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

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Errata below are for Protocol Document Version V52.0 – 2020/03/04.

<table>
<tr><th>Errata Published*</th><th>Description</th></tr>
<tr><td>2020/07/20</td><td>In Section 2.2.10.1.1.4.1.1, Logon Errors Info (TS_LOGON_ERRORS_INFO), added the LOGON_MSG_SESSION_BUSY_OPTIONS notification type.

Changed from:
ErrorNotificationType (4 bytes): A 32-bit, unsigned integer that specifies an NTSTATUS value (see [ERRTRANS] for information about translating NTSTATUS error codes to usable text strings), or one of the following values.
<table>
<tr><th>Value</th><th>Meaning</th></tr>
<tr><td>LOGON_MSG_DISCONNECT_REFUSED
0xFFFFFFF9</td><td>The "Disconnection Refused" dialog is being displayed by Winlogon. The session identifier is specified by the ErrorNotificationData field.</td></tr>
</table>
Changed to:</td></tr>
</table>

<table>
<tr><th>Errata Published*</th><th>Description</th></tr>
<tr><td></td><td>ErrorNotificationType (4 bytes): A 32-bit, unsigned integer that specifies an NTSTATUS value (see [ERRTRANS] for information about translating NTSTATUS error codes to usable text strings), or one of the following values.
<table>
<tr><th>Value</th><th>Meaning</th></tr>
<tr><td>LOGON_MSG_SESSION_BUSY_OPTIONS
0xFFFFFFF8</td><td>The "Session is Busy" dialog is being displayed by Winlogon. The session identifier is specified by the ErrorNotificationData field.</td></tr>
<tr><td>LOGON_MSG_DISCONNECT_REFUSED
0xFFFFFFF9</td><td>The "Disconnection Refused" dialog is being displayed by Winlogon. The session identifier is specified by the ErrorNotificationData field.</td></tr>
</table></td></tr>
<tr><td>2020/07/06</td><td>In Section 2.2.17.4, RDSTLS Authentication Response PDU, revised ResultCode description to match definition – 16-bit to 32-bit unsigned integer.

Changed from:

ResultCode (4 bytes): A 16-bit unsigned integer that specifies the user authentication result.

Changed to:

ResultCode (4 bytes): A 32-bit unsigned integer that specifies the user authentication result.

In Section 4.1.3, Client MCS Connect Initial PDU with GCC Conference Create Request, revised comment for TS_UD_CS_CORE::connectionType.

Changed from:

<pre>00 -> TS_UD_CS_CORE::connectionType = 0 (not used as
RNS_UD_CS_VALID_CONNECTION_TYPE not set)
00 -> TS_UD_CS_CORE::pad1octet</pre>
Changed to:

<pre>00 -> TS_UD_CS_CORE::connectionType = 0 (ignored as
RNS_UD_CS_VALID_CONNECTION_TYPE not set)
00 -> TS_UD_CS_CORE::pad1octet</pre>
In Section 4.1.14, Client Synchronize PDU, revised annotated dump to match revision made in section 2.2.17.4.

Changed from:

<pre>00 01 ->TS_SYNCHRONIZE_PDU::messageType = SYNCMSGTYPE_SYNC (1)</pre></td></tr>
</table>

