

What's New in Protocol Documentation

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What we'll be talking about today ...

- ▶ Who is the content team? What do we mean by new?
- ▶ New Features in Protocol Documentation
 - ▶ Preview Versions
 - ▶ Overview Documents and Network Captures
 - ▶ What's New and Changed
 - ▶ Landing Pages
 - ▶ Previous Document Versions and Diffs
 - ▶ License Programs and Support
 - ▶ Protocol Errata
 - ▶ SKU-to-Role Mapping Tables
 - ▶ Recently Added Protocol Documents
- ▶ Questions?

Who are we? And what do we mean by new?

- ▶ Who is the Windows Protocols Content Team?
- ▶ What do we mean by “What’s New in Protocol Documentation”?
 - ▶ Features added very recently (e.g., in the June 2017 refresh)
 - ▶ Features added in the last year or two
 - ▶ Features you haven’t discovered yet
 - ▶ Many of you are new yourselves!

New Features in Protocol Documentation

Preview Versions

- ▶ What are preview versions?
- ▶ Better Discoverability of Preview Versions
- ▶ Find links to Preview Documentation
 - ▶ ... on the main Windows Protocols page
 - ▶ ... at the Preview Versions page
 - ▶ ... on the Technical Documents page
 - ▶ ... on landing pages for individual protocols
- ▶ In other words, just about

The image shows a screenshot of the Microsoft Developer Network website. The top navigation bar includes 'Downloads', 'Programs', 'Community', and 'Documentation'. The left sidebar menu is expanded to 'Windows Protocols', with 'Preview Versions' highlighted in a red circle. The main content area displays the title '[MS-RDPEAR]: Remote Desktop Protocol Authentication Redirection Virtual Channel'. Below the title, there is a table for 'Published Version' and a table for 'Previous Versions'. A red box highlights the 'Preview Versions' section, which contains text explaining the purpose of preview versions and providing instructions for feedback. The bottom of the page includes a 'Support' section with contact information.

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

Performs authentication over a Remote Desktop connection. By establishing a virtual channel between the source and the target devices, it can relay authentication requests received by the target device to the source device.

This page and associated content may be updated frequently. We recommend you subscribe to the [RSS feed](#) to receive update notifications.

Published Version

Date	Protocol Revision	Revision Class	Downloads
6/1/2017	2.0	None	PDF DOCX Diff

[Click here to download a zip file of all PDF files for Windows Protocols.](#)

Previous Versions

Date	Protocol Revision	Revision Class	Downloads
3/16/2017	2.0	Major	PDF DOCX Diff
7/14/2016	1.0	New	PDF DOCX

Preview Versions

From time to time, Microsoft may publish a preview, or pre-release, version of an Open Specifications technical document for community review and feedback. To submit feedback for a preview version of a technical document, please follow any instructions specified for that document. If no instructions are indicated for the document, please provide feedback by using the [Open Specification Forums](#).

The preview period for a technical document varies. Additionally, not every technical document will be published for preview.

A preview version of this document may be available on the [Windows Protocols - Technical Documents](#) page. After the preview period, the most current version of the document is available on this page.

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Support. For questions and support, please contact dochelp@microsoft.com.

New Features in Protocol Overview Documents and Network C

- ▶ These provide an overview of inte (e.g., Active Directory, RDP, File Se
- ▶ Located under Windows Protocol
- ▶ For each overview document, we and several previous versions in P
- ▶ For the current version and some annotated network capture file in

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- ▶ MSDN Library
- ▶ Open Specifications
- ▶ Protocols
- ▶ Windows Protocols
- ▶ Overview Documents
- ▶ **[MS-FSMOD]: File Services Management Protocols Overview**
 - ▶ 1 Introduction
 - ▶ 2 Functional Architecture
 - ▶ 3 Examples
 - ▶ 4 Microsoft Implementations
 - ▶ 5 Change Tracking
 - ▶ 6 Index

[MS-FSMOD]: File Services Management Protocols Overview

Provides an overview of the functionality and relationship of the protocols used for configuring, managing, and monitoring file services in Windows over the network. The File Services Management protocols include the protocols specified in [MS-FSRM], [MS-WKST], [MS-SRVSI], [MS-RAP], [MS-DFSNM], [MS-DFSRI], [MS-FRS2], and [MS-FRS1]. These protocols support scenarios such as share management, DFS namespace management, SMB Server management, SMB network redirector management, file server resource management, and file replication.

