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ORACLE®

Guida all'amministrazione di Sun Ray Connector for Windows OS 2.3

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Guida all'amministrazione di Sun Ray Connector for Windows OS 2.3

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Moduli

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About SRWC (All Topics)

Features

The Sun Ray(TM) Connector for Windows OS is a client based on the Microsoft Remote Desktop Protocol (RDP) that enables Sun Ray users to access applications running on remote Microsoft Windows systems. This client is especially useful to those who are accustomed to Windows-based applications or who want to access documents in certain formats from a Sun Ray thin client. Users can access their Windows desktop, which can either occupy the entire Sun Ray screen or run in a window in a Solaris(TM) or Linux environment.

The Sun Ray Connector for Windows OS is often referred to as the Sun Ray Windows Connector (SRWC).

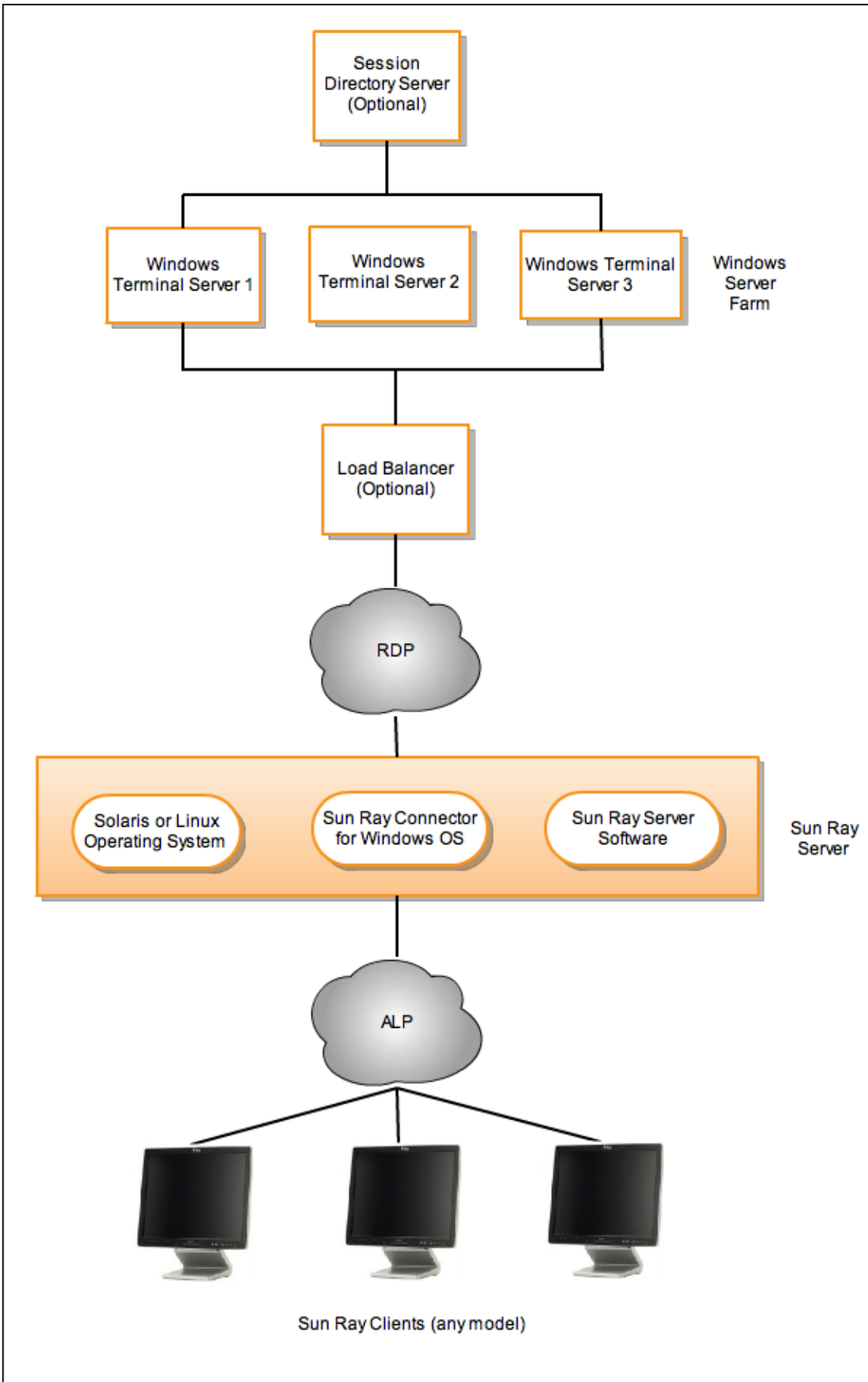
The following table outlines the features provided by SRWC.

Feature	Description
Audio Support	Users can play sound files on their Sun Ray desktops (audio out) with audio applications located on the Windows system. Recording from the Sun Ray DTU to the Windows system (audio in) is also supported.
Clipboard	<p>The Sun Ray Windows Connector enables cut-and-paste text functionality between Windows applications and applications running on the Sun Ray desktop, whether Linux or Solaris versions. Copying and pasting is enabled for all supported languages, including double-byte languages such as Chinese, Japanese, and Korean. The Sun Ray Windows Connector does not support copying and pasting functionality for Rich Text Format.</p> <p>The following behaviors, although similar, are caused by limitations in different applications:</p> <ul style="list-style-type: none"> • Once a copy-and-paste operation has been performed from a <code>dterm</code> window, subsequent copy-and-paste operations from the same window to a Windows application always show the data from the first such operation. • Cut-and-paste operations do not work from <code>dtpad</code> to Windows applications. • Cut-and-paste menu options do not work correctly in transfers from StarOffice applications.
Compression	The Sun Ray Windows Connector uses RDP bulk compression to compress data between the Sun Ray Server, which runs the Sun Ray Windows Connector, and the Windows system. For more information, see Managing Session Connections .
Encryption	The Sun Ray Windows Connector uses RSA Security's RC4 cipher, which encrypts data of varying size with a 56-bit or a 128-bit key, to secure all data being transferred to and from the Windows server. For more information, see Managing Session Connections .
Local Drive Mapping	File systems from removable media devices, such as Flash drives, can be connected to the Sun Ray server USB ports and mapped to the Windows environment through the <code>utstorged</code> command, where they appear as locally mounted drives. Any file can be mounted and mapped from the Sun Ray environment to the Windows environment.
Multimedia Redirection	The Sun Ray Windows Connector provides features to increase the performance for video streams and Adobe Flash content, including rapidly-changing screen content in some scenarios. The support provided is dependent on the Windows OS. For more information, see Managing Multimedia .
Printing	From a Windows session, a user can print from a Windows application using any of the following configurations: a network printer or a locally attached printer on the Windows system, a network printer or a locally-attached printer on the Sun Ray server, or a local printer attached to the Sun Ray client.

Serial Port Mapping	Users can access the serial devices connected to a Sun Ray DTU from their Windows sessions. Serial devices can be connected either directly to the serial ports on a Sun Ray DTU or by means of a serial adapter.
Session Directory	The Sun Ray Windows Connector supports server session reconnection based on load balancing information and Session Directory, a database that keeps track of which users are running which sessions on which Windows Terminal Servers. Session Directory functionality enables Sun Ray Windows Connector users to reconnect automatically to the right Windows session. Terminal services session load balancing is handled transparently by the Windows Terminal Server. For more information, see About Session Directory .
Smart Cards	The Sun Ray Windows Connector uses the PC/SC framework to enable applications on the Windows system to access smart cards inserted in the Sun Ray DTU. Typically, this feature is used to provide two-factor authentication with digital certificates or to permit the use of electronic signatures or other information stored on a smart card.
USB Device Redirection	Enables users to access USB devices connected to a Sun Ray DTU from their Windows sessions, provided that the appropriate device drivers are installed on the Windows server. For more information, see About USB Device Redirection .

SRWC Architecture Overview

From a user point of view, the Sun Ray Windows Connector mediates between the Sun Ray desktop and a Windows system, which can be a Windows Terminal Server. It resides on the Sun Ray server and uses the Remote Desktop Protocol (RDP) to communicate with the Windows system and the Appliance Link Protocol(TM) (ALP) to communicate with the Sun Ray desktop, as shown in the following figure.



Once the Sun Ray Windows Connector is installed, the user can type a simple command to connect to a Windows system where the usual applications reside. The command can be modified to accommodate a variety of preferences, or options, for example, to specify screen size or a list of available printers.

For a list of procedures describing how to use the Sun Ray Windows Connector, see [Using \(All Topics\)](#).

About Licensing

Microsoft Terminal Services licensing information is stored in the Sun Ray data store automatically upon Windows session startup, using the existing LDAP schema. No administrator setup or intervention is required.

Licenses can be administered, such as listing and deleting licenses, with the `utlicenseadm` command. See the `utlicenseadm man page` for details.

The Sun Ray Windows Connector supports both per-user and per-device Terminal Server Client Access Licenses (TS-CAL):

- Per-user mode - The user's hotdesking experience is virtually seamless.
- Per-device mode - The user must reauthenticate every time they hotdesk to a different DTU to ensure correct TS-CAL license handling.



Note

If you access terminal server functionality provided by Microsoft operating system products, you need to purchase additional licenses to use such products. Consult the license agreements for the Microsoft operating system products that you are using to determine which licenses you must acquire. Currently, information regarding Terminal Services can be found at: <http://www.microsoft.com/windowsserver2008/en/us/how-to-buy.aspx>

Per-user Mode Versus Per-device Mode

To show the different behavior between the per-user and per-device modes, let's start with the user logging into a Sun Ray session with a smart card and opening a connection to a Windows session. The following table shows what happens next when the user removes the smart card and inserts it again.

The User Removes the Smart Card and...	Per-user Mode	Per-device Mode
Reinserts the Smart Card in the same DTU.	The user is instantly reconnected to the existing Windows session.	The user is instantly reconnected to the existing Windows session.
Inserts the Smart Card in a different DTU.	The user is instantly reconnected to the existing Windows session.	The Windows login screen prompts the user for username and password, after which the user is reconnected to the existing Windows session. Other features and services are similarly affected. For example: <ul style="list-style-type: none"> • Windows Media Player stops playing audio/video file, although the application is still active on the Windows session. The user needs to replay the audio/video file. • Any serial port transfer is stopped. All the command line options specified remain valid.



You can use the `-o` option of the `uttscc` command to prevent the Sun Ray Windows Connector from disconnecting upon detection of hotdesking events.



With the `-o` option, the Sun Ray Windows Connector does not disconnect and reconnect when a hotdesk event occurs, nor does it refresh licenses on different DTUs. Instead, it uses the original license granted upon connection to the first DTU. This behavior might cause you to inadvertently violate your Microsoft Terminal Server license agreement. Because you have full responsibility for license compliance, be aware of the danger and use the `-o` option only with caution.

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Managing USB Device Redirection (All Topics)

About USB Device Redirection

The USB redirection feature enables users to access USB devices connected to a Sun Ray DTU from their Windows sessions, provided that the appropriate device drivers are installed on the Windows server.

Once you install the USB redirection component and add USB Drivers to the Virtual Machines, users can simply plug in and access supported USB devices from their Sun Ray DTU.



Note

Human Interface Devices (HID) such as keyboards and mice do not use the USB redirection component.

Device Access

The accessibility of USB devices through USB redirection is determined by what Windows OS you are using for the remote desktop connection.

When using the single-user Windows XP or Windows 7 platforms, the USB devices connected to a client are accessible only to the user logged into the client's Windows session.

When using the Windows Server 2003 R2 or Windows Server 2008 R2 platforms, the USB devices connected to a client are accessible and visible to all desktops running on the Windows server. Sharing USB devices between multiple clients does not require any additional setup. Users are always prompted to verify if it is acceptable to share their USB device with others.

Supported Configurations

For the list of supported Windows operating systems, see [Sun Ray Software 5.1 System Requirements](#).

USB redirection is available through the following configurations:

Configuration	Description
SRS 5.1 and Sun Ray Connector Kiosk Session	Supports connection to Windows desktop using the Kiosk session.
SRS 5.1 and Sun Ray Connector for VMware View Manager (SRVC) 1.2.	In this configuration, the kiosk mode should be configured with the session type as "VMware View Manager session."

