

Control Server

Dell® Windows® 10 Thin Client HMI System User Guide

June 2019



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Related Documents

Document #	Title
GEH-6840	NetworkST 3.1/4.0 for Mark* Vle Controls Application Guide
GEH-6844	Control Server System Overview
GEH-6845	Control Server — Domain Services Maintenance Guide
GEH-6846	Control Server Installation and Setup Guide
GEH-6864	Control Server Dell Windows 10 Thin Client HMI System Support and Maintenance Guide
GEH-6865	Control Server Dell Windows 10 Thin Client HMI System Secure Deployment Guide
GHT-200059	How to Remove Unused Software from Control Server Dell Windows 10 Thin Client HMI Systems

Acronyms and Abbreviations

PDH	Plant Data Highway
RDP	Remote Desktop Protocol
VM	Virtual Machine

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1 *Introduction*

GE has developed the Control Server platform to implement the use of virtual machines (VM) running various applications from a server in place of personal computers (PCs) running the applications individually.

The Control Server system has been designed to work with the Dell® Thin Client. The Thin Client provides single, dual, or quad monitor support for display flexibility. The user must connect to a VM, log in, then run the desired application.

Note For instructions to configure and download the Thin Client, refer to the *Control Server Dell Windows 10 Thin Client HMI System Support and Maintenance Guide* (GEH-6864).

Notes

2 *Operation*

The sections in this chapter provide information on starting up, connecting, logging in, and shutting down a Dell Windows 10 Thin Client.

2.1 *Thin Client Bootup*

Momentarily pressing the power button on the Thin Client applies power to the Thin Client and starts the boot sequence. The power button light remains illuminated and the monitor displays the progress during the boot sequence. When the boot sequence is completed, the Thin Client desktop is visible and the user desktop is displayed.

Note If the boot process fails to complete successfully, refer to the Troubleshooting section [Thin Client Bootup Issues](#).

2.2 *Thin Client Login*

The Thin Client is configured for automatic login. At startup, the Thin Client logs in to the local User account automatically, without requesting a password. If you are asked for user login credentials at any time, reboot the Thin client to automatically login to the user account.

2.3 *Host Connection*

The Thin Client serves as a remote terminal for one or more VMs running on the Control Server. The user establishes a connection to a host to access the features supported on the host. Host connections that are available to the user are typically determined on a Thin Client basis. Each Thin Client will typically provide connections to a subset of the VMs running on the Control Server based on its location and purpose. This section provides an overview of the typical use cases with Thin Clients. Refer to the section [Connect to Host Using Remote Desktop](#) for detailed instructions on managing connections of supported host connection clients.

2.3.1 Manual Host Connection

The Thin Client provides host connection links on the desktop.

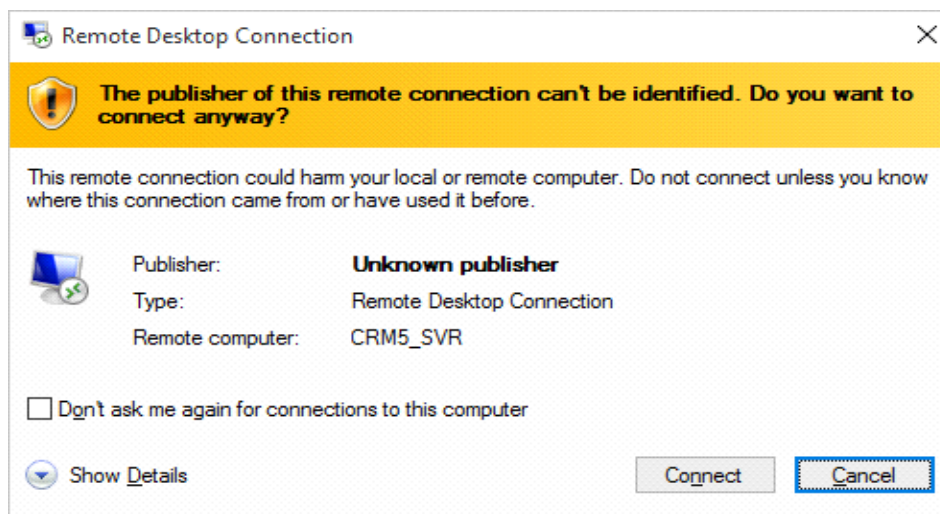
- **To manually launch and connect to a host:** double-click the desktop Host connection links.