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Published Version

Date	Protocol Revision	Revision Class	Downloads
6/1/2017	5.0	None	PDF DOCX Diff Capture

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Previous Versions

Date	Protocol Revision	Revision Class	Downloads
9/26/2016	5.0	None	PDF DOCX Diff
10/16/2015	5.0	None	PDF DOCX
6/30/2015	5.0	Major	PDF DOCX
5/15/2014	4.0	None	PDF DOCX
2/13/2014	4.0	None	PDF DOCX
11/14/2013	4.0	Major	PDF DOCX Capture
8/8/2013	3.0	Major	PDF DOCX
1/31/2013	2.0	None	
10/25/2012	2.0	None	
7/12/2012	2.0	None	
3/30/2012	2.0	Major	
12/16/2011	1.0	New	

New Features in Protocol D

What's New and Changed

- ▶ Located under Windows Protocols | W
- ▶ Includes new, updated, and deprecate
- ▶ Describes changes made to each protol document release
- ▶ Documents may be released with ...
 - ▶ Planned product releases (Windows Server, etc.)
 - ▶ Out-of-band protocol changes —D
 - ▶ Periodic documentation updates (to

The screenshot shows the Microsoft Developer Network website. The navigation bar includes 'Downloads', 'Programs', 'Community', and 'Documentation'. The left sidebar shows a tree view with 'Windows Protocols' expanded to 'What's New and Changed'. The main content area is titled 'What's New and Changed' and is divided into sections: 'New', 'Updated', and 'New Protocol Documentation'. The 'New' section states that these documents have not been previously released. The 'Updated' section states that these documents were previously released and have been revised. The 'New Protocol Documentation' section states that this protocol overview document has not been previously released. Below these sections are two tables. The first table, under 'New Protocol Documentation', has one row for '[MS-VSOD]: Virtual Storage Protocols Overview' with a release date of April 2017. The second table, under 'Updated Protocol Documentation', has two rows. The first row is for '[MC-DTCXA]: MSDTC Connection Manager: OleTx XA Protocol' with a release date of June 2017. The second row is for '[MS-ADA2]: Active Directory Schema Attributes M' with a release date of June 2017. The 'Updated Protocol Documentation' section also includes a paragraph about updates on June 1, 2017, and a link to download the errata.

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What's New and Changed

New

These protocol documents have not been previously released.

Updated

These protocol documents were previously released and have been revised to reflect new functionality and/or content updates.

New Protocol Documentation

This protocol overview document has not been previously released.

Specification	Description	Release Date
[MS-VSOD]: Virtual Storage Protocols Overview	Provides an overview of the functionality of and relationship among the virtual storage protocols, which provide a means for a client to access, read, and write to virtual storage (for example, a virtual disk file) on a remote server. Virtual Storage protocols also can provide this functionality to multiple clients by using a shared virtual SCSI disk.	April 2017

Updated Protocol Documentation

The following previously-released Windows protocol documents were updated on June 1, 2017 to address feedback on the content. These changes are not related to the March 2017 release of Windows 10. To view a PDF file of the errata describing the changes in these documents, see the following Errata Archive:

June 1, 2017 - Download

Specification	Description	Release Date
[MC-DTCXA]: MSDTC Connection Manager: OleTx XA Protocol	Specifies the MSDTC Connection Manager: OleTx Transaction Protocol, which describes the extensions that support XA [XOPEN-DTP]-compliant software components in an OleTx distributed transaction processing environment. This document has been updated as follows: <ul style="list-style-type: none">• Clarified Windows behavior for the maximum allowed values for the count of bytes in the lenDSN and lenXaDll fields in the XATMUSER_MTAG_RMOPEN message. The maximum allowed values are implementation-specific.	June 2017
[MS-ADA2]: Active Directory Schema Attributes M	Specifies the Active Directory Schema Attributes M, which contains a partial list of the objects that exist in the Active Directory schema (attributes beginning with M). This document has been updated as follows to accurately reflect a freshly-installed schema: <ul style="list-style-type: none">• Attribute msDS-AllowedDNSSuffixes has been more accurately identified to be relevant to domains rather than forests.• Attribute msDS-SourceAnchor has been marked as reserved for future use.• Attribute msDS-DrsFamID was added, but is identified as a defunct attribute.• The following attributes have had isMemberOfPartialAttributeSet added to their definitions: msDS-ComputerSID, msDS-CustomKeyInformation, msDS-DeviceDN, msDS-KeyApproximateLastLogonTimeStamp, msDS-KeyId, msDS-KeyMaterial, msDS-KeyPrincipal, msDS-KeyUsage.	June 2017