Supported USB Devices

For the list of supported USB devices for the USB redirection feature, see [Sun Ray USB Peripherals List for Windows \(Oracle Supported\)](#).

Important Notes

- Devices should be connected to a user's session only after a Windows session is established. When users exit their session, the device should be disconnected.
- If a device is connected before a Windows session is established and the device is not available in the Windows session, hotplugging the device will make it available to the Windows session.

- Before disconnecting a USB device being used through USB-R during a live Windows session, users must follow the same steps to safely remove the USB device as if the device were directly connected to Windows.
- There is no limit to the number of USB devices that USB redirection can support on a client. A USB hub can be used to expand the number of physical USB ports if needed.
- USB external smart card readers cannot be used for session authentication with USB redirection.
- The following scenarios might lead to data corruption on the device:
 - Hotplugging a device during data transfer
 - Hotdesking during data transfer
 - If the session is disconnected for any reason
- Some unpowered USB devices may draw more current than what is supported by the Sun Ray DTU. If you see the following overcurrent icon, then the device may not work properly.



How to Add USB Drivers to a Virtual Machine

This procedure should be done before the USB Redirection feature is installed. For details on installing USB Redirection, see [How to Install the Sun Ray Connector Windows Components](#).

If your Virtual Machine (VM) does not have the USB driver installed by default, you must install the driver for USB device redirection to work properly. Examples of VMs that require this step include VMWare ESX and Hyper-V Server.

1. Make sure the Windows system has access to the Windows XP ISO used to create the VM.
2. Copy the `usbd.sy_` file from the Windows XP ISO to the VM.

For 32-bit:

```
cp <ISO-image>\i386\usbd.sy_ \windows\system32\drivers
```

For 64-bit:

```
cp <ISO-image>\amd64\usbd.sy_ \windows\system32\drivers
```

3. Change to the `drivers` directory.

```
cd \windows\system32\drivers
```

4. Install the USB drivers.

```
expand usbd.sy_ usbd.sys
```

5. Reboot the VM.

How to Verify that USB Redirection is Active

When the USB redirection is active and running in a session, the following icon should appear in the System Tray, indicating that the server is ready for USB devices.



When you see this icon, you can connect USB devices to the Sun Ray DTU.

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Troubleshooting USB Redirection

For information about the latest known bugs and other issues about USB redirection, see the [SRWC Release Notes](#).

Supported USB Devices

The first troubleshooting step is to make sure the USB device is supported. This release supports the following USB device types: flash drives, printers, scanners, USB-to-serial adapters, and USB-to-parallel adapters. Check the [Sun Ray USB Peripherals List for Windows \(Oracle Supported\)](#) for the list of tested devices from each of the supported device types.

General Troubleshooting

Here is a list of questions if USB redirection is not working.

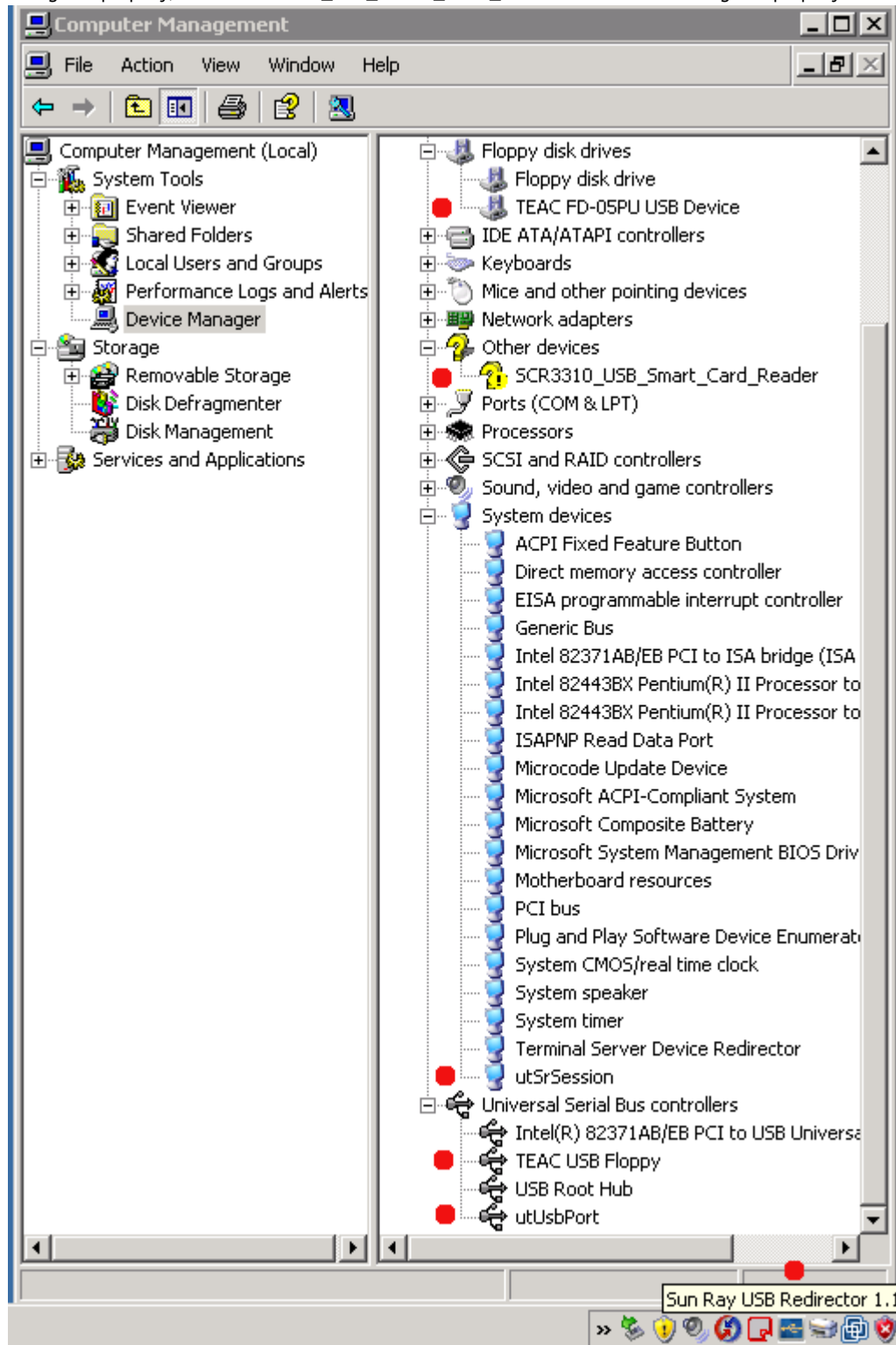
- Is the [USB redirection icon](#) displayed in the Window's System Tray.
- Are you using a supported USB device type. Check the [Sun Ray USB Peripherals List for Windows \(Oracle Supported\)](#) for the list of tested devices from each of the supported device types.
- Are you using USB redirection in a supported configuration. See [Supported Configurations](#) for details.
- Are you using a USB device that draws more current than what is supported by the Sun Ray client. If there is a power problem with the device, the following overcurrent icon is displayed.



- Was the USB device was plugged in after the Windows session was established? If not, disconnect the USB device and plug it in again.
- Are you using a USB external smart card reader for session authentication. If so, this will produce unpredictable behaviors.
- Is the USB redirection feature configured properly in the Windows Device Manager? Is the USB device configured properly (appropriate device driver installed) in the Windows Device Manager?

The following example shows that USB redirection feature is configured properly (`utSrSession` under Device Manager/System

devices and `utUsbPort` under Device Manager/Universal Serial Bus controllers). And, it shows that the `TEAC USB Floppy` is configured properly, but the `SCR3310_USB_Smart_Card_Reader` device is not configured properly.



Debugging Log Files on Windows



Note

The tracer utility output should be sent to Sun support. The output is not intended for customer diagnosis.

Tracer Utility

The tracer utility enables you to capture the log information for the USB redirection activities. Note that these log files are not in a human

readable format.

To use the tracer utility:

1. Log in as the administrator account.
2. Choose Run from the Start menu.
3. Start the tracing utility using the following command:

```
C:\Program Files\Sun\SunRay\utUsbTraceController\uttrace start [-s <filesize>]
```

This example shows the location of the `uttrace` command based on the default installation. The `-s <filesize>` option specifies the size of the log file before the log output rotates to a new file. `<filesize>` must be specified in Mbytes. Default is 500 Mbytes.

4. Log in as the user account and replicate the issue.
5. Stop the tracing utility using the following command:

```
C:\Program Files\Sun\SunRay\utUsbTraceController\uttrace stop
```

The tracer utility log files are located in the following directory:

```
C:\Program Files\Sun\SunRay\Logs
```

The tracer utility log files have the following format:

```
trace log (<YYYY>-<MM>-<DD>)-(<HH>-<MM>-<SS>)-1.etl
```

Debugging Log Files on Sun Ray Server

Log Files

You can also refer to the more general [SRWC Log Files](#) for troubleshooting USB redirection issues.

To generate a log file with full debug information for USB redirection:

1. Become superuser on the Sun Ray server.
2. Uncomment the `USB_DEBUG_ON` variable in the `/etc/init.d/uttscp` file and make sure it is set to something like `"-D 20"`.

```
USB_DEBUG_ON="-D 20"
```

3. Restart the SRWC proxy daemon.

```
# /opt/SUNWuttsc/sbin/uttscrestart
```

Log files are located at `/var/opt/SUNWut/log/uttscpd.log*`.

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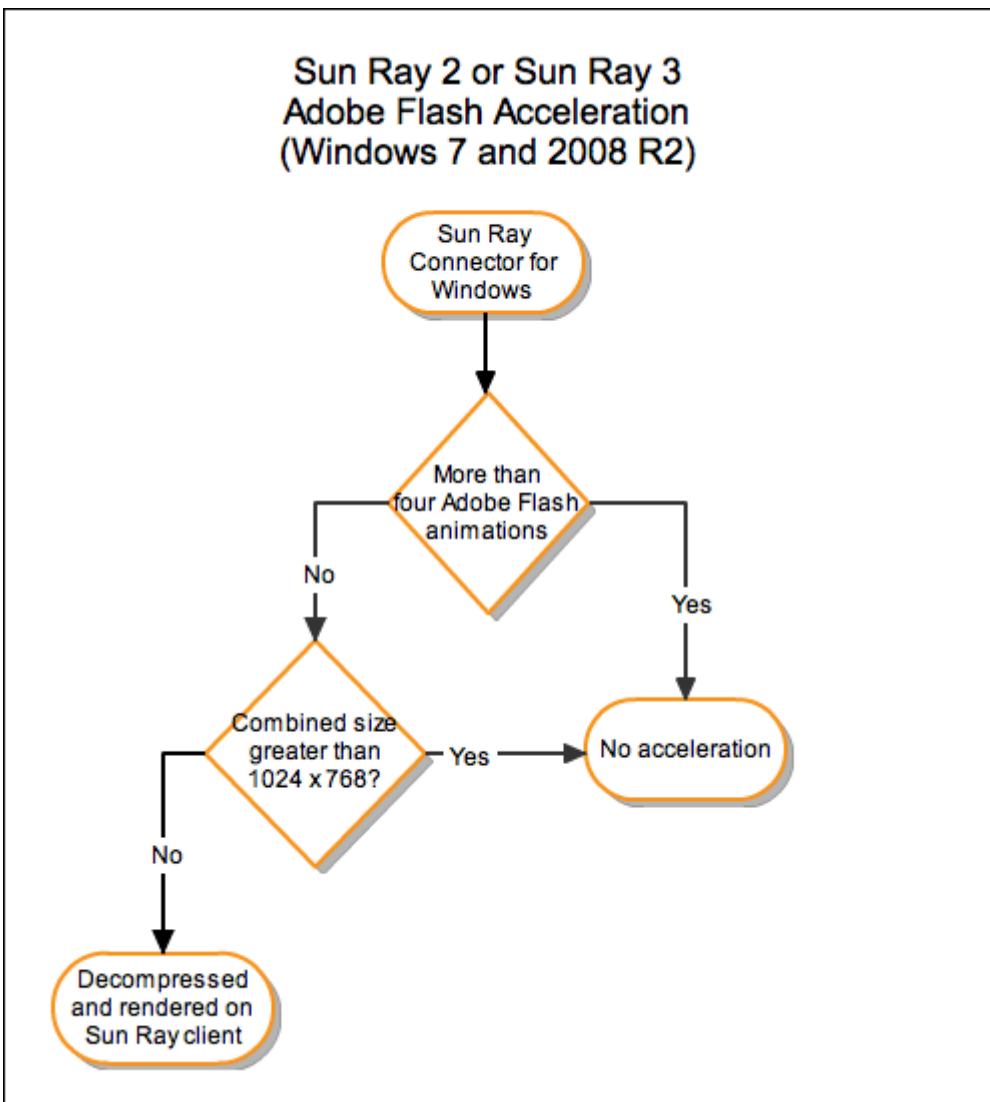
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Managing Multimedia (All Topics)

About Adobe Flash Acceleration (Windows 7 and 2008 R2)

For Windows 7 and 2008 R2 in SRWC, Adobe Flash media performance is improved through a customized compression program together with RDP 7. This acceleration not only affects Adobe Flash media, but it improves many instances of rendering an area of the screen that changes often (like an hourglass that indicates progress).