Thin Client Displaying Two Host Links

The *Unknown Publisher* warning is typically displayed when launching an RDP connection from a desktop link. Click the *Connect* button to proceed with the connection process.

Note The Unknown Publisher warning is simply an indication that the desktop RDP file has not been signed. It is not an indication of an authentication failure between the Thin Client and remote host.

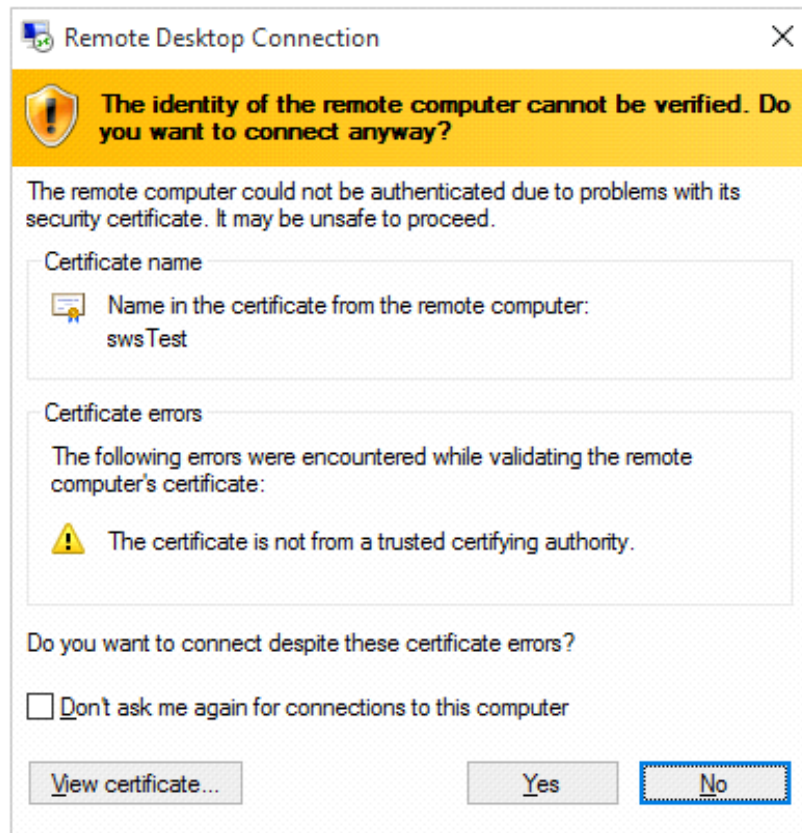


Unknown Publishing Warning



Attention

If the *RDP Connection Cannot be Authenticated* warning displays it is an indication that there is a system issue or a potential cyber attack. **Never** connect to a remote host that cannot be authenticated. Click the *No* button to terminate the connection attempt and immediately contact the site maintenance personnel. Never provide your login credentials (username and password) to an unauthenticated server.



RDP Connection Cannot be Authenticated Warning

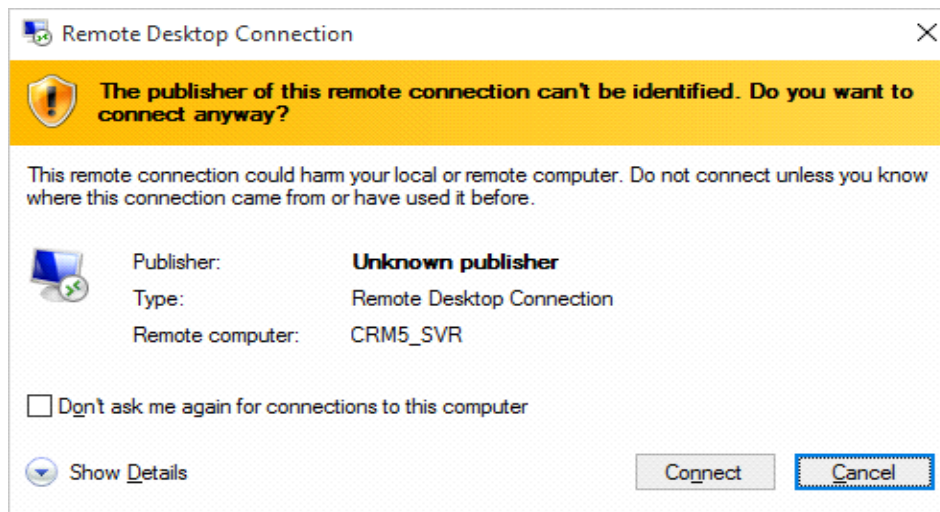
2.3.2 Automatic Host Connection

When configured for automatic connection, the Thin Client automatically launches a connection to a designated host without the user having to select the connection.