New Features in Protocol Landing Pages: Previous Versions

- ▶ Located under Windows Protocols
- ▶ A convenient top-level web page for protocol documents
- ▶ For each protocol document, view the current version and several previous versions

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- ▶ MSDN Library
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- ▶ Windows Protocols
- ▶ Technical Documents
 - ▶ [MS-ADTS]: Active Directory Technical Specification
 - ▶ 1 Introduction
 - ▶ 2 Messages
 - ▶ 3 Details
 - ▶ 4 Protocol Examples
 - ▶ 5 Security
 - ▶ 6 Additional Information
 - ▶ 7 Communication Details for Active Directory Connections
 - ▶ 8 Change Tracking
 - ▶ 9 Index

[MS-ADTS]: Active Directory Technical Specification

Specifies the core functionality of Active Directory. Active Directory extends and provides variations of the Lightweight Directory Access Protocol (LDAP).

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Published Version

Date	Protocol Revision	Revision Class	Downloads
6/1/2017	45.0	Major	PDF DOCX Diff

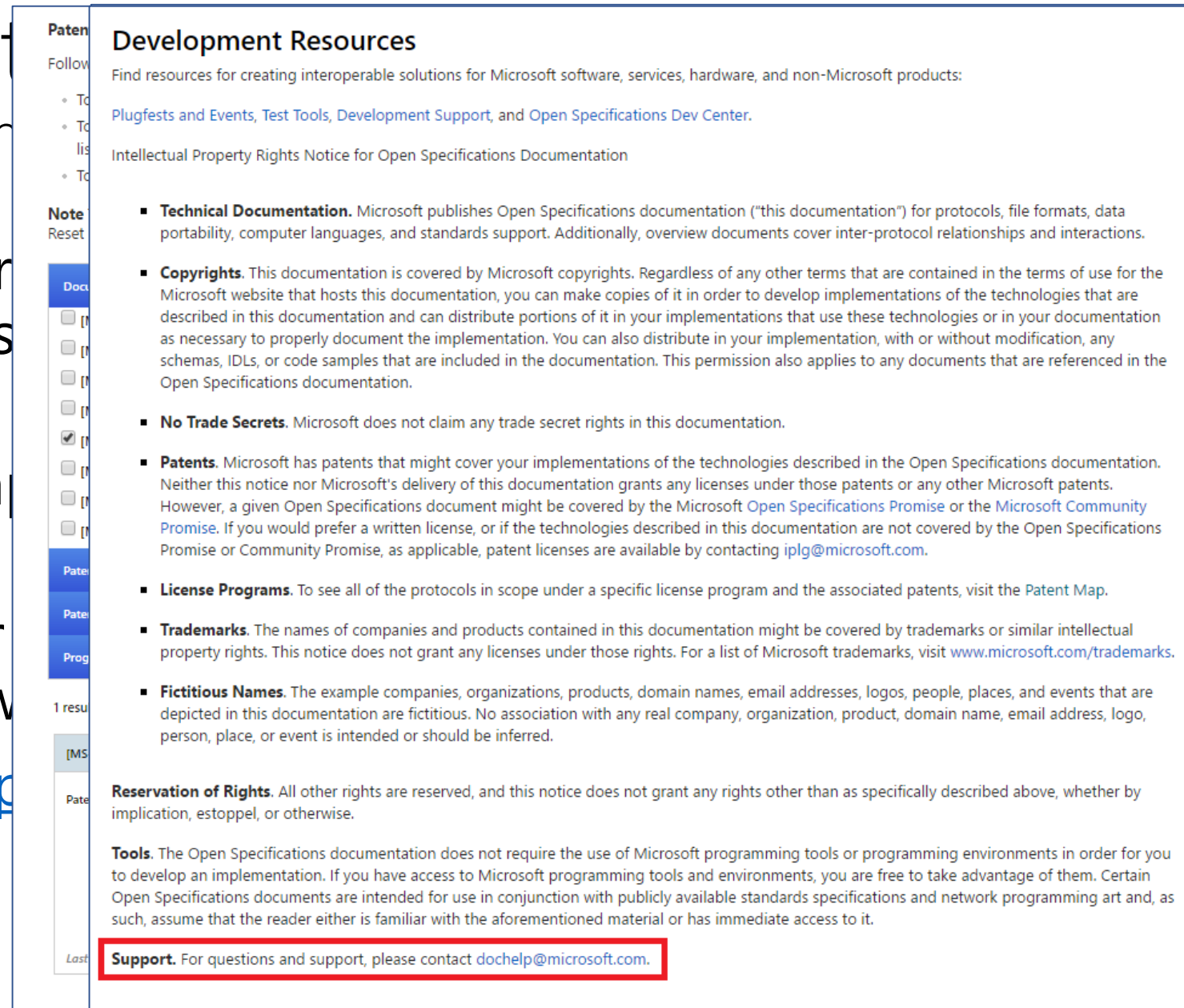
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Previous Versions

