000700 +1824 +1734 +1644 +1554 +1464 +1438 +1412 +1386
226. 00000708 +1360 +1331 +1302 +1273 +1244 +1215 +1186 +1157
227. 00000710 +1128 +1095 +1062 +1029 +996 +979 +962 +945
228. 00000718 +928 +871 +814 +789 +764 +707 +1162 +1585
229. 00000720 +2008 +1588 +1168 +1356 +1544 +1836 +1616 +1940
230. 00000728 +1752 +2235 +2206 +1217 +1252 +1311 +1370 +1013
231. 00000730 +144 +143 +142 +109 +76 +59 +42 +25
232. 00000738 +8 -16 -40 -64 -88 -152 -216 -216
233. 00000740 +1552 +1528 +1504 +1480 +1456 +1420 +1384 +1348
234. 00000748 +1312 +1289 +1266 +1243 +1220 +1197 +1174 +1151
235. 00000750 +1128 +1091 +1054 +1017 +980 +959 +938 +917
236. 00000758 +896 +853 +810 +767 +724 +613 +502 +551
237. 00000760 +600 +384 +680 +560 +440 +376 +1336 +1528
238. 00000768 +1208 +989 +258 +231 +204 +137 +70 +131
239. 00000770 +192 +167 +142 +117 +92 +71 +50 +29
240. 00000778 +8 -20 -48 -76 -104 -136 -168 -168
241. 00000780 +1536 +1514 +1492 +1470 +1448 +1402 +1356 +1310
242. 00000788 +1264 +1247 +1230 +1213 +1196 +1179 +1162 +1145
243. 00000790 +1128 +1087 +1046 +1005 +964 +939 +914 +889
244. 00000798 +864 +835 +806 +777 +748 +711 +674 +637
245. 000007A0 +600 +588 +576 +564 +552 +580 +608 +1660
246. 000007A8 +1176 +511 +358 +333 +308 +275 +242 +209
247. 000007B0 +176 +159 +142 +125 +108 +83 +58 +33
248. 000007B8 +8 -24 -56 -88 -120 -120 -120 -120
249. 000007C0 +1536 +1514 +1492 +1470 +1448 +1402 +1356 +1310
250. 000007C8 +1264 +1247 +1230 +1213 +1196 +1179 +1162 +1145
251. 000007D0 +1128 +1087 +1046 +1005 +964 +939 +914 +889
252. 000007D8 +864 +835 +806 +777 +748 +711 +674 +637
253. 000007E0 +600 +588 +576 +564 +552 +452 +352 +92
254. 000007E8 +344 +319 +294 +301 +308 +275 +242 +209
255. 000007F0 +176 +159 +142 +125 +108 +83 +58 +33
256. 000007F8 +8 -24 -56 -88 -120 -120 -120 -120

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -16 +8 +32 +136 -16 -8 +0 -8
2. 00000008 -16 -12 -8 -4 +0 -12 -24 -36
3. 00000010 -48 -45 -42 -39 -36 -49 -62 -75
4. 00000018 -88 -96 -104 -112 -120 -128 -136 -144
5. 00000020 -152 -152 -152 -152 -152 -168 -184 -200
6. 00000028 -216 -225 -234 -243 -252 -261 -270 -279
7. 00000030 -288 -299 -310 -321 -332 -343 -354 -365
8. 00000038 -376 -384 -392 -400 -408 -408 -408 -408
9. 00000040 +84 +112 +140 +104 +69 +63 +57 +51
10. 00000048 +46 +44 +42 +40 +38 +32 +26 +20
11. 00000050 +14 +9 +4 -1 -6 -19 -32 -45
12. 00000058 -58 -52 -47 -74 -100 -99 -97 -96
13. 00000060 -95 -102 -109 -116 -123 -134 -145 -156
14. 00000068 -168 -178 -189 -200 -211 -223 -236 -249
15. 00000070 -262 -273 -284 -295 -307 -330 -353 -344
16. 00000078 -336 -349 -362 -375 -388 -388 -388 -388
17. 00000080 +184 +200 +217 +169 +122 +118 +115 +111
18. 00000088 +108 +100 +92 +84 +76 +76 +76 +76
19. 00000090 +76 +63 +50 +37 +24 +11 -2 -15
20. 00000098 -28 -9 +9 -35 -81 -70 -59 -48
21. 000000A0 -38 -52 -66 -80 -95 -101 -107 -113
22. 000000A8 -120 -132 -145 -157 -170 -186 -203 -219
23. 000000B0 -236 -247 -259 -270 -282 -317 -353 -324
24. 000000B8 -296 -314 -332 -350 -368 -368 -368 -368
25. 000000C0 +188 +324 +205 +182 +159 +397 +124 +171
26. 000000C8 +218 +204 +190 +176 +162 +154 +146 -70
27. 000000D0 -30 +37 +104 +91 +78 +93 +108 +187
28. 000000D8 +266 +252 +238 +160 +82 +30 -21 -73
29. 000000E0 -125 -122 -119 -85 -50 -61 -73 -84
30. 000000E8 -96 -108 -120 -132 -145 -159 -173 -187
31. 000000F0 -202 -199 -197 -227 -257 -278 -300 -178
32. 000000F8 -312 -311 -310 -325 -340 -340 -340 -340
33. 00000100 +576 +513 +450 +435 +420 +453 +230 +215
34. 00000108 +200 +212 +224 +204 +184 +200 -296 -120
35. 00000110 +56 +267 +478 +497 +516 +463 +410 +485
36. 00000118 +560 +577 +595 +548 +502 +419 +337 +254
37. 00000120 +172 +95 +19 +6 -6 -22 -39 -55
38. 00000128 -72 -84 -96 -108 -120 -132 -144 -156
39. 00000130 -168 -152 -136 -184 -232 -208 -184 -224
40. 00000138 -264 -276 -288 -300 -312 -312 -312 -312
41. 00000140 +354 +318 +283 +279 +276 +256 +237 +249
42. 00000148 +262 +280 +299 +286 +273 +65 -141 +3
43. 00000150 +148 +332 +517 +813 +854 +834 +815 +811
44. 00000158 +808 +855 +903 +854 +806 +765 +725 +620
45. 00000160 +516 +475 +434 +281 +129 -60 +7 -37
46. 00000168 -82 -90 -98 -75 -51 -61 -72 -82
47. 00000170 -93 -162 -232 -141 -51 -152 -254 -243
48. 00000178 -233 -511 -533 -267 -257 -289 -321 -321
49. 00000180 +388 +380 +372 +364 +356 +348 +340 +332
50. 00000188 +324 +317 +311 +288 +266 -228 +45 +206
51. 00000190 +368 +462 +556 +762 +968 +1142 +1060 +1058
52. 00000198 +1056 +1133 +1211 +1160 +1110 +1111 +1113 +986
53. 000001A0 +860 +791 +722 +621 +8 -1 -10 +13
54. 000001A8 +36 -32 -101 -106 -111 -119 -128 -137
55. 000001B0 -146 -93 -40 +29 -158 -145 -132 -231
56. 000001B8 +182 +1254 +1302 -218 -458 -506 -298 -298
57. 000001C0 +438 +427 +417 +406 +396 +401 +407 +412
58. 000001C8 +418 +360 +302 +276 +507 -9 +243 +367
59. 000001D0 +492 +619 +747 +906 +1066 +1171 +1277 +1286
60. 000001D8 +1296 +1319 +1343 +1430 +1518 +1411 +1305 +1262
61. 000001E0 +1220 +1202 +1185 +224 +31 +57 +84 +719
62. 000001E8 +586 +485 +384 +266 +149 +108 +67 +26
63. 000001F0 -15 -31 -48 -80 -113 -209 -50 +477
64. 000001F8 -19 +921 +837 -495 -547 -499 -195 -195
65. 00000200 +488 +475 +462 +449 +436 +423 +410 +397
66. 00000208 +384 +403 +422 +393 +876 +1267 +378 +497
67. 00000210 +616 +777 +938 +1035 +1132 +1297 +1462 +1499
68. 00000218 +1536 +1569 +1603 +1652 +1190 +1551 +1657 +1586
69. 00000220 +1516 +1502 +977 -108 +86 -43 +851 +1073
70. 00000228 +1040 +986 +933 +863 +794 +720 +647 +573
71. 00000230 +500 +398 +296 +242 +188 +366 +288 +546
72. 00000238 +36 -292 -364 +476 +36 -28 -92 -220
73. 00000240 +538 +522 +507 +492 +477 +465 +454 +443
74. 00000248 +432 +375 +319 +231 +655 +874 +1606 +818
75. 00000250 +798 +900 +1003 +1153 +1304 +1449 +1593 +1674
76. 00000258 +1755 +1780 +1806 +1784 +994 +1465 +1937 +1833
77. 00000260 +1729 +1779 +38 +40 +43 +333 +1648 +1490
78. 00000268 +1333 +1326 +1319 +1280 +1242 +1141 +1040 +971
79. 00000270 +903 +856 +810 +732 +654 +591 +529 +195
80. 00000278 +117 -30 -177 +732 +1897 +1113 -183 -311
81. 00000280 +588 +570 +553 +535 +518 +508 +499 +489
82. 00000288 +480 +428 +377 +5 +402 +802 +947 +1619
83. 00000290 +1012 +1136 +1260 +1368 +1477 +1537 +1597 +1657
84. 00000298 +1718 +1768 +1818 +1692 +1566 +1572 +1834 +1888
85. 000002A0 +1942 +968 -5 +77 -96 +1654 +1613 +1603
86. 000002A8 +1594 +1618 +1642 +1602 +1562 +1466 +1370 +1338
87. 000002B0 +1306 +1283 +1261 +1110 +960 +769 +579 +388
88. 000002B8 +198 +56 -86 -372 -402 -290 -178 -178
89. 000002C0 +606 +592 +578 +564 +551 +539 +527 +483
90. 000002C8 +440 +541 +130 +263 +397 +642 +887 +1196
91. 000002D0 +1506 +1243 +1493 +1615 +1737 +1737 +1737 +1737
92. 000002D8 +1737 +1773 +1809 +1829 +1850 +2006 +1906 +1934
93. 000002E0 +1963 -78 +184 +110 +805 +1881 +1678 +1730
94. 000002E8 +1783 +1785 +1788 +1759 +1730 +1724 +1719 +1682
95. 000002F0 +1645 +1478 +1311 +1112 +914 +785 +656 +495
96. 000002F8 +335 +164 -7 -226 -189 -157 -125 -125
97. 00000300 +624 +614 +604 +594 +584 +570 +556 +542
98. 00000308 +528 +318 +108 +298 +488 +626 +1020 +1078
99. 00000310 +1392 +1063 +991 +1046 +1102 +1265 +1429 +1592
100. 00000318 +1756 +1970 +2185 +2079 +1974 +1960 +1947 +2061
101. 00000320 +640 +138 +149 +47 +1994 +1804 +1871 +1857
102. 00000328 +1844 +1857 +1871 +1884 +1898 +1855 +1813 +1642
103. 00000330 +1472 +1321 +1170 +1083 +996 +897 +798 +635
104. 00000338 +472 +240 +8 -176 -104 -152 -200 -200
105. 00000340 +672 +670 +668 +666 +665 +595 +525 +535
106. 00000348 +546 +106 +434 +459 +483 +475 +468 +364
107. 00000350 +261 +258 +256 +222 +188 +146 +104 +14
108. 00000358 +180 +228 +276 +836 +1652 +1892 +2132 +1700
109. 00000360 -12 +242 -15 +1390 +2029 +2009 +1989 +1953
110. 00000368 +1918 +1909 +1900 +1892 +1883 +1780 +1678 +1703
111. 00000370 +1729 +1821 +1913 +1797 +1681 +1469 +1001 +581
112. 00000378 +162 +241 -192 -177 -162 -162 -162 -162
113. 00000380 +720 +694 +669 +643 +618 +636 +655 +577
114. 00000388 +756 +838 +665 +524 +383 +261 +140 +227
115. 00000390 +570 +766 +450 +630 +811 +867 +923 +803
116. 00000398 +428 +293 +159 +88 +18 +159 +557 +378
117. 000003A0 +200 +170 +396 +2126 +2064 +2038 +2012 +2002
118. 000003A8 +1992 +1961 +1930 +1899 +1869 +1930 +1991 +1924
119. 000003B0 +1858 +1713 +1568 +1487 +1407 +1498 +1589 +1664
120. 000003B8 +1740 +866 +760 +62 -124 -124 -124 -124
121. 000003C0 +736 +712 +689 +666 +643 +669 +696 +531
122. 000003C8 -402 -725 -792 -682 -573 -438 -47 +375
123. 000003D0 +799 +971 +888 +1076 +1265 +1436 +1606 +1825
124. 000003D8 +2044 +2067 +1834 +1409 +472 +249 +282 +251
125. 000003E0 +220 +137 +1335 +1925 +2259 +2152 +2046 +1988
126. 000003E8 +1930 +1949 +1968 +1987 +2006 +1891 +1776 +1661
127. 000003F0 +1547 +1429 +1311 +1194 +1076 +912 +749 +633
128. 000003F8 +1286 +269 +276 +75 -126 -126 -126 -126
129. 00000400 +752 +731 +710 +705 +700 +655 +866 -779
130. 00000408 -888 -544 -457 -305 -154 +29 +469 +764
131. 00000410 +1060 +1161 +1262 +1427 +1592 +1701 +1810 +1855
132. 00000418 +1900 +1936 +1973 +2105 +2238 +1970 +167 +267
133. 00000420 +368 +89 +67 +204 +342 +1163 +1729 +1926
134. 00000428 +2124 +2081 +2038 +2155 +2016 +1709 +1658 +1575
135. 00000430 +1492 +1305 +1119 +868 +618 +487 +357 +98
136. 00000438 -160 -136 -112 -88 -64 -96 -128 -128
137. 00000440 +794 +765 +737 +725 +713 +780 +80 -875
138. 00000448 -552 -387 -223 -74 +74 +376 +679 +949
139. 00000450 +1220 +1325 +1430 +1568 +1705 +1766 +1828 +1857
140. 00000458 +1887 +1963 +2040 +1956 +2129 +1031 +190 +292
141. 00000460 +139 +1565 +431 +177 -77 -35 +7 +97
142. 00000468 +187 +319 +707 +903 +843 +817 +791 +589
143. 00000470 +387 +231 +76 +0 -74 -290 -249 -16
144. 00000478 -40 -23 -6 -37 -68 -100 -132 -132
145. 00000480 +836 +800 +765 +745 +726 +842 -833 -604
146. 00000488 -376 -230 -85 +60 +206 +499 +793 +1022
147. 00000490 +1252 +1393 +1535 +1677 +1819 +1832 +1846 +1860
148. 00000498 +1874 +1814 +1755 +1663 +1316 +188 +341 +141
149. 000004A0 +1222 +2128 +2267 +2021 +1776 +1070 +365 +235
150. 000004A8 +106 -51 -208 -237 -266 -251 -236 -157
151. 000004B0 -78 +5 +89 +221 +609 +948 +1288 +476
152. 000004B8 -80 -54 -28 -50 -72 -104 -136 -136
153. 000004C0 +790 +807 +824 +729 +891 -134 -646 -503
154. 000004C8 -360 -221 -83 +39 +162 +274 +643 +899
155. 000004D0 +1156 +1310 +1464 +1554 +1644 +1640 +1636 +1664
156. 000004D8 +1693 +1721 +1750 +1522 +527 +327 +384 +296
157. 000004E0 +2001 +2028 +2055 +2034 +2013 +2118 +2223 +2104
158. 000004E8 +1985 +1871 +1757 +1739 +1721 +1637 +1553 +1661
159. 000004F0 +1769 +1793 +1818 +1699 +1580 +1493 +1150 -201
160. 000004F8 -16 -61 -106 -87 -68 -100 -132 -132
161. 00000500 +872 +846 +820 +794 +768 -950 -620 -482
162. 00000508 -344 -180 -17 +82 +182 +337 +493 +776
163. 00000510 +1060 +1194 +1329 +1335 +1342 +1352 +1363 +1437
164. 00000518 +1512 +1500 +1489 +1237 +218 +418 +107 +1571
165. 00000520 +2012 +2007 +2003 +1998 +1994 +1981 +1969 +1956
166. 00000528 +1944 +1921 +1898 +1795 +1948 +1973 +1998 +1847
167. 00000530 +1696 +1646 +1596 +1514 +1432 +1574 +180 -46
168. 00000538 -16 -36 -56 -60 -64 -96 -128 -128
169. 00000540 +930 +773 +872 +1036 -592 -713 -577 -410
170. 00000548 -243 -103 +35 +158 +281 +224 +423 +334
171. 00000550 +502 +651 +800 +901 +1002 +1095 +1188 +1217
172. 00000558 +1247 +1238 +1230 +421 +381 +365 +604 +2060
173. 00000560 +1980 +2005 +2031 +1992 +1954 +1941 +1929 +1916
174. 00000568 +1904 +1853 +1803 +1785 +1767 +1753 +1739 +1853
175. 00000570 +1967 +1958 +1949 +1893 +1836 +1184 -236 +7
176. 00000578 -6 -12 -18 -40 -62 -78 -94 -94
177. 00000580 +860 +924 +989 +590 -833 -636 -695 -226
178. 00000588 -270 -379 +23 -182 +125 +191 +258 +85
179. 00000590 +168 +219 +271 +339 +407 +614 +822 +822
180. 00000598 +822 +848 +619 +374 +385 +199 +1806 +1989
181. 000005A0 +1916 +1923 +1931 +1922 +1914 +1901 +1889 +1876
182. 000005A8 +1864 +1834 +1805 +1776 +1747 +1709 +1672 +1571
183. 000005B0 +1470 +1406 +1343 +1312 +1281 -118 +18 -4
184. 000005B8 -28 -36 -44 -52 -60 -60 -60 -60
185. 000005C0 +910 +880 +1106 -1116 -777 -381 -753 -645
186. 000005C8 -793 -358 -436 -401 -367 -651 -423 -194
187. 000005D0 -222 -63 -161 -35 +91 +71 +52 +160
188. 000005D8 +269 +388 +508 +420 +332 +962 +1848 +1854
189. 000005E0 +1860 +1865 +1871 +1860 +1850 +1715 +1837 +1814
190. 000005E8 +1792 +1761 +1731 +1700 +1670 +1632 +1593 +1491
191. 000005F0 +1389 +1281 +1173 +1209 +477 -6 +22 +34
192. 000005F8 +46 +18 -10 -38 -66 -66 -66 -66
193. 00000600 +832 +995 -377 -1717 -1010 -1246 -971 -375
194. 00000608 +220 +62 +416 +754 +836 +746 +656 +502
195. 00000610 +348 -91 -274 -537 -544 -567 -334 -165
196. 00000618 -252 +201 +398 +451 +248 +1805 +1826 +1799
197. 00000620 +1772 +1791 +1811 +1766 +1722 +1721 +1721 +1720
198. 00000628 +1720 +1688 +1657 +1625 +1594 +1554 +1515 +1411
199. 00000630 +1308 +1219 +1131 +1026 -102 +105 +57 +24
200. 00000638 -8 -24 -40 -56 -72 -72 -72 -72
201. 00000640 +900 +889 +110 +676 +729 +896 +1064 +1055
202. 00000648 +791 +738 +686 +666 +646 +764 +626 +744
203. 00000650 +606 +672 +739 +613 +488 +219 -306 -639
204. 00000658 -461 +661 +504 +442 +1149 +1614 +1566 +1631
205. 00000660 +1696 +1602 +1508 +1606 +1704 +1652 +1600 +1724
206. 00000668 +1593 +1576 +1560 +1528 +1496 +1443 +1391 +1275
207. 00000670 +1159 +1087 +1016 +272 +41 +47 +54 +28
208. 00000678 +3 -13 -29 -45 -61 -61 -61 -61
209. 00000680 +840 +847 +854 +797 +741 +736 +731 +726
210. 00000688 +722 +695 +669 +643 +617 +606 +596 +586
211. 00000690 +576 +556 +536 +532 +529 +461 +649 +565
212. 00000698 +482 +434 +386 +354 +1091 +1151 +1211 +1399
213. 000006A0 +1332 +1396 +1461 +1430 +1399 +1503 +1352 +1553
214. 000006A8 +1498 +1481 +1464 +1431 +1398 +1333 +1268 +1139
215. 000006B0 +1010 +891 +773 -113 +24 +21 +19 +16
216. 000006B8 +14 -2 -18 -34 -50 -50 -50 -50
217. 000006C0 +812 +825 +838 +819 +800 +775 +750 +725
218. 000006C8 +701 +680 +660 +639 +619 +607 +594 +582
219. 000006D0 +570 +551 +533 +515 +497 +507 +517 +463
220. 000006D8 +409 +442 +476 +494 +512 +496 +736 +1024
221. 000006E0 +1056 +943 +1086 +1054 +1277 +1242 +1208 +1205
222. 000006E8 +1203 +1363 +1267 +1155 +1044 +1034 +1024 +998
223. 000006F0 +973 +889 +38 +34 +31 +41 +52 +30
224. 000006F8 +9 -5 -19 -33 -47 -63 -79 -79
225. 00000700 +912 +867 +822 +777 +732 +719 +706 +693
226. 00000708 +680 +665 +651 +636 +622 +607 +593 +578
227. 00000710 +564 +547 +531 +514 +498 +489 +481 +472
228. 00000718 +464 +435 +407 +394 +382 +353 +581 +792
229. 00000720 +1004 +794 +584 +678 +772 +918 +808 +970
230. 00000728 +876 +1117 +1103 +608 +626 +655 +685 +506
231. 00000730 +72 +71 +71 +54 +38 +29 +21 +12
232. 00000738 +4 -8 -20 -32 -44 -76 -108 -108
233. 00000740 +776 +764 +752 +740 +728 +710 +692 +674
234. 00000748 +656 +644 +633 +621 +610 +598 +587 +575
235. 00000750 +564 +545 +527 +508 +490 +479 +469 +458
236. 00000758 +448 +426 +405 +383 +362 +306 +251 +275
237. 00000760 +300 +192 +340 +280 +220 +188 +668 +764
238. 00000768 +604 +494 +129 +115 +102 +68 +35 +65
239. 00000770 +96 +83 +71 +58 +46 +35 +25 +14
240. 00000778 +4 -10 -24 -38 -52 -68 -84 -84
241. 00000780 +768 +757 +746 +735 +724 +701 +678 +655
242. 00000788 +632 +623 +615 +606 +598 +589 +581 +572
243. 00000790 +564 +543 +523 +502 +482 +469 +457 +444
244. 00000798 +432 +417 +403 +388 +374 +355 +337 +318
245. 000007A0 +300 +294 +288 +282 +276 +290 +304 +830
246. 000007A8 +588 +255 +179 +166 +154 +137 +121 +104
247. 000007B0 +88 +79 +71 +62 +54 +41 +29 +16
248. 000007B8 +4 -12 -28 -44 -60 -60 -60 -60
249. 000007C0 +768 +757 +746 +735 +724 +701 +678 +655
250. 000007C8 +632 +623 +615 +606 +598 +589 +581 +572
251. 000007D0 +564 +543 +523 +502 +482 +469 +457 +444
252. 000007D8 +432 +417 +403 +388 +374 +355 +337 +318
253. 000007E0 +300 +294 +288 +282 +276 +226 +176 +46
254. 000007E8 +172 +159 +147 +150 +154 +137 +121 +104
255. 000007F0 +88 +79 +71 +62 +54 +41 +29 +16
256. 000007F8 +4 -12 -28 -44 -60 -60 -60 -60