Note Automatic connection to a host is configured by your System Administrator.

The *Unknown Publisher* warning is typically displayed when launching an RDP connection from a desktop link. Click the *Connect* button to proceed with the connection process.

Note The Unknown Publisher warning is simply an indication that the desktop RDP file has not been signed. It is not an indication of an authentication failure between the Thin Client and remote host.

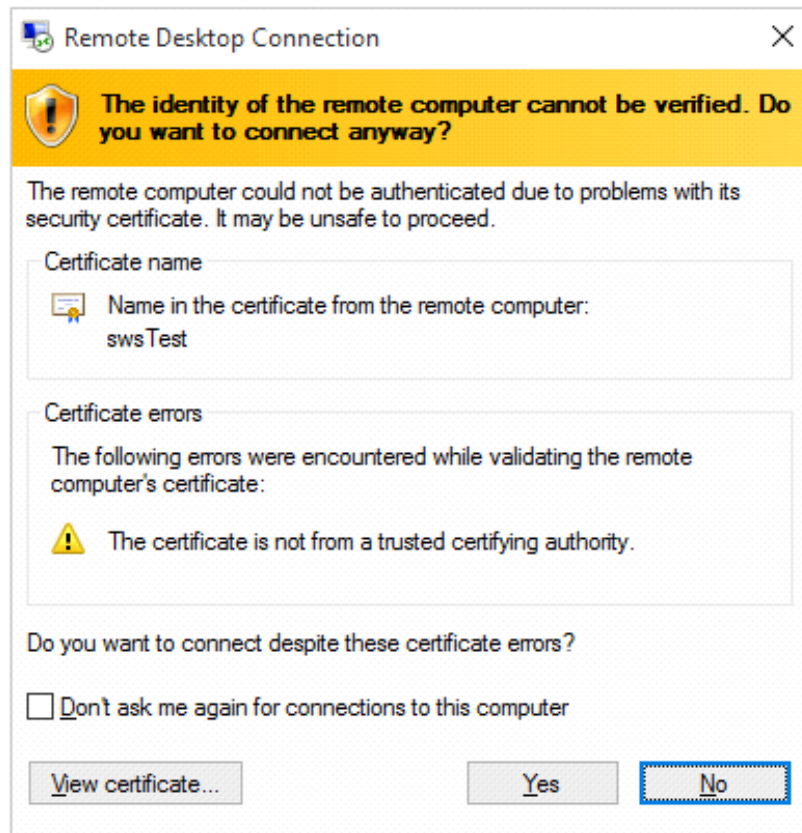


Unknown Publishing Warning



Attention

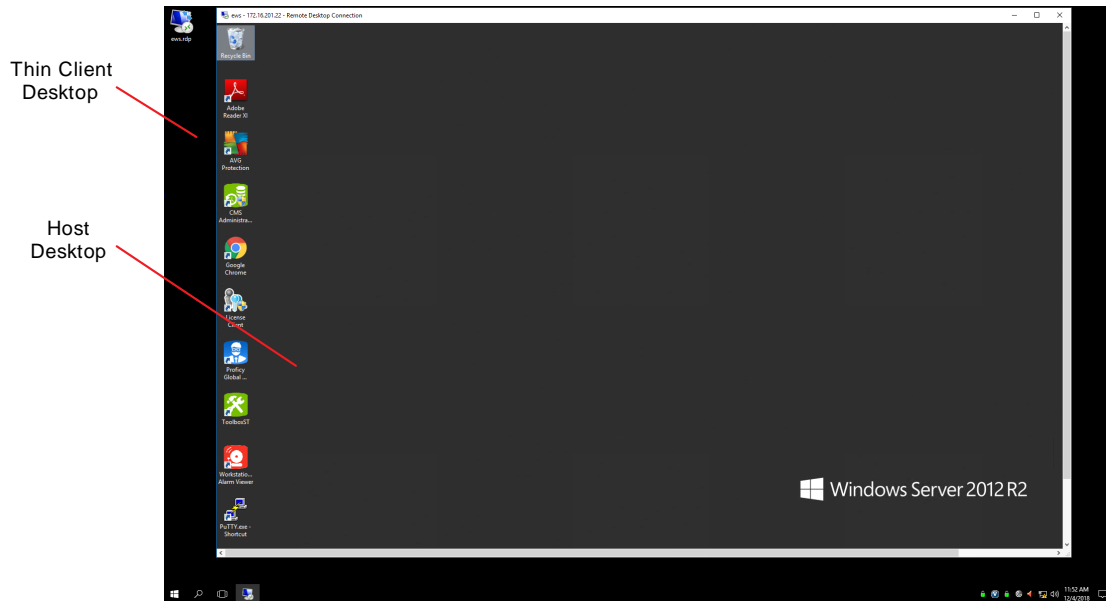
If the *RDP Connection Cannot be Authenticated* warning displays it is an indication that there is a system issue or a potential cyber attack. **Never** connect to a remote host that cannot be authenticated. Click the *No* button to terminate the connection attempt and immediately contact the site maintenance personnel. Never provide your login credentials (username and password) to an unauthenticated server.



RDP Connection Cannot be Authenticated Warning

2.3.3 Client Session

Typically, the host requests the user credentials from the client when the connection is established. The user is required to provide the login credentials to establish the connection to the host. Once the user authentication is complete, the client provides a view of the host's desktop or an application running on the host, and the user interacts with the host from the client window. The host desktop is displayed within the Remote Desktop window, and the users interact with the desktop exactly like they would if they were directly logged into the host.