Errata Published*	Description
	ea 03 ->TS_SYNCHRONIZE_PDU::targetUser = 0x03ea Changed to: 01 00 ->TS_SYNCHRONIZE_PDU::messageType = SYNCMSGTYPE_SYNC (1) ea 03 ->TS_SYNCHRONIZE_PDU::targetUser = 0x03ea
2020/07/06	In Section 4.1.12, Server Demand Active PDU, revised annotated dump – pad1octet to drawingFlags & pad2octetsB to orderSupportExFlags. Changed from: 00 -> TS_BITMAP_CAPABILITYSET::highColorFlags = 0 00 -> TS_BITMAP_CAPABILITYSET::pad1octet 01 00 -> TS_BITMAP_CAPABILITYSET::multipleRectangleSupport = TRUE 00 00 -> TS_BITMAP_CAPABILITYSET::pad2octetsB Order Capability Set (88 bytes) Changed to: 00 -> TS_BITMAP_CAPABILITYSET::highColorFlags = 0 00 -> TS_BITMAP_CAPABILITYSET::drawingFlags 01 00 -> TS_BITMAP_CAPABILITYSET::multipleRectangleSupport = TRUE 00 00 -> TS_BITMAP_CAPABILITYSET::pad2octetsB Order Capability Set (88 bytes) In that same section, changed from: a1 06 -> TS_ORDER_CAPABILITYSET::textFlags = 0x06a1 00 00 -> TS_ORDER_CAPABILITYSET::pad2octetsB 40 42 0f 00 -> TS_ORDER_CAPABILITYSET::pad4octetsB 40 42 0f 00 -> TS_ORDER_CAPABILITYSET::desktopSaveSize = 0xf4240 = 1000000 Changed to: a1 06 -> TS_ORDER_CAPABILITYSET::textFlags = 0x06a1 00 00 -> TS_ORDER_CAPABILITYSET::orderSupportExFlags 40 42 0f 00 -> TS_ORDER_CAPABILITYSET::pad4octetsB

Errata Published*	Description
	40 42 0f 00 -> TS_ORDER_CAPABILITYSET::desktopSaveSize = 0xf4240 = 1000000 In Section 4.1.13, Client Confirm Active PDU, revised annotated dump – pad2octets to pad2Octets & pad1octet to drawingFlags & pad2octetsB to orderSupportExFlags. Changed from: 4d 53 54 53 43 00 -> TS_CONFIRM_ACTIVE_PDU::sourceDescriptor = "MSTSC" 12 00 -> TS_CONFIRM_ACTIVE_PDU::numberCapabilities = 18 00 00 -> TS_CONFIRM_ACTIVE_PDU::pad2octets General Capability Set (24 bytes) Changed to: 4d 53 54 53 43 00 -> TS_CONFIRM_ACTIVE_PDU::sourceDescriptor = "MSTSC" 12 00 -> TS_CONFIRM_ACTIVE_PDU::numberCapabilities = 18 00 00 -> TS_CONFIRM_ACTIVE_PDU::pad2Octets General Capability Set (24 bytes) In that same section, changed from: 00 -> TS_BITMAP_CAPABILITYSET::highColorFlags = 0 00 -> TS_BITMAP_CAPABILITYSET::pad1octet 01 00 -> TS_BITMAP_CAPABILITYSET::multipleRectangleSupport = TRUE 00 00 -> TS_BITMAP_CAPABILITYSET::pad2octetsB Order Capability Set (88 bytes) Changed to: 00 -> TS_BITMAP_CAPABILITYSET::highColorFlags = 0 00 -> TS_BITMAP_CAPABILITYSET::drawingFlags 01 00 -> TS_BITMAP_CAPABILITYSET::multipleRectangleSupport = TRUE 00 00 -> TS_BITMAP_CAPABILITYSET::pad2octetsB Order Capability Set (88 bytes) Changed from: TS_TEXTFLAGS_ALLOWDELTAXSIM | TS_TEXTFLAGS_CHECKFONTASPECT 00 00 -> TS_ORDER_CAPABILITYSET::pad2octetsB

