

Windows Protocols Errata

This topic lists the Errata found in the Windows Protocols Technical Specifications, Overview Documents, and Reference documents since they were last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



Errata are subject to the same terms as the Open Specifications documentation referenced.

Errata are content issues in published versions of protocols documents that could impact an **implementation**. Examples of errata are errors or missing information in the normative sections of the Technical Specifications or in the use cases (examples) in the Technical Specifications and Overview Documents.

Content issues that don't impact an implementation, for example, editorial updates due to typos, formatting updates, and rewrites for readability and clarity, are **not** included in Errata.

The sections below list the Windows Protocols documents that contain active Errata (i.e., Errata not yet released with the documents on MSDN) and provide links to archived Errata (i.e., Errata already released with the documents on MSDN).

Protocols Documents with Active Errata

[\[MC-PRCR\]: Peer Channel Custom Resolver Protocol](#)

[\[MS-ADFSPiP\]: Active Directory Federation Services and Proxy Integration Protocol](#)

[\[MS-ADTS\]: Active Directory Technical Specification](#)

[\[MS-DHCPM\]: Microsoft Dynamic Host Configuration Protocol \(DHCP\) Server Management Protocol](#)

[\[MS-DRSR\]: Directory Replication Service \(DRS\) Remote Protocol](#)

[\[MS-ERREF\]: Windows Error Codes](#)

[\[MS-FSA\]: File System Algorithms](#)

[\[MS-FSCC\]: File System Control Codes](#)

[\[MS-HGSA\]: Host Guardian Service: Attestation Protocol](#)

[\[MS-KPS\]: Key Protection Service Protocol](#)

[\[MS-LCID\]: Windows Language Code Identifier \(LCID\) Reference](#)

[\[MS-LSAT\] Local Security Authority \(Translation Methods\) Remote Protocol](#)

[\[MS-MSSOD\]: Media Streaming Server Protocols Overview](#)

[\[MS-OAPX\]: OAuth 2.0 Protocol Extensions](#)

[\[MS-OAPXBC\]: OAuth 2.0 Protocol Extensions for Broker Clients](#)

[\[MS-RDPEAR\]: Remote Desktop Protocol Authentication Redirection Virtual Channel](#)

[\[MS-RDPEFS\]: Remote Desktop Protocol: File System Virtual Channel Extension](#)

[\[MS-RDPEGFX\]: Remote Desktop Protocol: Graphics Pipeline Extension](#)

[\[MS-RDPERP\]: Remote Desktop Protocol: Remote Programs Virtual Channel Extension](#)

[\[MS-RSVD\]: Remote Shared Virtual Disk Protocol](#)

[\[MS-SAMR\]: Security Account Manager \(SAM\) Remote Protocol \(Client-to-Server\)](#)

[\[MS-SMB\]: Server Message Block \(SMB\) Protocol](#)

[\[MS-SMB2\]: Server Message Block \(SMB\) Protocol Versions 2 and 3](#)

[\[MS-TDS\]: Tabular Data Stream Protocol](#)

Errata Archives

March 2, 2016 - [Download](#)

October 16, 2015 - [Download](#)

June 30, 2015 - [Download](#)

July 18, 2016 - [Download](#)

September 26, 2016 - [Download](#)

March 20, 2017 - [Download](#)

June 1, 2017 - [Download](#)

Last date updated: August 7, 2017

[MC-DTCXA]: MSDTC Connection Manager OleTx XA Protocol

This topic lists the Errata found in [MC-DTCXA] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



Errata are subject to the same terms as the Open Specifications documentation referenced.

No errata are available for the latest version of this Windows Protocols document. To view a PDF file of the errata for the previous versions of this document, see the following ERRATA Archives:

June 1, 2017 - [Download](#)

[MC-PRCR]: Peer Channel Custom Resolver Protocol

This topic lists the Errata found in [MC-PRCR] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



Errata are subject to the same terms as the Open Specifications documentation referenced.

Errata below are for Protocol Document Version [V14.0 - 2017/06/01](#).

Errata Published*	Description																																													
2017/07/24	In Section 2.2.1, Namespaces, the namespaces table was updated.																																													
	Changed from:																																													
	<table><tr><th>Prefix</th><th>Namespace URI</th><th>Reference</th></tr><tr><td>Soapenc</td><td>http://schemas.xmlsoap.org/soap/encoding</td><td>[SOAP1.1]</td></tr><tr><td>Wsap</td><td>http://schemas.xmlsoap.org/ws/2004/08/addressing/policy</td><td>http://schemas.xmlsoap.org/ws/2004/08/addressing/policy</td></tr><tr><td>wsa10</td><td>http://www.w3.org/2005/08/addressing</td><td>[WSADDR]</td></tr><tr><td>msc</td><td>http://schemas.microsoft.com/ws/2005/12/wsd/contract</td><td>[MS-WSPOL]</td></tr><tr><td>wsp</td><td>http://www.w3.org/ns/ws-policy</td><td>[WSP1.5-Namespace]</td></tr><tr><td>Wsam</td><td>http://www.w3.org/2007/05/addressing/metadata</td><td>[WSA1.0-Metadata]</td></tr><tr><td>soap12</td><td>http://schemas.xmlsoap.org/wsd/soap12/</td><td>[WSDLSOAP]</td></tr><tr><td>wsa</td><td>http://schemas.xmlsoap.org/ws/2004/08/addressing</td><td>[WSAddressing]</td></tr><tr><td>wsaw</td><td>http://www.w3.org/2006/05/addressing/wsd</td><td>[WSA1.0-WSDLBinding]</td></tr><tr><td>soap</td><td>http://schemas.xmlsoap.org/wsd/soap/</td><td>http://schemas.xmlsoap.org/wsd/soap/</td></tr><tr><td>wsu</td><td>http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd</td><td>[WSSU1.0]</td></tr><tr><td>xsd</td><td>http://www.w3.org/2001/XMLSchema</td><td>[WSDLSOAP]</td></tr><tr><td>wSDL</td><td>http://schemas.xmlsoap.org/wsd/</td><td>http://schemas.xmlsoap.org/wsd/</td></tr><tr><td>peer</td><td>http://schemas.microsoft.com/net/2006/05</td><td>See section 6, Appendix A: Full WSDL</td></tr></table>	Prefix	Namespace URI	Reference	Soapenc	http://schemas.xmlsoap.org/soap/encoding	[SOAP1.1]	Wsap	http://schemas.xmlsoap.org/ws/2004/08/addressing/policy	http://schemas.xmlsoap.org/ws/2004/08/addressing/policy	wsa10	http://www.w3.org/2005/08/addressing	[WSADDR]	msc	http://schemas.microsoft.com/ws/2005/12/wsd/contract	[MS-WSPOL]	wsp	http://www.w3.org/ns/ws-policy	[WSP1.5-Namespace]	Wsam	http://www.w3.org/2007/05/addressing/metadata	[WSA1.0-Metadata]	soap12	http://schemas.xmlsoap.org/wsd/soap12/	[WSDLSOAP]	wsa	http://schemas.xmlsoap.org/ws/2004/08/addressing	[WSAddressing]	wsaw	http://www.w3.org/2006/05/addressing/wsd	[WSA1.0-WSDLBinding]	soap	http://schemas.xmlsoap.org/wsd/soap/	http://schemas.xmlsoap.org/wsd/soap/	wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd	[WSSU1.0]	xsd	http://www.w3.org/2001/XMLSchema	[WSDLSOAP]	wSDL	http://schemas.xmlsoap.org/wsd/	http://schemas.xmlsoap.org/wsd/	peer	http://schemas.microsoft.com/net/2006/05	See section 6, Appendix A: Full WSDL
	Prefix	Namespace URI	Reference																																											
	Soapenc	http://schemas.xmlsoap.org/soap/encoding	[SOAP1.1]																																											
	Wsap	http://schemas.xmlsoap.org/ws/2004/08/addressing/policy	http://schemas.xmlsoap.org/ws/2004/08/addressing/policy																																											
	wsa10	http://www.w3.org/2005/08/addressing	[WSADDR]																																											
	msc	http://schemas.microsoft.com/ws/2005/12/wsd/contract	[MS-WSPOL]																																											
	wsp	http://www.w3.org/ns/ws-policy	[WSP1.5-Namespace]																																											
	Wsam	http://www.w3.org/2007/05/addressing/metadata	[WSA1.0-Metadata]																																											
	soap12	http://schemas.xmlsoap.org/wsd/soap12/	[WSDLSOAP]																																											
	wsa	http://schemas.xmlsoap.org/ws/2004/08/addressing	[WSAddressing]																																											
	wsaw	http://www.w3.org/2006/05/addressing/wsd	[WSA1.0-WSDLBinding]																																											
	soap	http://schemas.xmlsoap.org/wsd/soap/	http://schemas.xmlsoap.org/wsd/soap/																																											
	wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd	[WSSU1.0]																																											
xsd	http://www.w3.org/2001/XMLSchema	[WSDLSOAP]																																												
wSDL	http://schemas.xmlsoap.org/wsd/	http://schemas.xmlsoap.org/wsd/																																												
peer	http://schemas.microsoft.com/net/2006/05	See section 6, Appendix A: Full WSDL																																												

Errata Published*	Description		
		/peer	
	Changed to:		
	Prefix	Namespace URI	Reference
	soapenc	http://schemas.xmlsoap.org/soap/encoding	[SOAP1.1]
	wsap	http://schemas.xmlsoap.org/ws/2004/08/addressing/policy	http://schemas.xmlsoap.org/ws/2004/08/addressing/policy
	msc	http://schemas.microsoft.com/ws/2005/12/wsd/contract	[MS-WSPOL]
	wsp	http://www.w3.org/ns/ws-policy	[WSP1.5-Namespace]
	Wsam	http://www.w3.org/2007/05/addressing/metadata	[WSA1.0-Metadata]
	soap12	http://schemas.xmlsoap.org/wsd/soap12/	[WSDLSOAP]
	wsa	http://schemas.xmlsoap.org/ws/2004/08/addressing	[WSAddressing]
	wsaw	http://www.w3.org/2006/05/addressing/wsd	[WSA1.0-WSDLBinding]
	soap	http://schemas.xmlsoap.org/wsd/soap/	http://schemas.xmlsoap.org/wsd/soap/
	wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd	[WSSU1.0]
	xsd	http://www.w3.org/2001/XMLSchema	[WSDLSOAP]
	wsdl	http://schemas.xmlsoap.org/wsd/	http://schemas.xmlsoap.org/wsd/
	tns	http://schemas.microsoft.com/net/2006/05/peer/resolver	See section 6.1
	peer	http://schemas.microsoft.com/net/2006/05/peer	See section 6.2
	q3	http://schemas.datacontract.org/2004/07/System.ServiceModel.PeerResolvers	See section 6.3
		http://schemas.microsoft.com/2003/10/Serialization	See section 6.4
	wsa10	http://www.w3.org/2005/08/addressing	[WSADDR] See section 6.5
	q2	http://schemas.datacontract.org/2004/07/System.Net	See section 6.6
		http://schemas.datacontract.org/2004/07/System.Net.Sockets	See section 6.7

Errata Published*	Description										
	<table><tr><td></td><td>http://schemas.microsoft.com/2003/10/Serialization/Arrays</td><td>See section 6.8</td></tr></table>		http://schemas.microsoft.com/2003/10/Serialization/Arrays	See section 6.8							
	http://schemas.microsoft.com/2003/10/Serialization/Arrays	See section 6.8									
	<p>The WSDL was updated to correct compilation errors. The complete updated Section 6, Appendix A: Full WSDL, is now as follows:</p> <table><tr><th>WSDL name</th><th>Prefix</th><th>Section</th></tr><tr><td>http://schemas.microsoft.com/net/2006/05/peer/resolver</td><td>tns</td><td>section 6.1</td></tr><tr><td>http://schemas.microsoft.com/net/2006/05/peer</td><td>peer</td><td>section 6.2</td></tr></table> <p>For ease of implementation, the full WSDLs are provided in the following sections.</p> <p>6.1 http://schemas.microsoft.com/net/2006/05/peer/resolver</p> <pre><?xml version="1.0" encoding="utf-8"?> <wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/" xmlns:tns="http://schemas.microsoft.com/net/2006/05/peer/resolver" xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/08/addressing" xmlns:wsp="http://www.w3.org/ns/ws-policy" xmlns:wsap="http://schemas.xmlsoap.org/ws/2004/08/addressing/policy" xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" xmlns:msc="http://schemas.microsoft.com/ws/2005/12/wsdl/contract" xmlns:wsa10="http://www.w3.org/2005/08/addressing" xmlns:wsx="http://schemas.xmlsoap.org/ws/2004/09/mex" xmlns:wsam="http://www.w3.org/2007/05/addressing/metadata" targetNamespace="http://schemas.microsoft.com/net/2006/05/peer/resolver" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"> <wsdl:types> <xsd:schema targetNamespace="http://schemas.microsoft.com/net/2006/05/peer/resolver/Imports"> <xsd:import namespace="http://schemas.microsoft.com/net/2006/05/peer" /> <xsd:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" /> </xsd:schema> </wsdl:types> <wsdl:message name="RegisterInfo"> <wsdl:part name="Register" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:Register" /> </wsdl:message> <wsdl:message name="RegisterResponseInfo"> <wsdl:part name="RegisterResponse" /> </wsdl:message></pre>		WSDL name	Prefix	Section	http://schemas.microsoft.com/net/2006/05/peer/resolver	tns	section 6.1	http://schemas.microsoft.com/net/2006/05/peer	peer	section 6.2
WSDL name	Prefix	Section									
http://schemas.microsoft.com/net/2006/05/peer/resolver	tns	section 6.1									
http://schemas.microsoft.com/net/2006/05/peer	peer	section 6.2									

Errata Publis hed*	Description
	<pre> xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:RegisterResponse" /> </wsdl:message> <wsdl:message name="UpdateInfo"> <wsdl:part name="UpdateInfo" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:UpdateInfo" /> </wsdl:message> <wsdl:message name="ResolveInfo"> <wsdl:part name="Resolve" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:Resolve" /> </wsdl:message> <wsdl:message name="ResolveResponseInfo"> <wsdl:part name="ResolveResponse" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:ResolveResponse" /> </wsdl:message> <wsdl:message name="UnregisterInfo"> <wsdl:part name="Unregister" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:Unregister" /> </wsdl:message> <wsdl:message name="IPeerResolverContract_Unregister_OutputMessage" /> <wsdl:message name="RefreshInfo"> <wsdl:part name="Refresh" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:Refresh" /> </wsdl:message> <wsdl:message name="RefreshResponseInfo"> <wsdl:part name="RefreshResponse" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:RefreshResponse" /> </wsdl:message> <wsdl:message name="IPeerResolverContract_GetServiceInfo_InputMessage" /> <wsdl:message name="ServiceSettingsResponseInfo"> <wsdl:part name="ServiceSettings" xmlns:peer="http://schemas.microsoft.com/net/2006/05/peer" element="peer:ServiceSettings" /> </wsdl:message> <wsdl:portType name="IPeerResolverContract"> <wsdl:operation name="Register"> <wsdl:input wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/Register" name="RegisterInfo" message="tns:RegisterInfo" /> <wsdl:output wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/RegisterRespons e" name="RegisterResponseInfo" message="tns:RegisterResponseInfo" /> </wsdl:operation> <wsdl:operation name="Update"> <wsdl:input wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/Update" name="UpdateInfo" message="tns:UpdateInfo" /> <wsdl:output wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/UpdateResponse" name="RegisterResponseInfo" message="tns:RegisterResponseInfo" /> </wsdl:operation> <wsdl:operation name="Resolve"> <wsdl:input wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/Resolve" name="ResolveInfo" message="tns:ResolveInfo" /> <wsdl:output wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/ResolveResponse " name="ResolveResponseInfo" message="tns:ResolveResponseInfo" /> </wsdl:operation> </pre>

Errata Published*	Description
	<pre> <wsdl:operation name="Unregister"> <wsdl:input wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/Unregister" name="UnregisterInfo" message="tns:UnregisterInfo" /> <wsdl:output wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/IPeerResolverCo ntract/UnregisterResponse" message="tns:IPeerResolverContract_Unregister_OutputMessage" /> </wsdl:operation> <wsdl:operation name="Refresh"> <wsdl:input wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/Refresh" name="RefreshInfo" message="tns:RefreshInfo" /> <wsdl:output wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/RefreshResponse " name="RefreshResponseInfo" message="tns:RefreshResponseInfo" /> </wsdl:operation> <wsdl:operation name="GetServiceInfo"> <wsdl:input wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/GetServiceSetti ngs" message="tns:IPeerResolverContract_GetServiceInfo_InputMessage" /> <wsdl:output wsam:Action="http://schemas.microsoft.com/net/2006/05/peer/resolver/GetServiceSetti ngsResponse" name="ServiceSettingsResponseInfo" message="tns:ServiceSettingsResponseInfo" /> </wsdl:operation> </wsdl:portType> </wsdl:definitions> 6.2 http://schemas.microsoft.com/net/2006/05/peer <?xml version="1.0" encoding="utf-8"?> <xs:schema xmlns:ser="http://schemas.microsoft.com/2003/10/Serialization/" xmlns:tns="http://schemas.microsoft.com/net/2006/05/peer" elementFormDefault="qualified" targetNamespace="http://schemas.microsoft.com/net/2006/05/peer" xmlns:xs="http://www.w3.org/2001/XMLSchema"> <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" /> <xs:import namespace="http://www.w3.org/2005/08/addressing" /> <xs:import namespace="http://schemas.datacontract.org/2004/07/System.Net" /> <xs:import namespace="http://schemas.datacontract.org/2004/07/System.ServiceModel.PeerResolver s" /> <xs:complexType name="Register"> <xs:sequence> <xs:element minOccurs="0" name="ClientId" type="ser:guid" /> <xs:element minOccurs="0" name="MeshId" nillable="true" type="xs:string" /> <xs:element minOccurs="0" name="NodeAddress" nillable="true" type="tns:PeerNodeAddress" /> </xs:sequence> </xs:complexType> <xs:element name="Register" nillable="true" type="tns:Register" /> <xs:complexType name="PeerNodeAddress"> <xs:sequence> <xs:element minOccurs="0" name="EndpointAddress" nillable="true" xmlns:q1="http://www.w3.org/2005/08/addressing" type="q1:EndpointReferenceType" /> <xs:element minOccurs="0" name="IPAddresses" nillable="true" xmlns:q2="http://schemas.datacontract.org/2004/07/System.Net" type="q2:ArrayOfIPAddress" /> </xs:sequence> </xs:complexType> <xs:element name="PeerNodeAddress" nillable="true" type="tns:PeerNodeAddress" /> <xs:complexType name="RegisterResponse"> <xs:sequence> </pre>