###### Inverse DWT-X (LH1 - HH1)

The following is a dump of the H0 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +0 +0 +0 +0 +0 +0 +0 +0
11. 00000050 +0 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +0 +0 +0 +0 +0 +0 +0 +0
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 +0 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +0 +0 +0 +0 +0
17. 00000080 +0 +0 +0 +0 +0 +0 +0 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +64
19. 00000090 +128 +64 +0 -64 -128 -128 -128 -64
20. 00000098 +0 +0 +0 -64 -128 -128 -128 +0
21. 000000A0 +128 +64 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +0 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 +0 +0 +0 +0 +0 +0
24. 000000B8 +0 +0 +0 +0 +0 +0 +0 +0
25. 000000C0 -128 -128 -128 -128 -128 -64 +0 +0
26. 000000C8 +0 +0 +0 +0 +0 -64 -128 -64
27. 000000D0 +0 +0 +0 +0 +0 +0 +0 +0
28. 000000D8 +0 +0 +0 +0 +0 +0 +0 +0
29. 000000E0 +0 -64 -128 -64 +0 +0 +0 +0
30. 000000E8 +0 +0 +0 +0 +0 +0 +0 +0
31. 000000F0 +0 +0 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 +0 +0 +0 +0 +0 +0
33. 00000100 -128 -128 -128 -128 -128 -64 +0 +0
34. 00000108 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000110 +0 +0 +0 +0 +0 +0 +0 +0
36. 00000118 +0 +0 +0 +0 +0 +0 +0 +0
37. 00000120 +0 +0 +0 +0 +0 +0 +0 +0
38. 00000128 +0 +0 +0 +0 +0 +0 +0 +0
39. 00000130 +0 +0 +0 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 +0 +0 +0 +0 +0
41. 00000140 +0 +0 +0 +0 +0 +0 +0 +0
42. 00000148 +0 +0 +0 +0 +0 +0 +0 +0
43. 00000150 +0 +0 +0 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 +0 +0 +0
45. 00000160 +0 +0 +0 +0 +0 +0 +0 -64
46. 00000168 -128 +0 +128 +64 +0 +0 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 -64
48. 00000178 -128 -1088 -1024 +64 +128 +64 +0 +0
49. 00000180 +0 +0 +0 +0 +0 +0 +0 +0
50. 00000188 +0 +0 +0 -64 -128 -64 +0 +0
51. 00000190 +0 +0 +0 +0 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 +0 +0 +0
53. 000001A0 +0 +0 +0 +0 +0 +0 +0 +0
54. 000001A8 +0 +0 +0 -64 -128 -64 +0 +0
55. 000001B0 +0 +64 +128 +64 +0 +0 +0 -576
56. 000001B8 +896 +192 +512 +640 -256 -128 +0 +0
57. 000001C0 +0 +0 +0 +0 +0 +0 +0 +0
58. 000001C8 +0 +0 +0 -192 +640 -192 +0 +0
59. 000001D0 +0 +0 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 +0 +64 +128 +64 +0 +0
61. 000001E0 +0 +128 +256 -320 +128 +64 +0 +0
62. 000001E8 +0 +0 +0 +0 +0 +0 +0 +0
63. 000001F0 +0 +0 +0 +0 +0 -320 +384 +960
64. 000001F8 +512 -1088 -640 -384 -128 -64 +0 +0
65. 00000200 +0 +0 +0 +0 +0 +0 +0 +0
66. 00000208 +0 +0 +0 +0 +0 +64 +128 +64
67. 00000210 +0 +0 +0 +0 +0 +0 +0 +0
68. 00000218 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000220 +0 +0 +0 +0 +0 -384 +256 +128
70. 00000228 +0 +0 +0 +0 +0 +0 +0 +0
71. 00000230 +0 +0 +0 +0 +0 +128 +256 -320
72. 00000238 +128 +64 +0 +320 +640 +1024 +384 -128
73. 00000240 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000248 +0 +64 +128 -384 +128 +64 +0 +0
75. 00000250 +0 +0 +0 +0 +0 +64 +128 +64
76. 00000258 +0 +0 +0 +0 +0 +0 +0 +64
77. 00000260 +128 +64 +0 +0 +0 +0 +0 +0
78. 00000268 +0 +0 +0 +0 +0 +0 +0 +0
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +0 -512 -1024 -512 +0 +0
81. 00000280 +0 +0 +0 +0 +0 +0 +0 +0
82. 00000288 +0 +0 +0 +0 +0 +0 +0 +0
83. 00000290 +0 +0 +0 +0 +0 +64 +128 -64
84. 00000298 -256 -256 -256 +0 +256 +64 -128 -64
85. 000002A0 +0 +0 +0 -64 -128 -64 +0 +0
86. 000002A8 +0 +0 +0 +0 +0 +0 +0 +0
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 +0 +0 +0 +0 +0 +0 +0 +0
89. 000002C0 +0 +0 +0 +0 +0 +0 +0 +0
90. 000002C8 +0 -64 -128 -64 +0 +0 +0 +64
91. 000002D0 +128 +128 +128 +256 +384 +256 +128 +64
92. 000002D8 +0 +0 +0 +0 +0 +0 +0 +0
93. 000002E0 +0 +0 +0 +0 +0 +0 +0 +0
94. 000002E8 +0 +0 +0 +0 +0 +64 +128 +64
95. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0
96. 000002F8 +0 +0 +0 +0 +0 +0 +0 +0
97. 00000300 +0 +0 +0 +0 +0 +0 +0 +0
98. 00000308 +0 -64 -128 -64 +0 -64 -128 -384
99. 00000310 -640 -512 -384 -448 -512 -576 -640 -1152
100. 00000318 -640 +128 +896 +512 +128 +64 +0 +384
101. 00000320 -256 -128 +0 +0 +0 +0 +0 +0
102. 00000328 +0 +0 +0 +0 +0 +0 +0 -64
103. 00000330 -128 -192 -256 -320 -384 -192 +0 +64
104. 00000338 +128 +64 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 -64
106. 00000348 -128 +448 +0 +0 +0 +128 +256 +64
107. 00000350 -128 -64 +0 -128 -256 -320 -384 -128
108. 00000358 +128 +128 +128 -448 -1024 -64 +896 +0
109. 00000360 +128 -64 -256 +384 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +64 +128 +128
111. 00000370 +128 +64 +0 +0 +0 +384 +768 +128
112. 00000378 -512 +128 -256 -128 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 -64 -128 +192
114. 00000388 +512 +832 +128 -320 -768 -512 -256 -128
115. 00000390 +0 +0 +0 +0 +0 +128 +256 +576
116. 00000398 +896 +128 -640 -832 +0 +0 +0 +0
117. 000003A0 +0 +64 +128 +64 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 +0 +0 +0 -64 -128 -192 -256 +320
120. 000003B8 -128 +768 +640 +320 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 -128
122. 000003C8 -256 -64 +128 +64 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 +0 +0 +0 +0 +0
124. 000003D8 +0 -64 -128 +384 +896 -64 +0 +0
125. 000003E0 +0 +64 -896 +0 +896 +448 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 +0 +0 +0 +0 +384
128. 000003F8 -256 -192 -128 -64 +0 +0 +0 +0
129. 00000400 +0 +0 +0 +0 +0 +128 +256 -320
130. 00000408 +128 +64 +0 +0 +0 +0 +0 +0
131. 00000410 +0 +0 +0 +0 +0 +0 +0 +0
132. 00000418 +0 +0 +0 +0 +0 +0 +0 +64
133. 00000420 +128 -960 +0 +0 +0 -512 -1024 -128
134. 00000428 +768 +768 +768 +640 +512 +448 +384 +384
135. 00000430 +384 +448 +512 +192 -128 -192 -256 -128
136. 00000438 +0 +0 +0 +0 +0 +0 +0 +0
137. 00000440 +0 +0 +0 +0 +0 +0 +0 +0
138. 00000448 +0 +0 +0 +0 +0 +0 +0 +0
139. 00000450 +0 +0 +0 +0 +0 +0 +0 +0
140. 00000458 +0 +0 +0 +192 +384 -320 +0 +0
141. 00000460 +0 +0 +1024 +0 -1024 -512 +0 +64
142. 00000468 +128 -64 -256 -384 -512 -448 -384 -256
143. 00000470 -128 +0 +128 -128 -384 -512 -640 +192
144. 00000478 +0 +0 +0 +0 +0 +0 +0 +0
145. 00000480 +0 +0 +0 +0 +0 +0 +0 +0
146. 00000488 +0 +0 +0 +0 +0 +0 +0 +0
147. 00000490 +0 +0 +0 +64 +128 +64 +0 +64
148. 00000498 +128 -64 -256 -960 -640 +128 -128 +0
149. 000004A0 +128 +64 +0 +0 +0 +512 +1024 +448
150. 000004A8 -128 -512 -896 -1024 -1152 -1024 -896 -576
151. 000004B0 -256 +256 +768 +576 +384 +256 +128 -384
152. 000004B8 +128 +64 +0 +0 +0 +0 +0 +0
153. 000004C0 +0 +0 +0 +64 +128 +64 +0 +0
154. 000004C8 +0 +0 +0 -64 -128 -128 -128 -64
155. 000004D0 +0 +0 +0 +0 +0 +0 +0 +0
156. 000004D8 +0 +0 +0 +384 -256 -128 +0 +0
157. 000004E0 +0 +0 +0 +0 +0 +0 +0 +0
158. 000004E8 +0 +0 +0 +0 +0 +0 +0 +0
159. 000004F0 +0 +0 +0 +0 +0 +0 +0 +0
160. 000004F8 +0 +0 +0 +0 +0 +0 +0 +0
161. 00000500 +0 +0 +0 +0 +0 +0 +0 +0
162. 00000508 +0 +0 +0 +64 +128 +64 +0 +0
163. 00000510 +0 +0 +0 +0 +0 +0 +0 +0
164. 00000518 +0 +0 +0 +0 +0 -128 -256 +384
165. 00000520 +0 +0 +0 +0 +0 +0 +0 +0
166. 00000528 +0 +0 +0 -64 -128 +0 +128 +64
167. 00000530 +0 +0 +0 +0 +0 +384 -256 -128
168. 00000538 +0 +0 +0 +0 +0 +0 +0 +0
169. 00000540 -128 -64 +0 +384 -256 -64 +128 +128
170. 00000548 +128 +0 -128 +384 -128 -64 +0 +0
171. 00000550 +0 +0 +0 +0 +0 +0 +0 +0
172. 00000558 +0 +0 +0 +0 +0 +0 +0 +0
173. 00000560 +0 +0 +0 +0 +0 +0 +0 +0
174. 00000568 +0 +0 +0 +0 +0 +0 +0 -64
175. 00000570 -128 +0 +128 +0 -128 -64 +0 +0
176. 00000578 +0 +0 +0 +0 +0 +0 +0 +0
177. 00000580 +0 +64 +128 +192 +256 -128 +512 +448
178. 00000588 +384 +128 -128 +384 -128 +448 +0 -64
179. 00000590 -128 +0 +128 +64 +0 +0 +0 +0
180. 00000598 +0 +0 +0 +0 +0 +0 +0 +0
181. 000005A0 +0 +0 +0 +0 +0 +0 +0 +0
182. 000005A8 +0 +0 +0 +0 +0 +0 +0 +0
183. 000005B0 +0 +0 +0 +64 +128 +64 +0 +0
184. 000005B8 +0 +0 +0 +64 +128 +64 +0 +0
185. 000005C0 +0 +64 +128 -192 +512 -256 +0 +640
186. 000005C8 -768 -640 -512 -1216 -896 -832 -768 -640
187. 000005D0 -512 -192 +128 +64 +0 +0 +0 -64
188. 000005D8 -128 -64 +0 +0 +0 +0 +0 +0
189. 000005E0 +0 +0 +0 +0 +0 +0 +0 +0
190. 000005E8 +0 +0 +0 +0 +0 +0 +0 +0
191. 000005F0 +0 +0 +0 +0 +0 +64 +128 +64
192. 000005F8 +0 +0 +0 +0 +0 +0 +0 +0
193. 00000600 +128 +0 -1152 -1344 -512 +384 +1280 +768
194. 00000608 +256 +256 +256 +128 +0 -64 -128 +64
195. 00000610 +256 +448 +640 +576 -512 -768 +0 +0
196. 00000618 +0 +0 +0 +0 +0 +0 +0 +0
197. 00000620 +0 +0 +0 +0 +0 +0 +0 +0
198. 00000628 +0 +0 +0 +0 +0 +0 +0 +0
199. 00000630 +0 +0 +0 +0 +0 +0 +0 +0
200. 00000638 +0 +0 +0 +0 +0 +0 +0 +0
201. 00000640 -128 +64 +256 +64 -128 -128 -128 +0
202. 00000648 +128 +64 +0 +0 +0 +0 +0 +0
203. 00000650 +0 +0 +0 -64 -128 +192 +512 +128
204. 00000658 -256 -192 -128 -64 +0 +384 -256 -64
205. 00000660 +128 +0 -128 -64 +0 +0 +0 +0
206. 00000668 +0 +0 +0 +0 +0 +0 +0 +0
207. 00000670 +0 +64 +128 +64 +0 +0 +0 +0
208. 00000678 +0 +0 +0 +0 +0 +0 +0 +0
209. 00000680 +0 +0 +0 +0 +0 +0 +0 +0
210. 00000688 +0 +0 +0 +0 +0 +0 +0 +0
211. 00000690 +0 +0 +0 +0 +0 +0 +0 +0
212. 00000698 +0 +0 +0 +0 +0 +64 +128 +0
213. 000006A0 -128 +0 +128 +64 +0 +0 +0 +0
214. 000006A8 +0 +0 +0 +0 +0 +0 +0 +0
215. 000006B0 +0 +0 +0 +0 +0 +0 +0 +0
216. 000006B8 +0 +0 +0 +0 +0 +0 +0 +0
217. 000006C0 +0 +64 +128 +64 +0 +0 +0 +0
218. 000006C8 +0 +0 +0 +0 +0 +0 +0 +0
219. 000006D0 +0 +0 +0 +0 +0 +0 +0 +0
220. 000006D8 +0 +0 +0 -64 -128 -128 -128 +0
221. 000006E0 +128 -448 +0 +64 +128 +128 +128 +64
222. 000006E8 +0 +64 +128 +64 +0 -64 -128 +128
223. 000006F0 +384 +128 -128 -64 +0 +0 +0 +0
224. 000006F8 +0 +0 +0 +0 +0 +0 +0 +0
225. 00000700 +0 +0 +0 +0 +0 +0 +0 +0
226. 00000708 +0 +0 +0 +0 +0 +0 +0 +0
227. 00000710 +0 +0 +0 +0 +0 +0 +0 +0
228. 00000718 +0 +0 +0 +0 +0 -64 -128 -64
229. 00000720 +0 -512 +0 +64 +128 +128 +128 +128
230. 00000728 +128 +64 +0 -128 -256 -320 -384 -192
231. 00000730 +0 +0 +0 +0 +0 +0 +0 +0
232. 00000738 +0 +0 +0 +0 +0 +0 +0 +0
233. 00000740 +0 +0 +0 +0 +0 +0 +0 +0
234. 00000748 +0 +0 +0 +0 +0 +0 +0 +0
235. 00000750 +0 +0 +0 +0 +0 +0 +0 +0
236. 00000758 +0 +0 +0 +0 +0 +0 +0 +0
237. 00000760 +0 +0 +0 +0 +0 -128 +768 +0
238. 00000768 +256 +640 +0 +0 +0 +0 +0 +0
239. 00000770 +0 +0 +0 +0 +0 +0 +0 +0
240. 00000778 +0 +0 +0 +0 +0 +0 +0 +0
241. 00000780 +0 +0 +0 +0 +0 +0 +0 +0
242. 00000788 +0 +0 +0 +0 +0 +0 +0 +0
243. 00000790 +0 +0 +0 +0 +0 +0 +0 +0
244. 00000798 +0 +0 +0 +0 +0 +0 +0 +0
245. 000007A0 +0 +0 +0 +0 +0 +64 +128 -512
246. 000007A8 -128 -64 +0 +0 +0 +0 +0 +0
247. 000007B0 +0 +0 +0 +0 +0 +0 +0 +0
248. 000007B8 +0 +0 +0 +0 +0 +0 +0 +0
249. 000007C0 +0 +0 +0 +0 +0 +0 +0 +0
250. 000007C8 +0 +0 +0 +0 +0 +0 +0 +0
251. 000007D0 +0 +0 +0 +0 +0 +0 +0 +0
252. 000007D8 +0 +0 +0 +0 +0 +0 +0 +0
253. 000007E0 +0 +0 +0 +0 +0 +0 +0 +0
254. 000007E8 +0 +0 +0 +0 +0 +0 +0 +0
255. 000007F0 +0 +0 +0 +0 +0 +0 +0 +0
256. 000007F8 +0 +0 +0 +0 +0 +0 +0 +0

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +0 +0 +0 +0 +0 +0 +0 +0
2. 00000008 +0 +0 +0 +0 +0 +0 +0 +0
3. 00000010 +0 +0 +0 +0 +0 +0 +0 +0
4. 00000018 +0 +0 +0 +0 +0 +0 +0 +0
5. 00000020 +0 +0 +0 +0 +0 +0 +0 +0
6. 00000028 +0 +0 +0 +0 +0 +0 +0 +0
7. 00000030 +0 +0 +0 +0 +0 +0 +0 +0
8. 00000038 +0 +0 +0 +0 +0 +0 +0 +0
9. 00000040 +0 +0 +0 +0 +0 +0 +0 +0
10. 00000048 +0 +0 +0 +0 +0 +0 +0 +0
11. 00000050 +0 +0 +0 +0 +0 +0 +0 +0
12. 00000058 +0 +0 +0 +0 +0 +0 +0 +0
13. 00000060 +0 +0 +0 +0 +0 +0 +0 +0
14. 00000068 +0 +0 +0 +0 +0 +0 +0 +0
15. 00000070 +0 +0 +0 +0 +0 +0 +0 +0
16. 00000078 +0 +0 +0 +0 +0 +0 +0 +0
17. 00000080 +0 +0 +0 +0 +0 +0 +0 +0
18. 00000088 +0 +0 +0 +0 +0 +0 +0 +32
19. 00000090 +64 +32 +0 -32 -64 -64 -64 -32
20. 00000098 +0 +0 +0 -32 -64 -64 -64 +0
21. 000000A0 +64 +32 +0 +0 +0 +0 +0 +0
22. 000000A8 +0 +0 +0 +0 +0 +0 +0 +0
23. 000000B0 +0 +0 +0 +0 +0 +0 +0 +0
24. 000000B8 +0 +0 +0 +0 +0 +0 +0 +0
25. 000000C0 -64 -64 -64 -64 -64 -32 +0 +0
26. 000000C8 +0 +0 +0 +0 +0 -32 -64 -32
27. 000000D0 +0 +0 +0 +0 +0 +0 +0 +0
28. 000000D8 +0 +0 +0 +0 +0 +0 +0 +0
29. 000000E0 +0 -32 -64 -32 +0 +0 +0 +0
30. 000000E8 +0 +0 +0 +0 +0 +0 +0 +0
31. 000000F0 +0 +0 +0 +0 +0 +0 +0 +0
32. 000000F8 +0 +0 +0 +0 +0 +0 +0 +0
33. 00000100 -64 -64 -64 -64 -64 -32 +0 +0
34. 00000108 +0 +0 +0 +0 +0 +0 +0 +0
35. 00000110 +0 +0 +0 +0 +0 +0 +0 +0
36. 00000118 +0 +0 +0 +0 +0 +0 +0 +0
37. 00000120 +0 +0 +0 +0 +0 +0 +0 +0
38. 00000128 +0 +0 +0 +0 +0 +0 +0 +0
39. 00000130 +0 +0 +0 +0 +0 +0 +0 +0
40. 00000138 +0 +0 +0 +0 +0 +0 +0 +0
41. 00000140 +0 +0 +0 +0 +0 +0 +0 +0
42. 00000148 +0 +0 +0 +0 +0 +0 +0 +0
43. 00000150 +0 +0 +0 +0 +0 +0 +0 +0
44. 00000158 +0 +0 +0 +0 +0 +0 +0 +0
45. 00000160 +0 +0 +0 +0 +0 +0 +0 -32
46. 00000168 -64 +0 +64 +32 +0 +0 +0 +0
47. 00000170 +0 +0 +0 +0 +0 +0 +0 -32
48. 00000178 -64 -544 -512 +32 +64 +32 +0 +0
49. 00000180 +0 +0 +0 +0 +0 +0 +0 +0
50. 00000188 +0 +0 +0 -32 -64 -32 +0 +0
51. 00000190 +0 +0 +0 +0 +0 +0 +0 +0
52. 00000198 +0 +0 +0 +0 +0 +0 +0 +0
53. 000001A0 +0 +0 +0 +0 +0 +0 +0 +0
54. 000001A8 +0 +0 +0 -32 -64 -32 +0 +0
55. 000001B0 +0 +32 +64 +32 +0 +0 +0 -288
56. 000001B8 +448 +96 +256 +320 -128 -64 +0 +0
57. 000001C0 +0 +0 +0 +0 +0 +0 +0 +0
58. 000001C8 +0 +0 +0 -96 +320 -96 +0 +0
59. 000001D0 +0 +0 +0 +0 +0 +0 +0 +0
60. 000001D8 +0 +0 +0 +32 +64 +32 +0 +0
61. 000001E0 +0 +64 +128 -160 +64 +32 +0 +0
62. 000001E8 +0 +0 +0 +0 +0 +0 +0 +0
63. 000001F0 +0 +0 +0 +0 +0 -160 +192 +480
64. 000001F8 +256 -544 -320 -192 -64 -32 +0 +0
65. 00000200 +0 +0 +0 +0 +0 +0 +0 +0
66. 00000208 +0 +0 +0 +0 +0 +32 +64 +32
67. 00000210 +0 +0 +0 +0 +0 +0 +0 +0
68. 00000218 +0 +0 +0 +0 +0 +0 +0 +0
69. 00000220 +0 +0 +0 +0 +0 -192 +128 +64
70. 00000228 +0 +0 +0 +0 +0 +0 +0 +0
71. 00000230 +0 +0 +0 +0 +0 +64 +128 -160
72. 00000238 +64 +32 +0 +160 +320 +512 +192 -64
73. 00000240 +0 +0 +0 +0 +0 +0 +0 +0
74. 00000248 +0 +32 +64 -192 +64 +32 +0 +0
75. 00000250 +0 +0 +0 +0 +0 +32 +64 +32
76. 00000258 +0 +0 +0 +0 +0 +0 +0 +32
77. 00000260 +64 +32 +0 +0 +0 +0 +0 +0
78. 00000268 +0 +0 +0 +0 +0 +0 +0 +0
79. 00000270 +0 +0 +0 +0 +0 +0 +0 +0
80. 00000278 +0 +0 +0 -256 -512 -256 +0 +0
81. 00000280 +0 +0 +0 +0 +0 +0 +0 +0
82. 00000288 +0 +0 +0 +0 +0 +0 +0 +0
83. 00000290 +0 +0 +0 +0 +0 +32 +64 -32
84. 00000298 -128 -128 -128 +0 +128 +32 -64 -32
85. 000002A0 +0 +0 +0 -32 -64 -32 +0 +0
86. 000002A8 +0 +0 +0 +0 +0 +0 +0 +0
87. 000002B0 +0 +0 +0 +0 +0 +0 +0 +0
88. 000002B8 +0 +0 +0 +0 +0 +0 +0 +0
89. 000002C0 +0 +0 +0 +0 +0 +0 +0 +0
90. 000002C8 +0 -32 -64 -32 +0 +0 +0 +32
91. 000002D0 +64 +64 +64 +128 +192 +128 +64 +32
92. 000002D8 +0 +0 +0 +0 +0 +0 +0 +0
93. 000002E0 +0 +0 +0 +0 +0 +0 +0 +0
94. 000002E8 +0 +0 +0 +0 +0 +32 +64 +32
95. 000002F0 +0 +0 +0 +0 +0 +0 +0 +0
96. 000002F8 +0 +0 +0 +0 +0 +0 +0 +0
97. 00000300 +0 +0 +0 +0 +0 +0 +0 +0
98. 00000308 +0 -32 -64 -32 +0 -32 -64 -192
99. 00000310 -320 -256 -192 -224 -256 -288 -320 -576
100. 00000318 -320 +64 +448 +256 +64 +32 +0 +192
101. 00000320 -128 -64 +0 +0 +0 +0 +0 +0
102. 00000328 +0 +0 +0 +0 +0 +0 +0 -32
103. 00000330 -64 -96 -128 -160 -192 -96 +0 +32
104. 00000338 +64 +32 +0 +0 +0 +0 +0 +0
105. 00000340 +0 +0 +0 +0 +0 +0 +0 -32
106. 00000348 -64 +224 +0 +0 +0 +64 +128 +32
107. 00000350 -64 -32 +0 -64 -128 -160 -192 -64
108. 00000358 +64 +64 +64 -224 -512 -32 +448 +0
109. 00000360 +64 -32 -128 +192 +0 +0 +0 +0
110. 00000368 +0 +0 +0 +0 +0 +32 +64 +64
111. 00000370 +64 +32 +0 +0 +0 +192 +384 +64
112. 00000378 -256 +64 -128 -64 +0 +0 +0 +0
113. 00000380 +0 +0 +0 +0 +0 -32 -64 +96
114. 00000388 +256 +416 +64 -160 -384 -256 -128 -64
115. 00000390 +0 +0 +0 +0 +0 +64 +128 +288
116. 00000398 +448 +64 -320 -416 +0 +0 +0 +0
117. 000003A0 +0 +32 +64 +32 +0 +0 +0 +0
118. 000003A8 +0 +0 +0 +0 +0 +0 +0 +0
119. 000003B0 +0 +0 +0 -32 -64 -96 -128 +160
120. 000003B8 -64 +384 +320 +160 +0 +0 +0 +0
121. 000003C0 +0 +0 +0 +0 +0 +0 +0 -64
122. 000003C8 -128 -32 +64 +32 +0 +0 +0 +0
123. 000003D0 +0 +0 +0 +0 +0 +0 +0 +0
124. 000003D8 +0 -32 -64 +192 +448 -32 +0 +0
125. 000003E0 +0 +32 -448 +0 +448 +224 +0 +0
126. 000003E8 +0 +0 +0 +0 +0 +0 +0 +0
127. 000003F0 +0 +0 +0 +0 +0 +0 +0 +192
128. 000003F8 -128 -96 -64 -32 +0 +0 +0 +0
129. 00000400 +0 +0 +0 +0 +0 +64 +128 -160
130. 00000408 +64 +32 +0 +0 +0 +0 +0 +0
131. 00000410 +0 +0 +0 +0 +0 +0 +0 +0
132. 00000418 +0 +0 +0 +0 +0 +0 +0 +32
133. 00000420 +64 -480 +0 +0 +0 -256 -512 -64
134. 00000428 +384 +384 +384 +320 +256 +224 +192 +192
135. 00000430 +192 +224 +256 +96 -64 -96 -128 -64
136. 00000438 +0 +0 +0 +0 +0 +0 +0 +0
137. 00000440 +0 +0 +0 +0 +0 +0 +0 +0
138. 00000448 +0 +0 +0 +0 +0 +0 +0 +0
139. 00000450 +0 +0 +0 +0 +0 +0 +0 +0
140. 00000458 +0 +0 +0 +96 +192 -160 +0 +0
141. 00000460 +0 +0 +512 +0 -512 -256 +0 +32
142. 00000468 +64 -32 -128 -192 -256 -224 -192 -128
143. 00000470 -64 +0 +64 -64 -192 -256 -320 +96
144. 00000478 +0 +0 +0 +0 +0 +0 +0 +0
145. 00000480 +0 +0 +0 +0 +0 +0 +0 +0
146. 00000488 +0 +0 +0 +0 +0 +0 +0 +0
147. 00000490 +0 +0 +0 +32 +64 +32 +0 +32
148. 00000498 +64 -32 -128 -480 -320 +64 -64 +0
149. 000004A0 +64 +32 +0 +0 +0 +256 +512 +224
150. 000004A8 -64 -256 -448 -512 -576 -512 -448 -288
151. 000004B0 -128 +128 +384 +288 +192 +128 +64 -192
152. 000004B8 +64 +32 +0 +0 +0 +0 +0 +0
153. 000004C0 +0 +0 +0 +32 +64 +32 +0 +0
154. 000004C8 +0 +0 +0 -32 -64 -64 -64 -32
155. 000004D0 +0 +0 +0 +0 +0 +0 +0 +0
156. 000004D8 +0 +0 +0 +192 -128 -64 +0 +0
157. 000004E0 +0 +0 +0 +0 +0 +0 +0 +0
158. 000004E8 +0 +0 +0 +0 +0 +0 +0 +0
159. 000004F0 +0 +0 +0 +0 +0 +0 +0 +0
160. 000004F8 +0 +0 +0 +0 +0 +0 +0 +0
161. 00000500 +0 +0 +0 +0 +0 +0 +0 +0
162. 00000508 +0 +0 +0 +32 +64 +32 +0 +0
163. 00000510 +0 +0 +0 +0 +0 +0 +0 +0
164. 00000518 +0 +0 +0 +0 +0 -64 -128 +192
165. 00000520 +0 +0 +0 +0 +0 +0 +0 +0
166. 00000528 +0 +0 +0 -32 -64 +0 +64 +32
167. 00000530 +0 +0 +0 +0 +0 +192 -128 -64
168. 00000538 +0 +0 +0 +0 +0 +0 +0 +0
169. 00000540 -64 -32 +0 +192 -128 -32 +64 +64
170. 00000548 +64 +0 -64 +192 -64 -32 +0 +0
171. 00000550 +0 +0 +0 +0 +0 +0 +0 +0
172. 00000558 +0 +0 +0 +0 +0 +0 +0 +0
173. 00000560 +0 +0 +0 +0 +0 +0 +0 +0
174. 00000568 +0 +0 +0 +0 +0 +0 +0 -32
175. 00000570 -64 +0 +64 +0 -64 -32 +0 +0
176. 00000578 +0 +0 +0 +0 +0 +0 +0 +0
177. 00000580 +0 +32 +64 +96 +128 -64 +256 +224
178. 00000588 +192 +64 -64 +192 -64 +224 +0 -32
179. 00000590 -64 +0 +64 +32 +0 +0 +0 +0
180. 00000598 +0 +0 +0 +0 +0 +0 +0 +0
181. 000005A0 +0 +0 +0 +0 +0 +0 +0 +0
182. 000005A8 +0 +0 +0 +0 +0 +0 +0 +0
183. 000005B0 +0 +0 +0 +32 +64 +32 +0 +0
184. 000005B8 +0 +0 +0 +32 +64 +32 +0 +0
185. 000005C0 +0 +32 +64 -96 +256 -128 +0 +320
186. 000005C8 -384 -320 -256 -608 -448 -416 -384 -320
187. 000005D0 -256 -96 +64 +32 +0 +0 +0 -32
188. 000005D8 -64 -32 +0 +0 +0 +0 +0 +0
189. 000005E0 +0 +0 +0 +0 +0 +0 +0 +0
190. 000005E8 +0 +0 +0 +0 +0 +0 +0 +0
191. 000005F0 +0 +0 +0 +0 +0 +32 +64 +32
192. 000005F8 +0 +0 +0 +0 +0 +0 +0 +0
193. 00000600 +64 +0 -576 -672 -256 +192 +640 +384
194. 00000608 +128 +128 +128 +64 +0 -32 -64 +32
195. 00000610 +128 +224 +320 +288 -256 -384 +0 +0
196. 00000618 +0 +0 +0 +0 +0 +0 +0 +0
197. 00000620 +0 +0 +0 +0 +0 +0 +0 +0
198. 00000628 +0 +0 +0 +0 +0 +0 +0 +0
199. 00000630 +0 +0 +0 +0 +0 +0 +0 +0
200. 00000638 +0 +0 +0 +0 +0 +0 +0 +0
201. 00000640 -64 +32 +128 +32 -64 -64 -64 +0
202. 00000648 +64 +32 +0 +0 +0 +0 +0 +0
203. 00000650 +0 +0 +0 -32 -64 +96 +256 +64
204. 00000658 -128 -96 -64 -32 +0 +192 -128 -32
205. 00000660 +64 +0 -64 -32 +0 +0 +0 +0
206. 00000668 +0 +0 +0 +0 +0 +0 +0 +0
207. 00000670 +0 +32 +64 +32 +0 +0 +0 +0
208. 00000678 +0 +0 +0 +0 +0 +0 +0 +0
209. 00000680 +0 +0 +0 +0 +0 +0 +0 +0
210. 00000688 +0 +0 +0 +0 +0 +0 +0 +0
211. 00000690 +0 +0 +0 +0 +0 +0 +0 +0
212. 00000698 +0 +0 +0 +0 +0 +32 +64 +0
213. 000006A0 -64 +0 +64 +32 +0 +0 +0 +0
214. 000006A8 +0 +0 +0 +0 +0 +0 +0 +0
215. 000006B0 +0 +0 +0 +0 +0 +0 +0 +0
216. 000006B8 +0 +0 +0 +0 +0 +0 +0 +0
217. 000006C0 +0 +32 +64 +32 +0 +0 +0 +0
218. 000006C8 +0 +0 +0 +0 +0 +0 +0 +0
219. 000006D0 +0 +0 +0 +0 +0 +0 +0 +0
220. 000006D8 +0 +0 +0 -32 -64 -64 -64 +0
221. 000006E0 +64 -224 +0 +32 +64 +64 +64 +32
222. 000006E8 +0 +32 +64 +32 +0 -32 -64 +64
223. 000006F0 +192 +64 -64 -32 +0 +0 +0 +0
224. 000006F8 +0 +0 +0 +0 +0 +0 +0 +0
225. 00000700 +0 +0 +0 +0 +0 +0 +0 +0
226. 00000708 +0 +0 +0 +0 +0 +0 +0 +0
227. 00000710 +0 +0 +0 +0 +0 +0 +0 +0
228. 00000718 +0 +0 +0 +0 +0 -32 -64 -32
229. 00000720 +0 -256 +0 +32 +64 +64 +64 +64
230. 00000728 +64 +32 +0 -64 -128 -160 -192 -96
231. 00000730 +0 +0 +0 +0 +0 +0 +0 +0
232. 00000738 +0 +0 +0 +0 +0 +0 +0 +0
233. 00000740 +0 +0 +0 +0 +0 +0 +0 +0
234. 00000748 +0 +0 +0 +0 +0 +0 +0 +0
235. 00000750 +0 +0 +0 +0 +0 +0 +0 +0
236. 00000758 +0 +0 +0 +0 +0 +0 +0 +0
237. 00000760 +0 +0 +0 +0 +0 -64 +384 +0
238. 00000768 +128 +320 +0 +0 +0 +0 +0 +0
239. 00000770 +0 +0 +0 +0 +0 +0 +0 +0
240. 00000778 +0 +0 +0 +0 +0 +0 +0 +0
241. 00000780 +0 +0 +0 +0 +0 +0 +0 +0
242. 00000788 +0 +0 +0 +0 +0 +0 +0 +0
243. 00000790 +0 +0 +0 +0 +0 +0 +0 +0
244. 00000798 +0 +0 +0 +0 +0 +0 +0 +0
245. 000007A0 +0 +0 +0 +0 +0 +32 +64 -256
246. 000007A8 -64 -32 +0 +0 +0 +0 +0 +0
247. 000007B0 +0 +0 +0 +0 +0 +0 +0 +0
248. 000007B8 +0 +0 +0 +0 +0 +0 +0 +0
249. 000007C0 +0 +0 +0 +0 +0 +0 +0 +0
250. 000007C8 +0 +0 +0 +0 +0 +0 +0 +0
251. 000007D0 +0 +0 +0 +0 +0 +0 +0 +0
252. 000007D8 +0 +0 +0 +0 +0 +0 +0 +0
253. 000007E0 +0 +0 +0 +0 +0 +0 +0 +0
254. 000007E8 +0 +0 +0 +0 +0 +0 +0 +0
255. 000007F0 +0 +0 +0 +0 +0 +0 +0 +0
256. 000007F8 +0 +0 +0 +0 +0 +0 +0 +0

###### Inverse DWT-Y (L0 – H0)

The following is a dump of the LL0 sub-band, as shown in the figure illustrating three-level DWT decomposition in section [3.1.8.1.4](#Section_0E89CB498B754084B8C3A19C85F4BCAC).