The following diagram shows when the Adobe Flash acceleration occurs for Sun Ray DTUs when using a Windows 7 or Windows 2008 R2 session.



To verify that the Adobe Flash acceleration is occurring on the Sun Ray client, see [Troubleshooting Multimedia](#).

This feature is enabled by default. You can use the `-D` option of the `uttsc` command to disable the acceleration. For example:

```
% uttsc -u user04 -A 24 -g 1024x768 -D <hostname.domain>
```

About Multimedia Redirection (Windows XP and 2003)

The multimedia redirection component redirects video streams to provide better performance for various models of Sun Ray DTU. For information about installing the multimedia redirection component, see [How to Install the Sun Ray Connector Windows Components](#).

Performance can be improved for the following multimedia paths:

Accelerated Path	Description
YUV	An accelerated YUV path for Sun Ray clients.
H.264 and VC-1	An accelerated H.264/VC-1 path for the Sun Ray 2 and Sun Ray 3 series clients, where H.264 and VC-1 codecs are supported in the hardware.

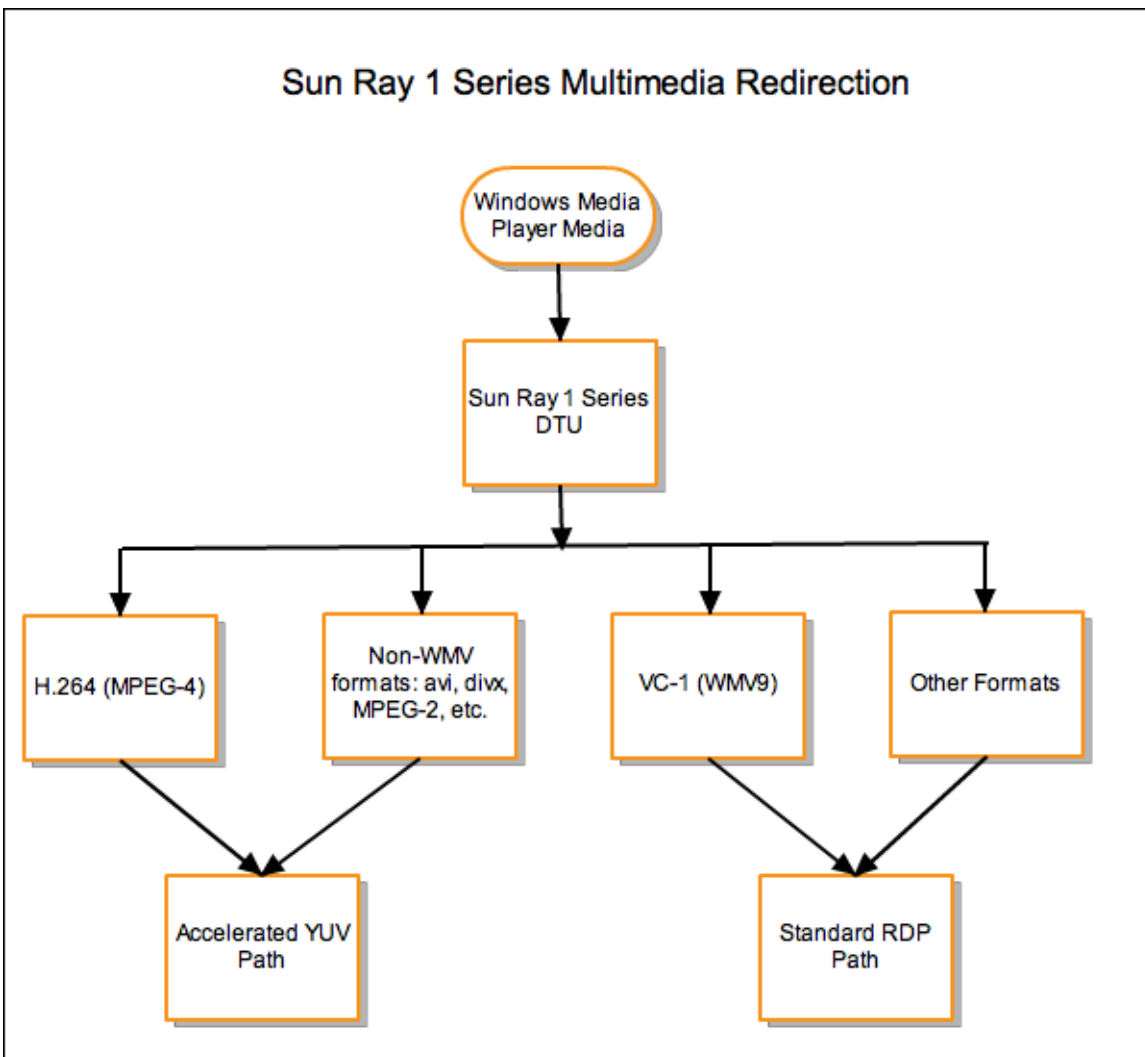


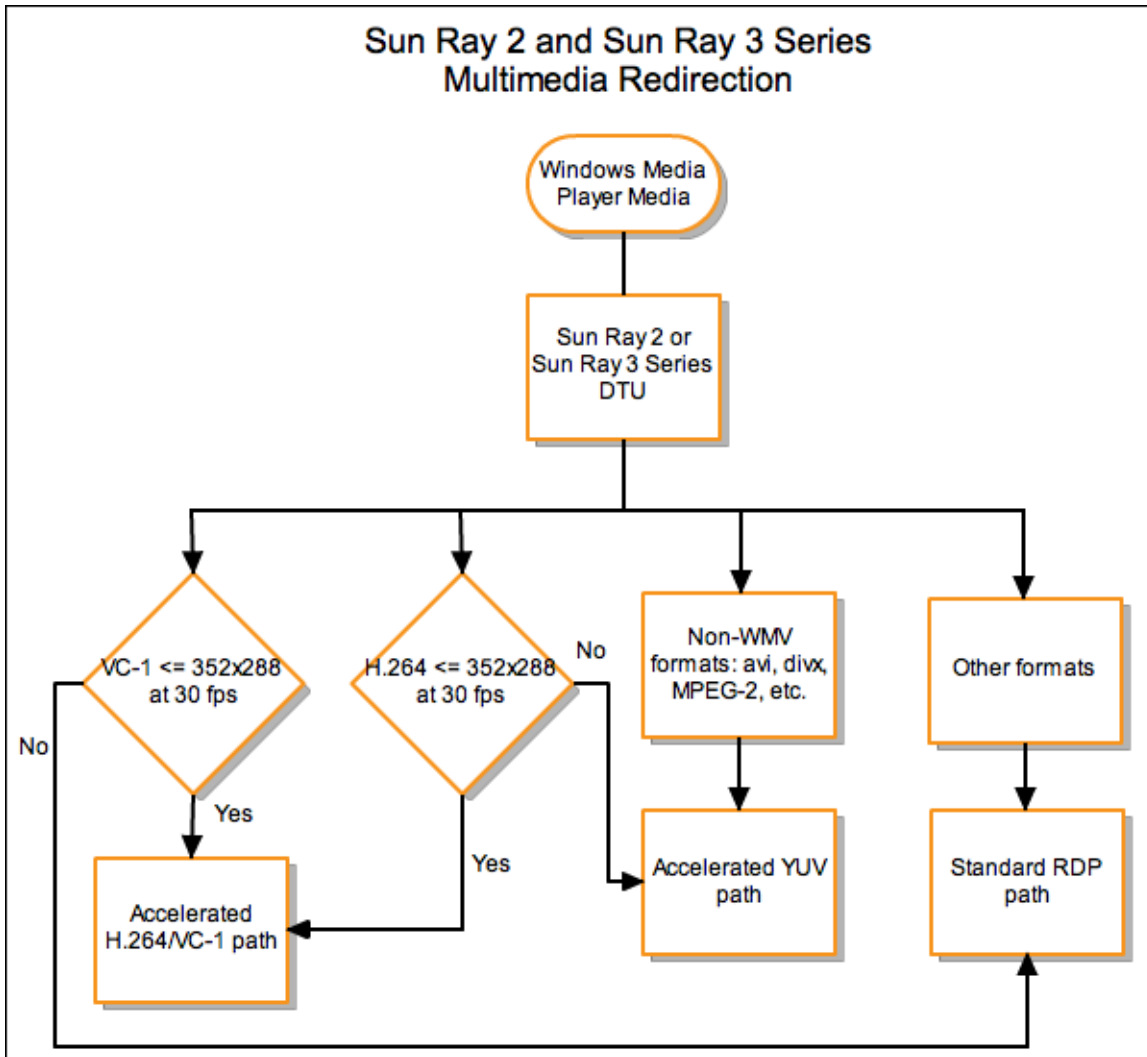
Note

The multimedia redirection feature for Windows XP and 2003 does not include support for Adobe Flash content. You need to install the [Adobe Flash Acceleration feature](#).

The multimedia redirection component supports Windows Media Player 10 and 11. A standard RDP path is used for other media formats.

The following diagrams show how the multimedia redirection works for Sun Ray DTUs.





H.264 Video Support

The best profile supported by the current Sun Ray hardware is Baseline, up to level 2.0. Certain videos encoded in the Main profile might play, however, the Sun Ray decoder does not support CABAC encoding or data partitioning, and cannot decode high-profile streams. Unsupported streams result in a black window or an error reported to the player.

For best results, video files should be encoded in Baseline profile at up to 352x288 pixels (CIF) and 15 frames per second (fps).

VC-1 Video Support

Sun Ray 2 family DTUs support all Simple and Main VC-1 profiles, up to the following levels:

Profile	Video Level
Simple Profile, Low Level	176x144 pixels (QCIF) at 15 frames per second
Simple Profile, Main Level	352x288 pixels (CIF) at 15 frames per second
	320x240 pixels (QVGA) at 24 frames per second
Main Profile, Low Level	320x240 pixels (QVGA) at 24 frames per second
	352x288 pixels (CIF) at 30 frames per second

VC-1 Simple/Main profiles are compatible with the Windows Media Video 9 (WMV9) format and also use the hardware decoding in Sun Ray 2 series DTUs.

**Note**

*.wmv files that are not VC-1 encoded cannot take advantage of accelerated playback.

YUV Video Support

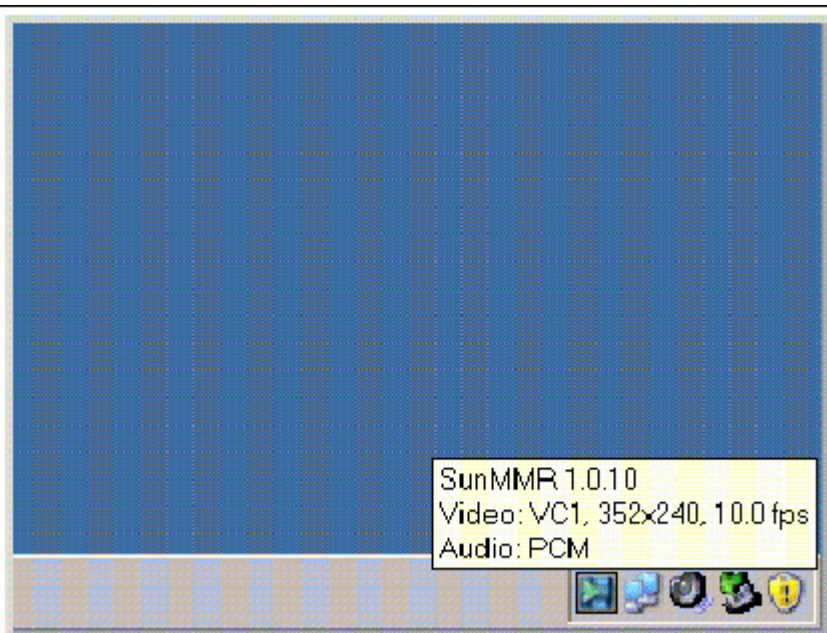
An accelerated path for YUV video delivery enables improved playback of video formats such as MPEG-1 and MPEG-2 by reducing the bandwidth required to deliver the decoded video to the Sun Ray DTU. The accelerated YUV path is used automatically so long as the correct software decoders are available for the video format required and the software is configured to make use of the XVideo extension. The following YUV formats are supported:

- Planar: YV12, I420
- Packed: UYVY, YUY2

H.264 or VC-1 video playback on a Sun Ray 1 DTU, which does not have a hardware decoding capability, uses software decoding and the accelerated YUV path.