Errata Publis hed*	Description
	<pre> <xs:element minOccurs="0" name="RegistrationId" type="ser:guid" /> <xs:element minOccurs="0" name="RegistrationLifetime" type="ser:duration" /> </xs:sequence> </xs:complexType> <xs:element name="RegisterResponse" nillable="true" type="tns:RegisterResponse" /> <xs:complexType name="UpdateInfo"> <xs:sequence> <xs:element minOccurs="0" name="ClientId" type="ser:guid" /> <xs:element minOccurs="0" name="MeshId" nillable="true" type="xs:string" /> <xs:element minOccurs="0" name="NodeAddress" nillable="true" type="tns:PeerNodeAddress" /> <xs:element minOccurs="0" name="RegistrationId" type="ser:guid" /> </xs:sequence> </xs:complexType> <xs:element name="UpdateInfo" nillable="true" type="tns:UpdateInfo" /> <xs:complexType name="ResolveInfo"> <xs:sequence> <xs:element minOccurs="0" name="ClientId" type="ser:guid" /> <xs:element minOccurs="0" name="MaxAddresses" type="xs:int" /> <xs:element minOccurs="0" name="MeshId" nillable="true" type="xs:string" /> </xs:sequence> </xs:complexType> <xs:element name="ResolveInfo" nillable="true" type="tns:ResolveInfo" /> <xs:element name="Resolve" nillable="true" type="tns:ResolveInfo" /> <xs:complexType name="ResolveResponseInfo"> <xs:sequence> <xs:element minOccurs="0" name="Addresses" nillable="true" type="tns:ArrayOfPeerNodeAddress" /> </xs:sequence> </xs:complexType> <xs:element name="ResolveResponseInfo" nillable="true" type="tns:ResolveResponseInfo" /> <xs:complexType name="ArrayOfPeerNodeAddress"> <xs:sequence> <xs:element minOccurs="0" maxOccurs="unbounded" name="PeerNodeAddress" nillable="true" type="tns:PeerNodeAddress" /> </xs:sequence> </xs:complexType> <xs:element name="ArrayOfPeerNodeAddress" nillable="true" type="tns:ArrayOfPeerNodeAddress" /> <xs:element name="ResolveResponse" nillable="true" type="tns:ResolveResponseInfo" /> <xs:complexType name="UnregisterInfo"> <xs:sequence> <xs:element minOccurs="0" name="MeshId" nillable="true" type="xs:string" /> <xs:element minOccurs="0" name="RegistrationId" type="ser:guid" /> </xs:sequence> </xs:complexType> <xs:element name="UnregisterInfo" nillable="true" type="tns:UnregisterInfo" /> <xs:element name="Unregister" nillable="true" type="tns:UnregisterInfo" /> <xs:complexType name="RefreshInfo"> <xs:sequence> <xs:element minOccurs="0" name="MeshId" nillable="true" type="xs:string" /> <xs:element minOccurs="0" name="RegistrationId" type="ser:guid" /> </xs:sequence> </xs:complexType> <xs:element name="RefreshInfo" nillable="true" type="tns:RefreshInfo" /> <xs:element name="Refresh" nillable="true" type="tns:RefreshInfo" /> <xs:complexType name="RefreshResponseInfo"> <xs:sequence> <xs:element minOccurs="0" name="RegistrationLifetime" type="ser:duration" /> <xs:element minOccurs="0" name="Result" xmlns:q3="http://schemas.datacontract.org/2004/07/System.ServiceModel.PeerResolvers" type="q3:RefreshResult" /> </pre>

Errata Publis hed*	Description
	<pre> </xs:sequence> </xs:complexType> <xs:element name="RefreshResponseInfo" nillable="true" type="tns:RefreshResponseInfo" /> <xs:element name="RefreshResponse" nillable="true" type="tns:RefreshResponseInfo" /> <xs:complexType name="ServiceSettingsResponseInfo"> <xs:sequence> <xs:element minOccurs="0" name="ControlMeshShape" type="xs:boolean" /> </xs:sequence> </xs:complexType> <xs:element name="ServiceSettingsResponseInfo" nillable="true" type="tns:ServiceSettingsResponseInfo" /> <xs:element name="ServiceSettings" nillable="true" type="tns:ServiceSettingsResponseInfo" /> </xs:schema> </pre> <p>6.3 http://schemas.datacontract.org/2004/07/System.ServiceModel.PeerResolvers</p> <pre> <xs:schema xmlns:tns="http://schemas.datacontract.org/2004/07/System.ServiceModel.PeerResolver s" elementFormDefault="qualified" targetNamespace="http://schemas.datacontract.org/2004/07/System.ServiceModel.PeerRe solvers" xmlns:xs="http://www.w3.org/2001/XMLSchema"> <xs:simpleType name="RefreshResult"> <xs:restriction base="xs:string"> <xs:enumeration value="Success" /> <xs:enumeration value="RegistrationNotFound" /> </xs:restriction> </xs:simpleType> <xs:element name="RefreshResult" nillable="true" type="tns:RefreshResult" /> </xs:schema> </pre> <p>6.4 http://schemas.microsoft.com/2003/10/Serialization</p> <pre> <?xml version="1.0" encoding="UTF-8"?> <xs:schema xmlns:tns3="http://schemas.microsoft.com/2003/10/Serialization/" attributeFormDefault="qualified" elementFormDefault="qualified" targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/" xmlns:xs="http://www.w3.org/2001/XMLSchema"> <xs:element name="anyType" nillable="true" type="xs:anyType"/> <xs:element name="anyURI" nillable="true" type="xs:anyURI"/> <xs:element name="base64Binary" nillable="true" type="xs:base64Binary"/> <xs:element name="boolean" nillable="true" type="xs:boolean"/> <xs:element name="byte" nillable="true" type="xs:byte"/> <xs:element name="dateTime" nillable="true" type="xs:dateTime"/> <xs:element name="decimal" nillable="true" type="xs:decimal"/> <xs:element name="double" nillable="true" type="xs:double"/> <xs:element name="float" nillable="true" type="xs:float"/> <xs:element name="int" nillable="true" type="xs:int"/> <xs:element name="long" nillable="true" type="xs:long"/> <xs:element name="QName" nillable="true" type="xs:QName"/> <xs:element name="short" nillable="true" type="xs:short"/> <xs:element name="string" nillable="true" type="xs:string"/> <xs:element name="unsignedByte" nillable="true" type="xs:unsignedByte"/> <xs:element name="unsignedInt" nillable="true" type="xs:unsignedInt"/> <xs:element name="unsignedLong" nillable="true" type="xs:unsignedLong"/> <xs:element name="unsignedShort" nillable="true" type="xs:unsignedShort"/> <xs:element name="char" nillable="true" type="tns3:char"/> <xs:simpleType name="char"> <xs:restriction base="xs:int"/> </pre>

Errata Publis hed*	Description
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Errata Publis hed*	Description
	<pre> <xs:attribute name="RelationshipType" type="tns:RelationshipTypeOpenEnum" use="optional" default="http://www.w3.org/2005/08/addressing/reply"/> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:extension> </xs:simpleContent> </xs:complexType> <xs:simpleType name="RelationshipTypeOpenEnum"> <xs:union memberTypes="tns:RelationshipType xs:anyURI"/> </xs:simpleType> <xs:simpleType name="RelationshipType"> <xs:restriction base="xs:anyURI"> <xs:enumeration value="http://www.w3.org/2005/08/addressing/reply"/> </xs:restriction> </xs:simpleType> <xs:element name="ReplyTo" type="tns:EndpointReferenceType"/> <xs:element name="From" type="tns:EndpointReferenceType"/> <xs:element name="FaultTo" type="tns:EndpointReferenceType"/> <xs:element name="To" type="tns:AttributedURIType"/> <xs:element name="Action" type="tns:AttributedURIType"/> <xs:complexType name="AttributedURIType" mixed="false"> <xs:simpleContent> <xs:extension base="xs:anyURI"> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:extension> </xs:simpleContent> </xs:complexType> <!-- Constructs from the WS-Addressing SOAP binding --> <xs:attribute name="IsReferenceParameter" type="xs:boolean"/> <xs:simpleType name="FaultCodesOpenEnumType"> <xs:union memberTypes="tns:FaultCodesType xs:QName"/> </xs:simpleType> <xs:simpleType name="FaultCodesType"> <xs:restriction base="xs:QName"> <xs:enumeration value="tns:InvalidAddressingHeader"/> <xs:enumeration value="tns:InvalidAddress"/> <xs:enumeration value="tns:InvalidEPR"/> <xs:enumeration value="tns:InvalidCardinality"/> <xs:enumeration value="tns:MissingAddressInEPR"/> <xs:enumeration value="tns:DuplicateMessageID"/> <xs:enumeration value="tns:ActionMismatch"/> <xs:enumeration value="tns:MessageAddressingHeaderRequired"/> <xs:enumeration value="tns:DestinationUnreachable"/> <xs:enumeration value="tns:ActionNotSupported"/> <xs:enumeration value="tns:EndpointUnavailable"/> </xs:restriction> </xs:simpleType> <xs:element name="RetryAfter" type="tns:AttributedUnsignedLongType"/> <xs:complexType name="AttributedUnsignedLongType" mixed="false"> <xs:simpleContent> <xs:extension base="xs:unsignedLong"> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:extension> </xs:simpleContent> </xs:complexType> <xs:element name="ProblemHeaderQName" type="tns:AttributedQNameType"/> <xs:complexType name="AttributedQNameType" mixed="false"> <xs:simpleContent> <xs:extension base="xs:QName"> <xs:anyAttribute namespace="##other" processContents="lax"/> </xs:extension> </xs:simpleContent> </xs:complexType> <xs:element name="ProblemIRI" type="tns:AttributedURIType"/> <xs:element name="ProblemAction" type="tns:ProblemActionType"/> <xs:complexType name="ProblemActionType" mixed="false"> </pre>

Errata Published*	Description
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Errata Publis hed*	Description
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Errata Publis hed*	Description
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Errata Publis hed*	Description
	<pre> </xs:sequence> </xs:complexType> </xs:schema> </pre>

*Date format: YYYY/MM/DD

[MS-ABTP]: Automatic Bluetooth Pairing Protocol

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[MS-ADA2]: Active Directory Schema Attributes M

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[MS-ADA3]: Active Directory Schema Attributes N-Z

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[MS-ADDM]: Active Directory Web Services: Data Model and Common Elements

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[MS-ADFSOAL]: Active Directory Federation Services OAuth Authorization Code Lookup Protocol

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[MS-ADFSPIP]: Active Directory Federation Services and Proxy Integration Protocol

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Errata below are for Protocol Document Version [V5.0 – 2017/06/01](#).

Errata Published *	Description
2017/08/07	<p>Several sections were updated to cover the proper handling of certificate errors.</p> <p>In Section 1.2.1, Normative References, the following reference was added: [MSKB-4034661] Microsoft Corporation, "August 15, 2017 – KB4034661", https://support.microsoft.com/help/4034661</p> <p>In Section 2.2.2.11, Serialized Request with Certificate, the key value pairs ErrorType : "<Error-Type>", and "ErrorCode" : "<Error-Code>" were added to the request object.</p> <p>Changed from:</p> <pre>{ "Request" : { ... }, "SerializedClientCertificate" : "<serialized-client-certificate>", "CertificateUsage" : "<certificate-usage>", }</pre> <p>Changed to:</p> <pre>{ "Request" : { ... }, "SerializedClientCertificate" : "<serialized-client-certificate>", "CertificateUsage" : "<certificate-usage>", "ErrorType" : "<Error-Type>", "ErrorCode" : "<Error-Code>" }</pre>

Errata Published *	Description
	<p>...</p> <p>Error-Type: Error Type (section 2.2.2.17).<5></p> <p>Error-Code: Error code, as an integer.<6></p> <p><5> Section 2.2.2.11: The Error-Type field of [Serialized Request with Certificate] is not supported on Windows Server 2012 R2. It is also not supported on Windows Server 2016 unless [MSKB-4034661] is installed.</p> <p><6> Section 2.2.2.11: The Error-Code field of [Serialized Request with Certificate] is not supported on Windows Server 2012 R2. It is also not supported on Windows Server 2016 unless [MSKB-4034661] is installed.</p> <p>A new section, 2.2.2.17, Error Type, was added to describe the Error Type enumeration:</p> <p>2.2.2.17 Error Type</p> <p>This is an enumeration with the following values:</p> <pre> { "None" "Certificate" } </pre> <p>In Section 3.10.5.1.1.3, Processing Details, the content was updated to include rules for success or failure of end-user certificate validation.</p> <p>Changed from:</p> <p>...</p> <p>The server MUST process the request as if it was received directly to the endpoint in the server as specified in the request.</p> <p>Changed to:</p> <p>...</p> <p>The server MUST process the request as if it was received directly to the endpoint in the server as specified in the request.</p> <p>If [Serialized Request with Certificate].ErrorType is set to "Certificate" and [Serialized Request with Certificate].ErrorCode is set to non-zero, then the server SHOULD fail the client's request</p> <p>In Section 3.11.5, Message Processing Events and Sequencing Rules, steps 3 and 5 were revised and a new step 6 was added.</p> <p>Changed from:</p> <p>...</p> <p>3. If CurrentEndpointConfiguration.ClientCertificateQueryMode is "QueryAndRequire", then the client SHOULD attempt to retrieve end-user X509 certificate [RFC4158] using client TLS authentication [RFC2246]. If it obtains a certificate, the client MUST follow the processing in section 3.11.5.1. If it does not obtain a certificate, it SHOULD return a HTTP error code of 204.</p> <p>...</p>

Errata Published *	Description
	<p>5. If no certificate was obtained in steps 2 or 3, then the client SHOULD replay the request as follows:</p> <ol style="list-style-type: none"> 1. The request SHOULD be made to the following URL: <p>...</p> <p>Changed to:</p> <p>...</p> <p>3. If CurrentEndpointConfiguration.ClientCertificateQueryMode is "QueryAndRequire", then the client SHOULD attempt to retrieve end-user X509 certificate [RFC4158] using client TLS authentication [RFC2246]. If it obtains a certificate, the client MUST follow the processing in section 3.11.5.1.</p> <p>...</p> <p>5. If no certificate was obtained in step 2, or if a certificate was obtained in steps 2 or 3, but the section 3.11.5.1 validation fails when the CurrentEndpointConfiguration.CertificateValidation value is "IssuedByDrs", then the client SHOULD replay the request as follows:</p> <ol style="list-style-type: none"> 1. The request SHOULD be made to the following URL: <p>...</p> <p>6. If no certificate was obtained in step 3, then the client SHOULD<10> perform the following steps:</p> <ol style="list-style-type: none"> 1. The client constructs a request as in section 3.10.5.1 with [Serialized Request with Certificate] set to following values: <ul style="list-style-type: none"> • [Serialized Request with Certificate].ErrorType MUST be set to "Certificate". • [Serialized Request with Certificate].ErrorCode MUST be set to 1168. 2. The client then performs the common processing defined in section 3.11.5.2. <p><10> Section 3.11.5: In Windows Server 2012 R2, and in Windows Server 2016 without [MSKB-4034661] installed, the client simply ignores the request if no certificate was obtained.</p> <p>In Section 3.11.5.1, End-user X509 Certificate Success Processing, added "Success" to the section title, and updated the content to include rules for success or failure of end-user certificate validation. Also created a new section (3.11.5.2) and moved part of the content to it.</p> <p>Changed from:</p> <p>If the client obtains a certificate of the end user then the client SHOULD validate the X509 certificate [RFC4158] based on the CurrentEndpointConfiguration.CertificateValidation.</p> <p>If the CurrentEndpointConfiguration.CertificateValidation value is "None" ...</p> <p>If the CurrentEndpointConfiguration.CertificateValidation value is "Ssl" ...</p> <p>If the CurrentEndpointConfiguration.CertificateValidation value is "IssuedByDrs" ...</p> <p>Upon successful validation the client MUST construct a request as in section 3.10.5.1. The [Serialized Request with Certificate].SerializedClientCertificate MUST be set to the base64 string encoded ([RFC4648] section 4) X509 certificate [RFC4158].</p> <p>If CurrentEndpointConfiguration.CertificateValidation value is "IssuedByDrs" then the [Serialized Request with Certificate].CertificateUsage MUST be set to "Device".</p> <p>If CurrentEndpointConfiguration.CertificateValidation value is "Ssl" then the [Serialized Request with Certificate].CertificateUsage MUST be set to "User".</p> <p>The [Serialized Request with Certificate].Request elements values SHOULD be copied from the incoming HTTP request.</p> <p>The request SHOULD be made to https://[ServiceConfiguration.ServiceHostName]:[ServiceConfiguration.HttpsPort]/adfs/backendproxyls and the client MUST authenticate with client TLS [RFC2246] using [Client</p>