Example Thin Client Display with Host Desktop

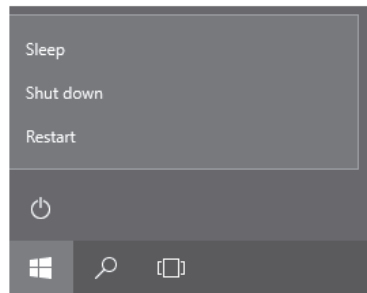
Note This figure shows a virtual desktop within the Thin Client desktop for demonstration purposes. Typically, the virtual desktop is maximized to use all available desktop area of the Thin Client. The Thin Client desktop settings, and the relative size of the virtual desktop are all controlled by the Thin Client configuration that is created and maintained by the System Administrator.

2.4 Close Host Connection

To prevent unauthorized access to the Host, the user should close the Host connection when it is not in use. Refer to the section [Connect to Host Using Remote Desktop](#) for detailed instructions on managing connections of supported host connection clients.

2.5 Thin Client Shutdown and Restart

- **To shut down or restart the Thin Client:** from the **Start** menu, select the **Power icon** and select **Restart** to shut down and automatically restart the client, or select **Shut down** to shut down and power off the client.

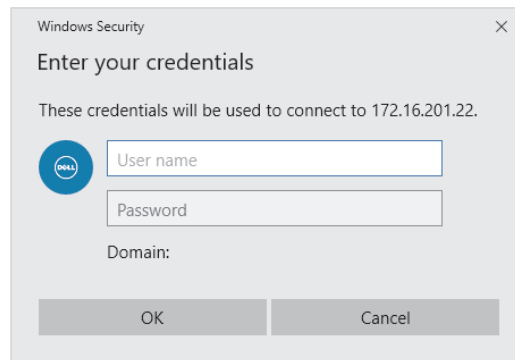


Thin Client Start Menu Shutdown and Restart

2.6 Connect to Host Using Remote Desktop

Remote Desktop is used to connect to Windows based hosts or any other hosts that support RDP. This section provides details on managing and troubleshooting the Remote Desktop connections.

To establish a connection, the host must receive valid login credentials from the client before it accepts the connection.