How to Verify that Multimedia Redirection is Active

A small, context-sensitive Play button is displayed as an icon in the task bar when the multimedia redirection component is being used for video playback. Hovering the mouse over the icon displays the media type and size.



How to Disable Multimedia Redirection

The standard RDP protocol is used for video when the multimedia redirection feature is disabled.

- When issuing the `uttsc` command, use the `-M off` option.

```
% uttsc -M off <more_uttsc_options>
```

About Adobe Flash Acceleration (Windows XP and 2003)

The Adobe Flash Acceleration feature provides better performance of Flash display on DTUs. For information about installing the Adobe Flash Acceleration feature, see [How to Install the Sun Ray Connector Windows Components](#).

When Flash acceleration is enabled, Flash content is diverted from the default RDP channel and sent through a private channel to the Sun Ray

DTU to achieve better performance and audio/video synchronization. The two main paths for Flash acceleration depend on the display mechanism of the Flash video content:

- DTU (XvEnc) - Flash content is decompressed and rendered in the DTU. This path yields the highest frame rates.
- X11/Xvideo - Flash content is decompressed on the Sun Ray server and is rendered by the X11 or Xvideo API before it is sent to the DTU.

By default, the DTU (XvEnc) path is enabled. You can use the `-F` option of the `uttscc` command to control which flash acceleration path is used.

Supported Configurations

For the list of supported Windows operating systems, see [SRS 5 System Requirements](#).

Flash acceleration is provided in the following environment:

- Internet Explorer version 7 and 8 (32-bit)
- Adobe Flash 9 content with all Adobe Flash Players from versions 9 and 10



Other browsers and stand-alone applications leveraging the Flash runtime environment will not be accelerated and will continue to leverage existing RDP/X11 rendering.

How Does Flash Acceleration Work?

Flash animations are compressed on Windows and sent directly to the Windows Connector. This compression dramatically reduces the amount of data transferred between the Windows server and the Sun Ray server.

On Sun Ray 2 and Sun Ray 3 series DTUs, the Flash display updates are sent by SRWC to the DTU to be decompressed and displayed. This process reduces the data transferred between the Sun Ray server and the DTU and does not affect the Sun Ray server CPU load. In Xinerama configurations, DTU decompression is not available.

On Sun Ray 1 series DTUs, the Flash display updates are decompressed on the Sun Ray server and rendered through the Xvideo or X11 APIs.

In multihead configurations, Flash acceleration is available on all heads.

When Does Flash Acceleration Happen?

A maximum of four concurrently displayed Flash animations can be decompressed in the DTU (Sun Ray 2 and Sun Ray 3 series) or displayed over Xvideo (Sun Ray 1 series). If more than four Flash animations are displayed, the Flash animations beyond the first four are displayed using the X11 API.

On Sun Ray 2 series DTUs, Flash animations are decompressed in the DTU as long as the combined size of all Flash animations is less than 1024x768. When this size is exceeded, the Flash animations that exceed the 1024x768 limit are displayed through Xvideo or, if more than four animations are displayed, through X11.

For example, if there are three animations and the first two combined animations are below the 1024x768 limit, the first two animations will be rendered in the DTU. If the third animation pushes the combined size above the limit, then the third animation will go through Xvideo and the first two animations will still render in the DTU. However, because the largest animations are always rendered through the DTU first, the rendering order might change. To use the same example, if the third animation pushes the combined size over the limit and the first animation is the smallest out of the three, then the smaller animation will go through Xvideo and the other two animations will go to the DTU, provided that their combined size is below the limit.



Note

When calculating Flash animation combined sizes, add the pixel sizes of the animations together. For example, the combined pixel size of three animations at 640x480 is 921,600 pixels, which would be over the 1024x768 limit (786,432 pixels).

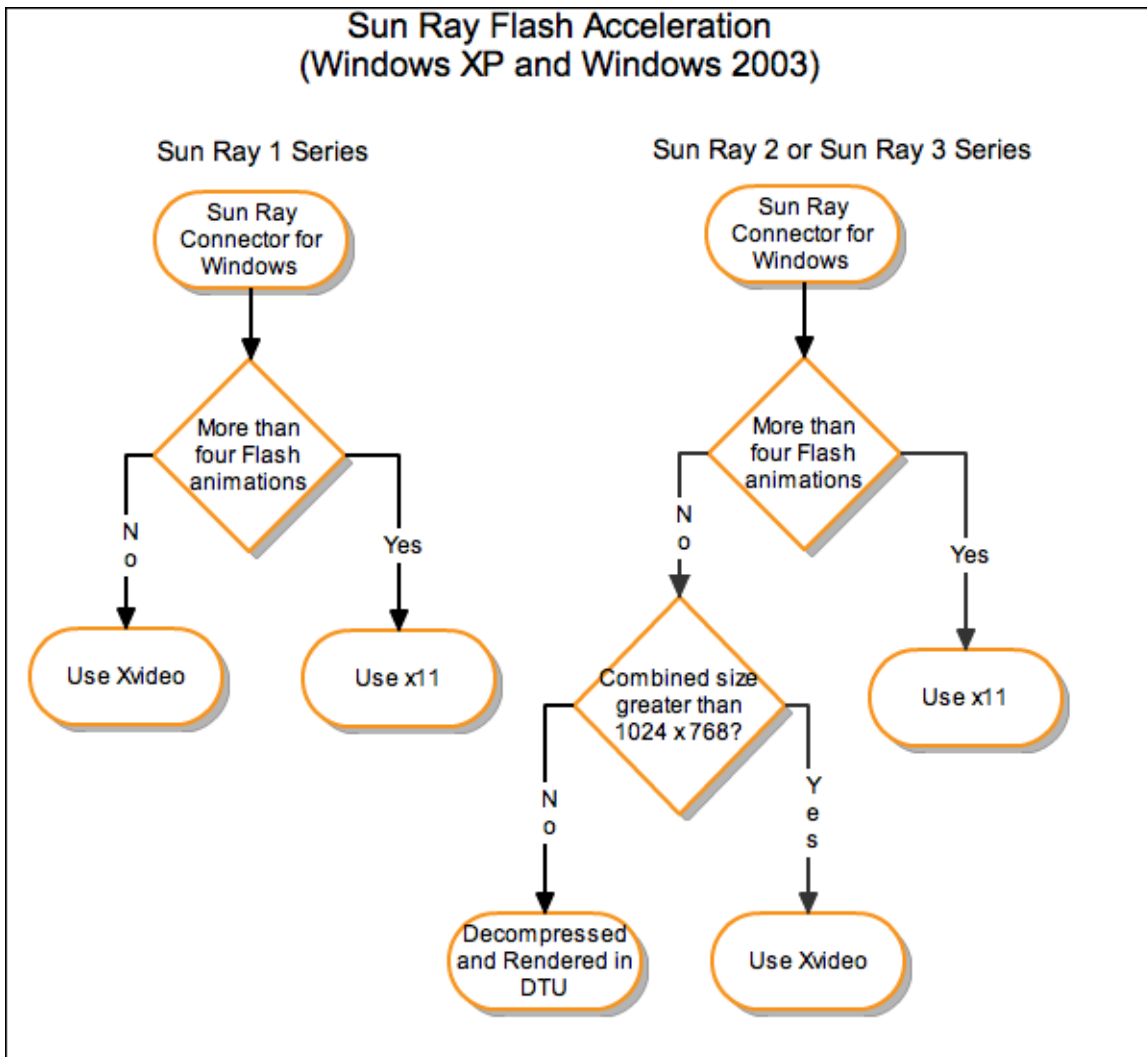
$$(640 \times 480) + (640 \times 480) + (640 \times 480) = 921,600 \text{ pixels}$$

**Note**

When the Flash animation size limit is exceeded, Xvideo or X11-based acceleration is used, with Xvideo given a priority. Depending on the Flash content that is being accelerated, X11-based acceleration or no acceleration at all might provide a better user experience than Xvideo-based acceleration.

Typically, Xvideo-based acceleration is best when most of the Flash area is updated regularly, for example, for a movie where full frames are displayed one after the other. X11-based acceleration or no acceleration can provide a better user experience if only small areas of a large Flash area are updated.

The following diagrams also describe when Adobe Flash acceleration happens.



How to Disable Adobe Flash Redirection

The standard RDP protocol is used for Adobe Flash content when the Adobe Flash acceleration feature is disabled.

- When issuing the `uttsc` command, use the `-F off` option.

```
% uttsc -F off <more_uttsc_options>
```

About Audio Input

Audio input redirects incoming audio from a Sun Ray client to a Windows session. When a user connects an analog audio input device (such as a

microphone or headset) to a physical Sun Ray client, the Windows session automatically detects and redirects the device, making it work like a local device in the Windows environment.

SRWC provides two versions of an audio input feature depending on the Windows release. For Windows XP and 2003, the feature must be installed as a [Windows Component](#). For Windows 7 and 2008 R2, audio input is automatically provided.

Audio input is disabled by default. You can enable audio input by using the following `uttsc` option:

```
-r soundin:[low|medium|high|off]
```



Windows 7 Enterprise has audio capture disabled by default. Audio capture must be enabled for the audio input feature to work properly. To enable audio capture on Windows 7 Enterprise, see [Microsoft knowledge article 2020918](#).



Audio input is not available through VPN connections.

The page Troubleshooting Multimedia Redirection does not exist.

Contents

- [About the SRWC Kiosk Mode Session](#)
 - [Session Descriptor](#)
 - [Session Script](#)
 - [Session Script Arguments](#)
- [How to Configure a Kiosk Mode Session for SRWC](#)

Managing the SRWC Kiosk Mode Session (All Topics)

About the SRWC Kiosk Mode Session

The Sun Ray Windows Connector Kiosk Mode Session enables the administrator to set up groups of DTUs to access a restricted set of applications, typically in settings where users are expected to use only one application or where security is an especially important consideration. In Kiosk Mode, the Sun Ray DTU behaves like a Windows Based Terminal, which means users do not have to interact with the Solaris or Linux login screen and no longer need to specify the `uttsc` command.

The Sun Ray Windows Connector Kiosk Mode Session is installed automatically as part of Sun Ray Windows Connector installation. The package name is `SUNWuttsc-kiosk`.

The core components of the Kiosk Mode Session are:

- Kiosk Session Service session descriptor - `/etc/opt/SUNWkio/sessions/uttsc.conf`
- Kiosk Session Service session script - `/etc/opt/SUNWkio/sessions/uttsc/uttsc`

Added applications are not supported.

Session Descriptor

The session descriptor defines a number of attributes useful for the administration and launching of the session. These attributes include the following:

Kiosk Session Descriptors	Descriptor Description
KIOSK_SESSION_EXEC	Identifies the location of the session script.
KIOSK_SESSION_LABEL KIOSK_SESSION_DESCRIPTION	Identify a label and description respectively to be used by the Sun Ray Admin GUI.

KIOSK_SESSION_ARGS	Identifies default session script arguments. For more information, see Session Script Arguments .
--------------------	---

Session Script

The session script is used to launch the Sun Ray Windows Connector. The script provides a simple wrapper on the Sun Ray Windows Connector executable, `/opt/SUNWuttsc/bin/uttsc`.