Date	Protocol Revision	Revision Class	Downloads
3/16/2017	44.0	Major	PDF DOCX Diff
7/14/2016	43.0	Major	PDF DOCX Diff
10/16/2015	42.0	Major	PDF DOCX
6/30/2015	41.0	Major	PDF DOCX
5/15/2014	40.0	Major	PDF DOCX
2/13/2014	39.0	Major	PDF DOCX
11/14/2013	38.0	Major	PDF DOCX
8/8/2013	37.0	Major	PDF DOCX
1/31/2013	36.0	Major	
10/25/2012	35.0	Major	
7/12/2012	34.0	Major	
3/30/2012	33.0	Major	

New Features in Protocols Landing Pages: License Program

- ▶ The landing page for each protocol now includes a **Development Resources** section — e.g., **Copyrights**
- ▶ In addition to **Patents**, we've added access to Microsoft's **Patent Map** and a **license program**
- ▶ Also on the landing page for each protocol is a new **Support** section for getting support with the protocols
- ▶ Get help by emailing dochelp@microsoft.com



Development Resources

Find resources for creating interoperable solutions for Microsoft software, services, hardware, and non-Microsoft products:

[Plugfests and Events](#), [Test Tools](#), [Development Support](#), and [Open Specifications Dev Center](#).

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New Features in Protocol Documents

Protocol Errata

- ▶ Not as new as other features, not still not well known
- ▶ What are errata?
 - ▶ Content issues in previously published versions could impact an implementation. Examples of errors and missing information in the normative sections of the Technical Specifications (examples) in the Technical Specifications
- ▶ Find them under Protocols | Errata | Windows
- ▶ There aren't very many active errata at the moment, but we update them each time we publish new versions of the document.

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

This topic lists the Errata found in [MS-RDPBCGR] 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.

To view a PDF file of the errata for the previous versions of this document, see the following ERRATA Archives:

October 16, 2015 - [Download](#)

June 30, 2015 - [Download](#)

July 18, 2016 - [Download](#)

Errata below are for Protocol Document Version [V43.0 - 2016/10/13](#).

Errata Published*	Description
2017/01/23	<p>In this document:</p> <ol style="list-style-type: none">1) Clarified that Redirection PDU has to contain a variable-length routing token in Section 1.3.8, Server Redirection.2) Added the PROTOCOL_RDSTLS flag to the requestedProtocols field table in Section 2.2.1.1.1, RDP Negotiation Request (RDP_NEG_REQ), and added the PROTOCOL_RDSTLS value to the selectedProtocol field table in Section 2.2.1.2.1, RDP Negotiation Response (RDP_NEG_RSP).3) Added RedirectionGuidLength, RedirectionGuid, TargetCertificateLength, and TargetCertificate fields; and added LB_PASSWORD_IS_PK_ENCRYPTED, LB_REDIRECTION_GUID, and LB_TARGET_CERTIFICATE to the RedirFlags field table in Section 2.2.13.1, Server Redirection Packet (RDP_SERVER_REDIRECTION_PACKET).4) Added the RDSTLS external security protocol to Section 5.4, Enhanced RDP Security.5) Added the following new sections:<ul style="list-style-type: none">1.3.8.1 RDSTLS2.2.17 RDSTLS PDUs<ul style="list-style-type: none">2.2.17.1 RDSTLS Capabilities PDU2.2.17.2 RDSTLS Authentication Request PDU with Password Credentials2.2.17.3 RDSTLS Authentication Request PDU with Auto-Reconnect Cookie2.2.17.4 RDSTLS Authentication Response PDU5.4.5.3 RDSTLS Security<ul style="list-style-type: none">5.4.5.3.1 RDSTLS Connection Sequence <p>For details on these changes, see the [MS-RDPBCGR] DIFF doc in PDF format here.</p>
2017/01/09	<p>In this document:</p> <ul style="list-style-type: none">• Added the normative reference [ITUX691] to Section 1.2.1, Normative References.• Clarified how MCS Send Data Request and MCS Send Data Indication structures avoid implementing ASN.1 PER extended size determinant encoding in Section 2.2, Message Syntax.• Clarified the overall PDU length in the length1 and length2 field descriptions in the following sections: 2.2.8.1.2, Client Fast-Path Input Event PDU (TS_FP_INPUT_PDU) and 2.2.9.1.2, Server Fast-Path Update PDU (TS_FP_UPDATE_PDU).