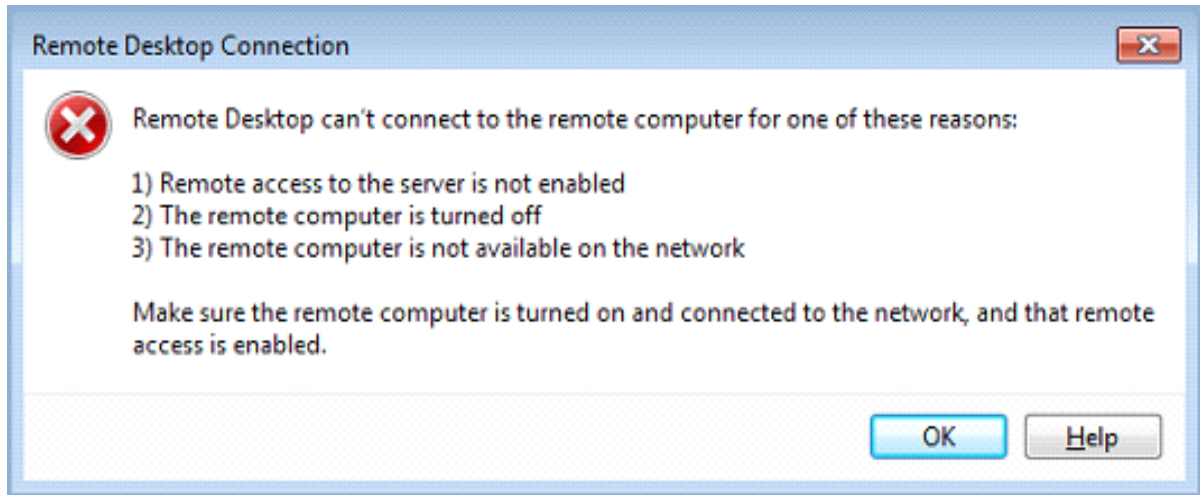
Remote Desktop Login

Note If errors indicating a connection failure are displayed, refer to the section [Unable to Establish Host Connection Using Remote Desktop](#). If the correct login information is used, but the login indicates a failure due to an incorrect Username or Password, refer to the section [Unable to Log in to Host Using Remote Desktop](#) for further information.

After the connection is established, the host's desktop displays on the connected Thin Client monitor. The host's desktop continues to be displayed as long as the session between the Thin Client and host is active. Typically, the virtual desktop displays in full screen mode, so the Thin Client display is dedicated to the virtual desktop and is the same experience as logging directly into the host. Refer to the figure [Example Thin Client Display with Host Desktop](#).

2.6.1 Unable to Establish Host Connection Using Remote Desktop

Errors, such as shown in the following figure, may be displayed if the Thin Client is unable to contact the Host over the network.



Example of Thin Client to Host Connection Error

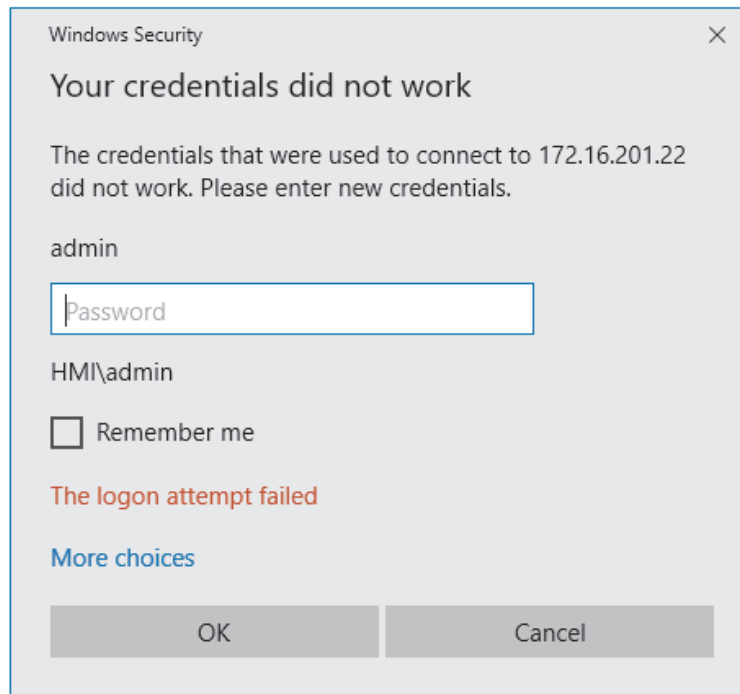
If the Thin Client fails to connect to the host, the problem could be caused by any of the following issues:

- Thin Client is not connected to the network due to a Thin Client or network issue
- Host is offline or unreachable due to network or host issues
- Host is online but not responding to the Thin Client connection requests

Note Refer to the procedures in the Troubleshooting section [Loss of Thin Client Network Connection](#) to determine and resolve Thin Client network connection issues. Contact the System Administrator if the connection error persists when the Thin Client is connected to the network.