Errata Published *	Description
	<p>State].TrustCertificate.</p> <p>Changed to:</p> <p>If the client obtains a certificate of the end-user then the client SHOULD validate the X509 certificate [RFC4158] based on the CurrentEndpointConfiguration.CertificateValidation.</p> <ul style="list-style-type: none"> • If the CurrentEndpointConfiguration.CertificateValidation value is "None" ... • If the CurrentEndpointConfiguration.CertificateValidation value is "Ssl" then the whole chain validation [RFC4158] of the certificate SHOULD be performed. • If the CurrentEndpointConfiguration.CertificateValidation value is "IssuedByDrs" then the client SHOULD validate that the end-user certificate was issued by one of ServiceConfiguration.DeviceCertificateIssuers. <p>If the validation of the end-user certificate was successful, or if the validation of the end-user certificate failed and the CurrentEndpointConfiguration.CertificateValidation value is "Ssl", the following processing occurs:</p> <ul style="list-style-type: none"> • The client MUST construct a request as in section 3.10.5.1. • If the validation of the end-user certificate was successful, then the [Serialized Request with Certificate].SerializedClientCertificate MUST be set to the base64 string encoded ([RFC4648] section 4) X509 certificate [RFC4158]. Otherwise, the [Serialized Request with Certificate].ErrorType SHOULD be set to "Certificate" and the [Serialized Request with Certificate].ErrorCode SHOULD be set to the error value that was encountered while validating the end-user certificate.<11> • The client then performs the common processing defined in section 3.11.5.2. <p>If the validation of the end-user certificate failed and the CurrentEndpointConfiguration.CertificateValidation value is "IssuedByDrs", the client SHOULD replay the request as defined in section 3.11.5 step 5.</p> <p><11> Section 3.11.5.1: In Windows Server 2012 R2 , and in Windows Server 2016 without [MSKB-4034661] installed, the client simply ignores a request with an invalid certificate.</p> <p>Added a new section:</p> <p>Section 3.11.5.2 End-user X509 Certificate Common Processing</p> <p>If CurrentEndpointConfiguration.CertificateValidation value is "IssuedByDrs" then the [Serialized Request with Certificate].CertificateUsage MUST be set to "Device".</p> <p>If CurrentEndpointConfiguration.CertificateValidation value is "Ssl" then the [Serialized Request with Certificate].CertificateUsage MUST be set to "User".</p> <p>The [Serialized Request with Certificate].Request elements values SHOULD be copied from the incoming HTTP request.</p> <p>The request SHOULD be made to https://[ServiceConfiguration.ServiceHostName]:[ServiceConfiguration.HttpsPort]/adfs/backendproxyls and the client MUST authenticate with client TLS [RFC2246] using [Client State].TrustCertificate.</p>

*Date format: YYYY/MM/DD

[MS-ADFSWAP]: Active Directory Federation Service (AD FS) Web Agent Protocol

This topic lists the Errata found in [MS-ADFSWAP] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-ADLS]: Active Directory Lightweight Directory Services Schema

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[MS-ADSC]: Active Directory Schema Classes

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[MS-ADTS]: Active Directory Technical Specification

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Errata below are for Protocol Document Version [V45.0 – 2017/06/01](#).

Errata Published*	Description																																																												
2017/07/17	<p>In various sections, added information about the msDS-ThreadStates rootDSE attribute.</p> <p>In Section 1.2.1, Normative References, a reference for KB4025334 was added:</p> <p>[MSKB-4025334] Microsoft Corporation, "July 18, 2017 - KB4025334", https://support.microsoft.com/en-us/kb/4025334.</p> <p>In Section 3.1.1.3.2, rootDSE Attributes, the msDS-ThreadStates rootDSE attribute was added to two tables, along with product-version information.</p> <p>Changed from:</p> <table><tr><th>Attribute name</th><th>A</th><th>D</th><th>G</th><th>K, N</th><th>L, P</th><th>S</th><th>T</th><th>V</th><th>W</th><th>Y</th><th>Z</th></tr><tr><td>configurationNamingContext</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td></tr><tr><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td></tr><tr><td>msDS-ProcessLinksOperations *</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td>X</td><td></td><td></td></tr><tr><td>msDS-SegmentCacheInfo **</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td>X</td><td></td><td></td></tr></table> <p>* The msDS-ProcessLinksOperations rootDSE attribute is available in Windows Server 2012 R2 only if [MSKB-3192404] is installed.</p> <p>** The msDS-SegmentCacheInfo rootDSE attribute is available in Windows Server 2012 R2 only if [MSKB-4019217] is installed.</p> <p>...</p>	Attribute name	A	D	G	K, N	L, P	S	T	V	W	Y	Z	configurationNamingContext	X	X	X	X	X	X	X	X	X	X	X	msDS-ProcessLinksOperations *								X	X			msDS-SegmentCacheInfo **								X	X		
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<p>A new section (Section 3.1.1.3.2.49, msDS-ThreadStates) was added to describe this attribute:</p>																																																																																				
<p>3.1.1.3.2.49, msDS-ThreadStates</p> <p>If the requestor is not a member of the BUILTIN\Administrators group (section 6.1.1.4.12.2), attempting to read this attribute will return an error. This attribute contains information outside the state model. Reading this attribute returns an XML-formatted string that describes memory and processor usage of the instance. The specific contents of the XML string are implementation-defined.</p>																																																																																				

*Date format: YYYY/MM/DD

[MS-AIPS]: Authenticated Internet Protocol

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[MS-APDS]: Authentication Protocol Domain Support

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[MS-AZOD]: Authorization Protocols Overview

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[MS-BKRP]: BackupKey Remote Protocol

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[MS-CAPR]: Central Access Policy Identifier (ID) Retrieval Protocol

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[MS-CDP]: Connected Devices Platform Protocol Version 3

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[MS-CHAP]: Extensible Authentication Protocol Method for Microsoft Challenge Handshake Authentication Protocol (CHAP)

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[MS-CFB]: Compound File Binary File Format

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[MS-CIFS]: Common Internet File System (CIFS) Protocol

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[MS-CMRP]: Failover Cluster: Management API (ClusAPI) Protocol

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[MS-COMA]: Component Object Model Plus (COMplus) Remote Administration Protocol

This topic lists the Errata found in the MS-COMA document since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-CSRA]: Certificate Services Remote Administration Protocol

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[MS-CSSP]: Credential Security Support Provider (CredSSP) Protocol

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[MS-CSVP]: Failover Cluster: Setup and Validation Protocol (ClusPrep)

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[MS-DCOM]: Distributed Component Object Model (DCOM) Remote Protocol

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[MS-DFSC]: Distributed File System (DFS) Referral Protocol

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[MS-DHCPM]: Microsoft Dynamic Host Configuration Protocol (DHCP) Server Management Protocol

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Errata below are for Protocol Document Version [V31.0 - 2017/06/01](#).

Errata Published*	Description
2017/06/15	<p>In Section 6, Appendix A: Full IDL, "DHCP_6937_INFO_VQ" was corrected to "DHCP_SUBNET_INFO_VQ".</p> <p>Changed from:</p> <pre>typedef struct _DHCP_SUBNET_INFO_VQ{ DHCP_IP_ADDRESS SubnetAddress; DHCP_IP_MASK SubnetMask; LPWSTR SubnetName; LPWSTR SubnetComment; DHCP_HOST_INFO PrimaryHost; DHCP_SUBNET_STATE SubnetState; DWORD QuarantineOn; DWORD Reserved1; DWORD Reserved2; INT64 Reserved3; INT64 Reserved4; } DHCP_6937_INFO_VQ, *LPDHCP_SUBNET_INFO_VQ;</pre> <p>Changed to:</p> <pre>typedef struct _DHCP_SUBNET_INFO_VQ{ DHCP_IP_ADDRESS SubnetAddress; DHCP_IP_MASK SubnetMask; LPWSTR SubnetName; LPWSTR SubnetComment; DHCP_HOST_INFO PrimaryHost; DHCP_SUBNET_STATE SubnetState; DWORD QuarantineOn; DWORD Reserved1; DWORD Reserved2; INT64 Reserved3; INT64 Reserved4; } DHCP_SUBNET_INFO_VQ, *LPDHCP_SUBNET_INFO_VQ;</pre>

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[MS-DNSP]: Domain Name Service (DNS) Server Management Protocol

This topic lists the Errata found in the MS-DNSP document since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-DPWSSN]: Devices Profile for Web Services (DPWS) Size Negotiation Extension

This topic lists the Errata found in [MS-DPWSSN] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-DRSR]: Directory Replication Service (DRS) Remote Protocol

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Errata below are for Protocol Document Version [V36.0 – 2017/06/01](#).

Errata Published*	Description
2017/07/12	<p>In Section 4.1.10.6.14, ProcessLinkValue, processing was added to the pseudo-code to handle the case where the return value of GetDSNameFromAttrVal() is null.</p> <p>Changed from:</p> <pre>... targetObject := GetDSNameFromAttrVal(replValInf.attrTyp, replValInf.pAval) if ((IsRecycleBinEnabled() and targetObject!isRecycled) or (not IsRecycleBinEnabled() and targetObject!isDeleted)) then ...</pre> <p>Changed to:</p> <pre>... targetObject := GetDSNameFromAttrVal(replValInf.attrTyp, replValInf.pAval) if (targetObject = null) return ERROR_DS_INVALID_ATTRIBUTE_SYNTAX if ((IsRecycleBinEnabled() and targetObject!isRecycled) or (not IsRecycleBinEnabled() and targetObject!isDeleted)) then ...</pre>

*Date format: YYYY/MM/DD

[MS-DTCO]: MSDTC Connection Manager: OleTx Transaction Protocol

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[MS-DSCPM]: Desired State Configuration Pull Model Protocol

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[MS-DTYP]: Windows Data Types

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[MS-DVRD]: Device Registration Discovery Protocol

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[MS-DVRE]: Device Registration Enrollment Protocol

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[MS-DVRJ]: Device Registration Join Protocol

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[MS-ECS]: Enterprise Client Synchronization Protocol

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[MS-EFSR]: Encrypting File System Remote (EFSRPC) Protocol

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[MS-EMF]: Enhanced Metafile Format

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[MS-EMFPLUS]: Enhanced Metafile Format Plus Extensions

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[MS-ERREF]: Windows Error Codes

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Errata below are for Protocol Document Version [V17.0 - 2017/06/01](#).

Errata Published*	Description		
2017/06/26	<div>In Section 2.2, Win32 Error Codes, the following error code was added:<table><tr><td>0x000021BF ERROR_DS_DRA_RECYCLED_TARGET</td><td>The replication operation failed because the target object referenced by a link value is recycled.</td></tr></table></div>	0x000021BF ERROR_DS_DRA_RECYCLED_TARGET	The replication operation failed because the target object referenced by a link value is recycled.
0x000021BF ERROR_DS_DRA_RECYCLED_TARGET	The replication operation failed because the target object referenced by a link value is recycled.		

*Date format: YYYY/MM/D

[MS-EVEN]: EventLog Remoting Protocol

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[MS-FASP]: Firewall and Advanced Security Protocol

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[MS-FRS2]: Distributed File System Replication Protocol

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[MS-FSA]: File System Algorithms

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Errata below are for Protocol Document Version [V24.0 – 2017/06/01](#).

Errata Published*	Description
2017/08/07	<p>In Section 2.1.5.17.1, Algorithm to Request an Exclusive Oplock, changed from:</p> <ul style="list-style-type: none">• EndIf• If Open.File.OpenList contains more than one Open whose Stream is the same as Open.Stream, and NO_OPLOCK is present in Open.Stream.Oplock.State, the operation MUST be failed with Status set to STATUS_OPLOCK_NOT_GRANTED.• If Open.Stream.IsDeleted is TRUE and RequestedOplock contains HANDLE_CACHING, the operation MUST be failed with Status set to STATUS_OPLOCK_NOT_GRANTED. <p>Changed to:</p> <ul style="list-style-type: none">• If Open.File.OpenList contains more than one Open whose Stream is the same as Open.Stream, and NO_OPLOCK is present in Open.Stream.Oplock.State:• The operation MUST be failed with Status set to STATUS_OPLOCK_NOT_GRANTED.• EndIf• If Open.Stream.IsDeleted is TRUE and RequestedOplock contains HANDLE_CACHING:• The operation MUST be failed with Status set to STATUS_OPLOCK_NOT_GRANTED.• EndIf
2017/08/07	<p>In Section 2.1.5.18, Server Acknowledges an Oplock Break, an endif was added.</p> <p>Changed from:</p> <ul style="list-style-type: none">• Else• // Note that because this oplock is being set up as part of an acknowledgement• // of an exclusive oplock break, Open.Stream.Oplock.ExclusiveOpen was set

Errata Published*	Description
	<ul style="list-style-type: none"> • // at the time of the original oplock request; it contains Open. • Set Open.Stream.Oplock.State to (RequestedOplockLevel EXCLUSIVE). • This operation MUST be made cancelable by inserting it into CancelableOperations.CancelableOperationList. • This operation waits until the oplock is broken or canceled, as specified in section 2.1.5.17.3. <p>Changed to:</p> <ul style="list-style-type: none"> • Else • // Note that because this oplock is being set up as part of an acknowledgement • // of an exclusive oplock break, Open.Stream.Oplock.ExclusiveOpen was set • // at the time of the original oplock request; it contains Open. • Set Open.Stream.Oplock.State to (RequestedOplockLevel EXCLUSIVE). • This operation MUST be made cancelable by inserting it into CancelableOperations.CancelableOperationList. • This operation waits until the oplock is broken or canceled, as specified in section 2.1.5.17.3. • EndIf
2017/08/07	<p>In Section 2.1.4.12, Algorithm to Check for an Oplock Break, changed from:</p> <ul style="list-style-type: none"> • If Open equals Open.Oplock.ExclusiveOpen <p>Changed to:</p> <ul style="list-style-type: none"> • If Open equals Oplock.ExclusiveOpen
2017/07/12	<p>In Section 2.1.5.21, Server Requests Setting Quota Information, changed from:</p> <p>The server provides: Open: An Open of a Quota Stream<153>. <153> The name of the quota file in the Windows environment is:</p> <p>\$Extend\Quota:\$Q:\$INDEX_ALLOCATION</p> <p>Changed to:</p> <p>The server provides: Open: An Open of a Quota Stream<153>. <153> The name of the quota file in the Windows environment is:</p> <p>\$Extend\Quota:\$Q:\$INDEX_ALLOCATION</p> <p>Opening the quota stream is only supported when the share is defined at the root of the volume.</p>
2017/07/12	<p>In multiple sections, product behavior notes were revised to address the FAT32 file system.</p> <p>For details on the changes, see the PDF Diff file at https://winprotocoldoc.blob.core.windows.net/productionwindowsarchives/MS-</p>

Errata Published*	Description
	FSA/[MS-FSA]-170712-diff.pdf .

*Date format: YYYY/MM/DD

[MS-FSCC]: File System Control Codes

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Errata below are for Protocol Document Version [V41.0 – 2017/06/01](#).

Errata Published*	Description
2017/08/07	<p>In Section 2.4.34.1, FileRenameInformation for SMB, the description of FileName was changed from:</p> <p>FileName (variable): A sequence of Unicode characters containing the new name of the file. When working with this field, use FileNameLength to determine the length of the file name rather than assuming the presence of a trailing null delimiter. If the RootDirectory field is zero, this field MUST specify a full pathname to be assigned to the file. For network operations, this pathname is relative to the root of the share. If the RootDirectory field is not zero, this field MUST specify a pathname, relative to RootDirectory, for the new name of the file.</p> <p>Changed to:</p> <p>FileName (variable): A sequence of Unicode characters containing the new file name of type Filename (section 2.1.5.2). When working with this field, use FileNameLength to determine the length of the file name rather than assuming the presence of a trailing null delimiter.</p> <p>In Section 2.4.34.2, FileRenameInformation for SMB2, the description of FileName was changed from:</p> <p>FileName (variable): A sequence of Unicode characters containing the new name of the file. When working with this field, use FileNameLength to determine the length of the file name rather than assuming the presence of a trailing null delimiter. If the RootDirectory field is zero, this member MUST specify a full pathname to be assigned to the file. For network operations, this pathname is relative to the root of the share. If the RootDirectory field is not zero, this field MUST specify a pathname, relative to RootDirectory, for the new name of the file.</p> <p>Changed to:</p> <p>FileName (variable): A sequence of Unicode characters containing the new name of the</p>

Errata Published*	Description
	file. When working with this field, use FileNameLength to determine the length of the file name rather than assuming the presence of a trailing null delimiter.
2017/07/12	<p>In multiple sections, product behavior notes were revised to address the FAT32 file system.</p> <p>For details on the changes, see the PDF Diff file at https://winprotocoldoc.blob.core.windows.net/productionwindowsarchives/MS-FSCC/[MS-FSCC]-170712-diff.pdf.</p>

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[MS-FSRVP]: File Server Remote VSS Protocol

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[MS-FSVCA]: File Set Version Comparison Algorithms

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[MS-GPPREF]: Group Policy: Preferences Extension Data Structure

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[MS-GPSB]: Group Policy: Security Protocol Extension

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[MS-GPOL]: Group Policy: Core Protocol

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[MS-GSSA]: Generic Security Service Algorithm for Secret Key Transaction Authentication for DNS (GSS-TSIG) Protocol Extension

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[MS-HGSA]: Host Guardian Service: Attestation Protocol

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Errata below are for Protocol Document Version [V2.0 – 2017/06/01](#).