New Features in Protocol Documentation

SKU-to-Role Mapping Tables

- ▶ We have added tables to clarify the often complex relationships between protocol roles and product SKUs

7 Appendix B: Product Behavior

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

The terms "earlier" and "later", when used with a product version, refer to either all preceding versions or all subsequent versions, respectively. The term "through" refers to the inclusive range of versions. Applicable Microsoft products are listed chronologically in this section.

The following tables show the relationships between Microsoft product versions or supplemental software and the roles they perform.

Windows Client	Client role	Server role
Windows 7 operating system	Yes	No
Windows 8 operating system	Yes	No
Windows 8.1 operating system	Yes	No
Windows 10 operating system	Yes	No

Windows Server	Client role	Server role
Windows Server 2008 operating system	Yes	No
Windows Server 2008 R2 operating system	Yes	No
Windows Server 2012 operating system	Yes	No
Windows Server 2012 R2 operating system	Yes	Yes
Windows Server 2016 operating system	Yes	Yes

New Features in Protocol Documentation

Recently Added Protocol Documents

- ▶ In recent release cycles, we've added lots of new protocol documents
- ▶ 15 new protocols since July 2016 alone!
- ▶ Let's take a quick look at them ...

New Features in Protocol Documentation

Recently Added Protocol Documents: Networking

- ▶ Overview document:

- ▶ [MS-NAPOD]: Network Access Protection Protocols Overview

- ▶ New protocols:

- ▶ [MS-CDP]: Connected Devices Platform Protocol Version 3
- ▶ [MS-DHA]: Device Health Attestation Protocol
- ▶ [MS-MICE]: Miracast over Infrastructure Connection Establishment Protocol
- ▶ [MS-NCNBI]: Network Controller Northbound Interface
- ▶ [MS-NCT]: Network Cost Transfer Protocol

New Features in Protocol Documentation

Recently Added Protocol Documents: Directory Services

- ▶ Overview documents:

- ▶ [MS-ADFSOD]: Active Directory Federation Services (AD FS) Protocols Overview
- ▶ [MS-ADOD]: Active Directory Protocols Overview

- ▶ New protocols:

- ▶ [MS-DVRJ]: Device Registration Join Protocol
- ▶ [MS-KPP]: Key Provisioning Protocol

New Features in Protocol Documentation

Recently Added Protocol Documents: Security and Identity Management

▶ Overview documents:

- ▶ [MS-AUTHSOD]: Authentication Services Protocols Overview
- ▶ [MS-AZOD]: Authorization Protocols Overview
- ▶ [MS-CERSOD]: Certificate Services Protocols Overview
- ▶ [MS-RMSOD]: Rights Management Services Protocols Overview

▶ New protocols:

- ▶ [MS-HGSA]: Host Guardian Service: Attestation Protocol
- ▶ [MS-KPS]: Key Protection Service Protocol
- ▶ [MS-OIDCE]: OpenID Connect 1.0 Protocol Extensions

New Features in Protocol Documentation

Recently Added Protocol Documents: File, Fax, and Printing Services

▶ Overview documents:

- ▶ [MS-FASOD]: File Access Services Protocols Overview
- ▶ [MS-FSMOD]: File Services Management Protocols Overview
- ▶ [MS-PRSOD]: Print Services Protocols Overview
- ▶ [MS-STOROD]: Storage Services Protocols Overview
- ▶ [MS-VSOD]: Virtual Storage Protocols Overview

▶ New protocols:

- ▶ [MS-HRL]: Hyper-V Replica Log (HRL) File Format
- ▶ [MS-HVRS]: Hyper-V Remote Storage Profile
- ▶ [MS-VHDX]: Virtual Hard Disk v2 (VHDX) File Format

New Features in Protocol Documentation

Recently Added Protocol Documents: Remote Connectivity

- ▶ Overview document:

- ▶ [MS-RDSOD]: Remote Desktop Services Protocols Overview

- ▶ New protocol:

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

New Features in Protocol Documentation

Recently Added Protocol Documents: Application Services

- ▶ Overview documents:

- ▶ [MS-MQOD]: Message Queuing Protocols Overview
- ▶ [MS-NETOD]: Microsoft .NET Framework Protocols Overview
- ▶ [MS-TPSOD]: Transaction Processing Services Protocols Overview

- ▶ New protocol:

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

Thank You!

(Visit our Booth!)

Questions?