Errata Published*	Description
	00 00 00 00 -> TS_ORDER_CAPABILITYSET::pad4octetsB 00 84 03 00 -> TS_ORDER_CAPABILITYSET::desktopSaveSize = 0x38400 = 230400 Changed to: TS_TEXTFLAGS_CHECKFONTASPECT 00 00 -> TS_ORDER_CAPABILITYSET::orderSupportExFlags 00 00 00 00 -> TS_ORDER_CAPABILITYSET::pad4octetsB 00 84 03 00 -> TS_ORDER_CAPABILITYSET::desktopSaveSize = 0x38400 = 230400 In Section 4.1.18, Client Font List PDU, revised annotated dump – numberEntries to numberFonts & totalNumEntries to totalNumFonts & added a couple of lines. Changed from: 00 00 -> TS_SHAREDATAHEADER::compressedLength = 0 00 00 -> TS_FONT_LIST_PDU::numberEntries = 0 00 00 -> TS_FONT_LIST_PDU::totalNumEntries = 0 03 00 -> TS_FONT_LIST_PDU::listFlags = 0x0003 = 0x0002 | 0x0001 = FONTLIST_LAST | FONTLIST_FIRST 32 00 -> TS_FONT_LIST_PDU::entrySize = 0x0032 = 50 bytes Changed to: 00 00 -> TS_SHAREDATAHEADER::compressedLength = 0 00 00 -> TS_FONT_LIST_PDU::numberFonts = 0 00 00 -> TS_FONT_LIST_PDU::totalNumFonts = 0 03 00 -> TS_FONT_LIST_PDU::listFlags = 0x0003 0x0003 = 0x0002 | 0x0001 FONTLIST_LAST | FONTLIST_FIRST 32 00 -> TS_FONT_LIST_PDU::entrySize = 0x0032 = 50 bytes In Section 4.4, Annotated Server-to-Client Virtual Channel PUD, revised HEADER to HEADER1. Changed from: 01 00 -> TS_SECURITY_HEADER::flagsHi - ignored as flags field does not contain SEC_FLAGSHI_VALID (0x8000) 47 bd eb cb 29 51 ae 0a -> TS_SECURITY_HEADER::dataSignature f6 07 33 ce fc a5 f7 09 de 67 4e a3 2a 2c 38 29 -> Encrypted static