Errata Published*	Description												
2017/07/12	<p>In Section 2.2.1.2, AttestationContentType, the properties of the Windows Boot Counter Log (WBCL) were revised to describe them in terms of industry standards.</p> <p>Changed from:</p> <table><tr><th>Value</th><th>Request or Reply Type</th><th>Meaning</th></tr><tr><td>0x00000001</td><td>TpmRequest</td><td>The virtual secure mode identity key (VSMIDK) is being requested as a health certificate. The VSMIDK will be determined from the contents of the TCG log after the RTPM exchange.</td></tr></table> <p>Changed to:</p> <table><tr><th>Value</th><th>Request or Reply Type</th><th>Meaning</th></tr><tr><td>0x00000001</td><td>TpmRequest</td><td>The virtual secure mode identity key (VSMIDK) is being requested as a health certificate. The VSMIDK will be determined from the contents of the Windows Boot Counter Log (WBCL), containing the Stored Measurement Log (SML) as defined in [TCG-Architect] after the RTPM exchange.</td></tr></table> <p>In sections 2.2.2.18, TcgLogValidationErrorReply, 2.2.2.24.1, WBCL_INFO, and 3.1.5.1.1.3, Processing Details, references to the TCG log have been replaced with references to the WBCL.</p>	Value	Request or Reply Type	Meaning	0x00000001	TpmRequest	The virtual secure mode identity key (VSMIDK) is being requested as a health certificate. The VSMIDK will be determined from the contents of the TCG log after the RTPM exchange.	Value	Request or Reply Type	Meaning	0x00000001	TpmRequest	The virtual secure mode identity key (VSMIDK) is being requested as a health certificate. The VSMIDK will be determined from the contents of the Windows Boot Counter Log (WBCL), containing the Stored Measurement Log (SML) as defined in [TCG-Architect] after the RTPM exchange.
Value	Request or Reply Type	Meaning											
0x00000001	TpmRequest	The virtual secure mode identity key (VSMIDK) is being requested as a health certificate. The VSMIDK will be determined from the contents of the TCG log after the RTPM exchange.											
Value	Request or Reply Type	Meaning											
0x00000001	TpmRequest	The virtual secure mode identity key (VSMIDK) is being requested as a health certificate. The VSMIDK will be determined from the contents of the Windows Boot Counter Log (WBCL), containing the Stored Measurement Log (SML) as defined in [TCG-Architect] after the RTPM exchange.											

*Date format: YYYY/MM/DD

[MS-HTTPE]: Hypertext Transfer Protocol (HTTP) Extensions

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[MS-HVRS]: Hyper-V Remote Storage Profile

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[MS-ICPR]: ICertPassage Remote Protocol

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[MS-IKEE]: Internet Key Exchange Protocol Extensions

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[MS-IPAMM2]: IP Address Management (IPAM) Management Protocol Version 2

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[MS-IRP]: Internet Information Services (IIS) Inetinfo Remote Protocol

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[MS-KILE]: Kerberos Protocol Extensions

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[MS-KPP]: Key Provisioning Protocol

This topic lists the Errata found in the MS-KPP document since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-KPS]: Key Protection Service Protocol

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Errata below are for Protocol Document Version [V2.0 – 2017/06/01](#).

Errata Published*	Description
2017/06/26	<p>In Sections 2.2.2.1, RollTransportKeyRequest, 2.2.2.2, RollTransportKeyResponse, and 2.2.2.4 Wrapping, the names of the component elements were updated. In Sections 2.2.2.1 through 2.2.2.15, plus Sections 2.2.3.11 and 2.2.3.12, element names were added to the structures and elements. In Section 2.2.2.15, Algorithm, and Section 2.2.3.12, Parameters, the names of the elements were updated to match the XML code listings.</p> <p>For details on the changes, see the PDF Diff file at https://winprotocoldoc.blob.core.windows.net/productionwindowsarchives/MS-KPS/[MS-KPS]-170626-diff.pdf.</p>

*Date format: YYYY/MM/DD

[MS-LCID]: Windows Language Code Identifier (LCID) Reference

This topic lists the Errata found in [MS-LCID] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



Errata are subject to the same terms as the Open Specifications documentation referenced.

Errata below are for Protocol Document Version [V9.0 - 2017/06/01](#).

Errata Published*	Description
2017/06/26	In Section 2.2, LCID Structure, the instances of yue and yue-HK in the table in behavior note <8> were removed. In Section 2.2.1, Locale Names without LCIDs, yue and yue-HK were removed from the table.

*Date format: YYYY/MM/DD

[MS-LSAD]: Local Security Authority (Domain Policy) Remote Protocol

This topic lists the Errata found in [MS-LSAT] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-LSAT]: Local Security Authority (Translation Methods) Remote Protocol

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Errata below are for Protocol Document Version [V28.0 – 2017/06/01](#).

Errata Published*	Description
2017/06/26	<p>In Section 7 Appendix B, information has been added about which products implement which protocol roles.</p> <p>Changed from:</p> <p>Windows Client</p> <ul style="list-style-type: none">• Windows NT operating system• Windows 2000 Professional operating system• Windows XP operating system• Windows Vista operating system• Windows 7 operating system• Windows 8 operating system• Windows 8.1 operating system• Windows 10 operating system <p>Windows Server</p> <ul style="list-style-type: none">• Windows NT• Windows 2000 Server operating system• Windows Server 2003 operating system• Windows Server 2003 R2 operating system• Windows Server 2008 operating system• Windows Server 2008 R2 operating system• Windows Server 2012 operating system• Windows Server 2012 R2 operating system• Windows Server 2016 operating system <p>Changed to:</p>

Errata Published*	Description		
	Windows Client	Client role	Server role
	Windows NT operating system	Yes	Yes
	Windows 2000 Professional operating system	Yes	Yes
	Windows XP operating system	Yes	Yes
	Windows Vista operating system	Yes	Yes
	Windows 7 operating system	Yes	Yes
	Windows 8 operating system	Yes	Yes
	Windows 8.1 operating system	Yes	Yes
	Windows 10 operating system	Yes	Yes
	Windows Server	Client role	Server role
	Windows NT	Yes	Yes
	Windows 2000 Server operating system	Yes	Yes
	Windows Server 2003 operating system	Yes	Yes
	Windows Server 2003 R2 operating system	Yes	Yes
	Windows Server 2008 operating system	Yes	Yes
	Windows Server 2008 R2 operating system	Yes	Yes
	Windows Server 2012 operating system	Yes	Yes
	Windows Server 2012 R2 operating system	Yes	Yes
	Windows Server 2016 operating system	Yes	Yes

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[MS-MDE]: Mobile Device Enrollment Protocol

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[MS-MDE2]: Mobile Device Enrollment Protocol Version 2

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[MS-MDM]: Mobile Device Management Protocol

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[MS-MSSOD]: Media Streaming Server Protocols Overview

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Errata below are for Protocol Document Version [V41.0 - 2017/06/01](#).

Errata Published*	Description						
2017/07/12	<p>In Section 2.6, Versioning, Capability Negotiation, and Extensibility, the client availability table for operating system versions was updated to change instances of Windows 2000 Server to Windows 2000 Professional and to use a different format ("... and later.") for denoting a sequence of operating system versions.</p> <p>In Section 4, Microsoft Implementations, the product applicability list was updated.</p> <p>Changed from:</p> <p>The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:</p> <p>Windows 2000 operating system Windows 2000 Server operating system Windows 2000 Advanced Server operating system Windows XP operating system Windows Server 2003 operating system Windows Server 2003 R2 operating system Windows Vista operating system Windows Server 2008 operating system Windows 7 operating system Windows Server 2008 R2 operating system 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 operating system</p> <p>Changed to:</p> <p>The following table describes the availability of the client role of the specified protocols on a given client operating system version.</p> <table><tr><th>Protocols implemented</th><th>Operating system versions</th></tr><tr><td>Microsoft Media Server (MMS) Protocol [MS-MMSP]</td><td>Windows 2000 Professional operating system Windows XP operating system</td></tr><tr><td>Real-Time Streaming Protocol (RTSP) Windows Media Extensions [MS-RTSP]</td><td>Windows XP and later</td></tr></table>	Protocols implemented	Operating system versions	Microsoft Media Server (MMS) Protocol [MS-MMSP]	Windows 2000 Professional operating system Windows XP operating system	Real-Time Streaming Protocol (RTSP) Windows Media Extensions [MS-RTSP]	Windows XP and later
Protocols implemented	Operating system versions						
Microsoft Media Server (MMS) Protocol [MS-MMSP]	Windows 2000 Professional operating system Windows XP operating system						
Real-Time Streaming Protocol (RTSP) Windows Media Extensions [MS-RTSP]	Windows XP and later						

Errata Published*	Description	
	Windows Media HTTP Streaming Protocol [MS-WMSP]	Windows 2000 Professional and later
	Media Stream Broadcast (MSB) Protocol [MS-MSB]	Windows 2000 Professional and later
	Media Stream Broadcast Distribution (MSBD) Protocol [MS-MSBD]	Windows 2000 Professional Windows XP

*Date format: YYYY/MM/DD

[MS-MWBE]: Microsoft Web Browser Federated Sign-On Protocol Extensions

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[MS-MWBF]: Microsoft Web Browser Federated Sign-On Protocol

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[MS-NCT]: Network Cost Transfer Protocol

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[MS-NFPB]: Near Field Proximity Bidirectional Services Protocol

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[MS-NFPS]: Near Field Proximity Sharing Protocol

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[MS-NKPU]: Network Key Protector Unlock Protocol

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[MS-NLMP]: NT LAN Manager (NTLM) Authentication Protocol

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[MS-NNS]: .NET NegotiateStream Protocol

This topic lists the Errata found in [MS-NNS] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-NRPC]: Netlogon Remote Protocol

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[MS-NSPI]: Name Service Provider Interface (NSPI) Protocol

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[MS-OAPX]: OAuth 2.0 Protocol Extensions

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Errata below are for Protocol Document Version [V7.0 - 2017/06/13](#).

Errata Published *	Description						
2017/08/07	<p>In multiple sections, added revisions for a POST body parameter that is sent from the token broker on the client.</p> <p>In Section 1.2.1, Normative References, the following references were added:</p> <p>[IETFDRAFT-OAUTH2TOKBIND] Popov, A., Ed., Nystroem, M., Balfranz, D., et al., "OAuth 2.0 Token Binding", draft-ietf-oauth-token-binding-04, July 2017, https://tools.ietf.org/html/draft-ietf-oauth-token-binding-04</p> <p>[IETFDRAFT-TOKBINDPROT] Popov, A., Ed., Nystroem, M., Balfranz, D., et al., "The Token Binding Protocol Version 1.0", draft-ietf-tokbind-protocol-14, April 2017, https://tools.ietf.org/html/draft-ietf-tokbind-protocol-14</p> <p>[MSKB-4034658] Microsoft Corporation, "August 8, 2017 - KB4034658", https://support.microsoft.com/help/4034658</p> <p>In Section 2.3.3, Common Data Structures, a new message body parameter, tbdv2, was added to the bottom of the table, along with a new product behavior note.</p> <p>Changed from:</p> <table><tr><th>Message body parameter</th><th>Description</th></tr><tr><td>...</td><td>...</td></tr><tr><td>x5c</td><td>OPTIONAL. The AD FS server includes this parameter in the successful response to an OAuth logon certificate request. The value is a base64-encoded CMS certificate chain or CMC full PKI response (see [MS-WCCE] section 2.2.2.8).</td></tr></table>	Message body parameter	Description	x5c	OPTIONAL. The AD FS server includes this parameter in the successful response to an OAuth logon certificate request. The value is a base64-encoded CMS certificate chain or CMC full PKI response (see [MS-WCCE] section 2.2.2.8).
Message body parameter	Description						
...	...						
x5c	OPTIONAL. The AD FS server includes this parameter in the successful response to an OAuth logon certificate request. The value is a base64-encoded CMS certificate chain or CMC full PKI response (see [MS-WCCE] section 2.2.2.8).						

Errata Published *	Description										
	<table border="1" data-bbox="370 247 1310 369"> <tr> <td data-bbox="370 247 841 369"></td><td data-bbox="841 247 1310 369">The AD FS server does not return this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.</td></tr> </table> <p>Changed to:</p> <table border="1" data-bbox="370 478 1310 1241"> <tr> <th data-bbox="370 478 841 531">Message body parameter</th><th data-bbox="841 478 1310 531">Description</th></tr> <tr> <td data-bbox="370 531 841 583">...</td><td data-bbox="841 531 1310 583">...</td></tr> <tr> <td data-bbox="370 583 841 898">x5c</td><td data-bbox="841 583 1310 898"> <p>OPTIONAL. The AD FS server includes this parameter in the successful response to an OAuth logon certificate request. The value is a base64-encoded CMS certificate chain or CMC full PKI response (see [MS-WCCE] section 2.2.2.8).</p> <p>The AD FS server does not return this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.</p> </td></tr> <tr> <td data-bbox="370 898 841 1241">tbidv2</td><td data-bbox="841 898 1310 1241"> <p>OPTIONAL. The OAuth 2.0 client includes this parameter in the POST body of a request to indicate that the client is providing a referred token-binding ID to the AD FS server for the current request. See [IETF DRAFT-TOKBINDPROT] for details on referred token-bindings.</p> <p>The AD FS server ignores this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.<5></p> </td></tr> </table> <p><5> Section 2.2.3: Even though <code>AD_FS_BEHAVIOR_LEVEL_2</code> is supported on Windows Server 2016, the <code>tbidv2</code> parameter is ignored on Windows Server 2016 unless [MSKB-4034658] is applied.</p> <p>A new section, 2.2.3.8, <code>tbidv2</code>, was added to describe the new message body parameter <code>tbidv2</code>.</p> <p>Added:</p> <p>2.2.3.8 <code>tbidv2</code></p> <pre> POST /token HTTP/1.1 Host: server.example.com Content-Type: application/x-www-form-urlencoded grant_type={grant_type}&client_id={client_id}&redirect_uri={redirect_uri}&tbidv2={tbidv2} </pre>		The AD FS server does not return this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.	Message body parameter	Description	x5c	<p>OPTIONAL. The AD FS server includes this parameter in the successful response to an OAuth logon certificate request. The value is a base64-encoded CMS certificate chain or CMC full PKI response (see [MS-WCCE] section 2.2.2.8).</p> <p>The AD FS server does not return this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.</p>	tbidv2	<p>OPTIONAL. The OAuth 2.0 client includes this parameter in the POST body of a request to indicate that the client is providing a referred token-binding ID to the AD FS server for the current request. See [IETF DRAFT-TOKBINDPROT] for details on referred token-bindings.</p> <p>The AD FS server ignores this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.<5></p>
	The AD FS server does not return this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.										
Message body parameter	Description										
...	...										
x5c	<p>OPTIONAL. The AD FS server includes this parameter in the successful response to an OAuth logon certificate request. The value is a base64-encoded CMS certificate chain or CMC full PKI response (see [MS-WCCE] section 2.2.2.8).</p> <p>The AD FS server does not return this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.</p>										
tbidv2	<p>OPTIONAL. The OAuth 2.0 client includes this parameter in the POST body of a request to indicate that the client is providing a referred token-binding ID to the AD FS server for the current request. See [IETF DRAFT-TOKBINDPROT] for details on referred token-bindings.</p> <p>The AD FS server ignores this parameter unless its <code>ad_fs_behavior_level</code> is <code>AD_FS_BEHAVIOR_LEVEL_2</code> or higher.<5></p>										

Errata Published *	Description
	<p>OPTIONAL</p> <p>The tbidv2 parameter is optional and can be specified by the client role of the OAuth 2.0 Protocol Extensions in the POST body when the client is providing a referred token-binding ID as part of the request. For details on referred token-binding IDs, see [IETFDRAFT-TOKBINDPROT].</p> <p>The format for the tbidv2 request parameter is as follows:</p> <pre>String = *(%x20-7E) tbidv2 = String</pre> <p>In Section 3.2.5.2.1.1, Request Body, a new message body parameter, tbidv2, was added to the parameter list.</p> <p>Changed from:</p> <p>In addition to the POST body parameters described in [RFC6749] section 4.1.3, the OAuth 2.0 client can choose to send the following additional parameters:</p> <p>...</p> <p>csr_type: OPTIONAL. See sections 2.2.3 and 2.2.3.6.</p> <p>Changed to:</p> <p>In addition to the POST body parameters described in [RFC6749] section 4.1.3, the OAuth 2.0 client can choose to send the following additional parameters:</p> <p>...</p> <p>csr_type: OPTIONAL. See sections 2.2.3 and 2.2.3.6.</p> <p>tbidv2: OPTIONAL. See [IETFDRAFT-TOKBINDPROT].</p> <p>In Section 3.2.5.2.1.3, Processing Details, processing information for the new message body parameter tbidv2 was added.</p> <p>Changed from:</p> <ul style="list-style-type: none"> • If the AD FS server's ad_fs_behavior_level is AD_FS_BEHAVIOR_LEVEL_2 or higher and it has not encountered any prior errors in processing, the AD FS server includes an ID token in the response as described in [OIDCCore] section 3.1.3.3. <p>Changed to:</p> <ul style="list-style-type: none"> • If the AD FS server's ad_fs_behavior_level is AD_FS_BEHAVIOR_LEVEL_2 or higher and it has not encountered any prior errors in processing, the AD FS server includes an ID token in the response as described in [OIDCCore] section 3.1.3.3. • If the AD FS server's ad_fs_behavior_level is AD_FS_BEHAVIOR_LEVEL_2 or higher and it has not encountered any prior errors in processing, and a referred token-binding ID was provided on the request using the tbidv2 POST parameter, the AD FS server includes a token-binding claim in the Access Token in the response, as defined in [IETFDRAFT-OAUTH2TOKBIND].