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -32 +16 +64 +272 -32 -16 +0 -16
2. 00000008 -32 -24 -16 -8 +0 -24 -48 -72
3. 00000010 -96 -90 -84 -78 -72 -98 -124 -150
4. 00000018 -176 -192 -208 -224 -240 -256 -272 -288
5. 00000020 -304 -304 -304 -304 -304 -336 -368 -400
6. 00000028 -432 -450 -468 -486 -504 -522 -540 -558
7. 00000030 -576 -598 -620 -642 -664 -686 -708 -730
8. 00000038 -752 -768 -784 -800 -816 -816 -816 -816
9. 00000040 +68 +120 +172 +240 +53 +55 +57 +43
10. 00000048 +30 +32 +34 +36 +38 +20 +2 -16
11. 00000050 -34 -36 -38 -40 -42 -68 -94 -120
12. 00000058 -146 -148 -151 -186 -220 -227 -233 -240
13. 00000060 -247 -254 -261 -268 -275 -302 -329 -356
14. 00000068 -384 -403 -423 -443 -463 -484 -506 -528
15. 00000070 -550 -572 -594 -616 -639 -673 -707 -709
16. 00000078 -712 -733 -754 -775 -796 -796 -796 -796
17. 00000080 +168 +224 +281 +209 +138 +126 +115 +103
18. 00000088 +92 +88 +84 +80 +76 +64 +52 +40
19. 00000090 +28 +18 +8 -2 -12 -38 -64 -90
20. 00000098 -116 -105 -95 -148 -201 -198 -195 -192
21. 000000A0 -190 -204 -218 -232 -247 -269 -291 -313
22. 000000A8 -336 -357 -379 -400 -422 -447 -473 -498
23. 000000B0 -524 -546 -569 -591 -614 -660 -707 -689
24. 000000B8 -672 -698 -724 -750 -776 -776 -776 -776
25. 000000C0 +268 +312 +357 +273 +191 +181 +172 +162
26. 000000C8 +154 +144 +134 +124 +114 +108 +102 +80
27. 000000D0 +58 +56 +54 +52 +50 +24 -2 -44
28. 000000D8 -86 -61 -38 -93 -149 -137 -124 -144
29. 000000E0 -165 -170 -175 -196 -218 -235 -252 -269
30. 000000E8 -288 -310 -334 -357 -381 -409 -439 -468
31. 000000F0 -498 -520 -543 -565 -589 -647 -706 -668
32. 000000F8 -632 -663 -694 -725 -756 -756 -756 -756
33. 00000100 +368 +401 +434 +339 +244 +237 +230 +223
34. 00000108 +216 +200 +184 +168 +152 +152 +152 +120
35. 00000110 +88 +94 +100 +106 +112 +86 +60 +2
36. 00000118 -56 -18 +19 -39 -98 -76 -55 -97
37. 00000120 -140 -136 -133 -161 -190 -202 -215 -227
38. 00000128 -240 -265 -290 -315 -340 -373 -406 -439
39. 00000130 -472 -495 -518 -541 -564 -635 -706 -649
40. 00000138 -592 -628 -664 -700 -736 -736 -736 -736
41. 00000140 +404 +556 +454 +383 +313 +531 +239 +282
42. 00000148 +326 +304 +282 +260 +238 +246 +254 +118
43. 00000150 +238 +196 +154 +32 -90 -88 -86 +76
44. 00000158 +238 +243 +247 +29 -191 -232 -272 -121
45. 00000160 +29 -62 -153 -149 -145 -162 -180 -197
46. 00000168 -216 -240 -265 -289 -315 -345 -376 -406
47. 00000170 -438 -446 -456 -497 -539 -595 -653 -502
48. 00000178 -608 -625 -642 -675 -708 -708 -708 -708
49. 00000180 +440 +713 +475 +428 +382 +827 +249 +342
50. 00000188 +436 +408 +380 +352 +324 +340 +356 -140
51. 00000190 -124 +42 +208 +214 +220 +250 +280 +406
52. 00000198 +532 +504 +476 +352 +229 +125 +22 -146
53. 000001A0 -314 -244 -175 -138 -101 -123 -146 -169
54. 000001A8 -192 -216 -241 -265 -290 -318 -347 -375
55. 000001B0 -404 -399 -395 -454 -514 -557 -601 -356
56. 000001B8 -624 -622 -620 -650 -680 -680 -680 -680
57. 000001C0 +604 +677 +495 +457 +419 +770 +354 +386
58. 000001C8 +418 +416 +414 +380 +346 +258 -342 -302
59. 000001D0 -6 +288 +582 +604 +626 +588 +550 +688
60. 000001D8 +826 +829 +833 +724 +616 +481 +348 +181
61. 000001E0 +15 -139 -292 -175 -56 -83 -112 -139
62. 000001E8 -168 -192 -216 -240 -265 -291 -317 -343
63. 000001F0 -370 -351 -333 -411 -489 -486 -484 -402
64. 000001F8 -576 -587 -598 -625 -652 -652 -652 -652
65. 00000200 +1280 +1154 +1028 +998 +968 +970 +460 +430
66. 00000208 +400 +424 +448 +408 +368 +432 -528 -208
67. 00000210 +112 +534 +956 +994 +1032 +926 +820 +970
68. 00000218 +1120 +1155 +1190 +1097 +1004 +839 +674 +509
69. 00000220 +344 +223 +102 +45 -12 -45 -78 -111
70. 00000228 -144 -168 -192 -216 -240 -264 -288 -312
71. 00000230 -336 -304 -272 -368 -464 -416 -368 -448
72. 00000238 -528 -552 -576 -600 -624 -624 -624 -624
73. 00000240 +770 +671 +573 +554 +536 +629 +467 +464
74. 00000248 +462 +492 +523 +490 +457 +281 -405 -101
75. 00000250 +204 +599 +995 +1310 +1370 +1297 +1225 +1296
76. 00000258 +1368 +1432 +1498 +1402 +1308 +1184 +1062 +874
77. 00000260 +688 +586 +485 +303 +123 -82 -32 -76
78. 00000268 -122 -174 -226 -199 -171 -193 -216 -238
79. 00000270 -261 -314 -368 -325 -283 -360 -438 -451
80. 00000278 -465 -515 -565 -583 -601 -617 -633 -633
81. 00000280 +772 +701 +630 +623 +616 +545 +474 +499
82. 00000288 +524 +561 +599 +572 +546 +131 -283 +6
83. 00000290 +296 +665 +1034 +1627 +1708 +1669 +1630 +1623
84. 00000298 +1616 +1711 +1806 +1709 +1612 +1531 +1450 +1241
85. 000002A0 +1032 +950 +869 +563 +258 -120 +15 -42
86. 000002A8 -100 -180 -261 -182 -103 -123 -144 -165
87. 000002B0 -186 -325 -464 -283 -102 -305 -508 -455
88. 000002B8 -402 -478 -554 -566 -578 -610 -642 -642
89. 000002C0 +774 +730 +687 +675 +664 +620 +577 +581
90. 000002C8 +586 +597 +610 +590 +571 -147 -96 +209
91. 000002D0 +516 +794 +1073 +1575 +1822 +1976 +1875 +1869
92. 000002D8 +1864 +1988 +2114 +2014 +1916 +1876 +1838 +1606
93. 000002E0 +1376 +1266 +1156 +902 +137 -61 -3 -120
94. 000002E8 -238 -122 -7 -69 -130 -164 -200 -219
95. 000002F0 -239 -271 -304 -128 -209 -297 -386 -426
96. 000002F8 -467 -937 -895 -549 -459 -667 -619 -619
97. 00000300 +776 +760 +744 +728 +712 +696 +680 +664
98. 00000308 +648 +635 +622 +609 +596 -425 +90 +413
99. 00000310 +736 +924 +1112 +1524 +1936 +2284 +2120 +2116
100. 00000318 +2112 +2267 +2422 +2321 +2220 +2223 +2226 +1973
101. 00000320 +1720 +1582 +1444 +1242 +16 -2 -20 +58
102. 00000328 +136 -65 -267 -212 -158 -207 -257 -274
103. 00000330 -292 -218 -144 +26 -316 -290 -264 -142
104. 00000338 -20 +2956 +2860 -788 -852 -980 -596 -596
105. 00000340 +826 +807 +789 +770 +752 +749 +747 +744
106. 00000348 +742 +677 +613 +516 +421 -285 +288 +573
107. 00000350 +860 +1081 +1303 +1668 +2034 +2313 +2337 +2344
108. 00000358 +2352 +2452 +2554 +2574 +2596 +2506 +2418 +2248
109. 00000360 +2080 +1961 +1843 +925 +7 +40 +74 +748
110. 00000368 +654 +453 +251 +48 -154 -107 -61 -111
111. 00000370 -161 -28 +104 +45 -271 -274 -278 -842
112. 00000378 +1411 +3007 +3323 +327 -1389 -1197 -493 -493
113. 00000380 +876 +855 +834 +813 +792 +803 +814 +825
114. 00000388 +836 +720 +605 +681 +758 +110 +487 +735
115. 00000390 +984 +1239 +1494 +1813 +2132 +2343 +2554 +2573
116. 00000398 +2592 +2639 +2686 +2829 +2972 +2791 +2610 +2525
117. 000003A0 +2440 +2341 +2243 +608 -2 +83 +169 +1438
118. 000003A8 +1172 +970 +768 +565 +363 +249 +135 +52
119. 000003B0 -30 -95 -160 -193 -226 -259 -292 +763
120. 000003B8 -742 +2290 +1738 -1118 -902 -902 -390 -390
121. 000003C0 +926 +902 +879 +855 +832 +824 +817 +809
122. 000003C8 +802 +763 +724 +397 +2375 +970 +589 +848
123. 000003D0 +1108 +1396 +1685 +1941 +2198 +2468 +2739 +2785
124. 000003D8 +2832 +2888 +2946 +3178 +2900 +3058 +2962 +2848
125. 000003E0 +2736 +2896 +2546 -364 +309 +205 +871 +1760
126. 000003E8 +1626 +1471 +1317 +1145 +975 +844 +714 +599
127. 000003F0 +485 +351 +216 +146 +75 -355 +750 +2687
128. 000003F8 +529 -1067 -615 -835 -799 -847 -383 -383
129. 00000400 +976 +950 +924 +898 +872 +846 +820 +794
130. 00000408 +768 +806 +844 +882 +1432 +2598 +692 +962
131. 00000410 +1232 +1554 +1876 +2070 +2264 +2594 +2924 +2998
132. 00000418 +3072 +3139 +3206 +3273 +2316 +3071 +3314 +3173
133. 00000420 +3032 +2941 +1826 -57 +108 +73 +1574 +2083
134. 00000428 +2080 +1973 +1866 +1727 +1588 +1441 +1294 +1147
135. 00000430 +1000 +796 +592 +484 +376 +828 +256 +772
136. 00000438 -248 -72 -408 +984 -184 -536 -376 -376
137. 00000440 +1026 +997 +969 +941 +913 +888 +864 +840
138. 00000448 +816 +762 +709 +768 +1339 +2269 +2176 +1411
139. 00000450 +1414 +1677 +1941 +2188 +2436 +2730 +3023 +3157
140. 00000458 +3291 +3349 +3409 +3420 +2152 +3000 +3594 +3403
141. 00000460 +3213 +3233 +951 +12 +97 -303 +2883 +2755
142. 00000468 +2373 +2312 +2252 +2143 +2036 +1861 +1687 +1544
143. 00000470 +1403 +1254 +1106 +974 +842 +1229 +1105 +21
144. 00000478 +217 +46 -381 +1912 +3181 +2765 +301 -723
145. 00000480 +1076 +1045 +1015 +984 +954 +931 +909 +886
146. 00000488 +864 +719 +575 +654 +1246 +1685 +3149 +1604
147. 00000490 +1596 +1801 +2006 +2307 +2609 +2866 +3123 +3316
148. 00000498 +3510 +3561 +3613 +3568 +1988 +2931 +3875 +3634
149. 000004A0 +3394 +3527 +76 +81 +86 +859 +3168 +2917
150. 000004A8 +2666 +2652 +2639 +2561 +2484 +2282 +2081 +1943
151. 000004B0 +1806 +1713 +1621 +1464 +1308 +1119 +931 +550
152. 000004B8 +170 -92 -354 +1560 +3986 +1970 -558 -558
153. 000004C0 +1126 +1092 +1060 +1027 +995 +973 +953 +932
154. 000004C8 +912 +899 +888 -340 +1249 +1756 +2521 +2421
155. 000004D0 +1810 +2036 +2263 +2521 +2781 +3066 +3350 +3443
156. 000004D8 +3537 +3612 +3688 +3476 +2496 +3021 +3803 +3833
157. 000004E0 +3863 +2843 +33 +133 -21 +2099 +3197 +3061
158. 000004E8 +2927 +2944 +2961 +2882 +2804 +2607 +2410 +2309
159. 000004F0 +2209 +2139 +2071 +1842 +1614 +1328 +1044 +663
160. 000004F8 +283 +10 -263 -488 -201 -201 -457 -457
161. 00000500 +1176 +1141 +1106 +1071 +1036 +1017 +998 +979
162. 00000508 +960 +825 +690 +203 +740 +1573 +1894 +3239
163. 00000510 +2024 +2272 +2521 +2737 +2954 +3010 +3067 +3315
164. 00000518 +3564 +3664 +3764 +3384 +3004 +3112 +3732 +3776
165. 00000520 +3820 +1905 -10 +187 -128 +3341 +3226 +3207
166. 00000528 +3188 +3236 +3284 +3204 +3124 +2932 +2740 +2676
167. 00000530 +2612 +2567 +2522 +2221 +1920 +1539 +1158 +777
168. 00000538 +396 +112 -172 -488 -292 -324 -356 -356
169. 00000540 +1194 +1162 +1131 +1099 +1069 +1047 +1026 +972
170. 00000548 +920 +969 +507 +380 +767 +1428 +1834 +2799
171. 00000550 +2486 +2347 +2721 +2919 +3118 +3290 +3462 +3266
172. 00000558 +3071 +3157 +3243 +3521 +3800 +3674 +3548 +3710
173. 00000560 +3873 +874 +179 +91 +517 +3439 +3291 +3333
174. 00000568 +3377 +3403 +3430 +3361 +3292 +3174 +3057 +3004
175. 00000570 +2951 +2761 +2572 +2222 +1874 +1554 +1235 +883
176. 00000578 +533 +220 -93 -470 -335 -319 -303 -303
177. 00000580 +1212 +1184 +1157 +1129 +1102 +1078 +1055 +967
178. 00000588 +880 +1114 +325 +559 +794 +1284 +1775 +2361
179. 00000590 +2948 +2423 +2923 +3103 +3283 +3314 +3346 +3474
180. 00000598 +3602 +3674 +3747 +3659 +3572 +3980 +3877 +3901
181. 000005A0 +3926 -157 +368 +253 +1674 +3795 +3356 +3461
182. 000005A8 +3566 +3571 +3577 +3518 +3460 +3417 +3375 +3332
183. 000005B0 +3290 +2956 +2623 +2225 +1828 +1570 +1313 +991
184. 000005B8 +670 +328 -14 -452 -378 -314 -250 -250
185. 000005C0 +1230 +1206 +1182 +1158 +1135 +1109 +1083 +1025
186. 000005C8 +968 +779 +78 +481 +885 +1284 +1939 +2466
187. 000005D0 +3250 +2626 +2772 +3157 +3543 +3514 +3486 +3729
188. 000005D8 +3717 +3775 +3834 +3780 +3728 +3934 +3885 +3915
189. 000005E0 +2667 +92 +333 +173 +2831 +3701 +3549 +3587
190. 000005E8 +3627 +3642 +3659 +3643 +3628 +3675 +3724 +3436
191. 000005F0 +3149 +2847 +2545 +2275 +2006 +1730 +1454 +1114
192. 000005F8 +775 +388 +1 -402 -293 -309 -325 -325
193. 00000600 +1248 +1228 +1208 +1188 +1168 +1140 +1112 +1084
194. 00000608 +1056 +700 +344 +660 +976 +1284 +2104 +2316
195. 00000610 +3040 +2319 +2110 +2189 +2268 +2691 +3114 +3729
196. 00000618 +3832 +3877 +3922 +3903 +3884 +3889 +3894 +3931
197. 00000620 +1408 +341 +298 +95 +3988 +3609 +3742 +3715
198. 00000628 +3688 +3715 +3742 +3769 +3796 +3679 +3562 +3285
199. 00000630 +3008 +2738 +2468 +2326 +2184 +1890 +1596 +1238
200. 00000638 +880 +448 +16 -352 -208 -304 -400 -400
201. 00000640 +1296 +1284 +1272 +1260 +1249 +1165 +1081 +1093
202. 00000648 +1106 +232 +382 +677 +971 +973 +1232 +834
203. 00000650 +693 +537 +639 +564 +490 +563 +637 -106
204. 00000658 +944 +2358 +3773 +3795 +4074 +3964 +3855 +4337
205. 00000660 +212 +204 +197 +1341 +4023 +3813 +3860 +3810
206. 00000668 +3762 +3766 +3771 +3776 +3781 +3603 +3427 +3201
207. 00000670 +2977 +2838 +2699 +2400 +2101 +1982 +1607 +1280
208. 00000678 +954 +545 -120 -321 -266 -314 -362 -362
209. 00000680 +1344 +1340 +1337 +1333 +1330 +1190 +1051 +1103
210. 00000688 +1156 +20 +933 +950 +967 +919 +872 +889
211. 00000690 +906 +805 +705 +733 +761 +740 +720 +668
212. 00000698 +616 +328 +40 +1640 +3752 +3784 +3816 +3208
213. 000006A0 +40 +581 +97 +2589 +4058 +4018 +3979 +3907
214. 000006A8 +3836 +3818 +3801 +3784 +3767 +3529 +3292 +3375
215. 000006B0 +3458 +3706 +3954 +3754 +3555 +2843 +1619 +1067
216. 000006B8 +516 +386 -256 -290 -324 -324 -324 -324
217. 000006C0 +1392 +1364 +1337 +1309 +1283 +1247 +1212 +968
218. 000006C8 +982 +1424 +1099 +1079 +1058 +1072 +1088 +815
219. 000006D0 +799 +1056 +802 +772 +743 +645 +547 +769
220. 000006D8 +736 +649 +563 +332 +102 +1939 +4033 +1982
221. 000006E0 +444 +332 -36 +4076 +4093 +4047 +4001 +3955
222. 000006E8 +3910 +3870 +3830 +3791 +3752 +3806 +3861 +3835
223. 000006F0 +3811 +3678 +3545 +3380 +3216 +3639 +3806 +2341
224. 000006F8 +1134 +1091 +24 -387 -286 -286 -286 -286
225. 00000700 +1440 +1389 +1338 +1287 +1236 +1305 +1374 +1091
226. 00000708 +1320 +1037 +1267 +1208 +1150 +715 +281 +486
227. 00000710 +1204 +1564 +901 +1325 +1750 +1830 +1911 +1383
228. 00000718 +344 +459 +574 +817 +548 +351 +666 +757
229. 00000720 +336 +340 +856 +4028 +4128 +4076 +4024 +4004
230. 00000728 +3984 +3922 +3861 +3799 +3738 +3828 +3919 +3785
231. 00000730 +3652 +3394 +3137 +3007 +2878 +2900 +2923 +3105
232. 00000738 +3800 +1284 +1328 +28 -248 -248 -248 -248
233. 00000740 +1456 +1406 +1358 +1309 +1261 +1209 +1159 +1444
234. 00000748 +1218 +1265 +33 -654 -1342 -977 -356 +394
235. 00000750 +1401 +1753 +1338 +1738 +2140 +2575 +3009 +3524
236. 00000758 +3784 +2536 +1033 +265 +522 +440 +615 +629
237. 00000760 +388 +403 +2211 +4051 +4099 +4078 +4058 +3990
238. 00000768 +3922 +3910 +3898 +3886 +3875 +3805 +3735 +3553
239. 00000770 +3373 +3126 +2879 +2585 +2291 +2026 +1762 +2649
240. 00000778 +3026 +2303 +2092 +665 -250 -250 -250 -250
241. 00000780 +1472 +1425 +1379 +1332 +1286 +1371 +1457 +1030
242. 00000788 -932 -1834 -1712 -1237 -763 -621 +33 +815
243. 00000790 +1598 +1943 +1776 +2153 +2531 +2808 +3085 +3362
244. 00000798 +3640 +4102 +4052 +3042 +496 +530 +564 +502
245. 000007A0 +440 +211 +3055 +3818 +4070 +4081 +4093 +3976
246. 000007A8 +3860 +3898 +3936 +3974 +4013 +3783 +3553 +3323
247. 000007B0 +3094 +2858 +2623 +2420 +2217 +1921 +1626 +915
248. 000007B8 +2764 +250 +296 +22 -252 -252 -252 -252
249. 000007C0 +1488 +1443 +1399 +1371 +1343 +1308 +1530 -408
250. 000007C8 -1834 -1589 -1089 -811 -535 -281 +485 +1171
251. 000007D0 +1859 +2132 +2150 +2503 +2857 +3105 +3352 +3536
252. 000007D8 +3720 +3875 +3775 +4298 +4054 +2123 +449 +502
253. 000007E0 +556 +546 +26 +2113 +3945 +4115 +4031 +3946
254. 000007E8 +3862 +3838 +3814 +3982 +3894 +3488 +3338 +3140
255. 000007F0 +2943 +2622 +2302 +2030 +1758 +1495 +1234 +1259
256. 000007F8 +774 -347 -188 -189 -190 -222 -254 -254
257. 00000800 +1504 +1462 +1420 +1410 +1400 +1246 +1604 -1334
258. 00000808 -1712 -1089 -978 -643 -308 +59 +938 +1529
259. 00000810 +2120 +2322 +2524 +2854 +3184 +3402 +3620 +3710