A two-minute timeout is imposed on Windows sessions that remain at the Windows login screen. When this timeout elapses, the associated Windows session is terminated and the Sun Ray Windows Connector terminates subsequently. If no Windows login takes place, the desktop unit appears to reset every two minutes.

To avoid the two-minute timeout, the session script supports its own timeout mechanism, which is initiated when the script detects that the Sun Ray Windows Connector has terminated. If the session script timeout interval has not elapsed, the session script relaunches the Sun Ray Windows Connector. If the session script timeout has elapsed, the session script terminates, and the Kiosk session also terminate as a result. The timeout may be specified as a session script argument. It has a default value of 30 minutes.

Session Script Arguments

A number of arguments are supported by the session script and they may be specified using the Sun Ray Admin GUI. Sun Ray Windows Connector arguments are not processed by the session script and are simply passed directly to the Sun Ray Windows Connector. Non-Sun Ray Windows Connector arguments are processed by the session script.

The complete argument list should be formatted according to the following example:

```
[<Non Sun Ray Connector arguments>] ["--" <Sun Ray Connector arguments>]
```

Non-Sun Ray Windows Connector Arguments

Currently, the `-t` and `-h` options are supported.

Option	Description
<code>-t</code>	Sets the value of a timeout interval (in seconds) after which the session script will terminate in the event of a Sun Ray Windows Connector termination. If Sun Ray Windows Connector terminates before the timeout has elapsed it will be restarted by the session script. The default value for timeout is 1800 (30 minutes). Values less than or equal to 0 indicate that the session script should never restart the Sun Ray Windows Connector.
<code>-h</code>	Disables the default behavior of starting <code>uttsc</code> with the <code>-m -b</code> options. This option disables full screen mode and enables the pull-down header.

Sun Ray Windows Connector Arguments

You may specify any valid `uttsc` arguments here. The `-m` and `-b` `uttsc` arguments are used by default. These arguments enable full-screen mode and disable the pull-down header respectively.



Note

The Sun Ray Windows Connector requires at least a server argument. As previously mentioned, you may use the Sun Ray Admin GUI to include this server argument in the session script argument list.

How to Configure a Kiosk Mode Session for SRWC

1. Log in to the Admin GUI and click the Advanced tab.
2. Click the Kiosk Mode tab.
3. Choose Sun Ray Connector for Windows OS from the Session menu.

VERSION LOG OUT HELP

User: admin Server: srsdemo01

Sun Ray Administration

Sun Microsystems, Inc. Java™

Servers Sessions Desktop Units Tokens Advanced Log Files

Security System Policy Kiosk Mode Card Probe Order Data Store Password

Edit Kiosk Mode

Specify the session type and general properties for Kiosk Mode. Click OK to store the changes.

Session: Sun Ray Connector for Windows OS

Timeout: Common Desktop Environment
Sun Java Desktop System 3
Sun Ray Connector for Windows OS

Maximum CPU Time:

Maximum VM Size: KB

Maximum number of Files:

Maximum File Size: 512E blocks

Locale:

Arguments: tswin?003
Default: -t 1800 --m -h

OK Cancel

Done srsdemo-01:1661

**Note**

Once the SRWC session is selected, most of the fields on the main Kiosk page are not available. The Applications list is not available because the Sun Ray Windows Connector session does not support the addition of applications.

- Add session arguments to the Arguments field at the bottom of the same page.

The minimal required argument is the host name, so the field should contain, at minimum, myhost.mydomain.com
A timeout option (-t timeout) can be added before the -- (two dashes). Further `uttscc` options can be added after the -- (two dashes).

The following example line specifies:

- A 10-minute timeout (specified in seconds) until the session is cycled if the user does not log in
- Printer forwarding
- Smart card redirection
- Optimized SRWC hotdesking behavior

```
-t 600 -- -r printer:officelaser -r scard:on -O myhost.mydomain.com
```

For more information about session arguments, see [About the SRWC Kiosk Mode Session](#).

Contents

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- Troubleshooting Printers
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Managing Printers (All Topics)

About Printing

The Sun Ray Windows Connector supports printing to the following printer configurations:

- Network printers visible on the Windows server
- Network printers visible on the Sun Ray server
- Local printers attached to the Windows server
- Local printers attached to the Sun Ray server
- Local printers attached to the DTU

Important Notes

- Network printers are not affected by hotdesking. Printers connected to DTUs are available for printing from any DTU connected to the same Sun Ray server.
- For printers accessible through the Sun Ray server (network visible or local), you need to perform some initial configuration to make the printers accessible through SRWC. See [Task Map - Managing Printers](#) for details.

Task Map - Managing Printers

Initial Configuration

For printers accessible through the Sun Ray server (network visible or local), you need to perform the following steps to make the printers accessible through SRWC.

Step	Task	Description
1	Set Up Print Queue (Solaris) Set Up Print Queue (Linux)	This step sets up a raw printer queue on the Sun Ray Server so that a Windows system can access it. If a network printer is visible on the Sun Ray server, the queue has been set up already and you should not have to perform this step.
2	Make Sun Ray Server Printers Available to Windows	This step makes printers configured on a Sun Ray server available to the Windows system.

Additional Tasks

Task	Description
Set Up Follow Me Printing	Describes how to set up Follow-Me Printing, which retains the user's default printer for a Windows session regardless of the Sun Ray DTU being used.

Maintain a Printer Cache	Describes how to use the <code>uttsprinteradm</code> to manage the users' printer configurations on the Windows system.
---------------------------------	---

How to Set Up Print Queues (Solaris)

This procedure describes how to set up a raw print queue on a Sun Ray server running Solaris so that a Windows system can access it. This procedure is typically needed for printers locally attached to the Sun Ray server.

Before You Begin

- If a network printer is visible on the Sun Ray server, this typically indicates that the queue has been set up already and you should not have to perform this task.
- These instructions pertain to raw print queues, which are print queues configured without a printer driver. Please consult your operating system documentation for instructions about setting up queues for PostScript drivers. See also the `lp` and `lpadmin` man pages.

Steps

1. Specify the printer and printer device node using the `lpadmin` command.

```
# /usr/sbin/lpadmin -p <printer-name> -v \  
/tmp/SUNWut/units/IEEE802.<mac-address>/dev/printers/<device node>
```

2. Enable the print queue.

```
# /usr/bin/enable <printer-name>
```

3. Accept the print queue.

```
# /usr/sbin/accept <printer-name>
```

Where to Go Next

To update the Windows session with the available print queues on the Sun Ray Server, you must restart the Sun Ray Windows Connector with the relevant print queues specified on the command line. See [How to Make Sun Ray Printers Available to a Windows Session](#) for details.

How to Set Up Print Queues (Linux)

This procedure describes how to set up a raw print queue on a Sun Ray server running Linux, so that it can be accessed by a Windows system. This procedure is typically needed for printers locally attached to the Sun Ray server.

Before You Begin

- If a network printer is visible on the Sun Ray server, the queue has been set up already and you should not have to perform this task.
- These instructions pertain to raw print queues, which is a print queue configured without a printer driver. Please consult your operating system documentation for instructions on setting up queues for PostScript drivers. See also the `lp` and `lpadmin` man pages.

Steps

1. Uncomment the following line from the `/etc/cups/mime.convs` file:

```
application/octet-stream          application/vnd.cups-raw          0 -
```

2. Uncomment the following line from the `/etc/cups/mime.types` file:


```
application/octet-stream
```

- Restart the cups daemon.

```
# /etc/init.d/cups restart
```

- Create a soft link to the Sun Ray printer node in `/dev/usb`.

For example, if the device node is `/tmp/SUNWut/units/IEEE802.<mac-address>/dev/printers/<device node>`, then use the following command:

```
# ln -s /tmp/SUNWut/units/IEEE802.<mac-address>/dev/printers/<device node>
/dev/usb/sunray-printer
```

Use this soft link (`/dev/usb/sunray-printer`) as the Device URI while creating the print queue.



After rebooting, you might have to create the `/dev/usb` directory and re-create the soft link.

- To complete the procedure, set up a raw print queue.

```
# /usr/sbin/lpadmin -p <printer-name> -E -v usb:/dev/usb/sunray-printer
```

- To complete this procedure for SuSE Linux:

- In the `/etc/cups/cupsd.conf` file, set the `RunAsUser` property to `No`.
- Restart the cups daemon.

```
# /etc/init.d/cups restart
```

Where to Go Next

To update the Windows session with the available print queues on the Sun Ray Server, you must restart the Sun Ray Windows Connector with the relevant print queues specified on the command line. See [How to Make Sun Ray Printers Available to a Windows Session](#) for details.

How to Make Sun Ray Printers Available to a Windows Session

The Windows session is aware only of the print queues specified in the command line when the Sun Ray Windows Connector is started. To update the Windows session with the available print queues on the Sun Ray server, you must restart the Sun Ray Windows Connector with the relevant print queues specified on the command line.

Before You Begin

- Make sure the print queues are set up on the Sun Ray server. See [How to Set Up Print Queues \(Solaris\)](#) and [How to Set Up Print Queues \(Linux\)](#) for details.
- Printer data is created on the Windows system, so make sure to specify the name of the printer's Windows driver and install it on the Windows system. If you make a printer available without specifying a driver, the Sun Ray Windows Connector defaults to a PostScript driver.
- To find the printer driver name on a Windows system, check the Windows Registry key at:

```
<MyComputer>/HKEY_LOCAL_MACHINE/System/CurrentControlSet/Control/Print/Environments/Windows
NT x86/Drivers/Version-3
```

All printer drivers installed on the system is displayed on this list.

Steps

- To specify a printer's Windows driver:

```
% /opt/SUNWuttsc/bin/uttsc -r printer:<prntername>=<driver name> <hostname.domain>
```

- To make a printer available without specifying a driver:

```
% /opt/SUNWuttsc/bin/uttsc -r printer:<prntername> <hostname.domain>
```

- To make multiple printers available:

```
% /opt/SUNWuttsc/bin/uttsc -r printer:<printer1>=<driver1>,<printer2>=<driver2>  
<hostname.domain>
```

How to Maintain the Printer Cache File

The Sun Ray server maintains a cache in the Sun Ray data store of printer configurations that users set up on the Windows system. The Sun Ray server presents the appropriate configuration to the Windows system when a user reconnects using the Sun Ray Windows Connector.

The `uttscprinteradm` CLI helps administrators to maintain this information. It can be used to list the available information and to perform cleanup in case of user or printer deletion. See the `uttscprinteradm` man page for further information.

How to Set Up Follow-Me Printing

This procedure describes how to set up Follow-Me Printing, which retains the user's default printer for a Windows session regardless of the Sun Ray DTU being used.



Note

Implementation of Follow-Me Printing relies on technology not available by default and non-public Sun Ray interfaces as well as the use of certain public Sun Ray interfaces for purposes other than their intended use. For these reasons, this feature is not a supported feature.

Steps

1. For each Sun Ray DTU of interest, specify a printer in the Sun Ray data store.
 - a. Log in to the Admin GUI.
 - b. Click Desktop Units.
 - c. Click the Sun Ray DTU for which you want to set up Follow-Me Printing.
 - d. Click Edit and add the printer's name to the Other Information field.
2. Create a shell script that queries the printer name stored in the Sun Ray data store for the current Sun Ray DTU and writes that name to the user's `$HOME/.printers` file.

For example:

```
#!/bin/sh
if [ 'uname' = Linux ] ; then
  theFlag="-P"
fi
theMACAddress='cd $theFlag $UTDEVROOT ; /bin/pwd | sed 's/.*<.....>/\1/'
thePrinter='/opt/SUNWut/sbin/utdesktop -o |
            grep $theMACAddress |
            /usr/bin/awk -F, '{print $3}'
echo "_default $thePrinter" > $HOME/.printers
```

3. Use `utaction` to invoke the script above on an initial connection and subsequently whenever a user moves from one Sun Ray DTU to another.

Provide the following scripts based on the user's login manager:

- dtlogin login manager - Xsession.d script
- Gnome Display Manager (GDM) - xinitrc.d script

For example, you might create the script `/usr/dt/config/Xsession.d/1100.SUNWut` for dtlogin or `/etc/X11/xinit/xinitrc.d/1100.SUNWut` for GDM as follows:

```
#!/bin/sh
/opt/SUNWut/bin/utaction -i -c <path-to-script> &
```

where `<path-to-script>` is the path to the script you created to retrieve the printer name in step 2.