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[MS-OAPXBC]: OAuth 2.0 Protocol Extensions for Broker Clients

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Errata below are for Protocol Document Version [V5.0 - 2017/06/13](#).

Errata Published*	Description
2017/08/07	<p>In Section 3.2.5.2.1.3, Processing Details, processing rules and a reference to [MS-OAPX] for the tbidv2 POST body parameter were added to the end of the section.</p> <p>Added:</p> <p>If the client provided a referred token-binding ID using the tbidv2 POST body parameter ([MS-OAPX] section 2.2.3), the AD FS Server secures the response Access Token with the referred token-binding ID that was provided.</p>

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[MS-OIDCE]: OpenID Connect 1.0 Protocol Extensions

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[MS-OTPCE]: One-Time Password Certificate Enrollment Protocol

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[MS-PAR]: Print System Asynchronous Remote Protocol

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[MS-PEAP]: Protected Extensible Authentication Protocol (PEAP)

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[MS-PKAP]: Public Key Authentication Protocol

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[MS-PSRDP]: PowerShell Remote Debugging Protocol

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[MS-PSRP]: PowerShell Remoting Protocol

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[MS-RA]: Remote Assistance Protocol

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[MS-RAI]: Remote Assistance Initiation Protocol

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[MS-RDPBCGR]: Remote Desktop Protocol: Basic Connectivity and Graphics Remoting

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[MS-RDPEA]: Remote Desktop Protocol: Audio Output Virtual Channel Extension

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[MS-RDPEAR]: Remote Desktop Protocol Authentication Redirection Virtual Channel

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Errata below are for Protocol Document Version [V2.0 – 2017/06/13](#).

Errata Published*	Description
2017/08/07	<p>In several sections, changes were made to resolve inconsistencies between section 2 and the Appendix.</p> <p>In Section 2.2.1.3.1, NtlmCredIsoRemoteInput, the structure definition for case RemoteCallNtlmProtectCredential was revised to match the IDL.</p> <p>Changed from:</p> <pre>// Request that the contents of this SECRETS_WRAPPER be encrypted. [case(RemoteCallNtlmProtectCredential)] struct { PMSV1_0_REMOTE_ENCRYPTED_SECRETS Credential; } ProtectCredential;</pre> <p>Changed to:</p> <pre>// Request that the contents of this SECRETS_WRAPPER be encrypted. [case(RemoteCallNtlmProtectCredential)] struct { PMSV1_0_REMOTE_PLAINTEXT_SECRETS Credential; } ProtectCredential;</pre> <p>In Section 2.2.2.1.11, SignS4UPreauthData, the struct definition in the ChecksumType field was revised to match the IDL.</p> <p>Changed from:</p> <pre>struct { PULONG ChecksumSize; [size_is(, *ChecksumSize)] PUCCHAR* ChecksumValue; } SignS4UPreauthData;</pre> <p>Changed to:</p> <pre>struct { PLONG ChecksumType;</pre>

Errata Published*	Description
	<pre>PULONG ChecksumSize; [size is(, *ChecksumSize)] PCHAR* ChecksumValue; } SignS4UPreauthData;</pre> <p>In Section 6.3 Appendix A.3: NTLM.IDL, the structure definition for case RemoteCallNtlmProtectCredential was revised to match the content is section 2.</p> <p>Changed from:</p> <pre>// Request that the contents of this SECRETS WRAPPER be encrypted.[case(RemoteCallNtlmProtectCredential)] struct { PMSV1_0_REMOTE_ENCRYPTED_SECRETS Credential; } ProtectCredential;</pre> <p>Changed to:</p> <pre>// Request that the contents of this SECRETS_WRAPPER be encrypted.[case(RemoteCallNtlmProtectCredential)] struct { PMSV1_0_REMOTE_PLAINTEXT_SECRETS Credential; } ProtectCredential;</pre>
2017/08/07	<p>In several sections, the mis-labelling of the RemoteCallKerbCreateApReqAuthenticator for the KerbCredIsoRemoteInput/KerbCredIsoRemoteOutput structures was corrected.</p> <p>In Section 2.2.2.1.4, CreateApReqAuthenticator, the first structure for RemoteCallKerbCreateApReqAuthenticator was relabeled from KerbCredIsoRemoteOutput to KerbCredIsoRemoteInput.</p> <p>Changed from:</p> <p>When populating this field of the KerbCredIsoRemoteOutput structure, the CallId field MUST be set to RemoteCallKerbCreateApReqAuthenticator.</p> <p>Changed to:</p> <p>When populating this field of the KerbCredIsoRemoteInput structure, the CallId field MUST be set to RemoteCallKerbCreateApReqAuthenticator.</p> <p>In Section 2.2.2.1.4, CreateApReqAuthenticator, the second structure for RemoteCallKerbCreateApReqAuthenticator was relabeled from KerbCredIsoRemoteInput to KerbCredIsoRemoteOutput.</p> <p>Changed from:</p> <p>When populating this field of the KerbCredIsoRemoteInput structure, the CallId field MUST be set to RemoteCallKerbCreateApReqAuthenticator.</p> <p>Changed to:</p> <p>When populating this field of the KerbCredIsoRemoteOutput structure, the CallId field MUST be set to RemoteCallKerbCreateApReqAuthenticator.</p>

*Date format: YYYY/MM/DD

[MS-RDPECLIP]: Remote Desktop Protocol: Clipboard Virtual Channel Extension

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[MS-RDPEDYC]: Remote Desktop Protocol: Dynamic Channel Virtual Channel Extension

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[MS-RDPEFS]: Remote Desktop Protocol: File System Virtual Channel Extension

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Errata below are for Protocol Document Version [V24.0 – 2017/06/01](#).

Errata Published*	Description
2017/06/26	<p>In Section 2.2.3.10, Server Drive Query Directory Request, changes were made to differentiate when STATUS_NO_MORE_FILES versus STATUS_NO_SUCH_FILE is returned. In particular, the description of InitialQuery was revised with an action to return a status (IoStatus) of STATUS_NO_SUCH_FILE when a non-zero value and no file is found, and the description of Path was revised to indicate that if the value of InitialQuery is zero, the contents of this field is ignored irrespective of the value of PathLength.</p> <p>Changed from:</p> <p>InitialQuery (1 byte): An 8-bit unsigned integer. If the value is zero, the Path field is not included regardless of the PathLength value. If the value is set to zero, the request is for the next file in the directory specified in a previous Server Drive Query Directory Request. If such a file does not exist, the client MUST complete this request with STATUS_NO_MORE_FILES in the IoStatus field of the Client Drive I/O Response packet.</p> <p>PathLength (4 bytes): A 32-bit unsigned integer that specifies the number of bytes in the Path field, including the null-terminator.</p> <p>Padding (23 bytes): An array of 23 bytes. This field is unused and MUST be ignored.</p> <p>Path (variable): A variable-length array of Unicode characters that specifies the directory on which this operation will be performed. The Path field MUST be null-terminated.</p> <p>Changed to:</p> <p>InitialQuery (1 byte): An 8-bit unsigned integer. If the value of this field is zero, the request is for the next file in the directory that was specified in a previous Server Drive Query Directory Request. If such a file does not exist, the client MUST complete this request with STATUS_NO_MORE_FILES in the IoStatus field of the Client Drive I/O Response packet (section 2.2.3.4). If the value of this field is non-zero and such a file does not exist, the client MUST complete this request with STATUS_NO_SUCH_FILE in the IoStatus field of the Client Drive I/O Response.</p> <p>PathLength (4 bytes): A 32-bit unsigned integer that specifies the number of bytes in</p>

Errata Published*	Description
	<p>the Path field, including the null-terminator.</p> <p>Padding (23 bytes): An array of 23 bytes. This field is unused and MUST be ignored.</p> <p>Path (variable): A variable-length array of Unicode characters that specifies the directory on which this operation will be performed. The Path field MUST be null-terminated. If the value of the InitialQuery field is zero, then the contents of the Path field MUST be ignored, irrespective of the value specified in the PathLength field.</p>

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[MS-RDPEGDI]: Remote Desktop Protocol: Graphics Device Interface (GDI) Acceleration Extensions

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[MS-RDPEGFX]: Remote Desktop Protocol: Graphics Pipeline Extension

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Errata below are for Protocol Document Version [V11.0 - 2017/06/01](#).

Errata Published*	Description				
2017/06/26	<p>In Sections 2.2.3.3, RDPGFX_CAPSET_VERSION10, 2.2.3.4, RDPGFX_CAPSET_VERSION102, and 2.2.3.5, RDPGFX_CAPSET_VERSION103, the description for the flag RDPGFX_CAPS_FLAG_AVC_DISABLED was revised to address all modes with specific instructions for the YUV444 mode.</p> <p>In each section, the text was changed from:</p> <table><tr><td>RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020</td><td>Indicates that usage of the MPEG-4 AVC/H.264 Codec in either YUV420p or YUV444 modes is not supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message.</td></tr></table> <p>Changed to:</p> <table><tr><td>RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020</td><td>If this flag is set, it indicates that usage of the MPEG-4 AVC/H.264 Codec in any mode is not supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message.</td></tr></table>	RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	Indicates that usage of the MPEG-4 AVC/H.264 Codec in either YUV420p or YUV444 modes is not supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message.	RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	If this flag is set, it indicates that usage of the MPEG-4 AVC/H.264 Codec in any mode is not supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message.
RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	Indicates that usage of the MPEG-4 AVC/H.264 Codec in either YUV420p or YUV444 modes is not supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message.				
RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	If this flag is set, it indicates that usage of the MPEG-4 AVC/H.264 Codec in any mode is not supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message.				
2017/06/26	<p>in Section 2.2.3.5, RDPGFX_CAPSET_VERSION103, changes were made to specify Bitmap Cache size and number of variable-length slot values for RDPGFX_CAPSET_VERSION_10, RDPGFX_CAPSET_VERSION_102 and RDPGFX_CAPSET_VERSION_103. Additionally, the description of the structure was revised to indicate a bitmap cache size of 16MB.</p> <p>Changed from:</p>				

Errata Published*	Description										
	<p>The RDPGFX_CAPSET_VERSION103 structure specifies an RDP version 10.3 Graphics Capability Set and conforms to the capability set layout specified in section 2.2.1.6. It is identical in form to the RDPGFX_CAPSET_VERSION102 (section 2.2.3.4) structure.</p> <p>flags (4 bytes): A 32-bit unsigned integer that specifies capability flags.</p> <table border="1" data-bbox="508 417 1430 829"> <thead> <tr> <th>Flag</th><th>Meaning</th></tr> </thead> <tbody> <tr> <td>RDPGFX_CAPS_FLAG_SMALL_CACHE 0x00000002</td><td>See the definition of the RDPGFX_CAPS_FLAG_SMALL_CACHE (0x00000002) flag in section 2.2.3.1 for details.<1></td></tr> <tr> <td>RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020</td><td>If this flag is set, it is supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 message.</td></tr> </tbody> </table> <p>Changed to:</p> <p>The RDPGFX_CAPSET_VERSION103 structure specifies an RDP version 10.3 Graphics Capability Set and conforms to the capability set layout specified in section 2.2.1.6. Selection of this capability set implies that the bitmap cache (as defined in section 3.3.1.4) MUST be constrained to 16MB in size.</p> <p>flags (4 bytes): A 32-bit unsigned integer that specifies capability flags.</p> <table border="1" data-bbox="508 1150 1430 1434"> <thead> <tr> <th>Flag</th><th>Meaning</th></tr> </thead> <tbody> <tr> <td>RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020</td><td>If this flag is set, it is supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 message.</td></tr> </tbody> </table> <p>In Section 3.3.1.4, Bitmap Cache, the description was revised to include sizes for RDPGFX_CAPSET_VERSION10, RDPGFX_CAPSET_VERSION102, and RDPGFX_CAPSET_VERSION103.</p> <p>Changed from:</p> <p>The Bitmap Cache ADM element is used to store bitmaps of arbitrary dimensions. Each bitmap is associated with a key and is stored in a variable-length slot (identified by a slot index). The size of the bitmap cache is capped at 100 MB or 16 MB, depending on whether the RDPGFX_CAPS_FLAG_THINCLIENT (0x00000001) flag or RDPGFX_CAPS_FLAG_SMALL_CACHE (0x00000002) flag is specified in the flags field of an RDPGFX_CAPSET_VERSION8 (section 2.2.3.1) or an RDPGFX_CAPSET_VERSION81</p>	Flag	Meaning	RDPGFX_CAPS_FLAG_SMALL_CACHE 0x00000002	See the definition of the RDPGFX_CAPS_FLAG_SMALL_CACHE (0x00000002) flag in section 2.2.3.1 for details.<1>	RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	If this flag is set, it is supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 message.	Flag	Meaning	RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	If this flag is set, it is supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 message.
Flag	Meaning										
RDPGFX_CAPS_FLAG_SMALL_CACHE 0x00000002	See the definition of the RDPGFX_CAPS_FLAG_SMALL_CACHE (0x00000002) flag in section 2.2.3.1 for details.<1>										
RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	If this flag is set, it is supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 message.										
Flag	Meaning										
RDPGFX_CAPS_FLAG_AVC_DISABLED 0x00000020	If this flag is set, it is supported in the RDPGFX_WIRE_TO_SURFACE_PDU_1 (section 2.2.2.1) message. If the flag is not set, the client MUST be capable of processing the MPEG-4 AVC/H.264 Codec in YUV444 mode in the RDPGFX_WIRE_TO_SURFACE_PDU_1 message.										

Errata Published*	Description
	<p>(section 2.2.3.2) structure, which is encapsulated in the server-to-client RDPGFX_CAPS_CONFIRM_PDU (section 2.2.2.19) message. The maximum possible number of variable-length slots is 25,600 in the case of a 100 MB cache and 4,096 in the case of a 16 MB cache. The size of the bitmap data stored across all of the in-use variable-length slots at any point in time MUST NOT exceed the total size of the cache.</p> <p>Changed to:</p> <p>The Bitmap Cache ADM element is used to store bitmaps of arbitrary dimensions. Each bitmap is associated with a key and is stored in a variable-length slot (identified by a slot index). The size of the bitmap cache is capped at 100 MB or 16 MB, depending on whether the RDPGFX_CAPS_FLAG_THINCLIENT (0x00000001) flag or RDPGFX_CAPS_FLAG_SMALL_CACHE (0x00000002) flag is specified in the flags field of an RDPGFX_CAPSET_VERSION8 (section 2.2.3.1), RDPGFX_CAPSET_VERSION81 (section 2.2.3.2), RDPGFX_CAPSET_VERSION10 (section 2.2.3.3), or RDPGFX_CAPSET_VERSION102 (section 2.2.3.4) structure, which is encapsulated in the server-to-client RDPGFX_CAPS_CONFIRM_PDU (section 2.2.2.19) message. The size of the bitmap cache is constrained to 16MB in size when the RDPGFX_CAPSET_VERSION103 (section 2.2.3.5) structure is encapsulated in the server-to-client RDPGFX_CAPS_CONFIRM_PDU message. The maximum possible number of variable-length slots is 25,600 in the case of a 100 MB cache and 4,096 in the case of a 16 MB cache. The size of the bitmap data stored across all of the in-use variable-length slots at any point in time MUST NOT exceed the total size of the cache.</p> <p>In Section 6, Appendix A, Product Behavior, the product behavior note regarding the limitations of RDP10.3 servers was removed from section 2.2.3.5.</p> <p>Removed:</p> <p><1> Section 2.2.3.5: Microsoft RDP 10.3 servers ignore the RDPGFX_CAPS_FLAG_SMALL_CACHE (0x00000002) flag in the RDPGFX_CAPSET_VERSION103 structure and always constrain the bitmap cache to 16 MB in size.</p>

*Date format: YYYY/MM/DD

[MS-RDPEGT]: Remote Desktop Protocol Geometry Tracking Virtual Channel Protocol Extension

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[MS-RDPEI]: Remote Desktop Protocol: Input Virtual Channel Extension

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[MS-RDPEMC]: Remote Desktop Protocol: Multiparty Virtual Channel Extension

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[MS-RDPEMT]: Remote Desktop Protocol: Multitransport Extension

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[MS-RDPEPC]: Remote Desktop Protocol: Print Virtual Channel Extension

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[MS-RDPEPNP]: Remote Desktop Protocol: Plug and Play Devices Virtual Channel Extension

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[MS-RDPERP]: Remote Desktop Protocol: Remote Programs Virtual Channel Extension

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Errata below are for Protocol Document Version [V23.0 – 2017/06/01](#).