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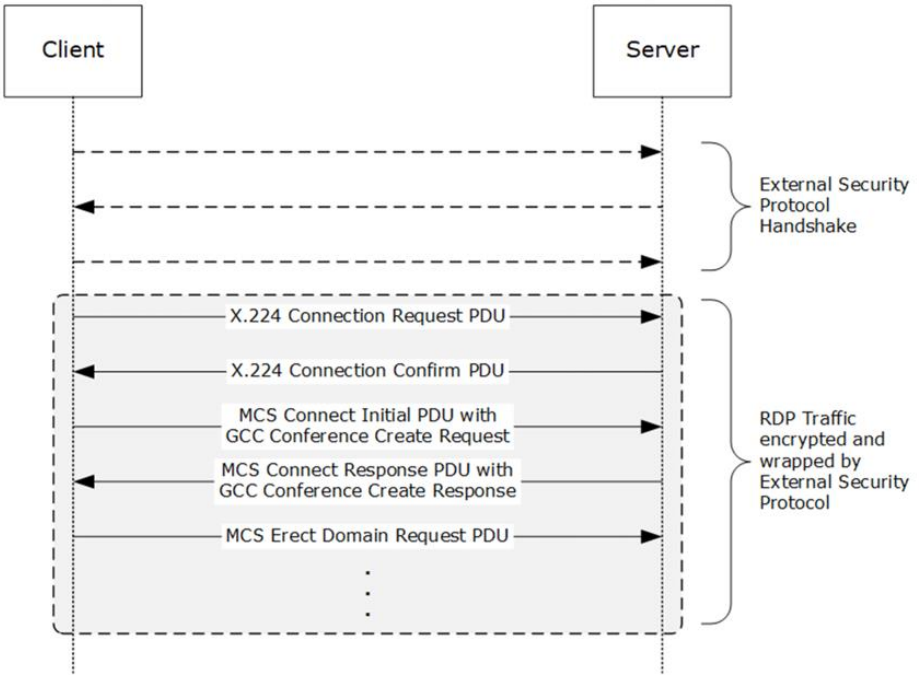
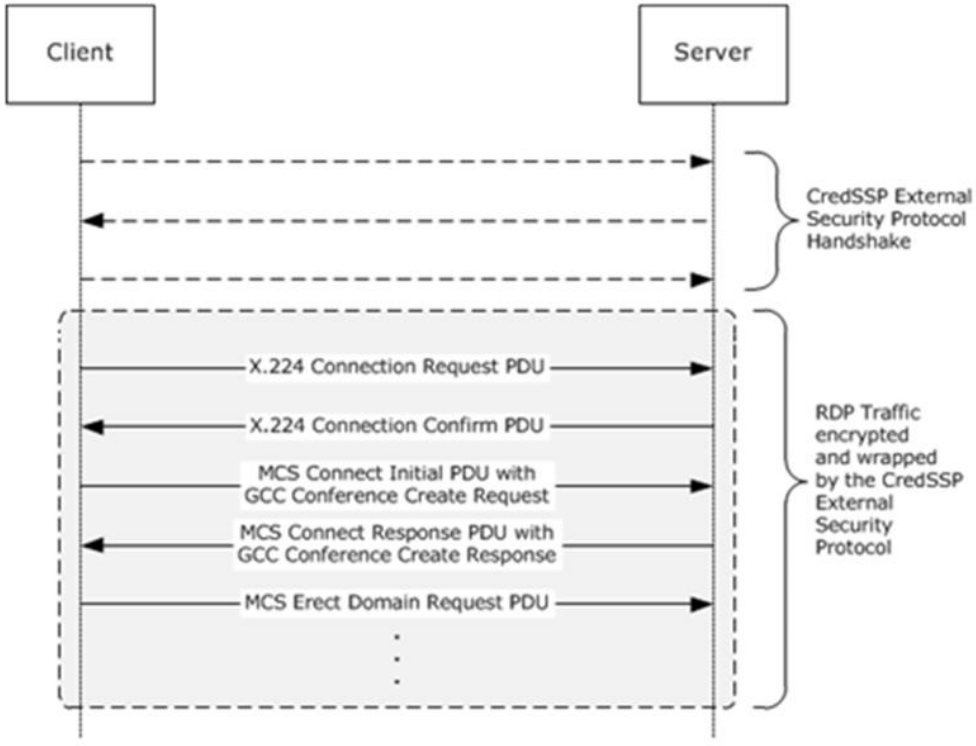
	virtual channel data Changed to: 01 00 -> TS_SECURITY_HEADER::flagsHi - ignored as flags field does not contain SEC_FLAGSHI_VALID (0x8000) 47 bd eb cb 29 51 ae 0a -> TS_SECURITY_HEADER1::dataSignature f6 07 33 ce fc a5 f7 09 de 67 4e a3 2a 2c 38 29 -> Encrypted static virtual channel data In Section 4.5, Annotated Standard Security Server Redirection PDU, revised HEADER to HEADER1. Changed from: = SEC_SECURE_CHECKSUM | SEC_REDIRECTION_PKT 00 00 -> TS_SECURITY_HEADER::flagsHi - ignored as flags field does not contain RDP_SEC_FLAGSHI_VALID (0x8000) 58 dd 3f e5 f3 de 80 26 -> TS_SECURITY_HEADER::dataSignature c0 d6 3f 26 0e 2c b5 93 dd 26 d5 4b 84 a1 1d 2a Changed to: = SEC_SECURE_CHECKSUM | SEC_REDIRECTION_PKT 00 00 -> TS_SECURITY_HEADER::flagsHi - ignored as flags field does not contain RDP_SEC_FLAGSHI_VALID (0x8000) 58 dd 3f e5 f3 de 80 26 -> TS_SECURITY_HEADER1::dataSignature c0 d6 3f 26 0e 2c b5 93 dd 26 d5 4b 84 a1 1d 2a
2020/07/06	In Section 2.2.4.1, Server Auto-Reconnect Status PDU, revised Client Auto-Reconnection Packet to Client Auto-Reconnect Packet. Changed from: The Auto-Reconnect Status PDU is sent by the server to the client to indicate that automatic reconnection using the Client Auto-Reconnection Packet (section 2.2.4.3), sent as part of the extended information of the Client Info PDU (section 2.2.1.11.1), has failed. Changed to: The Auto-Reconnect Status PDU is sent by the server to the client to indicate that automatic reconnection using the Client Auto-Reconnect Packet (section 2.2.4.3), sent as part of the extended information of the Client Info PDU (section 2.2.1.11.1), has failed. In Section 2.2.5.1.1, Set Error Info PDU Data, revised description for ERRINFO_CONTROLPDUSEQUENCE.