Note

The name `1100.SUNWut` is chosen purposely in this case to ensure that the script is run or sourced after the existing script `0100.SUNWut`. The `0100.SUNWut` script is responsible for setting `$UTDEVROOT`, which is needed by the first sample script in step 2.



Note

For information about the bundled `gdmgreeter`, see the `kiosk` man page.

4. Modify your Kiosk session script arguments to redirect the printer to Windows.

You may modify these arguments through the Admin GUI. In this example you need to add the argument `-r printer:_default` to the existing arguments, resulting in an argument list similar to the following:

```
-t 1800 -- -m -b -r printer:_default <myHost>
```

where `<myHost>` corresponds to the server argument passed to `uttscc`.

Troubleshooting Printers

Printer Caching

If a user changes the driver for a printer, the settings are not restored.

To restore the settings, use the same printer driver that was used when the settings were changed.



Warning

Using a different driver, even if no settings are changed, can invalidate settings stored for that printer with any previous driver.

Printer Not Visible in Windows

If a Sun Ray printer specified on the Solaris or Linux command line is not available on Windows (that is, it is not visible in the Printers and Faxes View), the user should confirm that the printer driver name is correct and installed on the Windows server.

See [How to Make Sun Ray Printers Available to a Windows Session](#).

Windows Printing

If a Windows print job does not print, whether on a local or a network printer, the user should contact the Windows system administrator.

Solaris or Linux Printing

If a job fails and cannot be diagnosed and fixed with the ordinary UNIX remedies, such as `lpq` or `lpstat`, the user should contact the appropriate system administrator.

Sun Ray DTU Local Printing

Users can continue to send jobs from Solaris or Linux applications to printers locally attached to their Sun Ray DTU. To enable access to printers attached to the Sun Ray DTU for Windows jobs, the user must specify the printer with the `uttsc` CLI.

For more information, see [Managing Printers](#) and the `uttsc` man page.

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Managing Smart Cards (All Topics)

About Smart Cards

In addition to normal Sun Ray smart card functionality, such as hotdesking, the Sun Ray Windows Connector enables additional smart card functionality, such as the following:

- Strong, two-factor authentication for access control with digital certificates
- PIN-based logins
- Digital signing, encrypting, and decrypting of email messages from Windows-based email clients

For this purpose, SRWC uses the Sun Ray PC/SC-lite framework on the Sun Ray server and smart card middleware on the Windows system.



Note

Smart cards and the PC/SC framework are supported on the Solaris Operating System but not on Linux.

The following components are important to implement additional smart card functionality.

Component	Information
PC/SC framework	See the PC/SC-lite Release Notes , available from the Sun Download Center (SDLC).
Smart cards	See Managing Smart Cards (All Topics) .
Smart card usage on Microsoft platforms	See Microsoft's Smart Card documentation at: http://technet.microsoft.com/en-us/library/dd277362.aspx .

How to Enable Smart Card Redirection on a Per-Connection Basis

This procedure describes how to enable smart card redirection on a per-connection basis.

Steps


Smart card redirection is disabled by default. It can be enabled on a per-connection basis with the following CLI option:

```
% /opt/SUNWuttsc/bin/uttsc -r scard:on <hostname.domain>
```

How to Set Up Smart Card Login for Windows

This procedure describes how to set up smart card login for Windows.

1. Set up Active Directory and Certification Authority (CA) on the Windows system.
2. Install the PC/SC framework.
For more information, see the [PC/SC-lite Installation Guide](#).
3. Install the smart card middleware product on the Windows system.

 If you use ActivClient middleware, set the Disable PIN Obfuscation option to Yes through the ActivClient user console on the Windows system.

4. Enroll the necessary certificates onto the Smart Card using either a Sun Ray token reader or an external smart card reader connected to the Windows system.

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Managing Licenses (All Topics)

About Licensing

Microsoft Terminal Services licensing information is stored in the Sun Ray data store automatically upon Windows session startup, using the existing LDAP schema. No administrator setup or intervention is required.

Licenses can be administered, such as listing and deleting licenses, with the `utlicenseadm` command. See the `utlicenseadm man page` for details.

The Sun Ray Windows Connector supports both per-user and per-device Terminal Server Client Access Licenses (TS-CAL):

- Per-user mode - The user's hotdesking experience is virtually seamless.
- Per-device mode - The user must reauthenticate every time they hotdesk to a different DTU to ensure correct TS-CAL license handling.



Note


If you access terminal server functionality provided by Microsoft operating system products, you need to purchase additional licenses to use such products. Consult the license agreements for the Microsoft operating system products that you are using to determine which licenses you must acquire. Currently, information regarding Terminal Services can be found at: <http://www.microsoft.com/windowsserver2008/en/us/how-to-buy.aspx>


Per-user Mode Versus Per-device Mode

To show the different behavior between the per-user and per-device modes, let's start with the user logging into a Sun Ray session with a smart card and opening a connection to a Windows session. The following table shows what happens next when the user removes the smart card and inserts it again.

The User Removes the Smart Card and...	Per-user Mode	Per-device Mode
Reinserts the Smart Card in the same DTU.	The user is instantly reconnected to the existing Windows session.	The user is instantly reconnected to the existing Windows session.

Inserts the Smart Card in a different DTU.	The user is instantly reconnected to the existing Windows session.	<p>The Windows login screen prompts the user for username and password, after which the user is reconnected to the existing Windows session. Other features and services are similarly affected. For example:</p> <ul style="list-style-type: none"> • Windows Media Player stops playing audio/video file, although the application is still active on the Windows session. The user needs to replay the audio/video file. • Any serial port transfer is stopped. All the command line options specified remain valid.
--	--	---

 You can use the `-O` option of the `uttsco` command to prevent the Sun Ray Windows Connector from disconnecting upon detection of hotdesking events.

 With the `-O` option, the Sun Ray Windows Connector does not disconnect and reconnect when a hotdesk event occurs, nor does it refresh licenses on different DTUs. Instead, it uses the original license granted upon connection to the first DTU. This behavior might cause you to inadvertently violate your Microsoft Terminal Server license agreement. Because you have full responsibility for license compliance, be aware of the danger and use the `-O` option only with caution.

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Managing Session Connections (All Topics)

About Session Directory

The Sun Ray Windows Connector supports server session reconnection based on load-balancing information and Session Directory, a database that keeps track of which users are running which sessions on which Windows Terminal Servers. Session Directory functionality enables Sun Ray Windows Connector users to reconnect automatically to the right Windows session.

Both IP address-based and token-based reconnection are supported. However, token-based redirection requires the use of a hardware-based load balancer for Windows Terminal Servers configured as a server farm. The capacity to use server farms and load balancing enables Windows Terminal Servers to accommodate a larger number of Sun Ray users and DTUs.

 **Note**
To participate in a Session Directory-enabled server farm, Windows Terminal Servers must run Windows Server 2003 R2 Enterprise Edition, Windows Server 2003 R2 Data Center edition, or Windows 2008. Session Directory is an optional component that can be configured to use Microsoft proprietary or third-party load balancing products.

Setting Up, Configuring, and Managing Session Directory

For details of setup, configuration, and operation, see Microsoft's [Session Directory documentation](#).

Setting Up, Configuring, and Managing Load Balancing

Terminal services session load balancing is handled transparently by the Windows Terminal Server. For more information, please refer to [Microsoft documentation](#)

About Network Security

To secure all data being transferred to and from the Windows server, the Sun Ray Windows Connector supports built-in RDP network security and enhanced network security options. The built-in RDP security uses the RC4 cipher, which encrypts data of varying size with a 56-bit or a 128-bit key. The enhanced network security options include TLS/SSL (with optional server verification) and Network Level Authentication (NLA) using CredSSP.

Built-in RDP Network Security

The Sun Ray Windows Connector uses RSA Security's RC4 cipher to secure all data being transferred to and from the Windows system. This cipher encrypts data of varying size with a 56-bit or a 128-bit key.

Four levels of encryption can be configured at the Windows system:

Level	Description
Low	All data from client to server is encrypted based on maximum key strength supported by the client.
Client-compatible	All data between client and server in both directions is encrypted based on the maximum key strength supported by the client.
High	All data between the client and server in both directions is encrypted based on the server's maximum key strength. Clients that do not support this strength of encryption cannot connect.
FIPS-Compliant	FIPS-compliant encryption is not supported.



Note

Data encryption is bidirectional except at the Low setting, which encrypts data only from the client to the server.

Enhanced Network Security

The enhanced network security options include TLS/SSL (with optional server verification) and Network Level Authentication (NLA) using CredSSP. These options protect the Windows session from malicious users and software before a full session connection is established.

For TLS/SSL support, the RDP host must be running Windows 2003 R2, Windows 7, or Windows 2008 R2. For NLA support, the RDP host must be running Windows 7 or Windows 2008 R2, and you must use the `-u` and `-p` options with the `uttsc` command. For both TLS/SSL and NLA support, the Windows server's security layer must be configured as "SSL (TLS 1.0)" or "Negotiate."

The following `uttsc` command line examples show which security mechanism is used when the Windows Remote Desktop Service is configured to negotiate with the client. A result of "RDP" means that the built-in RDP security is used.

Command Line Examples for Enhanced Network Security

uttsc Command Line Examples	Windows XP	Windows 2003 R2	Windows 7	Windows 2008 R2
<code>-u user -p</code>	RDP	SSL/TLS	NLA	NLA
<code>-u user -j VerifyPeer:on</code>	RDP	SSL/TLS	SSL/TLS	SSL/TLS
<code>-u user -j VerifyPeer:on -p</code>	RDP	SSL/TLS	NLA	NLA
<code>-N off</code>	RDP	RDP	RDP	RDP

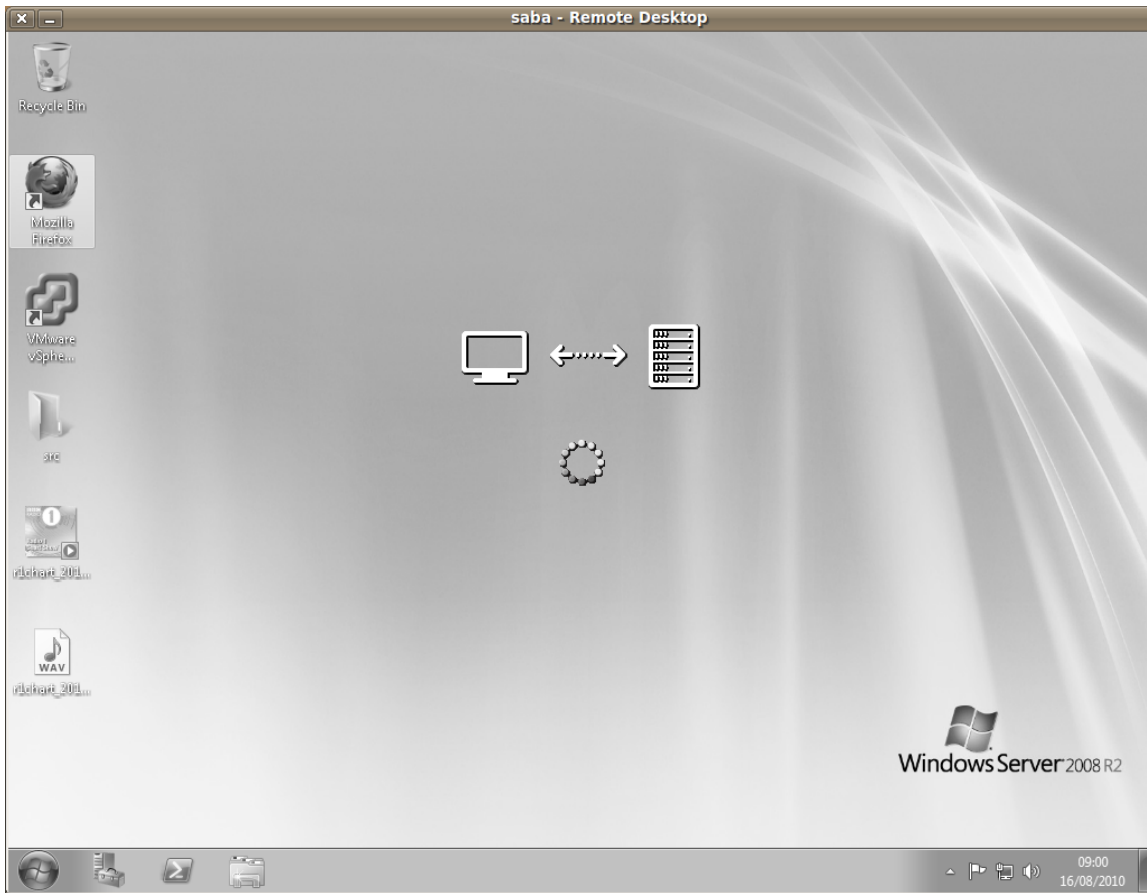
You can enforce NLA security on a Windows server. For example, on a Windows 2008 R2 server, select the following option on the Remote tab of the System Properties window: "Allow connections only from computers running Remote Desktop with Network Level Authentication (more secure)". With this option selected, users must use the `-u` and `-p` options with the `uttsc` command to connect to the server.