Errata Published*	Description
2017/07/24	<p>Text indicating that the WINDOW_ORDER_FIELD_RESIZE_MARGIN_X and WINDOW_ORDER_FIELD_RESIZE_MARGIN_Y flags are always present together was removed from the description for the WindowBottomResizeMargin field in Section 2.2.1.3.1.2.1, New or Existing Windows.</p> <p>Changed from:</p> <p>WindowBottomResizeMargin (4 bytes): An unsigned 32-bit integer specifying the height of the transparent hit-testable margin along the bottom edge of the window. Any mouse, pen or touch input within this margin SHOULD be sent to the server.</p> <p>This field is present only if the WINDOW_ORDER_FIELD_RESIZE_MARGIN_Y flag is set in the FieldsPresentFlags field of TS_WINDOW_ORDER_HEADER.</p> <p>If the WINDOW_ORDER_FIELD_RESIZE_MARGIN_X flag is present, then the WINDOW_ORDER_FIELD_RESIZE_MARGIN_Y SHOULD be present and vice versa.</p> <p>Changed to:</p> <p>WindowBottomResizeMargin (4 bytes): An unsigned 32-bit integer specifying the height of the transparent hit-testable margin along the bottom edge of the window. Any mouse, pen or touch input within this margin SHOULD be sent to the server.</p> <p>This field is present only if the WINDOW_ORDER_FIELD_RESIZE_MARGIN_Y flag is set in the FieldsPresentFlags field of TS_WINDOW_ORDER_HEADER.</p>
2017/07/12	<p>In multiple sections, added three new, optional fields - OverlayDescription, TaskbarButton, and EnforceServerZOrder - to packet diagramS, added new descriptions for those fields, and added related flags.</p> <p>For details on the changes, see the PDF Diff file at https://winprotocoldoc.blob.core.windows.net/productionwindowsarchives/MS-RDPERP/[MS-RDPERP]-170712-diff.pdf.</p>

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[MS-RDPESC]: Remote Desktop Protocol: Smart Card Virtual Channel Extension

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[MS-RDPESP]: Remote Desktop Protocol: Serial and Parallel Port Virtual Channel Extension

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[MS-RDPEUDP]: Remote Desktop Protocol: UDP Transport Extension

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[MS-RDPEV]: Remote Desktop Protocol: Video Redirection Virtual Channel Extension

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[MS-RDPEVOR]: Remote Desktop Protocol: Video Optimized Remoting Virtual Channel Extension

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[MS-RDPEXPS]: Remote Desktop Protocol: XML Paper Specification (XPS) Print Virtual Channel Extension

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[MS-RDPRFX]: Remote Desktop Protocol: RemoteFX Codec Extension

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[MS-RMPR]: Rights Management Services (RMS): Client-to-Server Protocol

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[MS-RMSOD]: Rights Management Services Protocols Overview

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[MS-RPCE]: Remote Procedure Call Protocol Extensions

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[MS-RPCH]: Remote Procedure Call over HTTP Protocol

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[MS-RPRN]: Print System Remote Protocol

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[MS-RRASM]: Routing and Remote Access Server (RRAS) Management Protocol

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[MS-RSMC]: Remote Session Monitoring and Control Protocol

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[MS-RSVD]: Remote Shared Virtual Disk Protocol

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Errata below are for Protocol Document Version [V10.0 - 2017/06/01](#).

Errata Published*	Description
2017/07/12	<p>In Section 2.2.4.4, SVHDX_TUNNEL_SRB_STATUS_RESPONSE Structure, the following fields were changed from:</p> <p>A - SenseInfoAutoGenerated (1 bit): A 1-bit field used to indicate that sense data was automatically generated by the virtual SCSI disk.</p> <p>SenseInfoExLength (1 byte): The length, in bytes, of the sense data in the SenseDataEx field.</p> <p>SenseDataEx (20 bytes): A buffer that contains the sense data.</p> <p>Changed to:</p> <p>A - SenseInfoAutoGenerated (1 bit): A 1-bit field used to indicate that sense data was automatically generated by the virtual SCSI disk.</p> <p>SenseInfoExLength (1 byte): The length, in bytes, of the sense data in the SenseDataEx field.</p> <p>SenseDataEx (20 bytes): A buffer that contains the sense data.</p> <p>In Section 2.2.4.7, SVHDX_TUNNEL_SCSI_REQUEST Structure, the descriptions of the following fields were changed from:</p> <p>Length (2 bytes): Specifies the size, in bytes, of the SVHDX_TUNNEL_SCSI_REQUEST structure excluding the DataBuffer field. The client MUST set this field to 36.</p> <p>SenseInfoExLength (1 byte): The length, in bytes, of the request sense data buffer. This value MUST be less than or equal to RSVD_SCSI_SENSE_BUFFER_SIZE.</p> <p>Changed to:</p>

Errata Published*	Description
	<p>Length (2 bytes): Specifies the size, in bytes, of the SVHDX_TUNNEL_SCSI_REQUEST structure excluding the DataBuffer field.</p> <p>SenseInfoExLength (1 byte): This field MUST be set to zero and the server MUST ignore it on receipt.</p> <p>In Section 2.2.4.8, SVHDX_TUNNEL_SCSI_RESPONSE Structure, the following fields were changed from:</p> <p>Length (2 bytes): Specifies the size, in bytes, of the SVHDX_TUNNEL_SCSI_RESPONSE structure excluding the DataBuffer field. This field MUST be set to 36.</p> <p>A - SenseInfoAutoGenerated (1 bit): A 1-bit field used to indicate that sense data was automatically generated by the virtual SCSI disk.</p> <p>CDBLength (1 byte): The length, in bytes, of the SCSI CDB.</p> <p>SenseInfoExLength (1 byte): The length, in bytes, of the sense data in the SenseDataEx field.</p> <p>SenseDataEx (20 bytes): A buffer that contains the sense data.</p> <p>Changed to:</p> <p>Length (2 bytes): Specifies the size, in bytes, of the SVHDX_TUNNEL_SCSI_RESPONSE structure excluding the DataBuffer field.</p> <p>A - SenseInfoAutoGenerated (1 bit): A 1-bit field; when set to TRUE, indicates that sense data was returned by the virtual SCSI disk.</p> <p>CDBLength (1 byte): This field MUST be set to the CDBLength value received in the request and ignored on receipt.</p> <p>SenseInfoExLength (1 byte): The length, in bytes, of the SenseDataEx field. This value MUST be less than or equal to RSVD_SCSI_SENSE_BUFFER_SIZE.</p> <p>SenseDataEx (variable): A buffer that contains the sense data.</p> <p>In Section 3.1.4.9, Application Requests Execution of SCSI Command, the following was changed from:</p> <p>The application provides:</p> <ul style="list-style-type: none"> • A handle to the Open identifying a shared virtual disk file. • The ID of the initiator. • The length of the SCSI CDB buffer, in bytes. • The length of the sense information, in bytes. • SrbFlags that indicate options about the SCSI request, as specified in section 2.2.4.7<4>. • The SCSI CDB buffer. • The length of any additional data (optional). • Any additional data buffer (optional). <p>The client MUST construct an SVHDX_TUNNEL_SCSI_REQUEST structure, as specified in section 2.2.4.7 as follows:</p> <p>The SVHDX_TUNNEL_OPERATION_HEADER MUST be initialized as follows:</p> <ul style="list-style-type: none"> • The OperationCode field is set to RSVD_TUNNEL_SCSI_OPERATION. • The Status is set to zero. • The RequestId field MUST be set to RequestIdentifier. <p>The SVHDX_TUNNEL_SCSI_REQUEST MUST be initialized as follows:</p> <ul style="list-style-type: none"> • The Length field is set to 36. • The Reserved1, Reserved2, and Reserved3 fields are set to zero.

Errata Published*	Description
	<ul style="list-style-type: none"> • The CDBLength is set to the application-provided SCSI CDB length value. • The SenseInfoExLength set to the application-provided sense info length value. • The SrbFlags field MUST be set to the application-provided SrbFlags. • If SrbFlags includes SRB_FLAGS_DATA_OUT, set Disposition to 0x00. If SrbFlags includes SRB_FLAGS_DATA_IN, Disposition SHOULD<5> be set to 0x01. If SrbFlags includes neither SRB_FLAGS_DATA_OUT nor SRB_FLAGS_DATA_IN, set Disposition to 0x02. <p>Changed to:</p> <p>The application provides:</p> <ul style="list-style-type: none"> • A handle to the Open identifying a shared virtual disk file. • The ID of the initiator. • The length of the SCSI CDB buffer, in bytes. • SrbFlags that indicate options about the SCSI request, as specified in section 2.2.4.7<4>. • The SCSI CDB buffer. • The length of any additional data (optional). • Any additional data buffer (optional). <p>The client MUST construct an SVHDX_TUNNEL SCSI_REQUEST structure, as specified in section 2.2.4.7 as follows:</p> <p>The SVHDX_TUNNEL_OPERATION_HEADER MUST be initialized as follows:</p> <ul style="list-style-type: none"> • The OperationCode field is set to RSVD_TUNNEL SCSI_OPERATION. • The Status is set to zero. • The RequestId field MUST be set to RequestIdentifier. <p>The SVHDX_TUNNEL SCSI_REQUEST is initialized as follows:</p> <ul style="list-style-type: none"> • The Length field SHOULD<5> be set to the size, in bytes, of the SVHDX_TUNNEL SCSI_REQUEST structure excluding the DataBuffer field. • The Reserved1, Reserved2, and Reserved3 fields MUST be set to zero. • The CDBLength field MUST be set to the application-provided SCSI CDB length value. • The SenseInfoExLength field MUST be set to zero. • The SrbFlags field MUST be set to the application-provided SrbFlags. • If SrbFlags includes SRB_FLAGS_DATA_OUT, the Disposition field MUST be set to 0x00. If SrbFlags includes SRB_FLAGS_DATA_IN, the Disposition field SHOULD<6> be set to 0x01. If SrbFlags includes neither SRB_FLAGS_DATA_OUT nor SRB_FLAGS_DATA_IN, the Disposition field MUST be set to 0x02. <p><5> Section 3.1.4.9: Windows Server 2012 R2 set the value of the Length field to 36.</p> <p>In Section 3.2.5.5.3, Receiving a Status Request for a Prior Operation, the following was changed from:</p> <p>The SVHDX_TUNNEL_SRB_STATUS_RESPONSE packet MUST be initialized as follows:</p> <ul style="list-style-type: none"> • The StatusKey field MUST be set to the value received in the request. • The SenseInfoAutoGenerated field MUST be set to the value received from the virtual SCSI disk. • The SrbStatus field MUST be set to SenseError.SrbStatus. • The ScsiStatus field MUST be set to SenseError.ScsiStatus. • The SenseInfoExLength field MUST be set to the length of the SenseError.SenseData, in bytes. <p>Changed to:</p>

Errata Published*	Description
	<p>The SVHDX_TUNNEL_SRB_STATUS_RESPONSE packet is initialized as follows:</p> <ul style="list-style-type: none"> • The StatusKey field MUST be set to the value received in the request. • The SenseInfoAutoGenerated field MUST be set to the value received from the virtual SCSI disk. • The SrbStatus field MUST be set to SenseError.SrbStatus. • The ScsiStatus field MUST be set to SenseError.ScsiStatus. • The SenseInfoExLength field SHOULD<17> be set to the length of the SenseError.SenseData, in bytes. <p><17> Section 3.2.5.5.3: Windows Server 2012 R2 set the SenseInfoExLength field to 20 bytes.</p> <p>In Section 3.2.5.5.5, Receiving a SCSI Command Request, the following was changed from:</p> <p>The SVHDX_TUNNEL_SCSCI_RESPONSE MUST be initialized as follows:</p> <ul style="list-style-type: none"> • The SenseInfoAutoGenerated field MUST be set to the value received from the virtual SCSI disk. • The SrbStatus field MUST be set to one of the values specified in section 2.2.5. • The SCISISStatus field MUST be set to value received from the virtual SCSI disk. • The Disposition field MUST be set to the value received in the request. • SrbFlags MUST be set to the value received in the request. • The CDBLength field MUST be set to the value received in the request. • The Length field is set to the size, in bytes, of the SVHDX_TUNNEL_SCSCI_RESPONSE structure that is constructed following the syntax specified in section 2.2.4.8. • The SenseInfoExLength field is set to the SenseInfoExLength received in the request. • The SenseDataEx field is set to the sense information received from the virtual SCSI disk<19>, if any. • The DataTransferLength is set to the length of the additional data returned by the virtual SCSI disk, if any. • The DataBuffer is set to the additional data returned by the virtual SCSI disk, if any. <p>The response MUST be sent to the client.</p> <p>Changed to:</p> <p>The SVHDX_TUNNEL_SCSCI_RESPONSE is initialized as follows:</p> <ul style="list-style-type: none"> • The SenseInfoAutoGenerated field MUST be set to the value received from the virtual SCSI disk. • The SrbStatus field MUST be set to one of the values specified in section 2.2.5. • The SCISISStatus field MUST be set to value received from the virtual SCSI disk. • The Disposition field MUST be set to the value received in the request. • The SrbFlags field MUST be set to the value received in the request. • The CDBLength field MUST be set to the value received in the request. • The Length field SHOULD<21> be set to the size, in bytes, of the SVHDX_TUNNEL_SCSCI_RESPONSE structure that is constructed following the syntax specified in section 2.2.4.8. • The SenseInfoExLength field SHOULD<22> be set to the SenseInfoExLength received in the request. • If SenseInfoAutoGenerated is FALSE, the size of SenseDataEx buffer field is set to 20 bytes and set to any value. Otherwise, the SenseDataEx field SHOULD<23> be set to the sense information received from the virtual SCSI disk.

Errata Published*	Description
	<ul style="list-style-type: none"> • The DataTransferLength field MUST be set to the length of the additional data returned by the virtual SCSI disk, if any. • The DataBuffer MUST be set to the additional data returned by the virtual SCSI disk, if any. <p>The response MUST be sent to the client.</p> <p><21> Section 3.2.5.5.5: Windows-based servers return Server 2012 R2 sets the value of the Length field to 36.</p> <p><22> Section 3.2.5.5.5: Windows Server 2012 R2 sets the SenseInfoExLength field to the value of the SenseInfoExLength field received in the request.</p> <p><23> Section 3.2.5.5.5: Windows Server 2012 R2 returns 18 bytes of valid sense data, but sends a 20-byte buffer with the final 2 bytes set to any value.</p>
2017/06/26	<p>In Sections 2.2.4.12, SVHDX_OPEN_DEVICE_CONTEXT Structure, 2.2.4.31, SVHDX_OPEN_DEVICE_CONTEXT_RESPONSE Structure, 2.2.4.32, SVHDX_OPEN_DEVICE_CONTEXT_V2 Structure, and 2.2.4.33, SVHDX_OPEN_DEVICE_CONTEXT_V2_RESPONSE Structure, the description of InitiatorId was changed from:</p> <p>HasInitiatorId (1 byte): A Boolean value, where zero represents FALSE and nonzero represents TRUE.</p> <p>Changed to:</p> <p>HasInitiatorId (1 byte): A Boolean value that, if set to TRUE (0x01), indicates that the message has a valid InitiatorId.</p> <p>In Section 3.2.1.1, Global, the description of OpenTable was changed from:</p> <p>OpenTable: A table of opened shared virtual disk files, as specified in section 3.2.1.2, indexed by InitiatorId.</p> <p>Changed to:</p> <p>OpenTable: A table of Opens of shared virtual disk files, as specified in section 3.2.1.2.</p> <p>In Section 3.2.1.2, Per Open, the description of Open.LocalOpen was changed from:</p> <p>Open.LocalOpen: An Open of a shared virtual disk file in the local resource that is used to perform the local operations, such as reading or writing, to the underlying object.</p> <p>Changed to:</p> <p>Open.LocalOpen: An Open of a shared virtual disk file in the local resource that is used to perform the local operations, such as reading or writing, on the underlying object.</p>

*Date format: YYYY/MM/DD

[MS-SAMR]: Security Account Manager (SAM) Remote Protocol (Client-to-Server)

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Errata below are for Protocol Document Version [V38.0 - 2017/06/01](#).

Errata Published*	Description
2017/07/12	<p>In Section 3.1.1.8.11.3.1, WDIGEST_CREDENTIALS Construction, the UPPER/LOWER function calls were reversed in hashes 2/3, 9/10, 16/17, 19/20, 22/23, 25/26 and 28/29. In addition, the literal string that is passed in hashes 22/23, 25/26 and 28/29 was revised from upper/lower case "DIGEST"/"digest" to simply "Digest".</p> <p>Changed from:</p> <p>Hash1: MD5(sAMAccountName, NETBIOSDomainName, password) Hash2: MD5(UPPER(sAMAccountName), UPPER(NETBIOSDomainName), password) Hash3: MD5(LOWER(sAMAccountName), LOWER(NETBIOSDomainName), password) Hash4: MD5(sAMAccountName, UPPER(NETBIOSDomainName), password) Hash5: MD5(sAMAccountName, LOWER(NETBIOSDomainName), password) Hash6: MD5(UPPER(sAMAccountName), LOWER(NETBIOSDomainName), password) Hash7: MD5(LOWER(sAMAccountName), UPPER(NETBIOSDomainName), password) Hash8: MD5(sAMAccountName, DNSDomainName, password) Hash9: MD5(UPPER(sAMAccountName), UPPER(DNSDomainName), password) Hash10: MD5(LOWER(sAMAccountName), LOWER(DNSDomainName), password) Hash11: MD5(sAMAccountName, UPPER(DNSDomainName), password) Hash12: MD5(sAMAccountName, LOWER(DNSDomainName), password) Hash13: MD5(UPPER(sAMAccountName), LOWER(DNSDomainName), password) Hash14: MD5(LOWER(sAMAccountName), UPPER(DNSDomainName), password) Hash15: MD5(userPrincipalName, password) Hash16: MD5(UPPER(userPrincipalName), password) Hash17: MD5(LOWER(userPrincipalName), password) Hash18: MD5(NETBIOSDomainName\sAMAccountName, password) Hash19: MD5(UPPER(NETBIOSDomainName\sAMAccountName), password) Hash20: MD5(LOWER(NETBIOSDomainName\sAMAccountName), password) Hash21: MD5(sAMAccountName, "Digest", password)</p>