260. 00000818 +3800 +3905 +4010 +4019 +4028 +3973 +334 +503
261. 00000820 +672 +627 +582 +409 +236 +2359 +3970 +3917
262. 00000828 +3864 +3778 +3692 +3990 +3776 +3194 +3124 +2958
263. 00000830 +2792 +2387 +1982 +1641 +1300 +1071 +842 +69
264. 00000838 -192 -176 -160 -144 -128 -192 -256 -256
265. 00000840 +1546 +1496 +1447 +1430 +1413 +1627 +1330 -2102
266. 00000848 -1184 -819 -712 -395 -80 +405 +1148 +1713
267. 00000850 +2280 +2486 +2692 +2995 +3297 +3467 +3638 +3712
268. 00000858 +3787 +3915 +4045 +3917 +4047 +3097 +357 +655
269. 00000860 +699 +198 +466 +381 +297 +376 +200 +1815
270. 00000868 +3431 +3568 +3961 +4114 +3755 +3310 +3121 +2804
271. 00000870 +2487 +2208 +1931 +1189 +447 +37 -116 -254
272. 00000878 -136 -111 -86 -109 -132 -196 -260 -260
273. 00000880 +1588 +1531 +1475 +1450 +1426 +1497 +33 -1591
274. 00000888 -1168 -807 -446 -149 +148 +753 +1358 +1899
275. 00000890 +2440 +2650 +2861 +3136 +3411 +3533 +3656 +3715
276. 00000898 +3774 +3927 +4080 +3817 +4066 +2223 +380 +553
277. 000008A0 +214 +3610 +350 +354 +358 +442 +526 +226
278. 000008A8 -74 +286 +1158 +1678 +1686 +1634 +1582 +1114
279. 000008B0 +646 +239 -168 -31 +107 -228 -51 -65
280. 000008B8 -80 -46 -12 -74 -136 -200 -264 -264
281. 000008C0 +1630 +1565 +1502 +1470 +1439 +1590 -817 -1399
282. 000008C8 -960 -633 -308 -14 +280 +875 +1472 +1971
283. 000008D0 +2472 +2718 +2965 +3229 +3492 +3582 +3674 +3701
284. 000008D8 +3729 +3793 +3859 +4147 +4181 +707 +563 +417
285. 000008E0 +1297 +3917 +4234 +2198 +163 +267 +372 +348
286. 000008E8 +325 +108 +147 +186 -31 +38 +107 +96
287. 000008F0 +85 +61 +38 -162 -106 -126 +111 +876
288. 000008F8 -152 -93 -34 -87 -140 -204 -268 -268
289. 00000900 +1672 +1601 +1530 +1491 +1452 +1685 -1666 -1209
290. 00000908 -752 -461 -170 +121 +412 +999 +1586 +2045
291. 00000910 +2504 +2787 +3071 +3322 +3574 +3633 +3693 +3688
292. 00000918 +3684 +3661 +3638 +3711 +2760 +473 +746 +283
293. 00000920 +2380 +4225 +4022 +4043 +4064 +2141 +218 +215
294. 00000928 +212 +186 +160 +230 +300 +234 +168 +102
295. 00000930 +36 -117 -269 +218 +1218 +2025 +2833 +1048
296. 00000938 -224 -140 -56 -100 -144 -208 -272 -272
297. 00000940 +1626 +1607 +1589 +1458 +1585 +692 -1479 -1107
298. 00000948 -736 -451 -168 +115 +400 +805 +1468 +1937
299. 00000950 +2408 +2703 +2999 +3327 +3655 +3568 +3482 +3620
300. 00000958 +3759 +3439 +3121 +1601 +851 +819 +533 +437
301. 00000960 +3415 +4252 +4066 +4055 +4045 +4084 +4124 +2995
302. 00000968 +1867 +1068 +269 +62 -145 -38 +69 +704
303. 00000970 +1339 +2183 +3028 +2816 +2861 +2953 +2790 -349
304. 00000978 +96 -19 -134 -137 -140 -204 -268 -268
305. 00000980 +1580 +1614 +1649 +1427 +1718 -300 -1293 -1006
306. 00000988 -720 -443 -166 +111 +388 +613 +1350 +1831
307. 00000990 +2312 +2620 +2928 +3076 +3225 +3249 +3273 +3297
308. 00000998 +3322 +3475 +3628 +3333 +1502 +655 +832 +593
309. 000009A0 +3938 +4024 +4110 +4068 +4026 +3980 +3934 +3984
310. 000009A8 +4034 +3998 +3962 +3990 +4018 +3786 +3554 +3610
311. 000009B0 +3666 +3459 +3253 +3111 +2969 +2858 +2236 -210
312. 000009B8 -96 -154 -212 -174 -136 -200 -264 -264
313. 000009C0 +1662 +1653 +1644 +1619 +1851 -988 -1266 -985
314. 000009C8 -704 -401 -100 +9 +120 +403 +944 +1579
315. 000009D0 +2216 +2504 +2793 +2873 +2954 +2976 +2999 +3085
316. 000009D8 +3173 +3237 +3303 +3575 +521 +553 +587 +1771
317. 000009E0 +3981 +4019 +4058 +4032 +4007 +3971 +3936 +3948
318. 000009E8 +3961 +3920 +3879 +3806 +3989 +3866 +3743 +3636
319. 000009F0 +3529 +3375 +3222 +3069 +2916 +2907 +1362 -119
320. 000009F8 -64 -113 -162 -147 -132 -196 -260 -260
321. 00000A00 +1744 +1692 +1640 +1556 +1472 -1932 -1240 -964
322. 00000A08 -688 -361 -34 +165 +364 +707 +1050 +1585
323. 00000A10 +2120 +2389 +2658 +2671 +2684 +2705 +2726 +2875
324. 00000A18 +3024 +3001 +2978 +2283 +564 +965 +342 +2951
325. 00000A20 +4024 +4015 +4006 +3997 +3988 +3963 +3938 +3913
326. 00000A28 +3888 +3842 +3796 +3622 +3960 +3946 +3932 +3662
327. 00000A30 +3392 +3292 +3192 +3028 +2864 +2956 +488 -28
328. 00000A38 -32 -72 -112 -120 -128 -192 -256 -256
329. 00000A40 +1834 +1635 +1692 +1718 +208 -1663 -1229 -924
330. 00000A48 -619 -283 +50 +256 +719 +705 +948 +1126
331. 00000A50 +1562 +1845 +2129 +2236 +2344 +2447 +2551 +2654
332. 00000A58 +2759 +2738 +2719 +1562 +663 +623 +327 +4207
333. 00000A60 +3992 +4012 +4034 +3990 +3948 +3922 +3898 +3872
334. 00000A68 +3848 +3774 +3701 +3484 +3523 +3726 +3929 +3812
335. 00000A70 +3695 +3604 +3513 +3407 +3300 +3350 -440 -231
336. 00000A78 -22 -48 -74 -100 -126 -174 -222 -222
337. 00000A80 +1924 +1578 +1745 +1880 -1057 -1394 -1219 -884
338. 00000A88 -550 -207 +135 +93 +563 +449 +847 +669
339. 00000A90 +1004 +1302 +1600 +1802 +2005 +2191 +2377 +2435
340. 00000A98 +2494 +2477 +2460 +843 +763 +794 +1337 +3928
341. 00000AA0 +3960 +4011 +4062 +3985 +3908 +3883 +3858 +3833
342. 00000AA8 +3808 +3707 +3607 +3603 +3599 +3506 +3414 +3706
343. 00000AB0 +3998 +3916 +3835 +3786 +3737 +2208 -345 +78
344. 00000AB8 -12 -24 -36 -80 -124 -156 -188 -188
345. 00000AC0 +1598 +1585 +1829 +2154 -1873 -1413 -1208 -556
346. 00000AC8 -417 -514 -102 +440 +214 +191 +681 +435
347. 00000AD0 +702 +870 +1039 +1224 +1409 +1709 +2010 +2039
348. 00000AD8 +2069 +2086 +1849 +795 +766 +596 +2474 +3953
349. 00000AE0 +3896 +3928 +3962 +3914 +3868 +3842 +3818 +3792
350. 00000AE8 +3768 +3687 +3608 +3577 +3546 +3462 +3379 +3312
351. 00000AF0 +3245 +3364 +3484 +3189 +2893 +858 -154 +35
352. 00000AF8 -34 -48 -62 -108 -154 -154 -154 -154
353. 00000B00 +1784 +1849 +1915 +892 -1666 -1176 -1711 -741
354. 00000B08 -796 -822 +175 -748 +378 +191 +517 +202
355. 00000B10 +400 +439 +479 +646 +814 +1229 +1645 +1644
356. 00000B18 +1644 +1697 +1239 +748 +770 +399 +3613 +3978
357. 00000B20 +3832 +3847 +3862 +3845 +3828 +3803 +3778 +3753
358. 00000B28 +3728 +3669 +3611 +3552 +3494 +3419 +3345 +3174
359. 00000B30 +3004 +2813 +2623 +2592 +2562 -237 +37 -9
360. 00000B38 -56 -72 -88 -136 -184 -152 -120 -120
361. 00000B40 +1802 +1900 +2255 -286 -1290 -1129 -712 -391
362. 00000B48 -327 -385 -445 +201 -178 +436 +27 -45
363. 00000B50 -118 +204 +270 +384 +498 +685 +874 +998
364. 00000B58 +1123 +1252 +1127 +794 +717 +1161 +3654 +3843
365. 00000B60 +3776 +3788 +3802 +3782 +3764 +3616 +3726 +3690
366. 00000B68 +3656 +3595 +3536 +3476 +3417 +3341 +3265 +3078
367. 00000B70 +2891 +2687 +2484 +2617 +1982 -28 +8 +14
368. 00000B78 +18 -18 -54 +6 +66 -30 -126 -126
369. 00000B80 +1820 +1696 +2084 -2232 -1939 -570 -1762 -1834
370. 00000B88 -1394 -461 -552 -387 -223 -1110 -462 -37
371. 00000B90 -124 -31 -451 -134 +183 +143 +104 +353
372. 00000B98 +602 +809 +1017 +841 +665 +1924 +3696 +3708
373. 00000BA0 +3720 +3731 +3742 +3721 +3700 +3431 +3674 +3629
374. 00000BA8 +3584 +3523 +3462 +3401 +3341 +3264 +3187 +2982
375. 00000BB0 +2778 +2562 +2346 +2386 +891 -77 -20 +36
376. 00000BB8 +92 +36 -20 -108 -196 -164 -132 -132
377. 00000BC0 +1710 +1955 +1177 -2833 -955 -2075 -2172 -364
378. 00000BC8 -1885 -1352 -820 -1599 -843 -1249 -887 -652
379. 00000BD0 -674 -554 -435 -636 -325 -304 -282 -101
380. 00000BD8 -175 +493 +906 +871 +580 +2767 +3674 +3653
381. 00000BE0 +3632 +3656 +3682 +3626 +3572 +3436 +3558 +3534
382. 00000BE8 +3512 +3449 +3388 +3325 +3264 +3186 +3108 +2902
383. 00000BF0 +2697 +2500 +2304 +2219 +343 +179 +271 +154
384. 00000BF8 +38 -6 -50 -110 -170 -154 -138 -138
385. 00000C00 +1600 +1959 -242 -2667 -2020 -2557 -2582 -1455
386. 00000C08 +696 +316 +960 +2052 +2120 +1940 +1760 +1292
387. 00000C10 +824 -310 -932 -1394 -832 -750 -668 -298
388. 00000C18 -440 +434 +796 +902 +496 +3610 +3652 +3598
389. 00000C20 +3544 +3583 +3622 +3533 +3444 +3443 +3442 +3441
390. 00000C28 +3440 +3377 +3314 +3251 +3188 +3109 +3030 +2823
391. 00000C30 +2616 +2439 +2262 +2053 -204 +179 +50 +17
392. 00000C38 -16 -48 -80 -112 -144 -144 -144 -144
393. 00000C40 +1956 +1852 -2091 -3025 -1145 +322 +2045 +1672
394. 00000C48 +1555 +1328 +1614 +1916 +1706 +1622 +1282 +1502
395. 00000C50 +1466 +1301 +1393 +940 -792 -1548 -768 -820
396. 00000C58 -617 +926 +934 +909 +1397 +3323 +3456 +3446
397. 00000C60 +3436 +3393 +3351 +3388 +3426 +3373 +3321 +3444
398. 00000C68 +3313 +3264 +3217 +3153 +3090 +2997 +2906 +2686
399. 00000C70 +2467 +2290 +2115 +1282 -61 +136 +79 +36
400. 00000C78 -5 -37 -69 -101 -133 -133 -133 -133
401. 00000C80 +1800 +1746 +669 +1992 +1779 +1665 +1552 +1727
402. 00000C88 +1390 +1317 +1245 +1269 +1293 +1560 +1316 +1456
403. 00000C90 +1084 +1121 +1158 +971 +1297 +726 -869 -1343
404. 00000C98 -794 +1419 +1072 +917 +2299 +3036 +3261 +3294
405. 00000CA0 +3328 +3204 +3080 +3244 +3409 +3305 +3201 +3449
406. 00000CA8 +3186 +3153 +3121 +3056 +2992 +2887 +2783 +2550
407. 00000CB0 +2318 +2143 +1968 +513 +82 +95 +108 +57
408. 00000CB8 +6 -26 -58 -90 -122 -122 -122 -122
409. 00000CC0 +1516 +1832 +1636 +1905 +1406 +1344 +1283 +1589
410. 00000CC8 +1641 +1465 +1291 +1277 +1263 +1386 +1254 +1314
411. 00000CD0 +1118 +1116 +1115 +905 +953 +1160 +1111 +118
412. 00000CD8 -363 +807 +698 +700 +2240 +3325 +2361 +2934
413. 00000CE0 +3252 +2998 +2745 +2924 +3103 +3155 +2952 +3277
414. 00000CE8 +3091 +3057 +3024 +2959 +2894 +2776 +2659 +2414
415. 00000CF0 +2169 +2074 +1981 +255 +65 +68 +73 +44
416. 00000CF8 +17 -15 -47 -79 -111 -111 -111 -111
417. 00000D00 +1744 +1662 +1581 +1563 +1546 +1536 +1527 +1453
418. 00000D08 +1380 +1359 +1339 +1286 +1234 +1213 +1193 +1172
419. 00000D10 +1152 +1112 +1073 +1097 +1122 +826 +1043 +1067
420. 00000D18 +1092 +964 +837 +741 +2182 +2078 +2487 +2831
421. 00000D20 +2664 +2793 +2923 +2860 +2798 +3007 +2705 +3106
422. 00000D28 +2996 +2962 +2928 +2862 +2796 +2666 +2536 +2278
423. 00000D30 +2020 +1751 +1482 -259 +48 +43 +38 +33
424. 00000D38 +28 -4 -36 -68 -100 -100 -100 -100
425. 00000D40 +1684 +1640 +1596 +1584 +1573 +1543 +1513 +1451
426. 00000D48 +1391 +1359 +1329 +1282 +1236 +1213 +1190 +1168
427. 00000D50 +1146 +1107 +1069 +1063 +1058 +920 +1038 +996
428. 00000D58 +955 +924 +894 +880 +1635 +1679 +2235 +2439
429. 00000D60 +2132 +2451 +2771 +2580 +2644 +2713 +2528 +2742
430. 00000D68 +2701 +2828 +2699 +2570 +2442 +2383 +2324 +2105
431. 00000D70 +1887 +1732 +811 -79 +55 +62 +71 +46
432. 00000D78 +23 -7 -37 -67 -97 -113 -129 -129
433. 00000D80 +1624 +1618 +1612 +1606 +1601 +1551 +1501 +1451
434. 00000D88 +1402 +1361 +1320 +1279 +1239 +1214 +1189 +1164
435. 00000D90 +1140 +1103 +1067 +1031 +995 +1014 +1034 +926
436. 00000D98 +818 +885 +953 +1021 +1089 +1024 +1472 +2048
437. 00000DA0 +2112 +2110 +2109 +2044 +2491 +2421 +2352 +2379
438. 00000DA8 +2406 +2694 +2471 +2279 +2088 +2100 +2113 +1933
439. 00000DB0 +1754 +1715 +140 +101 +62 +83 +104 +61
440. 00000DB8 +18 -10 -38 -66 -94 -126 -158 -158
441. 00000DC0 +1724 +1788 +1852 +1692 +1532 +1494 +1456 +1418
442. 00000DC8 +1381 +1345 +1311 +1275 +1241 +1214 +1187 +1160
443. 00000DD0 +1134 +1098 +1064 +1029 +995 +996 +998 +935
444. 00000DD8 +873 +877 +883 +792 +702 +657 +1125 +1832
445. 00000DE0 +2284 +1193 +1638 +1796 +2209 +2320 +2176 +2239
446. 00000DE8 +2047 +2560 +2562 +1891 +1734 +1673 +1613 +1744
447. 00000DF0 +1621 +1152 -83 -8 +69 +70 +73 +42
448. 00000DF8 +13 -13 -39 -65 -91 -139 -187 -187
449. 00000E00 +1824 +1702 +1580 +1522 +1464 +1438 +1412 +1386
450. 00000E08 +1360 +1331 +1302 +1273 +1244 +1215 +1186 +1157
451. 00000E10 +1128 +1095 +1062 +1029 +996 +979 +962 +945
452. 00000E18 +928 +871 +814 +821 +828 +803 +1290 +1617
453. 00000E20 +1944 +2068 +1168 +1292 +1416 +1708 +1488 +1844
454. 00000E28 +1688 +2171 +2142 +1249 +1380 +1503 +1626 +1045
455. 00000E30 -48 +79 +206 +141 +76 +59 +42 +25
456. 00000E38 +8 -16 -40 -64 -88 -152 -216 -216
457. 00000E40 +1688 +1615 +1542 +1501 +1460 +1429 +1398 +1367
458. 00000E48 +1336 +1309 +1284 +1257 +1232 +1205 +1180 +1153
459. 00000E50 +1128 +1092 +1058 +1022 +988 +968 +950 +930
460. 00000E58 +912 +861 +812 +793 +776 +595 +672 +971
461. 00000E60 +1272 +330 +924 +1038 +1152 +1298 +1444 +1910
462. 00000E68 +1608 +1531 +1200 +515 +344 +259 +176 +251
463. 00000E70 +72 +122 +174 +128 +84 +64 +46 +26
464. 00000E78 +8 -18 -44 -70 -96 -144 -192 -192
465. 00000E80 +1552 +1528 +1504 +1480 +1456 +1420 +1384 +1348
466. 00000E88 +1312 +1289 +1266 +1243 +1220 +1197 +1174 +1151
467. 00000E90 +1128 +1091 +1054 +1017 +980 +959 +938 +917
468. 00000E98 +896 +853 +810 +767 +724 +645 +566 +583
469. 00000EA0 +600 +640 +680 +528 +376 +376 +888 +1464
470. 00000EA8 +1016 +637 +258 +295 +332 +297 +262 +227
471. 00000EB0 +192 +167 +142 +117 +92 +71 +50 +29
472. 00000EB8 +8 -20 -48 -76 -104 -136 -168 -168
473. 00000EC0 +1544 +1521 +1498 +1475 +1452 +1411 +1370 +1329
474. 00000EC8 +1288 +1267 +1248 +1227 +1208 +1187 +1168 +1147
475. 00000ED0 +1128 +1088 +1050 +1010 +972 +948 +926 +902
476. 00000ED8 +880 +843 +808 +771 +736 +677 +620 +609
477. 00000EE0 +600 +614 +628 +546 +464 +238 +2060 +1690
478. 00000EE8 +1576 +1709 +308 +313 +320 +285 +252 +217
479. 00000EF0 +184 +162 +142 +120 +100 +76 +54 +30
480. 00000EF8 +8 -22 -52 -82 -112 -128 -144 -144
481. 00000F00 +1536 +1514 +1492 +1470 +1448 +1402 +1356 +1310
482. 00000F08 +1264 +1247 +1230 +1213 +1196 +1179 +1162 +1145
483. 00000F10 +1128 +1087 +1046 +1005 +964 +939 +914 +889
484. 00000F18 +864 +835 +806 +777 +748 +711 +674 +637
485. 00000F20 +600 +588 +576 +564 +552 +612 +160 +1916
486. 00000F28 +1112 +223 +358 +333 +308 +275 +242 +209
487. 00000F30 +176 +159 +142 +125 +108 +83 +58 +33
488. 00000F38 +8 -24 -56 -88 -120 -120 -120 -120
489. 00000F40 +1536 +1514 +1492 +1470 +1448 +1402 +1356 +1310
490. 00000F48 +1264 +1246 +1230 +1212 +1196 +1178 +1162 +1144
491. 00000F50 +1128 +1086 +1046 +1004 +964 +938 +914 +888
492. 00000F58 +864 +834 +806 +776 +748 +710 +674 +636
493. 00000F60 +600 +588 +576 +564 +552 +644 +480 +108
494. 00000F68 +504 +158 +326 +316 +308 +274 +242 +208
495. 00000F70 +176 +158 +142 +124 +108 +82 +58 +32
496. 00000F78 +8 -24 -56 -88 -120 -120 -120 -120
497. 00000F80 +1536 +1514 +1492 +1470 +1448 +1402 +1356 +1310
498. 00000F88 +1264 +1247 +1230 +1213 +1196 +1179 +1162 +1145
499. 00000F90 +1128 +1087 +1046 +1005 +964 +939 +914 +889
500. 00000F98 +864 +835 +806 +777 +748 +711 +674 +637
501. 00000FA0 +600 +588 +576 +564 +552 +420 +288 +348
502. 00000FA8 +408 +351 +294 +301 +308 +275 +242 +209
503. 00000FB0 +176 +159 +142 +125 +108 +83 +58 +33
504. 00000FB8 +8 -24 -56 -88 -120 -120 -120 -120
505. 00000FC0 +1536 +1514 +1492 +1470 +1448 +1402 +1356 +1310
506. 00000FC8 +1264 +1246 +1230 +1212 +1196 +1178 +1162 +1144
507. 00000FD0 +1128 +1086 +1046 +1004 +964 +938 +914 +888
508. 00000FD8 +864 +834 +806 +776 +748 +710 +674 +636
509. 00000FE0 +600 +588 +576 +564 +552 +420 +288 +348
510. 00000FE8 +408 +350 +294 +300 +308 +274 +242 +208
511. 00000FF0 +176 +158 +142 +124 +108 +82 +58 +32
512. 00000FF8 +8 -24 -56 -88 -120 -120 -120 -120