TLS/SSL connections require a certificate to be present on the Windows server. If that is not the case, the connection might fall back to the built-in RDP security (if allowed) or fail.

About Auto-reconnect

The auto-reconnect feature enables a Windows session to reestablish a network connection if it is unexpectedly disconnected. This feature is supported for Windows 7 and Windows 2008 R2 sessions.

When you are disconnected from a Window session, the `uttsc` command displays the following graphic on your screen.



By default, the `uttsc` command attempts to reconnect six times before ending the connection. You can control the number of reconnects through the `-U <number>` option of the `uttsc` command. Specifying `-U 0` disables the auto-reconnect feature.



Note

You may also specify the `-S` option for auto-reconnect to detect network loss.

About Compression

The Sun Ray Windows Connector uses RDP bulk compression to compress data between the Sun Ray Server, which runs the Sun Ray Windows Connector, and the Windows system.

Compression is enabled by default.

How to Disable Compression

You can be disable compression on a per-connection basis.

To disable compression:

```
% /opt/SUNWuttsc/bin/uttsc -z <hostname.domain>
```

Contents

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- Troubleshooting Windows Session Connection
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 - Connection Error Messages
- How to Enable and Disable Log and Error Messages

Troubleshooting (All Topics)

SRWC Log Files

The following log files are located on the Sun Ray server:

- SRWC logs (uttscpd.log): /var/opt/SUNWut/log/
- General messages: /var/opt/SUNWut/log/messages

For example:

```
[root][sunrayserv:/var/opt/SUNWut/log] # ls -lrt uttscpd.log*
-rw-r----- 1 root    utadmin  524249 Jul  6 08:30 uttscpd.log.9
-rw-r----- 1 root    utadmin  524271 Jul  6 08:41 uttscpd.log.8
-rw-r----- 1 root    utadmin  524230 Jul  6 08:49 uttscpd.log.7
-rw-r----- 1 root    utadmin  524266 Jul  6 08:56 uttscpd.log.6
-rw-r----- 1 root    utadmin  524245 Jul  6 09:03 uttscpd.log.5
-rw-r----- 1 root    utadmin  524267 Jul  6 09:09 uttscpd.log.4
-rw-r----- 1 root    utadmin  524267 Jul  6 09:16 uttscpd.log.3
-rw-r----- 1 root    utadmin  524275 Jul  6 09:23 uttscpd.log.2
-rw-r----- 1 root    utadmin  524258 Jul  6 09:29 uttscpd.log.1
-rw-r----- 1 root    utadmin  524281 Jul  6 09:36 uttscpd.log.0
-rw-r----- 1 root    utadmin  110380 Jul  6 09:37 uttscpd.log
```

Troubleshooting Multimedia

Log Files

When multimedia enhancements are in use, status messages are logged in the following files:

- /var/dt/Xerrors (Solaris)
- /var/log/gdm/\$DISPLAY.log (Linux)

To enable logging, see [How to Enable and Disable Log and Error Messages](#).

Adobe Flash Acceleration (Windows 7 and 2008 R2)

When the Adobe Flash acceleration is in progress, the following status messages identify the rendering mechanism used to display the content.

Message	Comments
---------	----------

Display :2.0 Video port Id 39 Compressed: JPEG-D	Indicates that the video and Adobe Flash display updates are decompressed and displayed in the DTU.
--	---

Multimedia Redirection (Windows XP and 2003)

Problem: Windows Media Player Error During Session Reconnection

If a Sun Ray Windows Connector session is relaunched or hotdesked while a supported media format clip is playing, a Windows Media Player error alert box might be displayed. If the message is displayed, the user must relaunch the clip from Windows Media Player.



Multimedia Redirection Status Messages

Message	Comments
Display :3.0 Video port Id 39 YUV: YV12 Display :3.0 Video port Id 39 YUV: I420 Display :3.1 Video port Id 49 YUV: YV12	Start of stream for XVideo. Note that the XVideo protocol does not require start/stop, so an application may send multiple streams without a new debug message.
Display :3.0 Video port Id 39 YUV: YV12 low bandwidth on Display :3.0 Video port Id 39 YUV: YV12 low bandwidth ended	An XVideo stream is using the low bandwidth logic or bandwidth has increased so it is resuming the normal logic.
Display :3.0 Video port Id 39 Compressed: H.264 Display :3.0 Video port Id 39 Compressed: VC1	Start of an XvEnc compressed video stream.
Display :3.0 Video port Id 39 YUV: YV12 hotdesked or swapped Display :3.0 Video port Id 39 Compressed: H.264 hotdesked	The session running a media stream has been hotdesked.
Display :3.0 Video port Id 39 Compressed: H.264 hotdesked firmware does not support compressed video	An XvEnc stream has been connected to a DTU that does not support decoding (non-P8 or P8 with old firmware).
Display :3.1 Video port Id 49 YUV: YV12	In a multihead configuration, Display indicates the head on which the video is being played. Each head's port ID is in a different range



Note

H.264 and VC-1 support on the DTU is not available for Xinerama sessions. In Xinerama sessions, video windows may be dragged from one DTU to another or may span multiple DTUs, but audio/video synchronization of H.264 and VC-1 support is limited to the primary DTU. Videos cannot be synchronized between DTUs. H.264 and VC-1 videos are rendered by the application in the same manner as they would be rendered on Sun Ray 1 DTUs.

Adobe Flash Acceleration (Windows XP and 2003)

Problem: Audio for a YouTube Video Is Out of Sync

Check whether the Sun Ray audio driver is set as the default:

1. From the Windows Desktop, choose Settings->Control Panel.
2. Click Sounds & Audio Devices.
3. Click the Audio tab.
4. If the Sun Ray RDP Audio Driver is not the default, select it and click Apply.
5. Close your browser and reopen it.

Adobe Flash Acceleration Status Messages

When Flash acceleration is in progress, the following status messages identify the rendering mechanism used to display Flash content.

Message	Comments
Display :2.0 Video port Id 39 Compressed: JPEG-D	Indicates that the Flash display updates are decompressed and displayed in the DTU.
Display :2.0 Video port Id 39 YUV: YV12	Indicates that the Flash display updates are decompressed on the Sun Ray server and displayed through the Xvideo API.

If Flash acceleration occurred (indicated by multimedia redirection icon) and no status messages are in the log file, then Flash display updates were decompressed on the Sun Ray Server and displayed through the X11 API.

Troubleshooting Printers

Printer Caching

If a user changes the driver for a printer, the settings are not restored.

To restore the settings, use the same printer driver that was used when the settings were changed.



Warning

Using a different driver, even if no settings are changed, can invalidate settings stored for that printer with any previous driver.

Printer Not Visible in Windows

If a Sun Ray printer specified on the Solaris or Linux command line is not available on Windows (that is, it is not visible in the Printers and Faxes View), the user should confirm that the printer driver name is correct and installed on the Windows server.

See [How to Make Sun Ray Printers Available to a Windows Session](#).

Windows Printing

If a Windows print job does not print, whether on a local or a network printer, the user should contact the Windows system administrator.

Solaris or Linux Printing

If a job fails and cannot be diagnosed and fixed with the ordinary UNIX remedies, such as `lpq` or `lprm`, the user should contact the appropriate system administrator.

Sun Ray DTU Local Printing

Users can continue to send jobs from Solaris or Linux applications to printers locally attached to their Sun Ray DTU. To enable access to printers

attached to the Sun Ray DTU for Windows jobs, the user must specify the printer with the `uttsc` CLI.

For more information, see [Managing Printers](#) and the `uttsc` man page.

Troubleshooting Windows Session Connection

Problem: Unexpected Time Zone Value

`uttsc` only considers time zones listed in `/usr/share/lib/zoneinfo/tab/zone_sun.tab` (for Solaris) and `/usr/share/zoneinfo/zone.tab` (for Linux), as valid zones that can be converted into the equivalent time zones in the Windows session. If the time zone is set to a value other than those defined in these files, then the time zone value in the Windows session can be unexpected.

Connection Error Messages

Message	Comments
Error(%d): Unable to establish data store connection.	The Sun Ray Windows Connector was unable to open a connection to the Sun Ray data store. Ensure that the SRDS has been configured for Sun Ray software and is reachable. Also, ensure that the Sun Ray Windows Connector has been successfully configured before launching it.
Error(%d): Unable to determine SRSS version.	SRWC could not determine SRSS version information. Ensure that SRSS 4.2 or above is installed and configured successfully.
Error(%d): Unable to launch Sun Ray Connector. Only SRSS 4.2 and above are supported.	SRWC 2.3 is supported only on SRSS 4.2 and above. Ensure that the correct version of SRSS is installed.
Sun Ray session is not connected, please try again.	Ensure that SRWC is being launched from a valid connected Sun Ray session.
Cannot obtain DTU MAC address.	SRWC was unable to contact the Sun Ray Authentication Manager to retrieve the DTUs MAC address. Ensure that this daemon is reachable.
Error: Sun Ray Token ID cannot be determined. Sun Ray Connector can only be launched from a Sun Ray session.	SRWC was launched from a non-Sun Ray session (for example, telnet or console). It can only be launched from a connected DTU session.
Unable to create new audio device. Using default audio device.	<code>utaudio</code> failed to create a new audio device. Check the messages logged by <code>utaudio</code> for more information. SRWC will try to use the default audio device for the session.
Device <device_name> is not allocated. Audio will not work in this session. Continuing..	On Solaris Trusted Extensions platforms, if the default audio device is not allocated, then SRWC will not be able to use any new audio device or the default audio device. In this case, the SRWC session will proceed but without audio support.
Warning. Printer preferences will not be stored. Please run <code>uttscadm</code> to complete configuration before launching Sun Ray Connector.	If <code>uttscadm</code> has not been run before the Sun Ray Windows Connector is launched, the printer preferences as sent by the Windows system will not be stored and hence cannot later be reused. This error is not fatal. The session will continue to be launched.
Unable to connect to Sun Ray Connector Proxy. Please ensure <code>uttscadm</code> has been run before launching the Sun Ray Connector.	Make sure the proxy daemon (<code>uttscpd</code>) is up and running. If the Sun Ray Windows Connector is launched before <code>uttscadm</code> has been run to configure it, then the Sun Ray Windows Connector Proxy is not reachable. This message occurs only on Solaris systems.
Unable to launch Sun Ray Connector. Please ensure <code>utconfig</code> has been run before launching the Sun Ray Connector.	If Sun Ray Windows Connector is launched without having configured Sun Ray data store using <code>utconfig</code> (from Sun Ray Server Software), then the connector cannot be used.

How to Enable and Disable Log and Error Messages

Sun Ray Windows Connector log and error messages are disabled by default.

To enable messages, type the following command:

```
# kill -USR2 <pid>
```

The pid is the process ID for an Xnewt process for an individual Sun Ray session.

To disable messages again, type the same command.

Refer to [SRWC Log Files](#) for more information about the log files, including their location.

Glossario

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Per aggiungere un termine all'elenco, utilizzare il collegamento per aggiungere un commento in basso.