<table>
<tr><th>Errata Published*</th><th>Description</th></tr>
<tr><td></td><td>
Changed from:
<table>
<tr><td>ERRINFO_CONTROLPDUSEQUENCE
0x000010CD</td><td>An out-of-sequence Slow-Path Non-Data PDU (section 2.2.8.1.1.1.1) has been received.</td></tr>
</table>
Changed to:
<table>
<tr><td>ERRINFO_CONTROLPDUSEQUENCE
0x000010CD</td><td>An out-of-sequence Server Demand Active PDU (section 2.2.1.13.1), Client Confirm Active PDU (section 2.2.1.13.2), Server Deactivate All PDU (section 2.2.3.1) or Enhanced Security Server Redirection PDU (section 2.2.13.3.1) has been received.</td></tr>
</table>
In Section 2.2.8.1.1.3.1.1, Slow-Path Input Event, revised definition for slowPathInputData.

Changed from:
slowPathInputData (variable): TS_KEYBOARD_EVENT, TS_UNICODE_KEYBOARD_EVENT, TS_POINTER_EVENT, TS_POINTERX_EVENT, or TS_SYNC_EVENT. The actual contents of the input event specified by the messageType field (sections 2.2.8.1.1.3.1.1.1 through 2.2.8.1.1.3.1.1.6).

Changed to:
slowPathInputData (variable): TS_KEYBOARD_EVENT, TS_UNICODE_KEYBOARD_EVENT, TS_POINTER_EVENT, TS_POINTERX_EVENT, TS_SYNC_EVENT, or TS_UNUSED_EVENT. The actual contents of the input event specified by the messageType field (sections 2.2.8.1.1.3.1.1.1 through 2.2.8.1.1.3.1.1.6).
</td></tr>
<tr><td>2020/07/06</td><td>In Section 5.4.2.2, Direct Approach, revised the figure.

Changed from:</td></tr>
</table>

Errata Published*	Description
	 Changed to: 

Errata Published*	Description
	In that same section, changed from: When using the Direct Approach, no negotiation of the security protocol takes place. The client and server are hard-coded to use the Credential Security Support Provider (CredSSP) Protocol (section 5.4.5) when a connection is initiated. Once the security protocol handshake has completed successfully, the RDP Connection Sequence begins, starting with (a) the X.224 messages which form the Connection Initiation phase (section 1.3.1.1); or (b) the Early User Authorization Result PDU (section 2.2.10.2) followed by the X.224 messages. From this point all RDP traffic is encrypted using the CredSSP External Security Protocol. The RDP Negotiation Request (section 2.2.1.1.1) will still be appended to the X.224 Connection Request PDU (section 2.2.1.1) and the requested protocol list will contain the identifier of the CredSSP protocol (section 2.2.1.1.1). If this is not the case, the server will append an RDP Negotiation Failure (section 2.2.1.2.2) to the X.224 Connection Confirm PDU (section 2.2.1.2) with a failure code of INCONSISTENT_FLAGS (0x04). Similarly, the server will indicate that the hard-coded security protocol is the selected protocol in the RDP Negotiation Response (section 2.2.1.2.1) which is appended to the X.224 Connection Confirm PDU. Changed to: When using the Direct Approach, no negotiation of the security protocol takes place. The client and server are hard-coded to use the Credential Security Support Provider (CredSSP) Protocol (section 5.4.5) when a connection is initiated. The Early User Authorization Result PDU (section 2.2.10.2) is not supported in the Direct Approach. Once the security protocol handshake has completed successfully, the RDP Connection Sequence begins, starting with the X.224 messages which form the Connection Initiation phase (section 1.3.1.1). From this point all RDP traffic is encrypted using the CredSSP External Security Protocol. The RDP Negotiation Request (section 2.2.1.1.1) MUST be appended to the X.224 Connection Request PDU (section 2.2.1.1) and the requested protocol list MUST contain the PROTOCOL_HYBRID (0x00000002) flag identifying the CredSSP protocol (section 2.2.1.1.1). If this is not the case, the server will append an RDP Negotiation Failure (section 2.2.1.2.2) to the X.224 Connection Confirm PDU (section 2.2.1.2) with a failure code of INCONSISTENT_FLAGS (0x04). Similarly, the server MUST indicate that CredSSP is the selected protocol in the RDP Negotiation Response (section 2.2.1.2.1) which is appended to the X.224 Connection Confirm PDU.

*Date format: YYYY/MM/DD