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -16 +8 +32 +136 -16 -8 +0 -8
2. 00000008 -16 -12 -8 -4 +0 -12 -24 -36
3. 00000010 -48 -45 -42 -39 -36 -49 -62 -75
4. 00000018 -88 -96 -104 -112 -120 -128 -136 -144
5. 00000020 -152 -152 -152 -152 -152 -168 -184 -200
6. 00000028 -216 -225 -234 -243 -252 -261 -270 -279
7. 00000030 -288 -299 -310 -321 -332 -343 -354 -365
8. 00000038 -376 -384 -392 -400 -408 -408 -408 -408
9. 00000040 +34 +60 +86 +120 +26 +27 +28 +21
10. 00000048 +15 +16 +17 +18 +19 +10 +1 -8
11. 00000050 -17 -18 -19 -20 -21 -34 -47 -60
12. 00000058 -73 -74 -75 -93 -110 -113 -116 -120
13. 00000060 -123 -127 -130 -134 -137 -151 -164 -178
14. 00000068 -192 -201 -211 -221 -231 -242 -253 -264
15. 00000070 -275 -286 -297 -308 -319 -336 -353 -354
16. 00000078 -356 -366 -377 -387 -398 -398 -398 -398
17. 00000080 +84 +112 +140 +104 +69 +63 +57 +51
18. 00000088 +46 +44 +42 +40 +38 +32 +26 +20
19. 00000090 +14 +9 +4 -1 -6 -19 -32 -45
20. 00000098 -58 -52 -47 -74 -100 -99 -97 -96
21. 000000A0 -95 -102 -109 -116 -123 -134 -145 -156
22. 000000A8 -168 -178 -189 -200 -211 -223 -236 -249
23. 000000B0 -262 -273 -284 -295 -307 -330 -353 -344
24. 000000B8 -336 -349 -362 -375 -388 -388 -388 -388
25. 000000C0 +134 +156 +178 +136 +95 +90 +86 +81
26. 000000C8 +77 +72 +67 +62 +57 +54 +51 +40
27. 000000D0 +29 +28 +27 +26 +25 +12 -1 -22
28. 000000D8 -43 -30 -19 -46 -74 -68 -62 -72
29. 000000E0 -82 -85 -87 -98 -109 -117 -126 -134
30. 000000E8 -144 -155 -167 -178 -190 -204 -219 -234
31. 000000F0 -249 -260 -271 -282 -294 -323 -353 -334
32. 000000F8 -316 -331 -347 -362 -378 -378 -378 -378
33. 00000100 +184 +200 +217 +169 +122 +118 +115 +111
34. 00000108 +108 +100 +92 +84 +76 +76 +76 +60
35. 00000110 +44 +47 +50 +53 +56 +43 +30 +1
36. 00000118 -28 -9 +9 -19 -49 -38 -27 -48
37. 00000120 -70 -68 -66 -80 -95 -101 -107 -113
38. 00000128 -120 -132 -145 -157 -170 -186 -203 -219
39. 00000130 -236 -247 -259 -270 -282 -317 -353 -324
40. 00000138 -296 -314 -332 -350 -368 -368 -368 -368
41. 00000140 +202 +278 +227 +191 +156 +265 +119 +141
42. 00000148 +163 +152 +141 +130 +119 +123 +127 +59
43. 00000150 +119 +98 +77 +16 -45 -44 -43 +38
44. 00000158 +119 +121 +123 +14 -95 -116 -136 -60
45. 00000160 +14 -31 -76 -74 -72 -81 -90 -98
46. 00000168 -108 -120 -132 -144 -157 -172 -188 -203
47. 00000170 -219 -223 -228 -248 -269 -297 -326 -251
48. 00000178 -304 -312 -321 -337 -354 -354 -354 -354
49. 00000180 +220 +356 +237 +214 +191 +413 +124 +171
50. 00000188 +218 +204 +190 +176 +162 +170 +178 -70
51. 00000190 -62 +21 +104 +107 +110 +125 +140 +203
52. 00000198 +266 +252 +238 +176 +114 +62 +11 -73
53. 000001A0 -157 -122 -87 -69 -50 -61 -73 -84
54. 000001A8 -96 -108 -120 -132 -145 -159 -173 -187
55. 000001B0 -202 -199 -197 -227 -257 -278 -300 -178
56. 000001B8 -312 -311 -310 -325 -340 -340 -340 -340
57. 000001C0 +302 +338 +247 +228 +209 +385 +177 +193
58. 000001C8 +209 +208 +207 +190 +173 +129 -171 -151
59. 000001D0 -3 +144 +291 +302 +313 +294 +275 +344
60. 000001D8 +413 +414 +416 +362 +308 +240 +174 +90
61. 000001E0 +7 -69 -146 -87 -28 -41 -56 -69
62. 000001E8 -84 -96 -108 -120 -132 -145 -158 -171
63. 000001F0 -185 -175 -166 -205 -244 -243 -242 -201
64. 000001F8 -288 -293 -299 -312 -326 -326 -326 -326
65. 00000200 +640 +577 +514 +499 +484 +485 +230 +215
66. 00000208 +200 +212 +224 +204 +184 +216 -264 -104
67. 00000210 +56 +267 +478 +497 +516 +463 +410 +485
68. 00000218 +560 +577 +595 +548 +502 +419 +337 +254
69. 00000220 +172 +111 +51 +22 -6 -22 -39 -55
70. 00000228 -72 -84 -96 -108 -120 -132 -144 -156
71. 00000230 -168 -152 -136 -184 -232 -208 -184 -224
72. 00000238 -264 -276 -288 -300 -312 -312 -312 -312
73. 00000240 +385 +335 +286 +277 +268 +314 +233 +232
74. 00000248 +231 +246 +261 +245 +228 +140 -202 -50
75. 00000250 +102 +299 +497 +655 +685 +648 +612 +648
76. 00000258 +684 +716 +749 +701 +654 +592 +531 +437
77. 00000260 +344 +293 +242 +151 +61 -41 -16 -38
78. 00000268 -61 -87 -113 -99 -85 -96 -108 -119
79. 00000270 -130 -157 -184 -162 -141 -180 -219 -225
80. 00000278 -232 -257 -282 -291 -300 -308 -316 -316
81. 00000280 +386 +350 +315 +311 +308 +272 +237 +249
82. 00000288 +262 +280 +299 +286 +273 +65 -141 +3
83. 00000290 +148 +332 +517 +813 +854 +834 +815 +811
84. 00000298 +808 +855 +903 +854 +806 +765 +725 +620
85. 000002A0 +516 +475 +434 +281 +129 -60 +7 -21
86. 000002A8 -50 -90 -130 -91 -51 -61 -72 -82
87. 000002B0 -93 -162 -232 -141 -51 -152 -254 -227
88. 000002B8 -201 -239 -277 -283 -289 -305 -321 -321
89. 000002C0 +387 +365 +343 +337 +332 +310 +288 +290
90. 000002C8 +293 +298 +305 +295 +285 -73 -48 +104
91. 000002D0 +258 +397 +536 +787 +911 +988 +937 +934
92. 000002D8 +932 +994 +1057 +1007 +958 +938 +919 +803
93. 000002E0 +688 +633 +578 +451 +68 -30 -1 -60
94. 000002E8 -119 -61 -3 -34 -65 -82 -100 -109
95. 000002F0 -119 -135 -152 -64 -104 -148 -193 -213
96. 000002F8 -233 -468 -447 -274 -229 -333 -309 -309
97. 00000300 +388 +380 +372 +364 +356 +348 +340 +332
98. 00000308 +324 +317 +311 +304 +298 -212 +45 +206
99. 00000310 +368 +462 +556 +762 +968 +1142 +1060 +1058
100. 00000318 +1056 +1133 +1211 +1160 +1110 +1111 +1113 +986
101. 00000320 +860 +791 +722 +621 +8 -1 -10 +29
102. 00000328 +68 -32 -133 -106 -79 -103 -128 -137
103. 00000330 -146 -109 -72 +13 -158 -145 -132 -71
104. 00000338 -10 +1478 +1430 -394 -426 -490 -298 -298
105. 00000340 +413 +403 +394 +385 +376 +374 +373 +372
106. 00000348 +371 +338 +306 +258 +210 -142 +144 +286
107. 00000350 +430 +540 +651 +834 +1017 +1156 +1168 +1172
108. 00000358 +1176 +1226 +1277 +1287 +1298 +1253 +1209 +1124
109. 00000360 +1040 +980 +921 +462 +3 +20 +37 +374
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114. 00000388 +418 +360 +302 +340 +379 +55 +243 +367
115. 00000390 +492 +619 +747 +906 +1066 +1171 +1277 +1286
116. 00000398 +1296 +1319 +1343 +1414 +1486 +1395 +1305 +1262
117. 000003A0 +1220 +1170 +1121 +304 -1 +41 +84 +719
118. 000003A8 +586 +485 +384 +282 +181 +124 +67 +26
119. 000003B0 -15 -47 -80 -96 -113 -129 -146 +381
120. 000003B8 -371 +1145 +869 -559 -451 -451 -195 -195
121. 000003C0 +463 +451 +439 +427 +416 +412 +408 +404
122. 000003C8 +401 +381 +362 +198 +1187 +485 +294 +424
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124. 000003D8 +1416 +1444 +1473 +1589 +1450 +1529 +1481 +1424
125. 000003E0 +1368 +1448 +1273 -182 +154 +102 +435 +880
126. 000003E8 +813 +735 +658 +572 +487 +422 +357 +299
127. 000003F0 +242 +175 +108 +73 +37 -177 +375 +1343
128. 000003F8 +264 -533 -307 -417 -399 -423 -191 -191
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130. 00000408 +384 +403 +422 +441 +716 +1299 +346 +481
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134. 00000428 +1040 +986 +933 +863 +794 +720 +647 +573
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151. 000004B0 +903 +856 +810 +732 +654 +559 +465 +275
152. 000004B8 +85 -46 -177 +780 +1993 +985 -279 -279
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161. 00000500 +588 +570 +553 +535 +518 +508 +499 +489
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163. 00000510 +1012 +1136 +1260 +1368 +1477 +1505 +1533 +1657
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176. 00000578 +266 +110 -46 -235 -167 -159 -151 -151
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178. 00000588 +440 +557 +162 +279 +397 +642 +887 +1180
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183. 000005B0 +1645 +1478 +1311 +1112 +914 +785 +656 +495
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188. 000005D8 +1858 +1887 +1917 +1890 +1864 +1967 +1942 +1957
189. 000005E0 +1333 +46 +166 +86 +1415 +1850 +1774 +1793
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207. 00000670 +1488 +1419 +1349 +1200 +1050 +991 +803 +640
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210. 00000688 +578 +10 +466 +475 +483 +459 +436 +444
211. 00000690 +453 +402 +352 +366 +380 +370 +360 +334
212. 00000698 +308 +164 +20 +820 +1876 +1892 +1908 +1604
213. 000006A0 +20 +290 +48 +1294 +2029 +2009 +1989 +1953
214. 000006A8 +1918 +1909 +1900 +1892 +1883 +1764 +1646 +1687
215. 000006B0 +1729 +1853 +1977 +1877 +1777 +1421 +809 +533
216. 000006B8 +258 +193 -128 -145 -162 -162 -162 -162
217. 000006C0 +696 +682 +668 +654 +641 +623 +606 +484
218. 000006C8 +491 +712 +549 +539 +529 +536 +544 +407
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226. 00000708 +660 +518 +633 +604 +575 +357 +140 +243
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228. 00000718 +172 +229 +287 +408 +274 +175 +333 +378
229. 00000720 +168 +170 +428 +2014 +2064 +2038 +2012 +2002
230. 00000728 +1992 +1961 +1930 +1899 +1869 +1914 +1959 +1892
231. 00000730 +1826 +1697 +1568 +1503 +1439 +1450 +1461 +1552
232. 00000738 +1900 +642 +664 +14 -124 -124 -124 -124
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268. 00000858 +1893 +1957 +2022 +1958 +2023 +1548 +178 +327
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278. 000008A8 -37 +143 +579 +839 +843 +817 +791 +557
279. 000008B0 +323 +119 -84 -15 +53 -114 -25 -32
280. 000008B8 -40 -23 -6 -37 -68 -100 -132 -132
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286. 000008E8 +162 +54 +73 +93 -15 +19 +53 +48
287. 000008F0 +42 +30 +19 -81 -53 -63 +55 +438
288. 000008F8 -76 -46 -17 -43 -70 -102 -134 -134
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362. 00000B48 -163 -192 -222 +100 -89 +218 +13 -22
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368. 00000B78 +9 -9 -27 +3 +33 -15 -63 -63
369. 00000B80 +910 +848 +1042 -1116 -969 -285 -881 -917
370. 00000B88 -697 -230 -276 -193 -111 -555 -231 -18
371. 00000B90 -62 -15 -225 -67 +91 +71 +52 +176
372. 00000B98 +301 +404 +508 +420 +332 +962 +1848 +1854
373. 00000BA0 +1860 +1865 +1871 +1860 +1850 +1715 +1837 +1814
374. 00000BA8 +1792 +1761 +1731 +1700 +1670 +1632 +1593 +1491
375. 00000BB0 +1389 +1281 +1173 +1193 +445 -38 -10 +18
376. 00000BB8 +46 +18 -10 -54 -98 -82 -66 -66
377. 00000BC0 +855 +977 +588 -1416 -477 -1037 -1086 -182
378. 00000BC8 -942 -676 -410 -799 -421 -624 -443 -326
379. 00000BD0 -337 -277 -217 -318 -162 -152 -141 -50
380. 00000BD8 -87 +246 +453 +435 +290 +1383 +1837 +1826
381. 00000BE0 +1816 +1828 +1841 +1813 +1786 +1718 +1779 +1767
382. 00000BE8 +1756 +1724 +1694 +1662 +1632 +1593 +1554 +1451
383. 00000BF0 +1348 +1250 +1152 +1109 +171 +89 +135 +77
384. 00000BF8 +19 -3 -25 -55 -85 -77 -69 -69
385. 00000C00 +800 +979 -121 -1333 -1010 -1278 -1291 -727
386. 00000C08 +348 +158 +480 +1026 +1060 +970 +880 +646
387. 00000C10 +412 -155 -466 -697 -416 -375 -334 -149
388. 00000C18 -220 +217 +398 +451 +248 +1805 +1826 +1799
389. 00000C20 +1772 +1791 +1811 +1766 +1722 +1721 +1721 +1720
390. 00000C28 +1720 +1688 +1657 +1625 +1594 +1554 +1515 +1411
391. 00000C30 +1308 +1219 +1131 +1026 -102 +89 +25 +8
392. 00000C38 -8 -24 -40 -56 -72 -72 -72 -72
393. 00000C40 +978 +926 -1045 -1512 -572 +161 +1022 +836
394. 00000C48 +777 +664 +807 +958 +853 +811 +641 +751
395. 00000C50 +733 +650 +696 +470 -396 -774 -384 -410
396. 00000C58 -308 +463 +467 +454 +698 +1661 +1728 +1723
397. 00000C60 +1718 +1696 +1675 +1694 +1713 +1686 +1660 +1722
398. 00000C68 +1656 +1632 +1608 +1576 +1545 +1498 +1453 +1343
399. 00000C70 +1233 +1145 +1057 +641 -30 +68 +39 +18
400. 00000C78 -2 -18 -34 -50 -66 -66 -66 -66
401. 00000C80 +900 +873 +334 +996 +889 +832 +776 +863
402. 00000C88 +695 +658 +622 +634 +646 +780 +658 +728
403. 00000C90 +542 +560 +579 +485 +648 +363 -434 -671
404. 00000C98 -397 +709 +536 +458 +1149 +1518 +1630 +1647
405. 00000CA0 +1664 +1602 +1540 +1622 +1704 +1652 +1600 +1724
406. 00000CA8 +1593 +1576 +1560 +1528 +1496 +1443 +1391 +1275
407. 00000CB0 +1159 +1071 +984 +256 +41 +47 +54 +28
408. 00000CB8 +3 -13 -29 -45 -61 -61 -61 -61
409. 00000CC0 +758 +916 +818 +952 +703 +672 +641 +794
410. 00000CC8 +820 +732 +645 +638 +631 +693 +627 +657
411. 00000CD0 +559 +558 +557 +452 +476 +580 +555 +59
412. 00000CD8 -181 +403 +349 +350 +1120 +1662 +1180 +1467
413. 00000CE0 +1626 +1499 +1372 +1462 +1551 +1577 +1476 +1638
414. 00000CE8 +1545 +1528 +1512 +1479 +1447 +1388 +1329 +1207
415. 00000CF0 +1084 +1037 +990 +127 +32 +34 +36 +22
416. 00000CF8 +8 -7 -23 -39 -55 -55 -55 -55
417. 00000D00 +872 +831 +790 +781 +773 +768 +763 +726
418. 00000D08 +690 +679 +669 +643 +617 +606 +596 +586
419. 00000D10 +576 +556 +536 +548 +561 +413 +521 +533
420. 00000D18 +546 +482 +418 +370 +1091 +1039 +1243 +1415
421. 00000D20 +1332 +1396 +1461 +1430 +1399 +1503 +1352 +1553
422. 00000D28 +1498 +1481 +1464 +1431 +1398 +1333 +1268 +1139
423. 00000D30 +1010 +875 +741 -129 +24 +21 +19 +16
424. 00000D38 +14 -2 -18 -34 -50 -50 -50 -50
425. 00000D40 +842 +820 +798 +792 +786 +771 +756 +725
426. 00000D48 +695 +679 +664 +641 +618 +606 +595 +584
427. 00000D50 +573 +553 +534 +531 +529 +460 +519 +498
428. 00000D58 +477 +462 +447 +440 +817 +839 +1117 +1219
429. 00000D60 +1066 +1225 +1385 +1290 +1322 +1356 +1264 +1371
430. 00000D68 +1350 +1414 +1349 +1285 +1221 +1191 +1162 +1052
431. 00000D70 +943 +866 +405 -39 +27 +31 +35 +23
432. 00000D78 +11 -3 -18 -33 -48 -56 -64 -64
433. 00000D80 +812 +809 +806 +803 +800 +775 +750 +725
434. 00000D88 +701 +680 +660 +639 +619 +607 +594 +582
435. 00000D90 +570 +551 +533 +515 +497 +507 +517 +463
436. 00000D98 +409 +442 +476 +510 +544 +512 +736 +1024
437. 00000DA0 +1056 +1055 +1054 +1022 +1245 +1210 +1176 +1189
438. 00000DA8 +1203 +1347 +1235 +1139 +1044 +1050 +1056 +966
439. 00000DB0 +877 +857 +70 +50 +31 +41 +52 +30
440. 00000DB8 +9 -5 -19 -33 -47 -63 -79 -79
441. 00000DC0 +862 +894 +926 +846 +766 +747 +728 +709
442. 00000DC8 +690 +672 +655 +637 +620 +607 +593 +580
443. 00000DD0 +567 +549 +532 +514 +497 +498 +499 +467
444. 00000DD8 +436 +438 +441 +396 +351 +328 +562 +916
445. 00000DE0 +1142 +596 +819 +898 +1104 +1160 +1088 +1119
446. 00000DE8 +1023 +1280 +1281 +945 +867 +836 +806 +872
447. 00000DF0 +810 +576 -41 -4 +34 +35 +36 +21
448. 00000DF8 +6 -6 -19 -32 -45 -69 -93 -93
449. 00000E00 +912 +851 +790 +761 +732 +719 +706 +693
450. 00000E08 +680 +665 +651 +636 +622 +607 +593 +578
451. 00000E10 +564 +547 +531 +514 +498 +489 +481 +472
452. 00000E18 +464 +435 +407 +410 +414 +401 +645 +808
453. 00000E20 +972 +1034 +584 +646 +708 +854 +744 +922
454. 00000E28 +844 +1085 +1071 +624 +690 +751 +813 +522
455. 00000E30 -24 +39 +103 +70 +38 +29 +21 +12
456. 00000E38 +4 -8 -20 -32 -44 -76 -108 -108
457. 00000E40 +844 +807 +771 +750 +730 +714 +699 +683
458. 00000E48 +668 +654 +642 +628 +616 +602 +590 +576
459. 00000E50 +564 +546 +529 +511 +494 +484 +475 +465
460. 00000E58 +456 +430 +406 +396 +388 +297 +336 +485
461. 00000E60 +636 +165 +462 +519 +576 +649 +722 +955
462. 00000E68 +804 +765 +600 +257 +172 +129 +88 +125
463. 00000E70 +36 +61 +87 +64 +42 +32 +23 +13
464. 00000E78 +4 -9 -22 -35 -48 -72 -96 -96
465. 00000E80 +776 +764 +752 +740 +728 +710 +692 +674
466. 00000E88 +656 +644 +633 +621 +610 +598 +587 +575
467. 00000E90 +564 +545 +527 +508 +490 +479 +469 +458
468. 00000E98 +448 +426 +405 +383 +362 +322 +283 +291
469. 00000EA0 +300 +320 +340 +264 +188 +188 +444 +732
470. 00000EA8 +508 +318 +129 +147 +166 +148 +131 +113
471. 00000EB0 +96 +83 +71 +58 +46 +35 +25 +14
472. 00000EB8 +4 -10 -24 -38 -52 -68 -84 -84
473. 00000EC0 +772 +760 +749 +737 +726 +705 +685 +664
474. 00000EC8 +644 +633 +624 +613 +604 +593 +584 +573
475. 00000ED0 +564 +544 +525 +505 +486 +474 +463 +451
476. 00000ED8 +440 +421 +404 +385 +368 +338 +310 +304
477. 00000EE0 +300 +307 +314 +273 +232 +119 +1030 +845
478. 00000EE8 +788 +854 +154 +156 +160 +142 +126 +108
479. 00000EF0 +92 +81 +71 +60 +50 +38 +27 +15
480. 00000EF8 +4 -11 -26 -41 -56 -64 -72 -72
481. 00000F00 +768 +757 +746 +735 +724 +701 +678 +655
482. 00000F08 +632 +623 +615 +606 +598 +589 +581 +572
483. 00000F10 +564 +543 +523 +502 +482 +469 +457 +444
484. 00000F18 +432 +417 +403 +388 +374 +355 +337 +318
485. 00000F20 +300 +294 +288 +282 +276 +306 +80 +958
486. 00000F28 +556 +111 +179 +166 +154 +137 +121 +104
487. 00000F30 +88 +79 +71 +62 +54 +41 +29 +16
488. 00000F38 +4 -12 -28 -44 -60 -60 -60 -60
489. 00000F40 +768 +757 +746 +735 +724 +701 +678 +655
490. 00000F48 +632 +623 +615 +606 +598 +589 +581 +572
491. 00000F50 +564 +543 +523 +502 +482 +469 +457 +444
492. 00000F58 +432 +417 +403 +388 +374 +355 +337 +318
493. 00000F60 +300 +294 +288 +282 +276 +322 +240 +54
494. 00000F68 +252 +79 +163 +158 +154 +137 +121 +104
495. 00000F70 +88 +79 +71 +62 +54 +41 +29 +16
496. 00000F78 +4 -12 -28 -44 -60 -60 -60 -60
497. 00000F80 +768 +757 +746 +735 +724 +701 +678 +655
498. 00000F88 +632 +623 +615 +606 +598 +589 +581 +572
499. 00000F90 +564 +543 +523 +502 +482 +469 +457 +444
500. 00000F98 +432 +417 +403 +388 +374 +355 +337 +318
501. 00000FA0 +300 +294 +288 +282 +276 +210 +144 +174
502. 00000FA8 +204 +175 +147 +150 +154 +137 +121 +104
503. 00000FB0 +88 +79 +71 +62 +54 +41 +29 +16
504. 00000FB8 +4 -12 -28 -44 -60 -60 -60 -60
505. 00000FC0 +768 +757 +746 +735 +724 +701 +678 +655
506. 00000FC8 +632 +623 +615 +606 +598 +589 +581 +572
507. 00000FD0 +564 +543 +523 +502 +482 +469 +457 +444
508. 00000FD8 +432 +417 +403 +388 +374 +355 +337 +318
509. 00000FE0 +300 +294 +288 +282 +276 +210 +144 +174
510. 00000FE8 +204 +175 +147 +150 +154 +137 +121 +104
511. 00000FF0 +88 +79 +71 +62 +54 +41 +29 +16
512. 00000FF8 +4 -12 -28 -44 -60 -60 -60 -60