2.6.2 Unable to Log in to Host Using Remote Desktop

If the login to the host fails, contact the System Administrator to verify that the Username, Domain, and Password are correct. If the login is unsuccessful with the correct information, contact the System Administrator for assistance.



Failed Remote Desktop Login Attempt

2.7 Disconnect Remote Desktop Session

The lifecycle of user sessions on the Windows VMs is dictated by the system configuration and the System Administrator. Some sites may choose to provide a unique domain account for each user, with the expectation that each user will maintain a unique session on the VMs to which they connect. Other sites may create a common set of domain user accounts that are shared between the operators and maintenance personnel at the site. The System Administrator must create the user accounts and communicate the policies used at the site.

2.7.1 Close Remote Desktop Session without Closing User Session

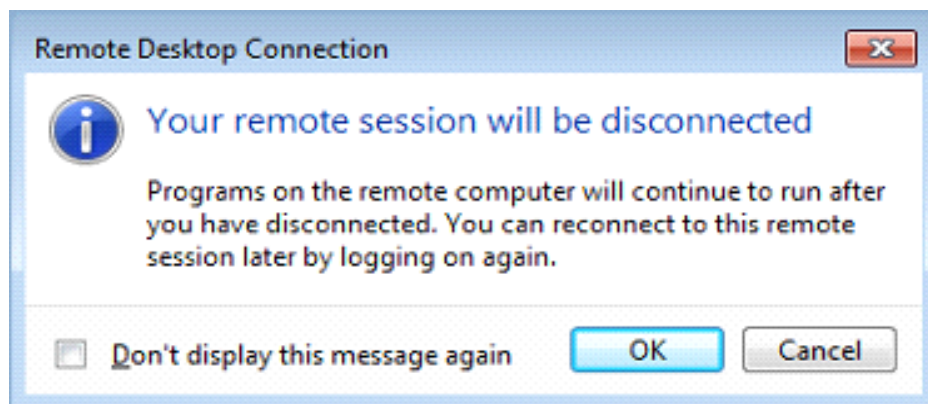
The Remote Desktop Connection can be closed while leaving the Windows User session active. This allows the user to re-establish a Remote Desktop connection to the Windows VM at a later time and resume any activities that may have been in progress on the user session.

- **To disconnect the Remote Desktop connection without affecting the underlying user session:** click the **Close (X)** icon in the Remote Desktop connection window.



Remote Desktop Connection Window

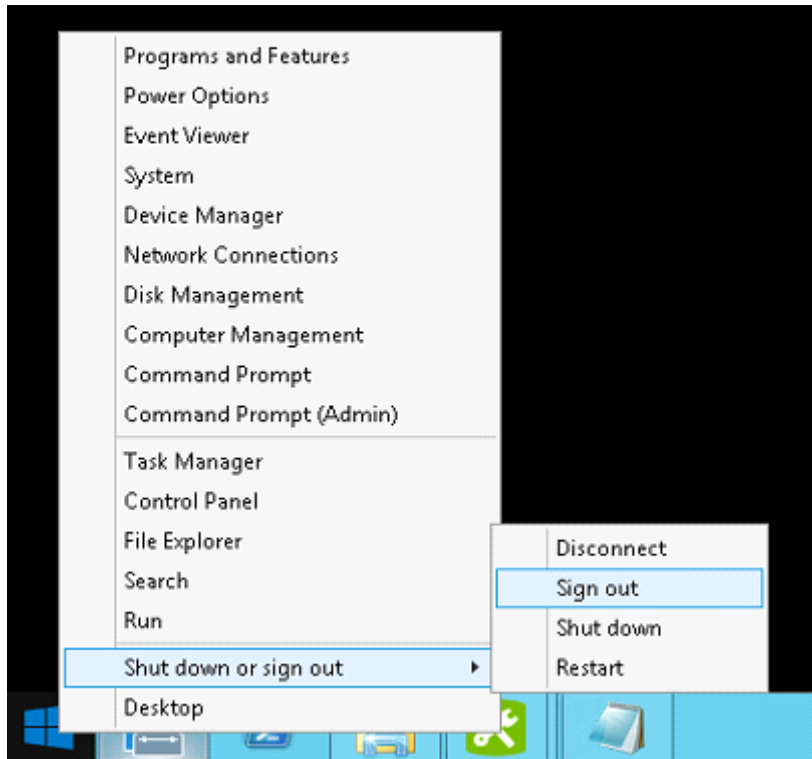
The *Remote Desktop Connection* dialog box requests verification that the user intended to close the Remote Desktop connection without closing the user session.