Errata Published*	Description
	<p>Hash22: MD5(UPPER(sAMAccountName), "DIGEST", password) Hash23: MD5(LOWER(sAMAccountName), "digest", password) Hash24: MD5(userPrincipalName, "Digest", password) Hash25: MD5(UPPER(userPrincipalName), "DIGEST", password) Hash26: MD5(LOWER(userPrincipalName), "digest", password) Hash27: MD5(NETBIOSDomainName\sAMAccountName, "Digest", password) Hash28: MD5(UPPER(NETBIOSDomainName\sAMAccountName), "DIGEST", password) Hash29: MD5(LOWER(NETBIOSDomainName\sAMAccountName), "digest", password)</p> <p>Changed to:</p> <p>Hash1: MD5(sAMAccountName, NETBIOSDomainName, password) Hash2: MD5(LOWER(sAMAccountName), LOWER(NETBIOSDomainName), password) Hash3: MD5(UPPER(sAMAccountName), UPPER(NETBIOSDomainName), password) Hash4: MD5(sAMAccountName, UPPER(NETBIOSDomainName), password) Hash5: MD5(sAMAccountName, LOWER(NETBIOSDomainName), password) Hash6: MD5(UPPER(sAMAccountName), LOWER(NETBIOSDomainName), password) Hash7: MD5(LOWER(sAMAccountName), UPPER(NETBIOSDomainName), password) Hash8: MD5(sAMAccountName, DNSDomainName, password) Hash9: MD5(LOWER(sAMAccountName), LOWER(DNSDomainName), password) Hash10: MD5(UPPER(sAMAccountName), UPPER(DNSDomainName), password) Hash11: MD5(sAMAccountName, UPPER(DNSDomainName), password) Hash12: MD5(sAMAccountName, LOWER(DNSDomainName), password) Hash13: MD5(UPPER(sAMAccountName), LOWER(DNSDomainName), password) Hash14: MD5(LOWER(sAMAccountName), UPPER(DNSDomainName), password) Hash15: MD5(userPrincipalName, password) Hash16: MD5(LOWER(userPrincipalName), password) Hash17: MD5(UPPER(userPrincipalName), password) Hash18: MD5(NETBIOSDomainName\sAMAccountName, password) Hash19: MD5(LOWER(NETBIOSDomainName\sAMAccountName), password) Hash20: MD5(UPPER(NETBIOSDomainName\sAMAccountName), password) Hash21: MD5(sAMAccountName, "Digest", password) Hash22: MD5(LOWER(sAMAccountName), "Digest", password) Hash23: MD5(UPPER(sAMAccountName), "Digest", password) Hash24: MD5(userPrincipalName, "Digest", password) Hash25: MD5(LOWER(userPrincipalName), "Digest", password) Hash26: MD5(UPPER(userPrincipalName), "Digest", password) Hash27: MD5(NETBIOSDomainName\sAMAccountName, "Digest", password) Hash28: MD5(LOWER(NETBIOSDomainName\sAMAccountName), "Digest", password) Hash29: MD5(UPPER(NETBIOSDomainName\sAMAccountName), "Digest", password)</p>
2017/06/26	<p>In Section 7 Appendix B, information has been added about which products implement which protocol roles.</p> <p>Changed from:</p> <p>Windows Client</p> <ul style="list-style-type: none"> • Windows NT 3.1 operating system

Errata Published*	Description																														
	<ul style="list-style-type: none">• Windows NT 3.5 operating system• Windows NT 3.51 operating system• Windows NT 4.0 operating system• Windows 2000 Professional operating system• Windows XP operating system• Windows Vista operating system• Windows 7 operating system• Windows 8 operating system• Windows 8.1 operating system• Windows 10 operating system <p>Windows Server</p> <ul style="list-style-type: none">• Windows NT 3.1• Windows NT 3.5• Windows NT 3.51• Windows NT 4.0• Windows 2000 Server operating system• Windows Server 2003 operating system• Windows Server 2008 operating system• Windows Server 2008 R2 operating system• Windows Server 2012 operating system• Windows Server 2012 R2 operating system• Windows Server 2016 operating system <p>Changed to:</p> <table><tr><th>Windows Client</th><th>Client role</th><th>Server role</th></tr><tr><td>Windows NT 3.1 operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows NT 3.5 operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows NT 3.51 operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows NT 4.0 operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows 2000 Professional operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows XP operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows Vista operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows 7 operating system</td><td>Yes</td><td>Yes</td></tr><tr><td>Windows 8 operating</td><td>Yes</td><td>Yes</td></tr></table>	Windows Client	Client role	Server role	Windows NT 3.1 operating system	Yes	Yes	Windows NT 3.5 operating system	Yes	Yes	Windows NT 3.51 operating system	Yes	Yes	Windows NT 4.0 operating system	Yes	Yes	Windows 2000 Professional operating system	Yes	Yes	Windows XP operating system	Yes	Yes	Windows Vista operating system	Yes	Yes	Windows 7 operating system	Yes	Yes	Windows 8 operating	Yes	Yes
Windows Client	Client role	Server role																													
Windows NT 3.1 operating system	Yes	Yes																													
Windows NT 3.5 operating system	Yes	Yes																													
Windows NT 3.51 operating system	Yes	Yes																													
Windows NT 4.0 operating system	Yes	Yes																													
Windows 2000 Professional operating system	Yes	Yes																													
Windows XP operating system	Yes	Yes																													
Windows Vista operating system	Yes	Yes																													
Windows 7 operating system	Yes	Yes																													
Windows 8 operating	Yes	Yes																													

Errata Published*	Description		
	system		
	Windows 8.1 operating system	Yes	Yes
	Windows 10 operating system	Yes	Yes
	Windows Server	Client role	Server role
	Windows NT 3.1	Yes	Yes
	Windows NT 3.5	Yes	Yes
	Windows NT 3.51	Yes	Yes
	Windows NT 4.0	Yes	Yes
	Windows 2000 Server operating system	Yes	Yes
	Windows Server 2003 operating system	Yes	Yes
	Windows Server 2008 operating system	Yes	Yes
	Windows Server 2008 R2 operating system	Yes	Yes
	Windows Server 2012 operating system	Yes	Yes
	Windows Server 2012 R2 operating system	Yes	Yes
	Windows Server 2016 operating system	Yes	Yes

*Date format: YYYY/MM/DD

[MS-SAMS]: Security Account Manager (SAM) Remote Protocol (Server-to-Server)

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[MS-SFMWA]: Server and File Management Web APIs

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[MS-SMB]: Server Message Block (SMB) Protocol

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Errata below are for Protocol Document Version [V46.0 - 2017/06/01](#).

Errata Published*	Description
2017/08/07	<p>In Section 3.3.5.21.1, Handling SMB2_0_INFO_FILE, changed from:</p> <p>If FileInfoClass is FileRenameInformation and the size of the buffer is less than the size of FILE_RENAME_INFORMATION_TYPE_2 as specified in [MS-FSCC] section 2.4.34.2, the server MUST fail the request with STATUS_INFO_LENGTH_MISMATCH.</p> <p>Changed to:</p> <p>If FileInfoClass is FileRenameInformation and, the server does the following:</p> <p>--If the size of the buffer is less than the size of FILE_RENAME_INFORMATION_TYPE_2 as specified in [MS-FSCC] section 2.4.34.2, the server MUST fail the request with STATUS_INFO_LENGTH_MISMATCH.</p> <p>--If the file name pointed to by the FileName parameter of the FILE_RENAME_INFORMATION_TYPE_2, as specified in [MS-FSCC] section 2.4.34.2, contains a separator character, then the server MUST fail the request with STATUS_NOT_SUPPORTED.</p> <p>--If the RootDirectory field of FILE_RENAME_INFORMATION_TYPE_2 as specified in [MS-FSCC] section 2.4.34.2 is zero, the FileName field MUST specify a full pathname as specified in [MS-FSCC] section 2.1.5 to be assigned to the file. If the RootDirectory field is not zero, the server MUST return STATUS_INVALID_PARAMETER.</p>

*Date format: YYYY/MM/DD

[MS-SMB2]: Server Message Block (SMB) Protocol Versions 2 and 3

This topic lists the Errata found in [MS-SMB2] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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Errata below are for Protocol Document Version [V52.0 - 2017/06/01](#).

Errata Published*	Description
2017/06/15	<p>In Section 2.2.1.1, SMB2 Packet Header – ASYNC, and Section 2.2.1.2, SMB2 Packet Header – SYNC, the Signature field was changed from:</p> <p>Signature (16 bytes): The 16-byte signature of the message, if SMB2_FLAGS_SIGNED is set in the Flags field of the SMB2 header. If the message is not signed, this field MUST be 0.</p> <p>Changed to:</p> <p>Signature (16 bytes): The 16-byte signature of the message, if SMB2_FLAGS_SIGNED is set in the Flags field of the SMB2 header and the message is not encrypted. If the message is not signed, this field MUST be 0.</p> <p>In Section 3.2.4.1.1, Signing the Message, a new sentence was added to the last paragraph:</p> <p>Changed from:</p> <p>If the client implements the SMB 3.x dialect family, and if the request is for session set up, the client MUST use Session.SigningKey, and for all other requests the client MUST provide Channel.SigningKey by looking up the Channel in Session.ChannelList, where the connection matches the Channel.Connection. Otherwise, the client MUST use Session.SessionKey for signing the request. The client provides the key for signing, the length of the request, and the request itself, and calculates the signature as specified in section 3.1.4.1. If the client signs the request, it MUST set the SMB2_FLAGS_SIGNED bit in the Flags field of the SMB2 header.</p> <p>Changed to:</p> <p>If the client implements the SMB 3.x dialect family, and if the request is for session set up, the client MUST use Session.SigningKey, and for all other requests the client MUST provide Channel.SigningKey by looking up the Channel in Session.ChannelList, where the connection matches the Channel.Connection. Otherwise, the client MUST use Session.SessionKey for signing the request. The client provides the key for signing, the length of the request, and the request itself, and calculates the signature as specified in section 3.1.4.1. If the client signs the request, it MUST set the SMB2_FLAGS_SIGNED bit in the Flags field of the SMB2 header. If the client encrypts</p>

Errata Published*	Description
	<p>the message, as specified in section 3.1.4.3, then the client MUST set the Signature field of the SMB2 header to zero.</p> <p>In Section 3.2.5.1.3, Verifying the Signature, the third paragraph was changed from: If the SMB2 header of the response has SMB2_FLAGS_SIGNED set in the Flags field, the client MUST verify the signature as follows: Changed to: If the SMB2 header of the response has SMB2_FLAGS_SIGNED set in the Flags field and the message is not encrypted, the client MUST verify the signature as follows:</p> <p>In Section 3.3.4.1.1, Signing the Message, a new sentence was added to the last paragraph: Changed from: The server provides the key for signing, the length of the response, and the response itself, and calculates the signature as specified in section 3.1.4.1. If the server signs the message, it MUST set the SMB2_FLAGS_SIGNED bit in the Flags field of the SMB2 header. Changed to: The server provides the key for signing, the length of the response, and the response itself, and calculates the signature as specified in section 3.1.4.1. If the server signs the message, it MUST set the SMB2_FLAGS_SIGNED bit in the Flags field of the SMB2 header. If the server encrypts the message, as specified in section 3.1.4.3, the server MUST set the Signature field of the SMB2 header to zero.</p> <p>In Section 3.3.5.2.4, Verifying the Signature, the first sentence of the third paragraph was changed from: If the SMB2 header of the request has SMB2_FLAGS_SIGNED set in the Flags field, the server MUST verify the signature. Changed to: If the SMB2 header of the request has SMB2_FLAGS_SIGNED set in the Flags field and the message is not encrypted, the server MUST verify the signature.</p>
2017/06/15	<p>In 8 subsections in Section 2, Message Syntax, listed below, processing information was moved to more appropriate subsections in Section 3, Protocol Details.</p> <ul style="list-style-type: none"> • Section 2.2.10, SMB2 TREE_CONNECT Response • Section 2.2.13.2.1, SMB2_CREATE_EA_BUFFER • Section 2.2.13.2.2, SMB2_CREATE_SD_BUFFER • Section 2.2.14.2.3, SMB2_CREATE_DURABLE_HANDLE_RESPONSE • Section 2.2.14.2.5, SMB2_CREATE_QUERY_MAXIMAL_ACCESS_RESPONSE • Section 2.2.14.2.12, SMB2_CREATE_DURABLE_HANDLE_RESPONSE_V2 • Section 2.2.24.1, Oplock Break Acknowledgment • Section 2.2.36, SMB2 CHANGE_NOTIFY Response <p>For details on the changes, see the PDF Diff file at https://winprotocoldoc.blob.core.windows.net/productionwindowsarchives/MS-SMB2/[MS-SMB2]-170615-diff.pdf.</p>

*Date format: YYYY/MM/DD

[MS-SMBD]: SMB2 Remote Direct Memory Access (RDMA) Transport Protocol

This topic lists the Errata found in [MS-SMBD] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



Errata are subject to the same terms as the Open Specifications documentation referenced.

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[MS-SPNG]: Simple and Protected GSS-API Negotiation Mechanism (SPNEGO) Extension

This topic lists the Errata found in [MS-SPNG] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-SQOS]: Storage Quality of Service Protocol

This topic lists the Errata found in [MS-SQOS] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-SSTP]: Secure Socket Tunneling Protocol (SSTP)

This topic lists the Errata found in [MS-SSTP] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-SWN]: Service Witness Protocol

This topic lists the Errata found in [MS-SWN] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-TCC]: Tethering Control Channel Protocol

This topic lists the Errata found in [MS-TCC] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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[MS-TDS]: Tabular Data Stream Protocol

This topic lists the Errata found in [MS-TDS] since it was last published. Since this topic is updated frequently, we recommend that you subscribe to these RSS or Atom feeds to receive update notifications.



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Errata below are for Protocol Document Version [V20.0 - 2017/06/01](#).

Errata Published*	Description
2017/07/24	<p>In Section 1.1, Glossary, the definition of Session Multiplex Protocol was changed from:</p> <p>Session Multiplex Protocol (SMUX): An entity on a network that implements the Secure Socket Tunneling Protocol (SSTP) and that listens for SSTP connections over TCP port 443.</p> <p>Changed to:</p> <p>Session Multiplex Protocol (SMP): A multiplexing protocol that enables multiple logical client connections to share a single transport connection to a server. Used by Multiple Active Result Sets (MARS). For more information, see [MC-SMP].</p> <p>In Section 1.4, Relationship to Other Protocols, in Figure 2: Protocol relationship, the abbreviation SMUX was changed to SMP.</p> <p>Changed from:</p>

Errata Published*	Description
	<div data-bbox="492 199 941 384" style="border: 1px solid black; padding: 10px; text-align: center; margin-bottom: 10px;">TDS</div> <div data-bbox="492 420 941 604" style="border: 1px dashed black; padding: 10px; text-align: center; margin-bottom: 10px;">SMUX (optional)</div> <div data-bbox="492 640 941 825" style="border: 1px dashed black; padding: 10px; text-align: center; margin-bottom: 10px;">TLS/SSL (optional)</div> <div data-bbox="492 861 941 1050" style="border: 1px solid black; padding: 10px; text-align: center;">Network Transport (e.g. TCP/IP)</div> <p data-bbox="492 1092 625 1123">Changed to:</p>

Errata Published*	Description
	<div data-bbox="513 212 948 388" style="border: 1px solid black; text-align: center; padding: 10px; margin-bottom: 10px;">TDS</div> <div data-bbox="513 426 948 602" style="border: 1px dashed black; text-align: center; padding: 10px; margin-bottom: 10px;">SMP (optional)</div> <div data-bbox="513 640 948 816" style="border: 1px dashed black; text-align: center; padding: 10px; margin-bottom: 10px;">TLS/SSL (optional)</div> <div data-bbox="513 854 948 1031" style="border: 1px solid black; text-align: center; padding: 10px;">Network Transport (e.g. TCP/IP)</div> <p>In Section 3.2.4, Higher-Layer Triggered Events, the abbreviation SMUX was changed to SMP in the second and third bullets of the fourth bullet list.</p> <p>Changed from:</p> <ul style="list-style-type: none"> • If MARS is enabled, the client MUST keep track whether there is an outstanding active request. If this is the case, then the client MUST initiate a new SMUX session, or else an existing SMUX session MAY be used. • Send either SQL Command, SQL Command with Binary Data, Transaction Manager Request, or a RPC message to the server. The message and its content MUST match the requested message from the Client Request. If MARS is enabled, the TDS message MUST be passed through to the SMUX layer. <p>Changed to:</p> <ul style="list-style-type: none"> • If MARS is enabled, the client MUST keep track whether there is an outstanding active request. If this is the case, then the client MUST initiate a new SMP session, or else an existing SMP session MAY be used. • Send either SQL Command, SQL Command with Binary Data, Transaction Manager Request, or a RPC message to the server. The message and its content MUST match the requested message from the Client Request. If MARS is enabled, the TDS message MUST be passed through to the SMP layer. <p>The abbreviation was also changed in the second bullet of the last bullet list.</p>

Errata Published*	Description
	<p>Changed from:</p> <ul style="list-style-type: none"> • Send an Attention message to the server. This indicates to the server that the client intends to abort the currently executing request. If MARS is enabled, the Attention message MUST be passed through to the SMUX layer. <p>Changed to:</p> <ul style="list-style-type: none"> • Send an Attention message to the server. This indicates to the server that the client intends to abort the currently executing request. If MARS is enabled, the Attention message MUST be passed through to the SMP layer. <p>In Section 3.2.5.6, Logged In State, in the third sentence, the abbreviation SMUX was changed to SMP.</p> <p>Changed from:</p> <p>If MARS is enabled, the TDS client MUST send the appropriate request to the SMUX layer.</p> <p>Changed to:</p> <p>If MARS is enabled, the TDS client MUST send the appropriate request to the SMP layer.</p> <p>In Section 3.3.5.7, Client Request Execution State, in the fifth bullet of the bullet list, the abbreviation SMUX was changed to SMP.</p> <p>Changed from:</p> <ul style="list-style-type: none"> • If MARS is enabled, all TDS server responses to client request messages MUST be passed through to the SMUX layer. <p>Changed to:</p> <ul style="list-style-type: none"> • If MARS is enabled, all TDS server responses to client request messages MUST be passed through to the SMP layer.
2017/07/24	<p>In Section 2.2.3.1.1, Type, in the first table, the heading of the third column was changed from:</p> <p>Buffer data?</p> <p>Changed to:</p> <p>Packet contains data?</p>
2017/07/24	<p>In Section 1.3, Overview, the word “buffer” was changed to “packet” in the penultimate paragraph.</p> <p>Changed from:</p>