##### Reconstructed Y Component

The reconstructed Y component is the same as the LL0 band shown in section [4.2.4.3.3.7](#Section_81e229bad85545929a5e94c567e57d54).

##### Reconstructed Cb Component

The following is a dump of the reconstructed Cb component.

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 +1728 +1730 +1732 +1734 +1736 +1738 +1740 +1742
2. 00000008 +1744 +1740 +1736 +1732 +1728 +1796 +1864 +1804
3. 00000010 +1744 +1754 +1764 +1774 +1784 +1794 +1804 +1814
4. 00000018 +1824 +1774 +1724 +1802 +1880 +1814 +1748 +1810
5. 00000020 +1872 +1878 +1884 +1890 +1896 +1910 +1924 +1938
6. 00000028 +1952 +1938 +1924 +1910 +1896 +1914 +1932 +1950
7. 00000030 +1968 +1974 +1980 +1986 +1992 +1998 +2004 +2010
8. 00000038 +2016 +2016 +2016 +2016 +2016 +2016 +2016 +2016
9. 00000040 +1710 +1697 +1684 +1704 +1723 +1726 +1730 +1733
10. 00000048 +1737 +1738 +1740 +1741 +1743 +1758 +1774 +1757
11. 00000050 +1741 +1762 +1783 +1788 +1793 +1774 +1755 +1784
12. 00000058 +1813 +1817 +1821 +1825 +1829 +1857 +1885 +1881
13. 00000060 +1877 +1849 +1821 +1857 +1894 +1904 +1914 +1924
14. 00000068 +1935 +1928 +1922 +1915 +1909 +1922 +1936 +1949
15. 00000070 +1963 +1974 +1985 +1997 +2008 +2009 +2011 +2012
16. 00000078 +2014 +2017 +2020 +2023 +2026 +2026 +2026 +2026
17. 00000080 +1692 +1664 +1637 +1674 +1711 +1715 +1720 +1725
18. 00000088 +1730 +1737 +1744 +1751 +1758 +1721 +1684 +1711
19. 00000090 +1738 +1770 +1802 +1802 +1802 +1754 +1706 +1754
20. 00000098 +1802 +1860 +1918 +1848 +1778 +1900 +2022 +1952
21. 000000A0 +1882 +1820 +1759 +1825 +1892 +1898 +1905 +1911
22. 000000A8 +1918 +1919 +1920 +1921 +1922 +1931 +1940 +1949
23. 000000B0 +1958 +1974 +1991 +2008 +2025 +2021 +2018 +2015
24. 000000B8 +2012 +2018 +2024 +2030 +2036 +2036 +2036 +2036
25. 000000C0 +1674 +1631 +1589 +1644 +1698 +1703 +1710 +1716
26. 000000C8 +1723 +1735 +1748 +1760 +1773 +1763 +1754 +1760
27. 000000D0 +1767 +1794 +1821 +1800 +1779 +1830 +1881 +1900
28. 000000D8 +1919 +2047 +2175 +2015 +1855 +1879 +1903 +1927
29. 000000E0 +1951 +1759 +1824 +1856 +1890 +1892 +1895 +1897
30. 000000E8 +1901 +1909 +1918 +1926 +1935 +1939 +1944 +1948
31. 000000F0 +1953 +1974 +1996 +2019 +2041 +2032 +2025 +2017
32. 000000F8 +2010 +2019 +2028 +2037 +2046 +2046 +2046 +2046
33. 00000100 +1656 +1599 +1543 +1614 +1686 +1693 +1701 +1708
34. 00000108 +1716 +1734 +1752 +1770 +1788 +1806 +1824 +1810
35. 00000110 +1796 +1818 +1840 +2054 +2268 +1650 +1032 +510
36. 00000118 -12 -70 -128 +390 +908 +1602 +2296 +2158
37. 00000120 +2020 +1699 +1890 +1889 +1888 +1887 +1886 +1885
38. 00000128 +1884 +1900 +1916 +1932 +1948 +1948 +1948 +1948
39. 00000130 +1948 +1975 +2003 +2030 +2058 +2045 +2033 +2020
40. 00000138 +2008 +2020 +2032 +2044 +2056 +2056 +2056 +2056
41. 00000140 +1590 +1570 +1551 +1612 +1673 +1579 +1742 +1713
42. 00000148 +1685 +1672 +1660 +1711 +1763 +1694 +1626 +1941
43. 00000150 +2001 +2060 +583 -654 -1891 -2046 -2201 -2084
44. 00000158 -1967 -2049 -2131 -2053 -1975 -1751 -1527 +41
45. 00000160 +1609 +2374 +1859 +2000 +1886 +1898 +1912 +1909
46. 00000168 +1907 +1900 +1894 +1919 +1945 +1944 +1944 +1943
47. 00000170 +1943 +1967 +1992 +2017 +2042 +2032 +2023 +2014
48. 00000178 +2006 +2017 +2028 +2039 +2050 +2050 +2050 +2050
49. 00000180 +1524 +1542 +1560 +1610 +1661 +1467 +1785 +1719
50. 00000188 +1654 +1611 +1568 +1653 +1738 +1839 +1940 +793
51. 00000190 -866 -2050 -2210 -2082 -1954 -1902 -1850 -1862
52. 00000198 -1874 -1980 -2086 -1936 -1786 -1776 -1766 -1820
53. 000001A0 -1874 -534 +1829 +2112 +1884 +1911 +1939 +1934
54. 000001A8 +1930 +1901 +1872 +1907 +1942 +1941 +1940 +1939
55. 000001B0 +1938 +1960 +1982 +2004 +2027 +2021 +2015 +2009
56. 000001B8 +2004 +2014 +2024 +2034 +2044 +2044 +2044 +2044
57. 000001C0 +1586 +1641 +1697 +1704 +1712 +1577 +1699 +1660
58. 000001C8 +1623 +1613 +1604 +1642 +1681 +1791 -402 -2036
59. 000001D0 -1877 -2144 -1899 -1942 -1985 -1918 -1851 -1880
60. 000001D8 -1909 -1959 -2009 -1931 -1853 -1801 -1749 -1617
61. 000001E0 -1485 -1939 -1882 +96 +2074 +1971 +1869 +1895
62. 000001E8 +1921 +1885 +1850 +1894 +1939 +1937 +1936 +1934
63. 000001F0 +1933 +1952 +1972 +1991 +2011 +2008 +2006 +2003
64. 000001F8 +2002 +2011 +2020 +2029 +2038 +2038 +2038 +2038
65. 00000200 +1136 +1229 +1322 +1287 +1252 +1433 +1614 +1603
66. 00000208 +1592 +1616 +1640 +1632 +1624 +2256 -1720 -1792
67. 00000210 -1864 -1982 -2100 -2058 -2016 -1934 -1852 -1898
68. 00000218 -1944 -1938 -1932 -1926 -1920 -1826 -1732 -1670
69. 00000220 -1608 -1552 -1496 -1664 -1320 +2288 +1800 +1856
70. 00000228 +1912 +1870 +1828 +1882 +1936 +1934 +1932 +1930
71. 00000230 +1928 +1945 +1962 +1979 +1996 +1997 +1998 +1999
72. 00000238 +2000 +2008 +2016 +2024 +2032 +2032 +2032 +2032
73. 00000240 +1552 +1624 +1698 +1674 +1652 +1644 +1638 +1614
74. 00000248 +1592 +1611 +1630 +1681 +1733 +1146 -2000 -1787
75. 00000250 -1830 -1924 -2019 -2049 -2080 -1986 -1893 -1895
76. 00000258 -1898 -1896 -1894 -1860 -1827 -1779 -1731 -1667
77. 00000260 -1604 -1615 -1626 -1878 -594 +2063 +1903 +2016
78. 00000268 +1873 +2132 +1880 +1884 +1888 +1921 +1955 +1941
79. 00000270 +1927 +1925 +1925 +1955 +1987 +2005 +2025 +2043
80. 00000278 +2063 +1995 +1927 +2099 +2015 +2095 +2175 +2175
81. 00000280 +1456 +1509 +1562 +1551 +1540 +1601 +1662 +1627
82. 00000288 +1592 +1606 +1621 +1731 +1842 +37 -2281 -1782
83. 00000290 -1796 -1867 -1938 -2041 -2144 -2039 -1934 -1893
84. 00000298 -1852 -1854 -1857 -1795 -1734 -1732 -1731 -1665
85. 000002A0 -1600 -1678 -1757 -1836 +645 +2094 +2007 +1920
86. 000002A8 +1322 +2139 +1933 +1886 +1840 +1909 +1979 +1952
87. 000002B0 +1926 +1907 +1888 +1933 +1978 +2015 +2052 +2089
88. 000002B8 +2126 +1982 +1838 +2174 +1998 +2158 +2318 +2318
89. 000002C0 +1488 +1520 +1554 +1554 +1556 +1588 +1622 +1606
90. 000002C8 +1592 +1569 +1547 +1700 +1855 -993 -2049 -1825
91. 000002D0 -1858 -1905 -1953 -2016 -2080 -1995 -1911 -1858
92. 000002D8 -1806 -1812 -1819 -1729 -1641 -1685 -1730 -1678
93. 000002E0 -1628 -1677 -1727 -2194 +1947 +2125 +2046 +945
94. 000002E8 -2205 +114 +2177 +2144 +1856 +1912 +1970 +1963
95. 000002F0 +1957 +1935 +1915 +1925 +1937 +1991 +2047 +2181
96. 000002F8 +2061 +2337 +2613 +1817 +2301 +2157 +2269 +2397
97. 00000300 +1520 +1533 +1546 +1559 +1572 +1577 +1582 +1587
98. 00000308 +1592 +1533 +1474 +1671 +1868 -2023 -1818 -1869
99. 00000310 -1920 -1944 -1968 -1992 -2016 -1952 -1888 -1824
100. 00000318 -1760 -1771 -1782 -1665 -1548 -1639 -1730 -1693
101. 00000320 -1656 -1677 -1699 -1017 +2226 +1644 +2087 -286
102. 00000328 -2148 -2167 -1674 +611 +2384 +2173 +1962 +1975
103. 00000330 +1988 +1965 +1942 +1919 +1896 +1969 +2042 +2019
104. 00000338 +1484 -1916 -1220 +2484 +1068 -916 +1708 +1964
105. 00000340 +1504 +1514 +1526 +1536 +1548 +1550 +1554 +1556
106. 00000348 +1560 +1581 +1604 +1786 +689 -2138 -1894 -1905
107. 00000350 -1918 -1926 -1935 -1943 -1952 -1878 -1805 -1731
108. 00000358 -1658 -1626 -1596 -1549 -1503 -1507 -1513 -1518
109. 00000360 -1524 -1526 -1785 +148 +2080 +1995 +2422 -2094
110. 00000368 -2003 -2033 -1809 -1665 -1776 -189 +1398 +2536
111. 00000370 +2139 +2122 +2105 +2327 +2295 +2204 +2113 +2870
112. 00000378 -213 -1669 -1077 -1237 -1653 -1589 +2059 +1931
113. 00000380 +1488 +1497 +1506 +1515 +1524 +1525 +1526 +1527
114. 00000388 +1528 +1631 +1735 +1902 -490 -2254 -1971 -1943
115. 00000390 -1916 -1909 -1902 -1895 -1888 -1805 -1722 -1639
116. 00000398 -1556 -1483 -1411 -1434 -1458 -1377 -1297 -1344
117. 000003A0 -1392 -1376 -1872 +1312 +1935 +1834 +1734 -2622
118. 000003A8 -2370 -2157 -1945 -1892 -1840 -2039 -2239 -2022
119. 000003B0 -782 -281 +220 +433 +134 -377 -888 -1655
120. 000003B8 -1398 -1166 -934 -1374 -1302 -726 +2410 +1898
121. 000003C0 +1472 +1478 +1486 +1492 +1500 +1498 +1498 +1496
122. 000003C8 +1496 +1600 +1705 +1666 -933 -1474 -2015 -1964
123. 000003D0 -1914 -1891 -1869 -1846 -1824 -1731 -1639 -1546
124. 000003D8 -1454 -1387 -1321 -1191 -1317 -1150 -1240 -1250
125. 000003E0 -1260 -1545 -1575 +2459 +1885 +2057 +182 -2429
126. 000003E8 -2225 -2088 -1952 -1928 -1904 -1905 -1907 -2149
127. 000003F0 -1879 -1835 -1793 -1670 -1803 -1645 -1489 -1491
128. 000003F8 -1239 -1335 -1431 -1335 -1495 +681 +2345 +2089
129. 00000400 +1456 +1461 +1466 +1471 +1476 +1473 +1470 +1467
130. 00000408 +1464 +1570 +1676 +1174 -1888 -950 -2060 -1986
131. 00000410 -1912 -1874 -1836 -1798 -1760 -1658 -1556 -1454
132. 00000418 -1352 -1292 -1232 -1204 -1688 -1180 -1184 -1156
133. 00000420 -1128 -1203 -254 +2071 +1836 +2281 -1370 -2237
134. 00000428 -2080 -2020 -1960 -1964 -1968 -2028 -2088 -2020
135. 00000430 -1952 -1855 -1758 -1725 -1692 -1635 -1578 -1329
136. 00000438 -1592 -1504 -1416 -1040 -1688 +2088 +2280 +2280
137. 00000440 +1428 +1438 +1450 +1460 +1472 +1463 +1454 +1493
138. 00000448 +1533 +1512 +1748 -160 -2068 -1346 -1137 -1775
139. 00000450 -1902 -1848 -1794 -1708 -1622 -1544 -1466 -1356
140. 00000458 -1247 -1198 -1149 -1196 -1755 -1246 -993 -1012
141. 00000460 -1032 -1202 +930 +2023 +1837 +2238 -2480 -2286
142. 00000468 -1838 -1799 -1761 -1835 -1909 -1954 -2000 -1982
143. 00000470 -1964 -1908 -1853 -1829 -1807 -1749 -1692 -1538
144. 00000478 -1642 -1526 -1410 -638 -122 +774 +1926 +1926
145. 00000480 +1400 +1417 +1434 +1451 +1469 +1454 +1439 +1520
146. 00000488 +1602 +1455 +1820 -1239 -1737 -1743 -726 -1821
147. 00000490 -1892 -1822 -1752 -1618 -1485 -1431 -1377 -1259
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422. 00000D28 -3116 -3163 -3210 -3257 -3304 -3271 -3238 -3141
423. 00000D30 -3044 -3091 -2114 +2319 +2144 +2121 +2098 +2139
424. 00000D38 +2180 +2196 +2212 +2228 +2244 +2244 +2244 +2244
425. 00000D40 +1230 +1255 +1281 +1306 +1333 +1303 +1272 +1338
426. 00000D48 +1405 +1436 +1468 +1500 +1533 +1535 +1537 +1539
427. 00000D50 +1542 +1562 +1584 +1605 +1627 +1601 +1577 +1616
428. 00000D58 +1656 +1807 +1959 -417 -2793 -2797 -2545 -2581
429. 00000D60 -2618 -2687 -2757 -2794 -2833 -2901 -2968 -3036
430. 00000D68 -3105 -3145 -3186 -3178 -3171 -3149 -3128 -3058
431. 00000D70 -2989 -3221 -126 +2281 +2129 +2084 +2040 +2107
432. 00000D78 +2175 +2189 +2203 +2217 +2231 +2231 +2231 +2231
433. 00000D80 +1220 +1229 +1238 +1247 +1257 +1266 +1275 +1348
434. 00000D88 +1422 +1447 +1473 +1499 +1525 +1530 +1536 +1542
435. 00000D90 +1548 +1567 +1587 +1606 +1626 +1601 +1577 +1616
436. 00000D98 +1656 +1763 +1871 +1658 -2138 -2862 -2563 -2583
437. 00000DA0 -2604 -2671 -2738 -2805 -2873 -2928 -2983 -3038
438. 00000DA8 -3094 -3128 -3162 -3100 -3038 -3028 -3018 -2976
439. 00000DB0 -2934 -3352 +1862 +2244 +2114 +2048 +1982 +2076
440. 00000DB8 +2170 +2182 +2194 +2206 +2218 +2218 +2218 +2218
441. 00000DC0 +1210 +1234 +1259 +1283 +1308 +1325 +1341 +1390
442. 00000DC8 +1439 +1457 +1477 +1496 +1516 +1525 +1535 +1544
443. 00000DD0 +1554 +1571 +1589 +1607 +1625 +1616 +1608 +1632
444. 00000DD8 +1656 +1718 +1782 +1685 +1845 +528 -2836 -2728
445. 00000DE0 -2622 -2654 -2687 -2719 -2752 -2763 -2773 -2992
446. 00000DE8 -2955 -3030 -3106 -2813 -2777 -3226 -2908 -3134
447. 00000DF0 -3359 -971 +2186 +2270 +2099 +2075 +2052 +2108
448. 00000DF8 +2165 +2175 +2185 +2195 +2205 +2205 +2205 +2205
449. 00000E00 +1200 +1240 +1280 +1320 +1360 +1384 +1408 +1432
450. 00000E08 +1456 +1469 +1482 +1495 +1508 +1521 +1534 +1547
451. 00000E10 +1560 +1576 +1592 +1608 +1624 +1632 +1640 +1648
452. 00000E18 +1656 +1675 +1694 +1713 +1732 +1871 +986 -827
453. 00000E20 -2640 -2638 -2636 -2634 -2632 -2598 -2564 -2946
454. 00000E28 -2816 -2933 -3050 -2783 -3028 -3169 -1774 +293
455. 00000E30 +2360 +2179 +1998 +2041 +2084 +2103 +2122 +2141
456. 00000E38 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192
457. 00000E40 +1232 +1266 +1300 +1334 +1368 +1390 +1412 +1434
458. 00000E48 +1456 +1468 +1482 +1494 +1508 +1520 +1534 +1546
459. 00000E50 +1560 +1578 +1596 +1614 +1632 +1640 +1648 +1656
460. 00000E58 +1664 +1645 +1628 +1705 +1784 +2101 +1908 +1298
461. 00000E60 +688 +1071 -594 -1587 -2580 -2891 -3202 -2281
462. 00000E68 -2640 -2058 -1476 -94 +1032 +2278 +2244 +2209
463. 00000E70 +2176 +2131 +2088 +2091 +2096 +2111 +2128 +2143
464. 00000E78 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192
465. 00000E80 +1264 +1292 +1320 +1348 +1376 +1396 +1416 +1436
466. 00000E88 +1456 +1469 +1482 +1495 +1508 +1521 +1534 +1547
467. 00000E90 +1560 +1580 +1600 +1620 +1640 +1648 +1656 +1664
468. 00000E98 +1672 +1617 +1562 +1699 +1836 +1821 +1806 +1887
469. 00000EA0 +1968 +1964 +1960 +2020 +2080 +1936 +1792 +1200
470. 00000EA8 +1632 +1889 +2146 +2083 +2020 +2093 +2166 +2079
471. 00000EB0 +1992 +2085 +2178 +2143 +2108 +2121 +2134 +2147
472. 00000EB8 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192
473. 00000EC0 +1296 +1318 +1340 +1362 +1384 +1402 +1420 +1438
474. 00000EC8 +1456 +1468 +1482 +1494 +1508 +1520 +1534 +1546
475. 00000ED0 +1560 +1582 +1604 +1626 +1648 +1656 +1664 +1672
476. 00000ED8 +1680 +1667 +1656 +1739 +1824 +1811 +1800 +1835
477. 00000EE0 +1872 +1881 +1890 +1819 +1748 +1995 +450 +937
478. 00000EE8 +912 +715 +2056 +2019 +1984 +2035 +2088 +2059
479. 00000EF0 +2032 +2085 +2140 +2129 +2120 +2129 +2140 +2149
480. 00000EF8 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192
481. 00000F00 +1328 +1344 +1360 +1376 +1392 +1408 +1424 +1440
482. 00000F08 +1456 +1469 +1482 +1495 +1508 +1521 +1534 +1547
483. 00000F10 +1560 +1584 +1608 +1632 +1656 +1664 +1672 +1680
484. 00000F18 +1688 +1719 +1750 +1781 +1812 +1803 +1794 +1785
485. 00000F20 +1776 +1798 +1820 +1874 +1928 +1798 +2180 +674
486. 00000F28 +1216 +2103 +1966 +1957 +1948 +1979 +2010 +2041
487. 00000F30 +2072 +2087 +2102 +2117 +2132 +2139 +2146 +2153
488. 00000F38 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192
489. 00000F40 +1328 +1344 +1360 +1376 +1392 +1408 +1424 +1440
490. 00000F48 +1456 +1468 +1482 +1494 +1508 +1520 +1534 +1546
491. 00000F50 +1560 +1584 +1608 +1632 +1656 +1664 +1672 +1680
492. 00000F58 +1688 +1718 +1750 +1780 +1812 +1802 +1794 +1784
493. 00000F60 +1776 +1798 +1820 +1858 +1896 +1750 +1860 +2338
494. 00000F68 +1792 +2134 +1966 +1956 +1948 +1978 +2010 +2040
495. 00000F70 +2072 +2086 +2102 +2116 +2132 +2138 +2146 +2152
496. 00000F78 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192
497. 00000F80 +1328 +1344 +1360 +1376 +1392 +1408 +1424 +1440
498. 00000F88 +1456 +1469 +1482 +1495 +1508 +1521 +1534 +1547
499. 00000F90 +1560 +1584 +1608 +1632 +1656 +1664 +1672 +1680
500. 00000F98 +1688 +1719 +1750 +1781 +1812 +1803 +1794 +1785
501. 00000FA0 +1776 +1798 +1820 +1842 +1864 +1958 +2052 +1954
502. 00000FA8 +1856 +1911 +1966 +1957 +1948 +1979 +2010 +2041
503. 00000FB0 +2072 +2087 +2102 +2117 +2132 +2139 +2146 +2153
504. 00000FB8 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192
505. 00000FC0 +1328 +1344 +1360 +1376 +1392 +1408 +1424 +1440
506. 00000FC8 +1456 +1468 +1482 +1494 +1508 +1520 +1534 +1546
507. 00000FD0 +1560 +1584 +1608 +1632 +1656 +1664 +1672 +1680
508. 00000FD8 +1688 +1718 +1750 +1780 +1812 +1802 +1794 +1784
509. 00000FE0 +1776 +1798 +1820 +1842 +1864 +1958 +2052 +1954
510. 00000FE8 +1856 +1910 +1966 +1956 +1948 +1978 +2010 +2040
511. 00000FF0 +2072 +2086 +2102 +2116 +2132 +2138 +2146 +2152
512. 00000FF8 +2160 +2168 +2176 +2184 +2192 +2192 +2192 +2192

The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 +864 +865 +866 +867 +868 +869 +870 +871
2. 00000008 +872 +870 +868 +866 +864 +898 +932 +902
3. 00000010 +872 +877 +882 +887 +892 +897 +902 +907
4. 00000018 +912 +887 +862 +901 +940 +907 +874 +905
5. 00000020 +936 +939 +942 +945 +948 +955 +962 +969
6. 00000028 +976 +969 +962 +955 +948 +957 +966 +975
7. 00000030 +984 +987 +990 +993 +996 +999 +1002 +1005
8. 00000038 +1008 +1008 +1008 +1008 +1008 +1008 +1008 +1008
9. 00000040 +855 +848 +842 +852 +861 +863 +865 +866
10. 00000048 +868 +869 +870 +870 +871 +879 +887 +878
11. 00000050 +870 +881 +891 +894 +896 +887 +877 +892
12. 00000058 +906 +908 +910 +912 +914 +928 +942 +940
13. 00000060 +938 +924 +910 +928 +947 +952 +957 +962
14. 00000068 +967 +964 +961 +957 +954 +961 +968 +974
15. 00000070 +981 +987 +992 +998 +1004 +1004 +1005 +1006
16. 00000078 +1007 +1008 +1010 +1011 +1013 +1013 +1013 +1013
17. 00000080 +846 +832 +818 +837 +855 +857 +860 +862
18. 00000088 +865 +868 +872 +875 +879 +860 +842 +855
19. 00000090 +869 +885 +901 +901 +901 +877 +853 +877
20. 00000098 +901 +930 +959 +924 +889 +950 +1011 +976
21. 000000A0 +941 +910 +879 +912 +946 +949 +952 +955
22. 000000A8 +959 +959 +960 +960 +961 +965 +970 +974
23. 000000B0 +979 +987 +995 +1004 +1012 +1010 +1009 +1007
24. 000000B8 +1006 +1009 +1012 +1015 +1018 +1018 +1018 +1018
25. 000000C0 +837 +815 +794 +822 +849 +851 +855 +858
26. 000000C8 +861 +867 +874 +880 +886 +881 +877 +880
27. 000000D0 +883 +897 +910 +900 +889 +915 +940 +950
28. 000000D8 +959 +1023 +1087 +1007 +927 +939 +951 +963
29. 000000E0 +975 +879 +912 +928 +945 +946 +947 +948
30. 000000E8 +950 +954 +959 +963 +967 +969 +972 +974
31. 000000F0 +976 +987 +998 +1009 +1020 +1016 +1012 +1008
32. 000000F8 +1005 +1009 +1014 +1018 +1023 +1023 +1023 +1023
33. 00000100 +828 +799 +771 +807 +843 +846 +850 +854
34. 00000108 +858 +867 +876 +885 +894 +903 +912 +905
35. 00000110 +898 +909 +920 +1027 +1134 +825 +516 +255
36. 00000118 -6 -35 -64 +195 +454 +801 +1148 +1079
37. 00000120 +1010 +849 +945 +944 +944 +943 +943 +942
38. 00000128 +942 +950 +958 +966 +974 +974 +974 +974
39. 00000130 +974 +987 +1001 +1015 +1029 +1022 +1016 +1010
40. 00000138 +1004 +1010 +1016 +1022 +1028 +1028 +1028 +1028
41. 00000140 +795 +785 +775 +806 +836 +789 +871 +856
42. 00000148 +842 +836 +830 +855 +881 +847 +813 +970
43. 00000150 +1000 +1030 +291 -327 -945 -1023 -1100 -1042
44. 00000158 -983 -1024 -1065 -1026 -987 -875 -763 +20
45. 00000160 +804 +1187 +929 +1000 +943 +949 +956 +954
46. 00000168 +953 +950 +947 +959 +972 +972 +972 +971
47. 00000170 +971 +983 +996 +1008 +1021 +1016 +1011 +1007
48. 00000178 +1003 +1008 +1014 +1019 +1025 +1025 +1025 +1025
49. 00000180 +762 +771 +780 +805 +830 +733 +892 +859
50. 00000188 +827 +805 +784 +826 +869 +919 +970 +396
51. 00000190 -433 -1025 -1105 -1041 -977 -951 -925 -931
52. 00000198 -937 -990 -1043 -968 -893 -888 -883 -910
53. 000001A0 -937 -267 +914 +1056 +942 +955 +969 +967
54. 000001A8 +965 +950 +936 +953 +971 +970 +970 +969
55. 000001B0 +969 +980 +991 +1002 +1013 +1010 +1007 +1004
56. 000001B8 +1002 +1007 +1012 +1017 +1022 +1022 +1022 +1022
57. 000001C0 +793 +820 +848 +852 +856 +788 +849 +830
58. 000001C8 +811 +806 +802 +821 +840 +895 -201 -1018
59. 000001D0 -938 -1072 -949 -971 -992 -959 -925 -940
60. 000001D8 -954 -979 -1004 -965 -926 -900 -874 -808
61. 000001E0 -742 -969 -941 +48 +1037 +985 +934 +947
62. 000001E8 +960 +942 +925 +947 +969 +968 +968 +967
63. 000001F0 +966 +976 +986 +995 +1005 +1004 +1003 +1001
64. 000001F8 +1001 +1005 +1010 +1014 +1019 +1019 +1019 +1019
65. 00000200 +568 +614 +661 +643 +626 +716 +807 +801
66. 00000208 +796 +808 +820 +816 +812 +1128 -860 -896
67. 00000210 -932 -991 -1050 -1029 -1008 -967 -926 -949
68. 00000218 -972 -969 -966 -963 -960 -913 -866 -835
69. 00000220 -804 -776 -748 -832 -660 +1144 +900 +928
70. 00000228 +956 +935 +914 +941 +968 +967 +966 +965
71. 00000230 +964 +972 +981 +989 +998 +998 +999 +999
72. 00000238 +1000 +1004 +1008 +1012 +1016 +1016 +1016 +1016
73. 00000240 +776 +812 +849 +837 +826 +822 +819 +807
74. 00000248 +796 +805 +815 +840 +866 +573 -1000 -893
75. 00000250 -915 -962 -1009 -1024 -1040 -993 -946 -947
76. 00000258 -949 -948 -947 -930 -913 -889 -865 -833
77. 00000260 -802 -807 -813 -939 -297 +1031 +951 +1008
78. 00000268 +936 +1066 +940 +942 +944 +960 +977 +970
79. 00000270 +963 +962 +962 +977 +993 +1002 +1012 +1021
80. 00000278 +1031 +997 +963 +1049 +1007 +1047 +1087 +1087
81. 00000280 +728 +754 +781 +775 +770 +800 +831 +813
82. 00000288 +796 +803 +810 +865 +921 +18 -1140 -891
83. 00000290 -898 -933 -969 -1020 -1072 -1019 -967 -946
84. 00000298 -926 -927 -928 -897 -867 -866 -865 -832
85. 000002A0 -800 -839 -878 -918 +322 +1047 +1003 +960
86. 000002A8 +661 +1069 +966 +943 +920 +954 +989 +976
87. 000002B0 +963 +953 +944 +966 +989 +1007 +1026 +1044
88. 000002B8 +1063 +991 +919 +1087 +999 +1079 +1159 +1159
89. 000002C0 +744 +760 +777 +777 +778 +794 +811 +803
90. 000002C8 +796 +784 +773 +850 +927 -496 -1024 -912
91. 000002D0 -929 -952 -976 -1008 -1040 -997 -955 -929
92. 000002D8 -903 -906 -909 -864 -820 -842 -865 -839
93. 000002E0 -814 -838 -863 -1097 +973 +1062 +1023 +472
94. 000002E8 -1102 +57 +1088 +1072 +928 +956 +985 +981
95. 000002F0 +978 +967 +957 +962 +968 +995 +1023 +1090
96. 000002F8 +1030 +1168 +1306 +908 +1150 +1078 +1134 +1198
97. 00000300 +760 +766 +773 +779 +786 +788 +791 +793
98. 00000308 +796 +766 +737 +835 +934 -1011 -909 -934
99. 00000310 -960 -972 -984 -996 -1008 -976 -944 -912
100. 00000318 -880 -885 -891 -832 -774 -819 -865 -846
101. 00000320 -828 -838 -849 -508 +1113 +822 +1043 -143
102. 00000328 -1074 -1083 -837 +305 +1192 +1086 +981 +987
103. 00000330 +994 +982 +971 +959 +948 +984 +1021 +1009
104. 00000338 +742 -958 -610 +1242 +534 -458 +854 +982
105. 00000340 +752 +757 +763 +768 +774 +775 +777 +778
106. 00000348 +780 +790 +802 +893 +344 -1069 -947 -952
107. 00000350 -959 -963 -967 -971 -976 -939 -902 -865
108. 00000358 -829 -813 -798 -774 -751 -753 -756 -759
109. 00000360 -762 -763 -892 +74 +1040 +997 +1211 -1047
110. 00000368 -1001 -1016 -904 -832 -888 -94 +699 +1268
111. 00000370 +1069 +1061 +1052 +1163 +1147 +1102 +1056 +1435
112. 00000378 -106 -834 -538 -618 -826 -794 +1029 +965
113. 00000380 +744 +748 +753 +757 +762 +762 +763 +763
114. 00000388 +764 +815 +867 +951 -245 -1127 -985 -971
115. 00000390 -958 -954 -951 -947 -944 -902 -861 -819
116. 00000398 -778 -741 -705 -717 -729 -688 -648 -672
117. 000003A0 -696 -688 -936 +656 +967 +917 +867 -1311
118. 000003A8 -1185 -1078 -972 -946 -920 -1019 -1119 -1011
119. 000003B0 -391 -140 +110 +216 +67 -188 -444 -827
120. 000003B8 -699 -583 -467 -687 -651 -363 +1205 +949
121. 000003C0 +736 +739 +743 +746 +750 +749 +749 +748
122. 000003C8 +748 +800 +852 +833 -466 -737 -1007 -982
123. 000003D0 -957 -945 -934 -923 -912 -865 -819 -773
124. 000003D8 -727 -693 -660 -595 -658 -575 -620 -625
125. 000003E0 -630 -772 -787 +1229 +942 +1028 +91 -1214
126. 000003E8 -1112 -1044 -976 -964 -952 -952 -953 -1074
127. 000003F0 -939 -917 -896 -835 -901 -822 -744 -745
128. 000003F8 -619 -667 -715 -667 -747 +340 +1172 +1044
129. 00000400 +728 +730 +733 +735 +738 +736 +735 +733
130. 00000408 +732 +785 +838 +587 -944 -475 -1030 -993
131. 00000410 -956 -937 -918 -899 -880 -829 -778 -727
132. 00000418 -676 -646 -616 -602 -844 -590 -592 -578
133. 00000420 -564 -601 -127 +1035 +918 +1140 -685 -1118
134. 00000428 -1040 -1010 -980 -982 -984 -1014 -1044 -1010
135. 00000430 -976 -927 -879 -862 -846 -817 -789 -664
136. 00000438 -796 -752 -708 -520 -844 +1044 +1140 +1140
137. 00000440 +714 +719 +725 +730 +736 +731 +727 +746
138. 00000448 +766 +756 +874 -80 -1034 -673 -568 -887
139. 00000450 -951 -924 -897 -854 -811 -772 -733 -678
140. 00000458 -623 -599 -574 -598 -877 -623 -496 -506
141. 00000460 -516 -601 +465 +1011 +918 +1119 -1240 -1143
142. 00000468 -919 -899 -880 -917 -954 -977 -1000 -991
143. 00000470 -982 -954 -926 -914 -903 -874 -846 -769
144. 00000478 -821 -763 -705 -319 -61 +387 +963 +963
145. 00000480 +700 +708 +717 +725 +734 +727 +719 +760
146. 00000488 +801 +727 +910 -619 -868 -871 -363 -910
147. 00000490 -946 -911 -876 -809 -742 -715 -688 -629
148. 00000498 -571 -552 -533 -594 -911 -656 -401 -434
149. 000004A0 -468 -601 +1057 +988 +919 +458 -1027 -784
150. 000004A8 -798 -789 -781 -853 -925 -940 -956 -972
151. 000004B0 -988 -981 -974 -967 -961 -932 -903 -874
152. 000004B8 -846 -774 -702 -502 -46 +498 +1042 +1042
153. 000004C0 +686 +697 +709 +720 +732 +722 +711 +741
154. 000004C8 +771 +882 +866 -1102 -766 -805 -589 -637
155. 000004D0 -941 -882 -823 -780 -737 -650 -563 -556
156. 000004D8 -550 -497 -443 -526 -865 -697 -402 -354
157. 000004E0 -436 -153 +1025 +964 +1031 -75 -798 -673
158. 000004E8 -677 -663 -650 -708 -767 -799 -832 -865
159. 000004F0 -898 -912 -926 -940 -954 -941 -928 -883
160. 000004F8 -839 -785 -731 -717 +577 +1201 +929 +929
161. 00000500 +672 +686 +701 +716 +731 +717 +704 +723
162. 00000508 +742 +782 +310 -945 -921 -868 -816 -364
163. 00000510 -936 -853 -770 -751 -733 -714 -695 -612
164. 00000518 -530 -442 -354 -458 -819 -739 -403 -275
165. 00000520 -404 +295 +994 +941 +1144 -609 -570 -563
166. 00000528 -556 -537 -519 -564 -610 -659 -709 -758
167. 00000530 -808 -843 -878 -913 -948 -951 -954 -893
168. 00000538 -832 -796 -760 -932 +1200 +1008 +1072 +1072
169. 00000540 +674 +686 +699 +712 +725 +731 +738 +745
170. 00000548 +752 +864 -303 -919 -895 -867 -840 -501
171. 00000550 -675 -855 -779 -759 -740 -691 -642 -689
172. 00000558 -737 -604 -470 -305 -396 -398 -400 -305
173. 00000560 -340 +682 +936 +966 +740 -575 -483 -463
174. 00000568 -443 -434 -425 -464 -504 -530 -557 -615
175. 00000570 -674 -760 -847 -902 -957 -950 -943 -896
176. 00000578 -849 -802 -883 -372 +1163 +1067 +1099 +1099
177. 00000580 +676 +686 +697 +708 +719 +746 +773 +768
178. 00000588 +763 +947 -917 -893 -869 -867 -865 -639
179. 00000590 -414 -857 -788 -768 -747 -668 -590 -511
180. 00000598 -433 -382 -331 -281 -486 -185 -141 -208
181. 000005A0 -276 +1069 +878 +991 +337 -541 -396 -363
182. 000005A8 -330 -331 -332 -365 -399 -402 -405 -472
183. 000005B0 -540 -678 -817 -892 -967 -949 -932 -899
184. 000005B8 -866 -808 -1006 +188 +1126 +1126 +1126 +1126
185. 000005C0 +678 +686 +695 +704 +713 +712 +711 +750
186. 000005C8 +789 +453 -907 -851 -923 -954 -858 -817
187. 000005D0 -393 -843 -909 -856 -802 -685 -569 -460
188. 000005D8 -352 -328 -304 -192 -208 -116 -154 -238
189. 000005E0 +188 +984 +884 +1016 -2 -419 -325 -303
190. 000005E8 -281 -292 -303 -330 -357 -369 -381 -481
191. 000005F0 -582 -716 -851 -921 -992 -988 -985 -942
192. 000005F8 -899 -1006 -1113 +1076 +1089 +1097 +1105 +1105
193. 00000600 +680 +687 +694 +701 +708 +679 +650 +733
194. 00000608 +816 -40 -897 -809 -978 -1042 -851 -995
195. 00000610 -372 -445 -263 -176 -90 -191 -293 -410
196. 00000618 -528 -402 -277 -231 -186 -176 -167 -269
197. 00000620 +652 +899 +891 +1042 -342 -298 -255 -243
198. 00000628 -232 -253 -274 -295 -316 -337 -358 -491
199. 00000630 -624 -754 -885 -951 -1018 -1028 -1039 -985
200. 00000638 -932 -948 -708 +1196 +1052 +1068 +1084 +1084
201. 00000640 +673 +679 +685 +691 +698 +697 +696 +776
202. 00000648 +855 -588 -881 -1101 -682 -232 +345 +971
203. 00000650 +956 +873 +918 +908 +897 +944 +991 +887
204. 00000658 +782 +274 -234 -149 -193 -195 -199 -73
205. 00000660 +947 +960 +973 +642 -200 -198 -196 -210
206. 00000668 -225 -239 -253 -284 -314 -361 -407 -534
207. 00000670 -660 -848 -1037 -1041 -1045 -1064 -1084 -1015
208. 00000678 -947 -1014 +71 +1140 +1057 +1041 +1025 +1025
209. 00000680 +666 +671 +677 +682 +688 +716 +743 +691
210. 00000688 +639 -881 -97 +654 +894 +833 +773 +761
211. 00000690 +749 +784 +820 +840 +860 +800 +740 +776
212. 00000698 +812 +950 +1089 +572 -200 -215 -231 -6
213. 000006A0 +987 +893 +1055 +242 -59 -99 -138 -178
214. 000006A8 -218 -225 -233 -273 -313 -385 -457 -449
215. 000006B0 -441 -303 -165 -235 -305 -717 -1129 -1045
216. 000006B8 -962 -1080 +850 +1084 +1062 +1014 +966 +966
217. 000006C0 +659 +663 +668 +673 +678 +702 +726 +710
218. 000006C8 +694 +690 +814 +874 +678 +747 +817 +815
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220. 000006D8 +826 +843 +860 +974 +960 +437 -215 +181
221. 000006E0 +962 +882 +929 +74 -14 -47 -80 -145
222. 000006E8 -211 -211 -213 -278 -344 -185 -154 -140
223. 000006F0 -125 -285 -445 -429 -413 -281 -150 -539
224. 000006F8 -929 -818 +1085 +1148 +1083 +1059 +1035 +1035
225. 00000700 +652 +656 +660 +664 +669 +689 +709 +729
226. 00000708 +750 +726 +702 +710 +718 +790 +862 +742
227. 00000710 +622 +511 +656 +593 +531 +544 +557 +698
228. 00000718 +840 +864 +888 +864 +841 +961 +825 +881
229. 00000720 +938 +871 +804 -94 +31 +4 -22 -113
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326. 00000A28 -304 -426 -549 -735 -410 -48 -455 -477
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500. 00000F98 +844 +859 +875 +890 +906 +901 +897 +892
501. 00000FA0 +888 +899 +910 +921 +932 +979 +1026 +977
502. 00000FA8 +928 +955 +983 +978 +974 +989 +1005 +1020
503. 00000FB0 +1036 +1043 +1051 +1058 +1066 +1069 +1073 +1076
504. 00000FB8 +1080 +1084 +1088 +1092 +1096 +1096 +1096 +1096
505. 00000FC0 +664 +672 +680 +688 +696 +704 +712 +720
506. 00000FC8 +728 +734 +741 +747 +754 +760 +767 +773
507. 00000FD0 +780 +792 +804 +816 +828 +832 +836 +840
508. 00000FD8 +844 +859 +875 +890 +906 +901 +897 +892
509. 00000FE0 +888 +899 +910 +921 +932 +979 +1026 +977
510. 00000FE8 +928 +955 +983 +978 +974 +989 +1005 +1020
511. 00000FF0 +1036 +1043 +1051 +1058 +1066 +1069 +1073 +1076
512. 00000FF8 +1080 +1084 +1088 +1092 +1096 +1096 +1096 +1096

##### Reconstructed Cr Component

The following is a dump of the reconstructed Cb component.