Remote Desktop Disconnect Verification

2.7.2 Close User Session and Remote Desktop Session

Signing out of the user session closes the user session and automatically closes the Remote Desktop session.



User Session Signout

3 Troubleshooting

3.1 Thin Client Bootup Issues

Momentarily pressing the power button on the Thin Client applies power to the Thin Client and starts the boot sequence. The power button light remains illuminated and the monitor displays the progress during the boot sequence.

3.1.1 Thin Client Power Button Does Not Illuminate

If the power button light does not illuminate when pressed, verify that the power supply is plugged in to the Thin Client, and that the power supply source plug is plugged into an outlet or power strip that has power. If power is applied to the power supply and it is plugged in to the Thin Client, unplug the power supply from the Thin Client and verify the correct power supply voltage. If the power supply voltage is incorrect, the power supply is most likely bad. If the power supply voltage is correct, the problem is most likely a hardware failure in the Thin Client, and the Thin Client may need to be replaced.

3.1.2 Thin Client Monitor Does Not Display

If the power button remains illuminated but there is no display on the monitor, verify that the monitor is plugged in to the Thin Client and the correct source is selected on the monitor. Try a different monitor to verify that the monitor is not the source of the problem. If the Thin Client is unable to drive a working monitor, there may be a failure in the Thin Client hardware. Contact a maintenance engineer to perform further troubleshooting and / or replace the Thin Client.

3.1.3 Boot Sequence Will Not Complete

If the boot sequence is displayed on the monitor but never completes, there is a problem with the Thin Client hardware or firmware that may require reloading or replacing the Thin Client. Contact the System Administrator.

3.2 Loss of Thin Client Network Connection

Most Thin Client functionality depends on its connection to the plant network (PDH). The Thin Client displays the following icon in the task bar when it has lost its network connection. The red X icon indicates that the Thin Client has lost its connection to the PDH network. Verify that the network cable is plugged in to the Thin Client. If the network cable is connected and the problem persists, the problem could be in the Thin Client or a network issue; contact the System Administrator.



Not Connected — No Connections Available

3.3 Unable to Power Down Thin Client

The Thin Client should always be powered down using the shutdown procedure provided in the section [Thin Client Shutdown and Restart](#). In situations where the Thin Client may be hung up and will not shut down from the system command, or other issues prevent logging in to the Thin Client, press and hold the power button until the power button light goes out. This forces a power down of the Thin Client.

Notes

Glossary of Terms

Remote Desktop Protocol (RDP) A proprietary protocol that provides a user with a graphical interface to connect to another computer over a network connection.

Thin Client A Thin Client is a purpose-built PC with a keyboard, mouse, monitor, and an Ethernet connection to the plant network (PDH), whose primary function is to provide an access point to hosts running within the system. A host can be a VM running on a server, a standalone PC, or any device that acts as a host for a protocol that the Thin Client can support. For example, the Thin Client can connect to a Windows host using RDP. Another example would be using a web browser on the Thin Client to connect to a web server, Virtual Machine, or any device that may be publishing web pages. The Thin Clients are configured by the System Administrator to provide a predefined set of host connections, based on the user account that is used to log into the Thin Client. Some user accounts may be allowed access to a limited set of hosts within the system, while other user accounts may have access to a greater number of hosts.

Virtual Machine (VM) An emulation of a specific computer system. VMs operate based on the computer architecture and functions of a real or hypothetical computer, and their implementations may involve specialized hardware, software, or a combination of both.

Notes



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