Errata Published*	Description
	<p>For more information about the correlation between data stream and TDS buffer, see section 2.2.4.<1></p> <p>Changed to:</p> <p>For more information about the correlation between data stream and TDS packet, see section 2.2.4.<1></p> <p>In Section 2.2.1.7, Attention, the word “buffer” was changed to “packet” in the last sentence.</p> <p>Changed from:</p> <p>For more details about the buffer header status code, see section 2.2.3.1.2.</p> <p>Changed to:</p> <p>For more details about the packet header status code, see section 2.2.3.1.2.</p> <p>In Section 2.2.3.1, Packet Header, the word “buffer” was changed to “packet” in the last sentence of the first paragraph.</p> <p>Changed from:</p> <p>Most importantly, the buffer header states the Type and Length of the entire packet.</p> <p>Changed to:</p> <p>Most importantly, the packet header states the Type and Length of the entire packet.</p> <p>In Section 2.2.3.1.1, Type, in the second table, the heading of the third column was changed from:</p> <p>Buffer header type</p> <p>Changed to:</p> <p>Packet header type</p> <p>The title of Section 2.2.5.8 was changed from:</p> <p>Data Buffer Stream Tokens</p> <p>Changed to:</p> <p>Data Packet Stream Tokens</p> <p>In Section 2.2.6.5, PRELOGIN, under the subheading “Encryption”, the word “buffer” was changed to “packet” in the penultimate paragraph and example.</p>

Errata Published*	Description
	<p>Changed from:</p> <p>If client and server negotiate to enable encryption, an SSL handshake takes place immediately after the initial PRELOGIN/table response message exchange. The SSL payloads MUST be transported as data in TDS buffers with the message type set to 0x12 in the packet header. For example:</p> <pre> 0x 12 01 00 4e 00 00 00 00// Buffer Header 0x 16 03 01 00 &// SSL payload </pre> <p>Changed to:</p> <p>If client and server negotiate to enable encryption, an SSL handshake takes place immediately after the initial PRELOGIN/table response message exchange. The SSL payloads MUST be transported as data in TDS packets with the message type set to 0x12 in the packet header. For example:</p> <pre> 0x 12 01 00 4e 00 00 00 00// Packet Header 0x 16 03 01 00 &// SSL payload </pre> <p>In Section 4.14, TVP Insert Statement, "BufferData" was changed to "PacketData" in the following lines of XML.</p> <p>Changed from:</p> <pre> <tds version="katmai"> <BufferData> . . . </BufferData> </tds> </pre> <p>Changed to:</p> <pre> <tds version="katmai"> <PacketData> . . . </PacketData> </tds> </pre> <p>In Section 4.15, SparseColumn Select Statement, "BufferHeader" was changed to "PacketHeader" and "BufferData" was changed to "PacketData" in the following lines of XML.</p> <p>Changed from:</p> <pre> <tds version="katmai"> <BufferHeader> . . . </pre>

Errata Published*	Description
	<pre> </BufferHeader> <BufferData> . . . </BufferData> </tds> </pre> <p>Changed to:</p> <pre> <tds version="katmai"> <PacketHeader> . . . </PacketHeader> <PacketData> . . . </PacketData> </tds> </pre> <p>In Section 4.16, FeatureExt with SessionRecovery Feature Data, "BufferHeader" was changed to "PacketHeader" and "BufferData" was changed to "PacketData" in the following lines of XML.</p> <p>Changed from:</p> <pre> <tds version="latest"> <BufferHeader> . . . </BufferHeader> <BufferData> . . . </BufferData> </tds> </pre> <p>Changed to:</p> <pre> <tds version="latest"> <PacketHeader> . . . </PacketHeader> <PacketData> . . . </PacketData> </tds> </pre> <p>In Section 4.17, FeatureExtAck with SessionRecovery Feature Data, "BufferHeader" was changed to "PacketHeader" and "BufferData" was changed to "PacketData" in the following lines of XML.</p> <p>Changed from:</p> <pre> <tds version="latest"> <BufferHeader> </pre>

Errata Published*	Description
	<pre> . . . </BufferHeader> <BufferData> . . . </BufferData> </tds> </pre> <p>Changed to:</p> <pre> <tds version="latest"> <PacketHeader> . . . </PacketHeader> <PacketData> . . . </PacketData> </tds> </pre> <p>In Section 4.18, Table Response with SessionState Token Data, "BufferHeader" was changed to "PacketHeader" and "BufferData" was changed to "PacketData" in the following lines of XML.</p> <p>Changed from:</p> <pre> <tds version="latest"> <BufferHeader> . . . </BufferHeader> <BufferData> . . . </BufferData> </tds> </pre> <p>Changed to:</p> <pre> <tds version="latest"> <PacketHeader> . . . </PacketHeader> <PacketData> . . . </PacketData> </tds> </pre>
2017/07/24	<p>In Section 6, Appendix A: Product Behavior, in note 1, support by versions of SQL Server and the .NET Framework was clarified by separating the one table into two tables.</p> <p>Changed from:</p> <p><1> Section 1.3: The following table describes the latest TDS version that is supported by a particular version of Microsoft SQL Server or the .NET Framework. To determine the earliest TDS version that is supported by a particular SQL Server or .NET</p>

Errata Published*	Description																																												
	<p>Framework version, refer to the product documentation.</p> <table><tr><th>TDS version</th><th>SQL Server version</th><th>.NET Framework version</th></tr><tr><td>7.0</td><td>SQL Server 7.0</td><td>.NET Framework 1.1</td></tr><tr><td>7.1</td><td>SQL Server 2000</td><td>.NET Framework 1.1</td></tr><tr><td>7.1 Revision 1</td><td>SQL Server 2000 SP1</td><td>.NET Framework 1.1</td></tr><tr><td>7.2</td><td>SQL Server 2005</td><td>.NET Framework 2.0</td></tr><tr><td>7.3.A</td><td>SQL Server 2008</td><td>.NET Framework 4.0</td></tr><tr><td>7.3.B</td><td>SQL Server 2008 R2</td><td>.NET Framework 4.0</td></tr><tr><td>7.4</td><td>SQL Server 2012 SQL Server 2014 SQL Server 2016 SQL Server 2017 RC1</td><td>.NET Framework 4.5 .NET Framework 4.6 .NET Framework 4.7</td></tr></table> <p>Changed to:</p> <p><1> Section 1.3: The following table describes the latest TDS version that is supported by a particular version of Microsoft SQL Server. To determine the earliest TDS version that is supported by a particular SQL Server version, refer to the product documentation.</p> <table><tr><th>TDS version</th><th>SQL Server version</th></tr><tr><td>7.0</td><td>SQL Server 7.0</td></tr><tr><td>7.1</td><td>SQL Server 2000</td></tr><tr><td>7.1 Revision 1</td><td>SQL Server 2000 SP1</td></tr><tr><td>7.2</td><td>SQL Server 2005</td></tr><tr><td>7.3.A</td><td>SQL Server 2008</td></tr><tr><td>7.3.B</td><td>SQL Server 2008 R2</td></tr><tr><td>7.4</td><td>SQL Server 2012 SQL Server 2014 SQL Server 2016 SQL Server 2017 RC1</td></tr></table> <p>The following table describes the TDS versions that are supported by particular versions of the .NET Framework.</p> <table><tr><th>TDS version</th><th>.NET Framework version</th></tr><tr><td>7.0</td><td>.NET Framework 1.1</td></tr></table>	TDS version	SQL Server version	.NET Framework version	7.0	SQL Server 7.0	.NET Framework 1.1	7.1	SQL Server 2000	.NET Framework 1.1	7.1 Revision 1	SQL Server 2000 SP1	.NET Framework 1.1	7.2	SQL Server 2005	.NET Framework 2.0	7.3.A	SQL Server 2008	.NET Framework 4.0	7.3.B	SQL Server 2008 R2	.NET Framework 4.0	7.4	SQL Server 2012 SQL Server 2014 SQL Server 2016 SQL Server 2017 RC1	.NET Framework 4.5 .NET Framework 4.6 .NET Framework 4.7	TDS version	SQL Server version	7.0	SQL Server 7.0	7.1	SQL Server 2000	7.1 Revision 1	SQL Server 2000 SP1	7.2	SQL Server 2005	7.3.A	SQL Server 2008	7.3.B	SQL Server 2008 R2	7.4	SQL Server 2012 SQL Server 2014 SQL Server 2016 SQL Server 2017 RC1	TDS version	.NET Framework version	7.0	.NET Framework 1.1
TDS version	SQL Server version	.NET Framework version																																											
7.0	SQL Server 7.0	.NET Framework 1.1																																											
7.1	SQL Server 2000	.NET Framework 1.1																																											
7.1 Revision 1	SQL Server 2000 SP1	.NET Framework 1.1																																											
7.2	SQL Server 2005	.NET Framework 2.0																																											
7.3.A	SQL Server 2008	.NET Framework 4.0																																											
7.3.B	SQL Server 2008 R2	.NET Framework 4.0																																											
7.4	SQL Server 2012 SQL Server 2014 SQL Server 2016 SQL Server 2017 RC1	.NET Framework 4.5 .NET Framework 4.6 .NET Framework 4.7																																											
TDS version	SQL Server version																																												
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7.3.A	SQL Server 2008																																												
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7.0	.NET Framework 1.1																																												

Errata Published*	Description								
	7.1	.NET Framework 1.1							
	7.1 Revision 1	.NET Framework 1.1							
	7.2	.NET Framework 2.0							
	7.3.A	.NET Framework 2.0 .NET Framework 4.0							
	7.3.B	.NET Framework 2.0 .NET Framework 4.0							
	7.4	.NET Framework 4.5 .NET Framework 4.6 .NET Framework 4.7							
2017/07/24	<p>In Section 6, Appendix A: Product Behavior, in note 24, SQL Server 2016 was added to the list of products. Changed from:</p> <p><24> Section 2.2.6.4: ANSI_DEFAULTS, CURSOR_CLOSE_ON_COMMIT, IMPLICIT_TRANSACTIONS, and ROWCOUNT are supported only by SQL Server 7.0, SQL Server 2000, SQL Server 2005, SQL Server 2008, SQL Server 2008 R2, SQL Server 2012, and SQL Server 2014.</p> <p>Changed to:</p> <p><24> Section 2.2.6.4: ANSI_DEFAULTS, CURSOR_CLOSE_ON_COMMIT, IMPLICIT_TRANSACTIONS, and ROWCOUNT are supported by SQL Server 7.0, SQL Server 2000, SQL Server 2005, SQL Server 2008, SQL Server 2008 R2, SQL Server 2012, SQL Server 2014, and SQL Server 2016.</p>								
2017/06/15	<p>In Section 2.2.6.4, LOGIN7, in the Stream Parameter Details table, in the description of the OffsetLength parameter, the eleventh bullet was changed from:</p> <ul style="list-style-type: none">ClientID: The unique client ID (created used NIC address). <p>Changed to:</p> <ul style="list-style-type: none">ClientID: The unique client ID (created by using the NIC address). ClientID is the MAC address of the physical network layer. It is used to identify the client that is connecting to the server. This value is mainly informational, and no processing steps on the server side use it.								
2017/06/15	<p>In Section 2.2.6.5, PRELOGIN, in the first table, the description of the VERSION token was revised, and a new product behavior note was added. The first row of the table was changed from:</p> <table><tr><th>PL_OPTION_TOKEN</th><th>Value</th><th>Description</th></tr><tr><td>VERSION</td><td>0x00</td><td><p>PL_OPTION_DATA = UL_VERSION US_SUBBUILD</p><p>UL_VERSION is represented in network byte order (big-endian).</p><p>The server SHOULD use the VERSION sent by the client to the server. The client SHOULD use the version returned from the server to determine which features are enabled or disabled. The client SHOULD do this only if it is known that this feature is supported by that version of the database.<28></p></td></tr></table>			PL_OPTION_TOKEN	Value	Description	VERSION	0x00	<p>PL_OPTION_DATA = UL_VERSION US_SUBBUILD</p> <p>UL_VERSION is represented in network byte order (big-endian).</p> <p>The server SHOULD use the VERSION sent by the client to the server. The client SHOULD use the version returned from the server to determine which features are enabled or disabled. The client SHOULD do this only if it is known that this feature is supported by that version of the database.<28></p>
PL_OPTION_TOKEN	Value	Description							
VERSION	0x00	<p>PL_OPTION_DATA = UL_VERSION US_SUBBUILD</p> <p>UL_VERSION is represented in network byte order (big-endian).</p> <p>The server SHOULD use the VERSION sent by the client to the server. The client SHOULD use the version returned from the server to determine which features are enabled or disabled. The client SHOULD do this only if it is known that this feature is supported by that version of the database.<28></p>							

Errata Published*	Description						
	<p><28> Section 2.2.6.5: The US_SUBBUILD returned by SQL Server is always 0. Changed to:</p> <table><tr><th>PL_OPTION_TOKEN</th><th>Value</th><th>Description</th></tr><tr><td>VERSION</td><td>0x00</td><td><p>PL_OPTION_DATA = UL_VERSION US_SUBBUILD</p><p>UL_VERSION = ((US_BUILD<<16) (VER_SQL_MINOR<<16) (VER_SQL_MAJOR<<16))</p><p>UL_VERSION is represented in network byte order (big-endian).</p><p>The server SHOULD use the VERSION sent by the client to the server. The client SHOULD use the version returned from the server to determine which features are enabled or disabled. The client SHOULD do this only if it is known that this feature is supported by that version of the database.<28></p><p>The VERSION token contains the product build version numbers. It SHOULD contain the major and minor version and build numbers of the data access provider.<28a></p></td></tr></table> <p><28> Section 2.2.6.5: The US_SUBBUILD returned by SQL Server is always 0.</p> <p><28a> Section 2.2.6.5: The major and minor version numbers of the data access provider's build are intended to match the major and minor versions of the most recent SQL Server build that a client is intended to use.</p>	PL_OPTION_TOKEN	Value	Description	VERSION	0x00	<p>PL_OPTION_DATA = UL_VERSION US_SUBBUILD</p> <p>UL_VERSION = ((US_BUILD<<16) (VER_SQL_MINOR<<16) (VER_SQL_MAJOR<<16))</p> <p>UL_VERSION is represented in network byte order (big-endian).</p> <p>The server SHOULD use the VERSION sent by the client to the server. The client SHOULD use the version returned from the server to determine which features are enabled or disabled. The client SHOULD do this only if it is known that this feature is supported by that version of the database.<28></p> <p>The VERSION token contains the product build version numbers. It SHOULD contain the major and minor version and build numbers of the data access provider.<28a></p>
PL_OPTION_TOKEN	Value	Description					
VERSION	0x00	<p>PL_OPTION_DATA = UL_VERSION US_SUBBUILD</p> <p>UL_VERSION = ((US_BUILD<<16) (VER_SQL_MINOR<<16) (VER_SQL_MAJOR<<16))</p> <p>UL_VERSION is represented in network byte order (big-endian).</p> <p>The server SHOULD use the VERSION sent by the client to the server. The client SHOULD use the version returned from the server to determine which features are enabled or disabled. The client SHOULD do this only if it is known that this feature is supported by that version of the database.<28></p> <p>The VERSION token contains the product build version numbers. It SHOULD contain the major and minor version and build numbers of the data access provider.<28a></p>					

*Date format: YYYY/MM/DD

[MS-TLSP]: Transport Layer Security (TLS) Profile

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[MS-TPMVSC]: Trusted Platform Module (TPM) Virtual Smart Card Management Protocol

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[MS-TSCH]: Task Scheduler Service Remoting Protocol

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[MS-TSGU]: Terminal Services Gateway Server Protocol

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[MS-TSTS]: Terminal Services Terminal Server Runtime Interface Protocol

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[MS-UAMG]: Update Agent Management Protocol

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[MS-UCODEREF]: Windows Protocols Unicode Reference

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[MS-VAPR]: Virtual Application Publication and Reporting (App-V) Protocol

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[MS-VHDX]: Virtual Hard Disk v2 (VHDX) File Format

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[MS-W32T]: W32Time Remote Protocol

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[MS-WCCE]: Windows Client Certificate Enrollment Protocol

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[MS-WCFESAN]: WCF-Based Encrypted Server Administration and Notification Protocol

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[MS-WDSMT]: Windows Deployment Services Multicast Transport Protocol

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[MS-WFDAA]: Wi-Fi Direct (WFD) Application to Application Protocol

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[MS-WFDPE]: Wi-Fi Display Protocol Extension

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[MS-WKST]: Workstation Service Remote Protocol

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[MS-WPO]: Windows Protocols Overview

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[MS-WMF]: Windows Metafile Format

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[MS-WSDS]: WS-Enumeration Directory Services Protocol Extensions

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[MS-WSMV]: Web Services Management Protocol Extensions for Windows Vista

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[MS-WSP]: Windows Search Protocol

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[MS-WSTEP]: WS-Trust X.509v3 Token Enrollment Extensions

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[MS-WSUSAR]: Windows Server Update Services: Administrative API Remoting Protocol

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[MS-WSUSOD]: Windows Server Update Services Protocols Overview

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[MS-WSUSSS]: Windows Update Services: Server-Server Protocol

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[MS-WUSP]: Windows Update Services: Client-Server Protocol

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[MS-XCEP]: X.509 Certificate Enrollment Policy Protocol

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