The sample data for 11.5 fixed-point integers (RDP 7.1/8.0) is:

1. 00000000 -2112 -2114 -2116 -2118 -2120 -2122 -2124 -2126
2. 00000008 -2128 -2118 -2108 -2098 -2088 -2150 -2212 -2146
3. 00000010 -2080 -2100 -2120 -2140 -2160 -2164 -2168 -2172
4. 00000018 -2176 -2092 -2008 -2052 -2096 -2132 -2168 -2076
5. 00000020 -1984 -2088 -2192 -2168 -2144 -2136 -2128 -2120
6. 00000028 -2112 -2126 -2140 -2154 -2168 -2150 -2132 -2114
7. 00000030 -2096 -2096 -2096 -2096 -2096 -2096 -2096 -2096
8. 00000038 -2096 -2080 -2064 -2048 -2032 -2032 -2032 -2032
9. 00000040 -2128 -2113 -2098 -2115 -2132 -2133 -2134 -2135
10. 00000048 -2137 -2127 -2117 -2107 -2097 -2117 -2137 -2125
11. 00000050 -2114 -2134 -2154 -2159 -2163 -2135 -2108 -2128
12. 00000058 -2149 -2132 -2116 -2116 -2115 -2115 -2114 -2098
13. 00000060 -2082 -2112 -2142 -2141 -2139 -2133 -2128 -2122
14. 00000068 -2117 -2127 -2137 -2147 -2158 -2146 -2134 -2122
15. 00000070 -2111 -2108 -2106 -2104 -2102 -2101 -2101 -2101
16. 00000078 -2101 -2087 -2073 -2059 -2045 -2045 -2045 -2045
17. 00000080 -2144 -2112 -2080 -2112 -2145 -2145 -2145 -2145
18. 00000088 -2146 -2136 -2126 -2116 -2107 -2085 -2063 -2105
19. 00000090 -2148 -2168 -2189 -2178 -2167 -2107 -2048 -2085
20. 00000098 -2122 -2173 -2225 -2180 -2135 -2098 -2061 -2120
21. 000000A0 -2180 -2136 -2093 -2114 -2135 -2131 -2128 -2125
22. 000000A8 -2122 -2128 -2135 -2141 -2148 -2142 -2137 -2131
23. 000000B0 -2126 -2121 -2117 -2112 -2108 -2107 -2107 -2106
24. 000000B8 -2106 -2094 -2082 -2070 -2058 -2058 -2058 -2058
25. 000000C0 -2160 -2111 -2062 -2109 -2157 -2156 -2155 -2154
26. 000000C8 -2155 -2145 -2135 -2125 -2116 -2132 -2148 -2132
27. 000000D0 -2118 -2154 -2191 -2181 -2170 -2494 -2308 -2393
28. 000000D8 -2479 -2470 -2461 -2243 -2282 -2353 -2167 -2174
29. 000000E0 -2182 -2160 -2139 -2135 -2130 -2128 -2128 -2127
30. 000000E8 -2127 -2129 -2132 -2134 -2138 -2138 -2139 -2139
31. 000000F0 -2141 -2133 -2127 -2120 -2114 -2112 -2112 -2111
32. 000000F8 -2111 -2101 -2091 -2081 -2071 -2071 -2071 -2071
33. 00000100 -2176 -2110 -2045 -2107 -2170 -2168 -2167 -2165
34. 00000108 -2164 -2154 -2145 -2135 -2126 -2180 -2235 -2161
35. 00000110 -2088 -2141 -2195 -2440 -2686 -2371 -1033 -398
36. 00000118 +236 +305 +375 -3 -894 -2096 -2787 -2485
37. 00000120 -2184 -2185 -2187 -2156 -2126 -2127 -2129 -2130
38. 00000128 -2132 -2131 -2130 -2129 -2128 -2135 -2142 -2149
39. 00000130 -2156 -2147 -2138 -2129 -2120 -2119 -2118 -2117
40. 00000138 -2116 -2108 -2100 -2092 -2084 -2084 -2084 -2084
41. 00000140 -2112 -2085 -2058 -2112 -2166 -2067 -2225 -2190
42. 00000148 -2157 -2107 -2057 -2104 -2151 -2119 -2088 -2632
43. 00000150 -2666 -2263 -837 +844 +2526 +3327 +2847 +2847
44. 00000158 +2847 +2726 +2606 +2967 +3070 +2968 +2867 +397
45. 00000160 -2074 -2745 -2137 -2281 -2169 -2202 -2236 -2190
46. 00000168 -2145 -2145 -2147 -2148 -2150 -2152 -2156 -2159
47. 00000170 -2163 -2159 -2156 -2152 -2150 -2130 -2111 -2123
48. 00000178 -2137 -2127 -2117 -2107 -2097 -2097 -2097 -2097
49. 00000180 -2048 -2060 -2073 -2118 -2163 -1967 -2284 -2217
50. 00000188 -2150 -2060 -1971 -2074 -2177 -2315 -2454 -1057
51. 00000190 +1364 +2990 +2568 +2593 +2619 +2369 +2631 +2508
52. 00000198 +2386 +2332 +2278 +2352 +2427 +2913 +2888 +3022
53. 000001A0 +3156 +1302 -2088 -2406 -2213 -2279 -2345 -2251
54. 000001A8 -2158 -2161 -2165 -2168 -2172 -2171 -2171 -2170
55. 000001B0 -2170 -2172 -2175 -2177 -2180 -2142 -2105 -2131
56. 000001B8 -2158 -2146 -2134 -2122 -2110 -2110 -2110 -2110
57. 000001C0 -2112 -2163 -2215 -2235 -2255 -1994 -2247 -2194
58. 000001C8 -2143 -2109 -2076 -2123 -2170 -2270 +700 +3527
59. 000001D0 +2770 +2035 +2325 +2293 +2263 +2178 +2350 +2265
60. 000001D8 +2181 +2129 +2078 +2154 +2231 +2521 +2557 +2559
61. 000001E0 +2562 +3221 +3113 +140 -2832 -2034 -2261 -2199
62. 000001E8 -2139 -2160 -2182 -2188 -2194 -2189 -2185 -2181
63. 000001F0 -2177 -2185 -2193 -2201 -2210 -2154 -2098 -2138
64. 000001F8 -2179 -2165 -2151 -2137 -2123 -2123 -2123 -2123
65. 00000200 -1664 -1755 -1846 -1841 -1836 -1767 -2210 -2173
66. 00000208 -2136 -2159 -2182 -2173 -2164 -2739 +2830 +2735
67. 00000210 +2640 +2361 +2082 +1995 +1908 +1989 +2070 +2023
68. 00000218 +1976 +1927 +1878 +1957 +2036 +2131 +2226 +2353
69. 00000220 +2480 +2581 +2682 +2943 +2692 -2815 -2178 -2149
70. 00000228 -2120 -2160 -2200 -2208 -2216 -2208 -2200 -2192
71. 00000230 -2184 -2198 -2212 -2226 -2240 -2166 -2092 -2146
72. 00000238 -2200 -2184 -2168 -2152 -2136 -2136 -2136 -2136
73. 00000240 -2096 -2166 -2238 -2228 -2220 -2087 -2210 -2173
74. 00000248 -2137 -2189 -2243 -2152 -2318 -2031 +3375 +2861
75. 00000250 +2605 +2305 +2007 +1851 +1697 +1756 +1815 +1810
76. 00000258 +1806 +1756 +1707 +1754 +1801 +1911 +2023 +2149
77. 00000260 +2277 +2299 +2323 +2729 +1345 -2439 -2129 -2217
78. 00000268 -2307 -2349 -2136 -2179 -2222 -2223 -2224 -2193
79. 00000270 -2162 -2171 -2180 -2190 -2199 -2198 -2198 -2213
80. 00000278 -2229 -2172 -2115 -2170 -2225 -2113 -2257 -2257
81. 00000280 -2016 -2067 -2118 -2105 -2093 -2152 -2211 -2174
82. 00000288 -2138 -2221 -2305 -2132 -2472 +212 +2897 +2477
83. 00000290 +2570 +2251 +1932 +1709 +1487 +1524 +1561 +1598
84. 00000298 +1636 +1586 +1537 +1552 +1567 +1693 +1820 +1947
85. 000002A0 +2074 +2019 +1964 +2261 -514 -2321 -2080 -2031
86. 000002A8 -1982 -2283 -2073 -2151 -2229 -2238 -2248 -2194
87. 000002B0 -2140 -2144 -2149 -2154 -2159 -2231 -2304 -2281
88. 000002B8 -2258 -2160 -2062 -2188 -2314 -2090 -2378 -2378
89. 000002C0 -2064 -2094 -2126 -2125 -2125 -2152 -2179 -2159
90. 000002C8 -2139 -2204 -2270 -2144 -2530 +1688 +2834 +2460
91. 000002D0 +2343 +2147 +1953 +1678 +1404 +1387 +1370 +1418
92. 000002D8 +1466 +1416 +1366 +1349 +1332 +1442 +1553 +1663
93. 000002E0 +1775 +1817 +1861 +2415 -2405 -2457 -1999 -2035
94. 000002E8 -281 -1464 -2393 -2378 -2363 -2301 -2240 -2195
95. 000002F0 -2150 -2165 -2181 -2182 -2182 -2199 -2218 -2188
96. 000002F8 -2159 -2756 -2329 -1934 -2307 -2627 -2179 -2307
97. 00000300 -2112 -2123 -2135 -2146 -2158 -2153 -2149 -2144
98. 00000308 -2140 -2188 -2236 -2156 -2588 +3164 +2772 +2444
99. 00000310 +2116 +2045 +1975 +1648 +1322 +1251 +1181 +1238
100. 00000318 +1296 +1246 +1197 +1147 +1098 +1192 +1287 +1381
101. 00000320 +1476 +1617 +1758 +1291 -2760 -2083 -2430 -1273
102. 00000328 -628 -647 -667 -1582 -2498 -2365 -2233 -2196
103. 00000330 -2160 -2187 -2215 -2210 -2206 -2169 -2133 -2096
104. 00000338 -2060 -280 -548 -2448 -1788 -860 -1980 -2236
105. 00000340 -2112 -2120 -2130 -2140 -2150 -2145 -2141 -2137
106. 00000348 -2133 -2147 -2161 -2079 -718 +3207 +2525 +2291
107. 00000350 +2057 +1941 +1827 +1553 +1279 +1174 +1070 +1094
108. 00000358 +1118 +1044 +970 +976 +983 +1001 +1019 +1165
109. 00000360 +1313 +1305 +1555 -212 -2491 -2189 -2401 -867
110. 00000368 -615 -642 -671 -603 -536 -1354 -2172 -2271
111. 00000370 -2370 -2340 -2311 -2330 -2349 -2315 -2282 -2697
112. 00000378 -1321 -420 -543 -394 -757 -741 -2261 -2261
113. 00000380 -2112 -2119 -2127 -2135 -2143 -2138 -2134 -2130
114. 00000388 -2126 -2106 -2087 -2259 +640 +2995 +2279 +2138
115. 00000390 +1998 +1839 +1681 +1459 +1237 +1098 +960 +950
116. 00000398 +940 +842 +744 +806 +869 +811 +753 +951
117. 000003A0 +1150 +995 +1352 -1715 -2222 -2297 -2372 -463
118. 000003A8 -602 -639 -676 -649 -623 -600 -577 -810
119. 000003B0 -1044 -1214 -1384 -1426 -1469 -1183 -897 -483
120. 000003B8 -582 -560 -538 -900 -750 -1134 -2542 -2286
121. 000003C0 -2112 -2117 -2123 -2129 -2135 -2131 -2127 -2123
122. 000003C8 -2119 -2017 -1916 -2886 +1262 +2014 +2256 +2097
123. 000003D0 +1939 +1736 +1534 +1364 +1194 +1022 +850 +806
124. 000003D8 +762 +736 +710 +508 +818 +604 +646 +752
125. 000003E0 +859 +1131 +1149 -2865 -2273 -2339 -1639 -425
126. 000003E8 -493 -522 -553 -566 -581 -677 -773 -661
127. 000003F0 -550 -567 -585 -586 -588 -657 -727 -572
128. 000003F8 -675 -668 -661 -798 -679 -1799 -2407 -2151
129. 00000400 -2112 -2116 -2120 -2124 -2128 -2124 -2120 -2116
130. 00000408 -2112 -2185 -2258 -1723 +1884 +1035 +2234 +2057
131. 00000410 +1880 +1634 +1388 +1270 +1152 +946 +740 +662
132. 00000418 +584 +630 +676 +466 +1280 +654 +540 +554
133. 00000420 +568 +757 -78 -2481 -2324 -2383 -906 -389
134. 00000428 -384 -407 -430 -485 -540 -499 -458 -513
135. 00000430 -568 -689 -810 -771 -732 -645 -558 -663
136. 00000438 -768 -776 -784 -696 -608 -2464 -2272 -2016
137. 00000440 -2104 -2110 -2116 -2122 -2129 -2105 -2081 -2105
138. 00000448 -2130 -2204 -2536 -84 +1856 +1148 +1209 +1701
139. 00000450 +1683 +1507 +1332 +1188 +1045 +837 +630 +518
140. 00000458 +407 +489 +572 +398 +1249 +662 +330 +383
141. 00000460 +436 +589 -1304 -2350 -2117 -2615 +213 -12
142. 00000468 -239 -265 -293 -320 -348 -377 -407 -484
143. 00000470 -562 -626 -691 -675 -661 -625 -590 -682
144. 00000478 -776 -804 -832 -540 -248 -664 -1848 -2616
145. 00000480 -2096 -2104 -2113 -2121 -2130 -2086 -2043 -2095
146. 00000488 -2148 -2225 -2815 +1555 +1829 +1519 +697 +1603
147. 00000490 +1486 +1381 +1276 +1107 +938 +729 +520 +375
148. 00000498 +230 +349 +468 +331 +1219 +670 +121 +212
149. 000004A0 +304 +423 -2531 -2477 -2423 -1569 +309 -149
150. 000004A8 -94 -125 -157 -157 -157 -256 -356 -456
151. 000004B0 -556 -564 -573 -581 -590 -606 -623 -703
152. 000004B8 -784 -832 -880 -384 +112 -1424 -2448 -2192
153. 000004C0 -2088 -2098 -2109 -2119 -2131 -2099 -2068 -2100
154. 000004C8 -2134 -2485 -2325 +2921 +2025 +1536 +1048 +1088
155. 000004D0 +1385 +1270 +1156 +993 +831 +700 +570 +407
156. 000004D8 +245 +256 +268 +343 +932 +662 +135 +185
157. 000004E0 +236 -337 -2445 -2346 -2504 -793 +149 -75
158. 000004E8 -45 -64 -84 -88 -93 -183 -273 -363
159. 000004F0 -454 -454 -454 -518 -583 -619 -655 -723
160. 000004F8 -792 -796 -800 -868 -1960 -2296 -2376 -2248
161. 00000500 -2080 -2093 -2106 -2119 -2132 -2113 -2094 -2107
162. 00000508 -2120 -2234 -813 +2752 +2222 +1555 +1401 +574
163. 00000510 +1284 +1160 +1036 +880 +724 +672 +620 +440
164. 00000518 +260 +164 +69 +357 +646 +654 +151 +159
165. 00000520 +168 -1096 -2361 -2217 -2586 -18 -11 -3
166. 00000528 +4 -4 -13 -21 -30 -110 -191 -271
167. 00000530 -352 -344 -336 -456 -576 -632 -688 -744
168. 00000538 -800 -760 -720 -584 -2496 -2400 -2304 -2304
169. 00000540 -2072 -2086 -2102 -2117 -2133 -2171 -2211 -2170
170. 00000548 -2130 -2462 +1045 +2615 +2138 +1656 +1432 +807
171. 00000550 +951 +1193 +924 +734 +545 +397 +250 +486
172. 00000558 +723 +569 +416 +311 +207 +384 +305 +242
173. 00000560 +180 -1825 -2295 -2348 -1891 +69 -19 -10
174. 00000568 -3 -7 -12 -16 -22 -65 -107 -182
175. 00000570 -258 -309 -361 -477 -593 -640 -688 -736
176. 00000578 -784 -752 -720 -1200 -2448 -2384 -2320 -2320
177. 00000580 -2064 -2081 -2099 -2116 -2134 -2231 -2329 -2234
178. 00000588 -2140 -2691 +2902 +2478 +2055 +1759 +1464 +1041
179. 00000590 +618 +1227 +812 +589 +366 +379 +392 +277
180. 00000598 +162 +207 +253 +267 +281 +114 -52 +70
181. 000005A0 +192 -2555 -2230 -2481 -1197 +156 -28 -19
182. 000005A8 -10 -11 -12 -13 -15 -20 -25 -94
183. 000005B0 -164 -275 -387 -498 -610 -649 -689 -728
184. 000005B8 -768 -744 -720 -1816 -2400 -2368 -2336 -2336
185. 000005C0 -2056 -2075 -2095 -2115 -2135 -2178 -2222 -2138
186. 000005C8 -2310 -1319 +2743 +2293 +2099 +1893 +1432 +1242
187. 000005D0 +541 +1036 +1020 +699 +379 +376 +374 +275
188. 000005D8 +177 +196 +217 +189 +162 +100 +39 +153
189. 000005E0 -756 -2420 -2293 -2549 -502 +131 -4 -10
190. 000005E8 -17 -14 -12 -9 -7 -7 -6 -102
191. 000005F0 -198 -320 -444 -519 -595 -641 -689 -720
192. 000005F8 -752 -768 -784 -2192 -2320 -2336 -2352 -2352
193. 00000600 -2048 -2070 -2092 -2114 -2136 -2126 -2116 -2042
194. 00000608 -2480 +52 +2584 +2108 +2144 +2028 +1400 +1444
195. 00000610 +464 +78 -308 -470 -632 -394 -156 +18
196. 00000618 +192 +187 +182 +113 +44 +87 +130 +237
197. 00000620 -1704 -2286 -2356 -2618 +192 +106 +20 -2
198. 00000628 -24 -18 -12 -6 +0 +6 +12 -110
199. 00000630 -232 -367 -502 -541 -580 -635 -690 -713
200. 00000638 -736 -792 -848 -2568 -2240 -2304 -2368 -2368
201. 00000640 -2046 -2068 -2091 -2113 -2136 -2121 -2105 -2186
202. 00000648 -2523 +1999 +2681 +2740 +1518 +117 -1541 -2639
203. 00000650 -2457 -2465 -2474 -2466 -2459 -2498 -2536 -2303
204. 00000658 -2070 -995 +81 -76 +24 +35 +47 -150
205. 00000660 -2394 -2422 -2450 -1806 +117 +85 +53 +21
206. 00000668 -11 -11 -11 -11 -11 -11 -11 -107
207. 00000670 -203 -404 -606 -615 -625 -610 -596 -693
208. 00000678 -791 -757 -1491 -2401 -2287 -2303 -2319 -2319
209. 00000680 -2044 -2067 -2090 -2113 -2137 -2116 -2095 -2074
210. 00000688 -2054 +2923 +219 -1748 -2692 -2563 -2435 -2114
211. 00000690 -2306 -2193 -2080 -2159 -2239 -2298 -2357 -2320
212. 00000698 -2284 -2432 -2580 -1544 +4 -16 -36 -280
213. 000006A0 -2572 -2302 -2544 -994 +43 +64 +86 +44
214. 000006A8 +2 -4 -10 -16 -22 -28 -34 -104
215. 000006B0 -174 -186 -198 -178 -158 -330 -502 -674
216. 000006B8 -846 -722 -2134 -2234 -2334 -2302 -2270 -2270
217. 000006C0 -2042 -2065 -2089 -2112 -2137 -2159 -2180 -2154
218. 000006C8 -2129 -2458 -2532 -2604 -2166 -2218 -2272 -2293
219. 000006D0 -2315 -2000 -2198 -2219 -2242 -2322 -2401 -2385
220. 000006D8 -2370 -2285 -2201 -2452 -2704 -1411 +137 -1402
221. 000006E0 -2174 -2502 -2830 +250 +0 +28 +55 +35
222. 000006E8 +15 +3 -9 -21 -33 -45 -57 -101
223. 000006F0 -145 -175 -206 -220 -235 -177 -120 -414
224. 000006F8 -709 -191 -2489 -2547 -2349 -2349 -2349 -2349
225. 00000700 -2040 -2064 -2089 -2113 -2138 -2202 -2267 -2235
226. 00000708 -2204 -2207 -2210 -2181 -2152 -2131 -2110 -2217
227. 00000710 -1812 -1552 -2317 -2025 -1734 -1578 -1423 -1939
228. 00000718 -2456 -2395 -2334 -2081 -2340 -2551 -2250 -2013
229. 00000720 -2288 -2446 -2093 -43 -42 -8 +25 +26
230. 00000728 +28 +10 -8 -26 -44 -62 -80 -98
231. 00000730 -116 -165 -214 -263 -312 -281 -250 -155
232. 00000738 -60 -940 -1820 -2348 -2364 -2396 -2428 -2428
233. 00000740 -2038 -2058 -2079 -2100 -2122 -2123 -2124 -2285
234. 00000748 -2191 -2065 -1940 -1910 -1882 -2232 -2327 -2149
235. 00000750 -1717 -1485 -2022 -1759 -1497 -1242 -987 -716
236. 00000758 -446 -1226 -2007 -2723 -2160 -2330 -2245 -2175
237. 00000760 -2362 -2338 -1034 +109 -28 -19 -10 +15
238. 00000768 +41 +19 -3 -25 -47 -89 -131 -141
239. 00000770 -151 -208 -266 -355 -445 -458 -472 -405
240. 00000778 -83 -1135 -1163 -1895 -2371 -2387 -2403 -2403
241. 00000780 -2036 -2053 -2071 -2089 -2107 -2044 -1982 -2080
242. 00000788 -1666 -1668 -1671 -1897 -2124 -2590 -2545 -2083
243. 00000790 -1622 -1419 -1729 -1495 -1261 -1162 -1064 -774
244. 00000798 -484 -314 -144 -806 -2492 -2366 -2240 -2338
245. 000007A0 -2436 -2486 -489 +4 -15 -30 -45 +4
246. 000007A8 +54 +28 +2 -24 -50 -116 -182 -184
247. 000007B0 -186 -252 -318 -448 -578 -636 -694 -656
248. 000007B8 -106 -2098 -2042 -2210 -2378 -2378 -2378 -2378
249. 000007C0 -2034 -2047 -2062 -2076 -2091 -2093 -2096 -1650
250. 000007C8 -1461 -1687 -1913 -2155 -2398 -2676 -2442 -2016
251. 000007D0 -1591 -1448 -1563 -1341 -1120 -986 -853 -623
252. 000007D8 -394 -265 -137 +200 +24 -1554 -2363 -2324
253. 000007E0 -2286 -2122 -2727 -1220 +31 +136 -15 +25
254. 000007E8 +67 +37 +7 -7 -21 -111 -201 -211
255. 000007F0 -221 -295 -370 -460 -551 -509 -468 -634
256. 000007F8 -545 -2805 -2249 -2301 -2353 -2353 -2353 -2353
257. 00000800 -2032 -2043 -2054 -2065 -2076 -2143 -2210 -1477
258. 00000808 -1768 -1962 -2156 -2414 -2672 -2762 -2340 -1950
259. 00000810 -1560 -1479 -1398 -1189 -980 -811 -642 -473
260. 00000818 -304 -217 -130 -75 -20 +27 -2486 -2311
261. 00000820 -2136 -2527 -2406 -2445 -2484 -979 +14 +47
262. 00000828 +80 +46 +12 +10 +8 -106 -220 -238
263. 00000830 -256 -339 -422 -473 -524 -639 -754 -1637
264. 00000838 -2520 -2232 -2456 -2392 -2328 -2328 -2328 -2328
265. 00000840 -2012 -2030 -2049 -2052 -2055 -2191 -2073 -1585
266. 00000848 -1867 -2081 -2296 -2526 -2757 -2653 -2294 -1886
267. 00000850 -1479 -1380 -1282 -1087 -893 -748 -604 -491
268. 00000858 -379 -243 -109 -181 +1 -606 -2493 -2283
269. 00000860 -2331 -2481 -2376 -2413 -2452 -2308 -2421 -1350
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292. 00000918 -604 -581 -558 -343 -1152 -2281 -2386 -2523
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371. 00000B90 -2310 -2211 -2625 -2751 -2877 -2822 -2768 -2650
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502. 00000FA8 -2400 -2433 -2466 -2435 -2404 -2405 -2406 -2407
503. 00000FB0 -2408 -2403 -2398 -2393 -2388 -2399 -2410 -2421
504. 00000FB8 -2432 -2432 -2432 -2432 -2432 -2432 -2432 -2432
505. 00000FC0 -2080 -2108 -2136 -2164 -2192 -2212 -2232 -2252
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510. 00000FE8 -2400 -2432 -2466 -2434 -2404 -2404 -2406 -2406
511. 00000FF0 -2408 -2402 -2398 -2392 -2388 -2398 -2410 -2420
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The sample data for 12.4 fixed-point integers (RDP 8.1) is:

1. 00000000 -1056 -1057 -1058 -1059 -1060 -1061 -1062 -1063
2. 00000008 -1064 -1059 -1054 -1049 -1044 -1075 -1106 -1073
3. 00000010 -1040 -1050 -1060 -1070 -1080 -1082 -1084 -1086
4. 00000018 -1088 -1046 -1004 -1026 -1048 -1066 -1084 -1038
5. 00000020 -992 -1044 -1096 -1084 -1072 -1068 -1064 -1060
6. 00000028 -1056 -1063 -1070 -1077 -1084 -1075 -1066 -1057
7. 00000030 -1048 -1048 -1048 -1048 -1048 -1048 -1048 -1048
8. 00000038 -1048 -1040 -1032 -1024 -1016 -1016 -1016 -1016
9. 00000040 -1064 -1056 -1049 -1057 -1066 -1066 -1067 -1067
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11. 00000050 -1057 -1067 -1077 -1079 -1081 -1067 -1054 -1064
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14. 00000068 -1058 -1063 -1068 -1073 -1079 -1073 -1067 -1061
15. 00000070 -1055 -1054 -1053 -1052 -1051 -1050 -1050 -1050
16. 00000078 -1050 -1043 -1036 -1029 -1022 -1022 -1022 -1022
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18. 00000088 -1073 -1068 -1063 -1058 -1053 -1042 -1031 -1052
19. 00000090 -1074 -1084 -1094 -1089 -1083 -1053 -1024 -1042
20. 00000098 -1061 -1086 -1112 -1090 -1067 -1049 -1030 -1060
21. 000000A0 -1090 -1068 -1046 -1057 -1067 -1065 -1064 -1062
22. 000000A8 -1061 -1064 -1067 -1070 -1074 -1071 -1068 -1065
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24. 000000B8 -1053 -1047 -1041 -1035 -1029 -1029 -1029 -1029
25. 000000C0 -1080 -1055 -1031 -1054 -1078 -1078 -1077 -1077
26. 000000C8 -1077 -1072 -1067 -1062 -1058 -1066 -1074 -1066
27. 000000D0 -1059 -1077 -1095 -1090 -1085 -1247 -1154 -1196
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324. 00000A18 -580 -520 -461 -705 -1206 -1094 -1239 -359
325. 00000A20 +8 +3 -2 +9 +20 +27 +34 +41
326. 00000A28 +48 +50 +52 +54 +56 +66 +76 +118
327. 00000A30 +160 +204 +248 +260 +272 +316 -920 -1180
328. 00000A38 -1184 -1184 -1184 -1168 -1152 -1152 -1152 -1152
329. 00000A40 -949 -960 -972 -1055 -883 -775 -924 -992
330. 00000A48 -1061 -1159 -1257 -1332 -1406 -1537 -1539 -1414
331. 00000A50 -1160 -1012 -864 -804 -744 -728 -712 -696
332. 00000A58 -681 -623 -565 -939 -1186 -1266 -1346 +165
333. 00000A60 +12 +20 +27 +27 +27 +35 +44 +52
334. 00000A68 +61 +75 +90 +104 +118 +41 -35 +24
335. 00000A70 +83 +124 +164 +173 +181 +366 -1369 -1288
336. 00000A78 -1208 -1197 -1187 -1176 -1166 -1166 -1166 -1166
337. 00000A80 -930 -920 -910 -1076 -730 -794 -858 -922
338. 00000A88 -986 -1095 -1205 -1267 -1329 -1475 -1365 -1479
339. 00000A90 -1337 -1191 -1046 -948 -851 -834 -816 -799
340. 00000A98 -782 -726 -670 -1174 -1166 -1182 -942 -78
341. 00000AA0 +17 +37 +57 +45 +34 +44 +54 +64
342. 00000AA8 +75 +101 +128 +154 +181 +145 +110 +58
343. 00000AB0 +7 +44 +81 +86 +91 -351 -1306 -1141
344. 00000AB8 -1232 -1211 -1190 -1185 -1180 -1180 -1180 -1180
345. 00000AC0 -1055 -983 -912 -976 -657 -756 -856 -907
346. 00000AC8 -959 -1103 -1121 -1226 -1204 -1301 -1270 -1376
347. 00000AD0 -1353 -1346 -1339 -1204 -1070 -1027 -984 -933
348. 00000AD8 -883 -860 -838 -1184 -1146 -1258 -474 -26
349. 00000AE0 +37 +46 +55 +47 +41 +52 +64 +76
350. 00000AE8 +88 +111 +134 +156 +179 +177 +175 +220
351. 00000AF0 +266 +236 +205 +207 +337 -844 -1259 -1169
352. 00000AF8 -1208 -1200 -1193 -1193 -1194 -1194 -1194 -1194
353. 00000B00 -924 -919 -914 -877 -584 -719 -854 -893
354. 00000B08 -932 -1112 -1037 -1186 -1079 -1127 -1176 -1273
355. 00000B10 -1370 -1373 -1377 -1333 -1289 -1220 -1152 -1068
356. 00000B18 -984 -995 -1007 -1195 -1127 -1334 -6 +25
357. 00000B20 +58 +55 +53 +50 +48 +61 +75 +88
358. 00000B28 +102 +121 +140 +159 +178 +209 +240 +255
359. 00000B30 +270 +300 +330 +328 +583 -1338 -1212 -1198
360. 00000B38 -1184 -1190 -1196 -1202 -1208 -1208 -1208 -1208
361. 00000B40 -941 -855 -898 -684 -599 -709 -820 -874
362. 00000B48 -929 -988 -921 -1029 -1009 -1056 -1103 -1183
363. 00000B50 -1262 -1239 -1344 -1418 -1491 -1379 -1268 -1196
364. 00000B58 -1125 -1097 -1069 -1178 -1159 -1009 +36 +56
365. 00000B60 +78 +75 +72 +69 +67 +79 +93 +106
366. 00000B68 +119 +136 +154 +171 +188 +219 +251 +274
367. 00000B70 +297 +316 +334 +465 +85 -1333 -1215 -1201
368. 00000B78 -1188 -1192 -1197 -1201 -1206 -1206 -1206 -1206
369. 00000B80 -958 -920 -1138 -620 -614 -700 -786 -856
370. 00000B88 -926 -865 -805 -872 -940 -986 -1031 -1093
371. 00000B90 -1155 -1105 -1312 -1375 -1438 -1411 -1384 -1325
372. 00000B98 -1266 -1199 -1132 -1162 -1191 -684 +78 +88
373. 00000BA0 +99 +95 +92 +89 +86 +98 +111 +124
374. 00000BA8 +137 +152 +168 +183 +199 +230 +262 +293
375. 00000BB0 +325 +332 +339 +603 -413 -1328 -1218 -1205
376. 00000BB8 -1192 -1195 -1198 -1201 -1204 -1204 -1204 -1204
377. 00000BC0 -975 -976 -978 -531 -597 -658 -720 -717
378. 00000BC8 -715 -749 -657 -715 -775 -819 -863 -899
379. 00000BD0 -935 -963 -1120 -1204 -1289 -1298 -1308 -1365
380. 00000BD8 -1423 -1277 -1131 -1129 -1255 -263 +88 +103
381. 00000BE0 +119 +115 +112 +108 +105 +117 +129 +142
382. 00000BE8 +154 +168 +182 +195 +209 +241 +273 +304
383. 00000BF0 +336 +372 +408 +468 -1007 -1242 -1093 -1144
384. 00000BF8 -1196 -1197 -1199 -1200 -1202 -1202 -1202 -1202
385. 00000C00 -992 -1033 -818 -443 -580 -617 -654 -707
386. 00000C08 -760 -1018 -1021 -943 -866 -908 -951 -961
387. 00000C10 -972 -950 -928 -1034 -1140 -1186 -1232 -1278
388. 00000C18 -1324 -1227 -1130 -1097 -1320 +157 +98 +119
389. 00000C20 +140 +136 +132 +128 +124 +136 +148 +160
390. 00000C28 +172 +184 +196 +208 +220 +252 +284 +316
391. 00000C30 +348 +412 +477 +461 -1346 -1157 -1225 -1212
392. 00000C38 -1200 -1200 -1200 -1200 -1200 -1200 -1200 -1200
393. 00000C40 -1126 -976 -571 -517 -720 -913 -1105 -1122
394. 00000C48 -1139 -1110 -954 -957 -961 -1000 -1168 -1047
395. 00000C50 -1055 -1085 -1115 -1065 -1015 -1071 -1127 -1151
396. 00000C58 -1176 -1153 -1130 -1179 -844 +221 +134 +152
397. 00000C60 +170 +166 +162 +158 +154 +164 +174 +184
398. 00000C68 +194 +207 +220 +234 +247 +268 +289 +334
399. 00000C70 +380 +398 +545 -124 -1305 -1203 -1229 -1215
400. 00000C78 -1202 -1200 -1198 -1196 -1194 -1194 -1194 -1194
401. 00000C80 -1004 -1048 -836 -976 -1117 -1081 -1045 -1025
402. 00000C88 -1006 -1074 -1143 -1099 -1056 -965 -1129 -1006
403. 00000C90 -1139 -1093 -1047 -1097 -1147 -1085 -1023 -1025
404. 00000C98 -1028 -1079 -1130 -1262 -369 +285 +171 +186
405. 00000CA0 +201 +197 +193 +189 +185 +193 +201 +209
406. 00000CA8 +217 +231 +245 +260 +274 +284 +295 +353
407. 00000CB0 +412 +385 +614 -709 -1264 -1249 -1234 -1219
408. 00000CB8 -1204 -1200 -1196 -1192 -1188 -1188 -1188 -1188
409. 00000CC0 -994 -1095 -1069 -1075 -1081 -1065 -1049 -1040
410. 00000CC8 -1033 -1070 -1108 -1089 -1071 -1033 -1122 -1068
411. 00000CD0 -1142 -1116 -1090 -1112 -1135 -1163 -1191 -1083
412. 00000CD8 -976 -1125 -1274 -1232 +90 +197 +176 +203
413. 00000CE0 +231 +227 +223 +211 +199 +261 +195 +273
414. 00000CE8 +223 +246 +270 +286 +301 +316 +332 +396
415. 00000CF0 +460 +547 +634 -1382 -1223 -1214 -1206 -1206
416. 00000CF8 -1206 -1200 -1194 -1188 -1182 -1182 -1182 -1182
417. 00000D00 -984 -1015 -1047 -1046 -1046 -1049 -1053 -1056
418. 00000D08 -1060 -1066 -1073 -1080 -1087 -1101 -1116 -1131
419. 00000D10 -1146 -1140 -1134 -1128 -1123 -1113 -1103 -1141
420. 00000D18 -1180 -1171 -1163 -1203 +293 -19 +181 +221
421. 00000D20 +262 +258 +254 +234 +214 +330 +190 +338
422. 00000D28 +230 +262 +295 +312 +329 +349 +370 +439
423. 00000D30 +508 +453 +143 -1287 -1182 -1180 -1179 -1193
424. 00000D38 -1208 -1200 -1192 -1184 -1176 -1176 -1176 -1176
425. 00000D40 -1010 -1035 -1062 -1040 -1018 -1031 -1044 -1057
426. 00000D48 -1071 -1076 -1082 -1088 -1094 -1105 -1117 -1129
427. 00000D50 -1141 -1137 -1133 -1130 -1126 -1124 -1123 -1145
428. 00000D58 -1168 -1168 -1169 -602 -35 -8 +148 +248
429. 00000D60 +220 +234 +248 +190 +260 +317 +246 +367
430. 00000D68 +232 +272 +312 +320 +328 +373 +419 +449
431. 00000D70 +480 +557 -516 -1246 -1209 -1189 -1169 -1189
432. 00000D78 -1210 -1204 -1198 -1192 -1186 -1186 -1186 -1186
433. 00000D80 -1036 -1056 -1077 -1034 -991 -1013 -1036 -1059
434. 00000D88 -1082 -1086 -1091 -1096 -1101 -1110 -1119 -1128
435. 00000D90 -1137 -1135 -1133 -1132 -1130 -1136 -1143 -1149
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439. 00000DB0 +452 +662 -1176 -1206 -1236 -1198 -1160 -1186
440. 00000DB8 -1212 -1208 -1204 -1200 -1196 -1196 -1196 -1196
441. 00000DC0 -998 -965 -932 -980 -1027 -1043 -1060 -1076
442. 00000DC8 -1093 -1096 -1100 -1104 -1108 -1114 -1120 -1126
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444. 00000DD8 -1160 -1171 -1182 -1353 -1269 -745 -94 +86
445. 00000DE0 +137 +163 +189 +143 +225 +252 +279 +386
446. 00000DE8 +237 +275 +314 +256 +326 +454 +327 +503
447. 00000DF0 +552 -369 -1291 -1253 -1215 -1198 -1182 -1198
448. 00000DF8 -1214 -1212 -1210 -1208 -1206 -1206 -1206 -1206
449. 00000E00 -960 -1002 -1044 -1054 -1064 -1074 -1084 -1094
450. 00000E08 -1104 -1107 -1110 -1113 -1116 -1119 -1122 -1125
451. 00000E10 -1128 -1130 -1133 -1135 -1138 -1144 -1151 -1157
452. 00000E18 -1164 -1176 -1189 -1169 -1150 -1238 -815 -359
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454. 00000E28 +240 +269 +299 +184 +326 +383 -71 -605
455. 00000E30 -1396 -1273 -1151 -1172 -1194 -1199 -1205 -1210
456. 00000E38 -1216 -1216 -1216 -1216 -1216 -1216 -1216 -1216
457. 00000E40 -1012 -1035 -1058 -1065 -1072 -1082 -1092 -1102
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459. 00000E50 -1128 -1131 -1135 -1138 -1142 -1148 -1155 -1161
460. 00000E58 -1168 -1159 -1152 -1143 -1136 -1279 -1168 -927
461. 00000E60 -688 -1132 -552 -260 +32 +192 +352 +352
462. 00000E68 +96 -22 -140 -618 -968 -1509 -1282 -1174
463. 00000E70 -1196 -1195 -1195 -1194 -1194 -1199 -1205 -1210
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465. 00000E80 -1064 -1068 -1072 -1076 -1080 -1090 -1100 -1110
466. 00000E88 -1120 -1121 -1122 -1123 -1124 -1125 -1126 -1127
467. 00000E90 -1128 -1132 -1137 -1141 -1146 -1152 -1159 -1165
468. 00000E98 -1172 -1143 -1115 -1118 -1122 -1193 -1265 -1240
469. 00000EA0 -1216 -1228 -1240 -1300 -1360 -1224 -1088 -952
470. 00000EA8 -1072 -1209 -1347 -1292 -1238 -1225 -1213 -1232
471. 00000EB0 -1252 -1245 -1239 -1216 -1194 -1199 -1205 -1210
472. 00000EB8 -1216 -1216 -1216 -1216 -1216 -1216 -1216 -1216
473. 00000EC0 -1052 -1061 -1070 -1079 -1088 -1098 -1108 -1118
474. 00000EC8 -1128 -1128 -1128 -1128 -1128 -1128 -1128 -1128
475. 00000ED0 -1128 -1133 -1139 -1144 -1150 -1156 -1163 -1169
476. 00000ED8 -1176 -1158 -1142 -1140 -1140 -1178 -1218 -1208
477. 00000EE0 -1200 -1204 -1208 -1180 -1152 -1240 -432 -824
478. 00000EE8 -704 -612 -1290 -1254 -1220 -1213 -1208 -1217
479. 00000EF0 -1228 -1223 -1219 -1206 -1194 -1199 -1205 -1210
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481. 00000F00 -1040 -1054 -1068 -1082 -1096 -1106 -1116 -1126
482. 00000F08 -1136 -1135 -1134 -1133 -1132 -1131 -1130 -1129
483. 00000F10 -1128 -1134 -1141 -1147 -1154 -1160 -1167 -1173
484. 00000F18 -1180 -1174 -1169 -1163 -1158 -1164 -1171 -1177
485. 00000F20 -1184 -1180 -1176 -1188 -1200 -1128 -1312 -696
486. 00000F28 -848 -1296 -1233 -1217 -1202 -1202 -1203 -1203
487. 00000F30 -1204 -1201 -1199 -1196 -1194 -1199 -1205 -1210
488. 00000F38 -1216 -1216 -1216 -1216 -1216 -1216 -1216 -1216
489. 00000F40 -1040 -1054 -1068 -1082 -1096 -1106 -1116 -1126
490. 00000F48 -1136 -1135 -1134 -1133 -1132 -1131 -1130 -1129
491. 00000F50 -1128 -1134 -1141 -1147 -1154 -1160 -1167 -1173
492. 00000F58 -1180 -1174 -1169 -1163 -1158 -1164 -1171 -1177
493. 00000F60 -1184 -1180 -1176 -1180 -1184 -1176 -1296 -1096
494. 00000F68 -1280 -1384 -1233 -1217 -1202 -1202 -1203 -1203
495. 00000F70 -1204 -1201 -1199 -1196 -1194 -1199 -1205 -1210
496. 00000F78 -1216 -1216 -1216 -1216 -1216 -1216 -1216 -1216
497. 00000F80 -1040 -1054 -1068 -1082 -1096 -1106 -1116 -1126
498. 00000F88 -1136 -1135 -1134 -1133 -1132 -1131 -1130 -1129
499. 00000F90 -1128 -1134 -1141 -1147 -1154 -1160 -1167 -1173
500. 00000F98 -1180 -1174 -1169 -1163 -1158 -1164 -1171 -1177
501. 00000FA0 -1184 -1180 -1176 -1172 -1168 -1224 -1280 -1240
502. 00000FA8 -1200 -1216 -1233 -1217 -1202 -1202 -1203 -1203
503. 00000FB0 -1204 -1201 -1199 -1196 -1194 -1199 -1205 -1210
504. 00000FB8 -1216 -1216 -1216 -1216 -1216 -1216 -1216 -1216
505. 00000FC0 -1040 -1054 -1068 -1082 -1096 -1106 -1116 -1126
506. 00000FC8 -1136 -1135 -1134 -1133 -1132 -1131 -1130 -1129
507. 00000FD0 -1128 -1134 -1141 -1147 -1154 -1160 -1167 -1173
508. 00000FD8 -1180 -1174 -1169 -1163 -1158 -1164 -1171 -1177
509. 00000FE0 -1184 -1180 -1176 -1172 -1168 -1224 -1280 -1240
510. 00000FE8 -1200 -1216 -1233 -1217 -1202 -1202 -1203 -1203
511. 00000FF0 -1204 -1201 -1199 -1196 -1194 -1199 -1205 -1210
512. 00000FF8 -1216 -1216 -1216 -1216 -1216 -1216 -1216 -1216

#### Inverse Color Conversion

The following is a dump of the decoded 64 x 64 XRGB image obtained by using the [Color Conversion transform matrix (section 3.1.8.2.5)](#Section_2E1618ED60D64A64AA5D0608884861BB) on the reconstructed Y, Cb, and Cr component data. The Y, Cb, and Cr component data, presented in earlier sections, was in 11.5 fixed-point format for Microsoft RDP 7.1 and Microsoft RDP 8.0 and 12.4 fixed-point format for Microsoft RDP 8.1. The 11.5 fixed-point format is used in this inverse color conversion example and should be converted to floating-point representation before using the transform matrix given in section 3.1.8.2.5. Alternatively, the transform matrix can be appropriately modified to handle fixed-point data.

1. 00000000 00229cdf 00249de0 00259fe2 002ca5e8 00229cdf 00229ce0 00239de0 00229ce0
2. 00000008 00229cdf 00229cdf 00239ce0 00249ce0 00249ce0 00219ce3 001e9ce6 00209ae2
3. 00000010 002299dd 002199de 00209adf 00209ae0 001f9be0 001e9ae0 001d99e0 001c98e0
4. 00000018 001b97df 001e96dc 002194d9 001f93dd 001d93e0 001b94dc 001895d8 001c92db
5. 00000020 00208fde 001b91de 001693df 001793df 001992df 001891df 00178fdf 00178edf
6. 00000028 00168dde 00158cdd 00148cdc 00128cda 00118cd9 00118bd9 00128ada 001289da
7. 00000030 001288db 001187da 001186da 001085da 000f85d9 000f84d9 000e83d9 000d82d8
8. 00000038 000d82d8 000d81d8 000d80d7 000d7fd7 000d7ed6 000d7ed6 000d7ed6 000d7ed6
9. 00000040 00259fe1 0027a1e2 0029a2e3 002ba4e6 00249fe1 00249fe1 00249fe1 00249ee1
10. 00000048 00239ee1 00249ee1 00249ee1 00259de1 00259de2 00249de2 00229de2 00229ce1
11. 00000050 00229bdf 00219ce0 00209ce1 00209ce2 00209ce2 00209ae0 002199de 001f99df
12. 00000058 001d98e0 001e97e0 001f97e0 001d96df 001c95de 001c94e0 001c94e1 001d93e1
13. 00000060 001d92e0 001b93de 001a94dc 001a93de 001a93e0 001992e0 001891df 00188fdf
14. 00000068 00178edf 00168ede 00158edd 00148ddc 00138ddb 00138cdb 00138bdb 00128adb
15. 00000070 001289db 001288db 001187db 001186db 001085db 000f84da 000e83d9 000e83d9
16. 00000078 000e83d9 000e82d9 000e81d8 000e80d8 000d7fd7 000d7fd7 000d7fd7 000d7fd7
17. 00000080 0027a3e3 002aa4e3 002ea6e3 002aa4e3 0026a2e3 0026a1e3 0025a1e3 0025a0e3
18. 00000088 0025a0e3 0025a0e3 00259fe3 00269fe3 00269ee4 00279ee1 00279edf 00259ee0
19. 00000090 00239ee1 00219ee2 00209ee4 00209de4 00219de3 00229be0 002499dc 002299de
20. 00000098 001f98e0 001d99e4 001b9ae7 001c98e2 001c96dc 001e94e3 002092ea 001d94e6
21. 000000A0 001a96e2 001c96de 001d95da 001c94de 001b94e1 001a93e0 001a92e0 001991e0
22. 000000A8 001890e0 001790df 00178fde 00168fde 00158edd 00148ddd 00138cdc 00138bdc
23. 000000B0 00128adc 001289dc 001188dc 001187dd 001086dd 000f85db 000e83d9 000e84da
24. 000000B8 000f84da 000e83da 000e82d9 000e81d9 000e80d8 000e80d8 000e80d8 000e80d8
25. 000000C0 002aa7e5 002da7e4 0031a8e3 002ca6e3 0027a4e4 0027a3e4 0027a3e4 0027a3e4
26. 000000C8 0026a2e4 0026a2e4 0027a1e5 0027a0e5 0027a0e6 0026a0e5 0025a0e4 00259fe4
27. 000000D0 00259ee3 00239ee5 00229fe6 00229fe5 00229fe4 0013a5e6 001b9fe8 0016a0e8
28. 000000D8 0011a0e7 00129fef 00139ef7 001b99ec 00179ae2 00149ce4 001d98e5 001c97e6
29. 000000E0 001b96e7 001c98dc 001d97df 001c96e1 001c94e2 001b94e1 001b93e1 001a93e0
30. 000000E8 001a92e0 001991e0 001890e0 001790df 00168fdf 00158ede 00158dde 00148cdd
31. 000000F0 00138bdc 00128add 001289dd 001188de 001187de 000f85dc 000d83da 000f85db
32. 000000F8 001086db 000f84db 000f83da 000e82da 000e81da 000e81da 000e81da 000e81da
33. 00000100 002caae7 0030aae5 0034abe3 002ea8e4 0029a6e5 0028a6e5 0028a5e5 0028a5e5
34. 00000108 0028a5e6 0028a4e6 0028a3e7 0028a2e7 0028a1e8 0025a2e9 0023a3ea 0025a0e8
35. 00000110 00279ee6 00259fe7 0023a0e9 0018a4f5 000ea7ff 001ba6de 00558ebb 006f839c
36. 00000118 0089797e 008d797c 00917979 007f7b94 005687af 00229bd6 0004a4fd 00109df4
37. 00000120 001c97eb 001c9ada 001c98e4 001c97e3 001d95e2 001c95e2 001c94e2 001c94e1
38. 00000128 001b94e1 001a93e1 001a92e1 001991e1 001890e1 00178fe0 00158edf 00148dde
39. 00000130 00138cdd 00128bde 00128adf 001289df 001188e0 000f85dd 000d83da 000f85db
40. 00000138 001187dd 001086dc 000f84dc 000e83db 000e81db 000e81db 000e81db 000e81db
41. 00000140 0030abe5 0036afe8 0034abe4 002faae5 002ba8e6 0036aee8 0026a6e8 0029a7e7
42. 00000148 002ca8e7 002da7e6 002fa5e5 002ca5e7 0029a4e9 002ba5e5 002ca5e2 0010aaef
43. 00000150 0013adf6 0023a3f8 006091a5 00a6755d 00ec5915 00ff490c 00fa5504 00ff590f
44. 00000158 00ff5d1b 00ff6116 00fa6412 00ff550f 00ff4b0d 00fb4918 00f54823 008e737e
45. 00000160 00269eda 0006a2ff 001d97e2 001799ea 001c97e4 001a98e4 001898e4 001a96e3
46. 00000168 001b95e3 001a94e2 001a93e0 001992e1 001891e2 001790e1 00168fe0 00158fdf
47. 00000170 00138ede 00138ddf 00138ce0 00128be0 001189e0 001087de 000f85db 00138ae0
48. 00000178 000f87dc 000f86dc 000f85dc 000f84dc 000e83db 000e83db 000e83db 000e83db
49. 00000180 0034abe2 003cb4ec 0034ace5 0031abe6 002daae8 0044b6eb 0024a7ea 0029aaea
50. 00000188 002face9 0032a9e6 0035a7e3 0030a7e6 002ba8ea 0025aaf0 0020adf6 004d8ba7
51. 00000190 00b8674c 00ff5510 00f7650c 00f86313 00fa611b 00f0671f 00fc6222 00fb6926
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512. 00000FF8 00169ff8 00159ef7 00149df7 00139cf6 00129bf5 00129bf5 00129bf5 00129bf5

#### Decoded Image

The following is the decoded image that is represented by the XRGB data given in section [4.2.4.4](#Section_3e2a70db97fd4b4ea4fc6711e70ba57b).



Figure : Decoded image

# Security

## Security Considerations for Implementers

None.

## Index of Security Parameters

None.

# Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs.

* Windows 7 Enterprise operating system with Service Pack 1 (SP1)
* Windows 7 Ultimate operating system with Service Pack 1 (SP1)
* Windows Server 2008 R2 Standard operating system with Service Pack 1 (SP1)
* Windows Server 2008 R2 Enterprise operating system with Service Pack 1 (SP1)
* Windows Server 2008 R2 Datacenter operating system with Service Pack 1 (SP1)
* Microsoft Hyper-V Server 2008 R2 Service Pack 1
* Windows 8 operating system
* Windows Server 2012 operating system
* Windows 8.1 operating system
* Windows Server 2012 R2 operating system
* Windows 10 operating system
* Windows Server 2016 Technical Preview operating system

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

[<1> Section 1.5](#Appendix_A_Target_1): Microsoft RDP 8.0 RemoteFX servers require that the [TS\_FRAME\_ACKNOWLEDGE\_CAPABILITYSET (section 2.2.1.3)](#Section_e4d498fd822b408db8b31c216f21265b) be sent by the client.

[<2> Section 1.5](#Appendix_A_Target_2): Microsoft RDP 8.0 RemoteFX servers do not require that the **connectionType** field of the Client Core Data ([[MS-RDPBCGR]](file:///E:\Target\Windows\Published\Books\MS-RDPRFX\%5bMS-RDPBCGR%5d.pdf) section 2.2.1.3.2) be set to CONNECTION\_TYPE\_LAN (0x06).

[<3> Section 2.2.2.1.3](#Appendix_A_Target_3): Microsoft RDP 7.1 RemoteFX clients validate the **width** field.

[<4> Section 2.2.2.1.3](#Appendix_A_Target_4): Microsoft RDP 7.1 RemoteFX clients validate the **height** field.

[<5> Section 2.2.3.1](#Appendix_A_Target_5): Microsoft RDP 8.0 RemoteFX servers do not check for the special **frameID** value of 0xFFFFFFFF.

# Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

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