A

Termine	Descrizione
AAC	Advanced Audio Coding, un formato di compressione con perdita di informazioni in grado di fornire un livello di qualità relativamente alto a velocità in bit relativamente basse.
token alias	Un token alias consente al proprietario di una card di accedere alla medesima sessione Sun Ray con un numero di token fisici maggiore di uno. Tale token è utile quando è necessaria una smart card duplicata.
ALP	Sun Appliance Link Protocol, una suite di protocolli di rete che consentono la comunicazione tra i server e le DTU Sun Ray.
AMGH	Automatic Multigroup Hotdesking Vedere hotdesking regionale
AH	Authentication header, vale a dire le intestazioni di autenticazione utilizzate come parte di un'implementazione IPSec.
criteri di autenticazione	La gestione delle autenticazioni utilizza il modulo di autenticazione per determinare i token validi e gli utenti che, in qualità di proprietari dei token, hanno accesso al sistema e alle sessioni.
token di autenticazione	Sebbene tutti i token vengano utilizzati dalla gestione delle autenticazioni per consentire o negare l'accesso alle sessioni Sun Ray, questo termine di solito si riferisce al token smart card. Vedere token.

B

Termine	Descrizione
ampiezza di banda backplane	Spesso indicato anche con il termine fabric switch. Il backplane di uno switch è la pipe attraverso cui passa il flusso di dati da una porta di input a una porta di output. Con il termine ampiezza di banda backplane si indica generalmente l'ampiezza di banda complessiva disponibile per tutte le porte di uno switch.
meccanismo barriera	Per impedire ai clienti di scaricare firmware datato rispetto al firmware già installato, l'amministratore può impostare un meccanismo barriera. Il simbolo del meccanismo barriera BarrierLevel è di norma definito nella tabella DHCP dei server Sun Ray su cui è in esecuzione la versione 2.0 o successive di Sun Ray Server Software.
bpp	Bit per pixel

C

Termine	Descrizione
CABAC	Context-Adaptive Binary Arithmetic Coding, una tecnica di codifica di entropia senza perdita di informazioni utilizzata nella codifica video di tipo H.264/MPEG-4 AVC.

CAM	Controlled Access Mode altrimenti detta modalità chiosco. A partire da SRSS 4.0, il modulo CAM è stato sostituito da un modulo chiosco riscritto.
lettore card	Vedere lettore token
categoria 5	Il tipo di cablaggio più comune utilizzato nelle LAN, adatto per voce e dati fino a 100 Mhz. Viene chiamato anche cat 5.
client-server	Un metodo per descrivere i servizi di rete e i processi utente (programmi) di questi servizi.
codec	Dispositivo o programma in grado di codificare e/o decodificare un flusso o segnale di dati digitali.
riavvio a freddo	Se si preme il pulsante per il riavvio a freddo tutte le sessioni in esecuzione su un server verranno terminate prima del riavvio dei servizi Sun Ray. Vedere riavvio.
switch cut-through	lo switch, che riceve di continuo il remainder del frame, avvia l'inoltro del frame in entrata verso la porta di uscita appena è in grado di leggere l'indirizzo MAC.

D

Termine	Descrizione
DHCP	Dynamic Host Configuration Protocol, protocollo per distribuire indirizzi IP e parametri iniziali alle DTU.
dominio	Una o più schede di sistema che agiscono come sistemi separati in grado di avviare il sistema operativo e di essere in esecuzione indipendentemente da altre schede.
DTU	Desktop Terminal Unit, il nome con cui in origine si indicavano le unità desktop Sun Ray. Tali unità vengono chiamate anche thin client Sun Ray, ultrathin client Sun Ray e terminale di visualizzazione virtuale Sun Ray.

E

Termine	Descrizione
ESP	Encapsulating Security Payloads, utilizzato come parte di IPSec.
Ethernet	Meccanismo di comunicazione fisico e a livello di collegamenti definito dalla famiglia di standard IEEE 802.3
Indirizzo Ethernet	L'indirizzo hardware univoco che viene assegnato a un computer o a una scheda di interfaccia in fabbrica. Vedere indirizzo MAC.
switch Ethernet	Unità che esegue il reindirizzamento di pacchetti dalle porte di input alle porte di output. Può costituire un componente della struttura di interconnessione Sun Ray.

F

Termine	Descrizione
failover	Trasferimento dei processi da un server non funzionante a uno funzionante.
gruppo di failover	Due o più server Sun Ray configurati per garantire la continuità del servizio nel caso di un errore di rete o del sistema. Talvolta abbreviato come FOG o HA (per high availability, elevata disponibilità). Il termine elevata disponibilità si riferisce al vantaggio di questo tipo di configurazione; il termine gruppo di failover si riferisce alla funzionalità.
stazione di servizio	Qualsiasi rete privata configurata per i servizi Sun Ray o qualsiasi rete condivisa in cui il server DHCP Sun Ray è l'unico server DHCP. Quando viene eseguito il downgrade del firmware della DTU a una versione precedente nel caso di una connessione a un server su cui è in esecuzione tale versione precedente, si rende necessario il collegamento a una stazione di servizio in modo che sia possibile eseguire il download del firmware più recente.
barriera firmware	Vedere meccanismo barriera.
FOG	Vedere gruppo di failover
fps	Frames per second (frame al secondo).

frame buffer	Dispositivo per l'output video responsabile della riproduzione video. Vedere frame buffer virtuale.
--------------	---

G

Termine	Descrizione
GEM	Gigabit Ethernet.
per un intero gruppo	In un gruppo di failover

H

Termine	Descrizione
H.264	Uno standard per la compressione video sviluppato da MPEG e VCEG per un'ampia gamma di velocità in bit e risoluzioni. È denominato anche MPEG-4 AVC (Advanced Video Coding) e MPEG-4 Part 10.
HA	High availability (elevata disponibilità) I gruppi HA di Sun Ray sono stati denominati gruppi di failover.
head	Termine colloquiale per schermo, display o monitor, specialmente in quei contesti in cui ne viene utilizzato più di uno in concomitanza con tastiera e mouse, come nella funzionalità multihead
high availability (elevata disponibilità)	Vedere failover. Il termine elevata disponibilità si riferisce a un vantaggio di questo tipo di configurazione. Il termine gruppo di failover fa riferimento alla funzionalità.
hotdesking	Possibilità per un utente di utilizzare la propria sessione su qualsiasi sistema, semplicemente rimuovendo la smart card e inserendola in una diversa DTU collegata allo stesso gruppo di server e di avere accesso istantaneo al proprio ambiente a finestre e alle proprie applicazioni su tutte le DTU.
tasto di scelta	Scelta rapida predefinita da tastiera utilizzata per avviare determinate attività sulla DTU o all'interno della sessione Sun Ray in esecuzione sul server Sun Ray. Il tasto di scelta è utilizzato per visualizzare la schermata delle impostazioni sulla DTU Sun Ray.
collegabile a caldo	Caratteristica di un componente hardware che può essere collegato o scollegato da un sistema acceso. I dispositivi USB collegati alle DTU Sun Ray sono collegabili a caldo.

I

Termine	Descrizione
sessione inattiva	Sessione in esecuzione su un server Sun Ray a cui nessun utente (identificato da un token smart card o da uno pseudo token) ha eseguito il login.
IKE	Internet Key Exchange, componente di IPSec.
struttura di interconnessioni	Tutti i cavi e gli switch che collegano le schede dell'interfaccia di rete di un server Sun Ray alle DTU Sun Ray.
intranet	Rete privata che utilizza protocolli Internet ed è interna a un'organizzazione.
indirizzo IP	Numero univoco che identifica ciascun host o altri sistemi hardware presenti in una rete. Un indirizzo IP è costituito da quattro numeri interi separati dal punto. Tali numeri interi devono essere tutti compresi nell'intervallo 0-255 (ad esempio, 129.144.0.0).
lease dell'indirizzo IP	Assegnazione di un indirizzo IP a un computer per un periodo di tempo limitato. Il leasing dell'indirizzo IP viene gestito dal protocollo DHCP (Dynamic Host Configuration Protocol). Gli indirizzi delle DTU Sun Ray sono concessi in leasing.
IPSec	Insieme di protocolli Internet Protocol (Security) atti a garantire la comunicazione IP mediante la codifica dei pacchetti di dati attraverso intestazioni di autenticazione (AH) e ESP nonché mediante un meccanismo di scambio di chiavi (IKE, key exchange mechanism).

K

Termine	Descrizione
modalità chiosco	Risorsa per eseguire le sessioni con account utente anonimo senza login UNIX. L'ambiente software nelle sessioni in modalità chiosco in genere è preconfigurato e offre funzionalità limitate. La modalità chiosco nelle versioni precedenti di SRSS era denominata anche CAM. A partire da SRSS 4.0, il modulo è stato tuttavia riscritto e ora si chiama ufficialmente modalità chiosco.

L

Termine	Descrizione
LAN	Local Area Network. Gruppo di computer vicini in grado di comunicare fra loro attraverso hardware e software.
Layer two	Data-link-layer Il modello OSI (Open Standards Interconnection) contiene sei livelli, o layer. Il layer two riguarda procedure e protocolli per attivare la comunicazione fra reti, client e server. Esso, inoltre, consente di rilevare e correggere eventuali messaggi di errore.
host locale	La CPU o il computer su cui è in esecuzione l'applicazione software.
server locale	Dal punto di vista della DTU, è il server più vicino presente nella LAN.

M

Termine	Descrizione
indirizzo MAC	Media Access Control. Un indirizzo MAC è un numero a 48 bit programmato in ciascuna scheda di interfaccia di rete dell'area locale (NIC) in fabbrica. I pacchetti LAN contengono nomi MAC di origine e di destinazione, utilizzabili dai bridge per filtrare, elaborare e inoltrare i pacchetti. 8:0:20:9e:51:cf è un esempio di indirizzo MAC. Vedere anche indirizzo Ethernet
oggetto gestito	Oggetto controllato dal software Sun Management Center.
token mobile	Con sessioni mobili abilitate, questo pseudo token consente a un utente di eseguire il login in una sessione esistente da diverse posizioni senza una smart card; in tal caso, il nome utente viene associato alla sessione. Questa tipologia di pseudo token viene chiamata token mobile
mobilità	In un ambiente SRSS, proprietà di una sessione che consente di seguire un utente da una DTU a un'altra all'interno di un medesimo gruppo di server. Nel sistema Sun Ray, la mobilità richiede l'uso di una smart card o di un meccanismo di identificazione alternativo.
moduli	I moduli di autenticazione vengono utilizzati per implementare diversi criteri di autenticazione selezionabili in loco.
MPPC	Protocollo di compressione punto-punto di Microsoft.
MTU	Maximum Transmission Unit, utilizzata per specificare il numero di byte del pacchetto di dimensioni più elevate trasmissibile da una rete.
multicasting	Processo di abilitazione della comunicazione tra i server Sun Ray verso le interfacce di rete Sun Ray in un ambiente di failover.
multihead	Vedere head.
multiplexing	La trasmissione di canali multipli in un circuito di comunicazione.

N

Termine	Descrizione
NAT	Vedere traduzione dell'indirizzo di rete
spazio dei nomi	Gruppo di nomi in cui un ID specificato deve essere univoco.

indirizzo di rete	Indirizzo di rete utilizzato per specificare una rete.
traduzione dell'indirizzo di rete	La traduzione dell'indirizzo di rete (NAT, Network address translation) generalmente prevede la mappatura dei numeri di porta per consentire a più macchine (DTU Sun Ray, ma non server Sun Ray) di condividere un unico indirizzo IP.
interfaccia di rete	Punto di accesso a un computer su una rete. Ciascuna interfaccia è associata a un dispositivo fisico. In ogni caso, un dispositivo fisico può disporre di più interfacce di rete.
schede dell'interfaccia di rete	Abbreviazione NIC Hardware che collega una workstation o un server a un dispositivo di rete.
latenza della rete	Ritardo associato allo spostamento delle informazioni attraverso una rete. Le applicazioni interattive, quali riproduzione voce e video nonché le applicazioni multimediali, risentono di tali ritardi.
maschera di rete	Numero utilizzato dal software per separare l'indirizzo della sottorete locale dal resto di un indirizzo IP dato. Un esempio di maschera di rete per una rete di classe C è 255 . 255 . 255 . 0.
stack di protocolli di rete	Suite di protocolli di rete organizzata in una gerarchia di livelli chiamata stack TCP/IP è un esempio di uno stack di protocolli Sun Ray.
NIC	Network interface card (scheda dell'interfaccia di rete)
mobilità non-smart card	Sessione mobile su una DTU Sun Ray che non si basa su una smart card. La mobilità non-smart card richiede dei criteri che consentano gli pseudo token.
NSCM (non-smart card mobility)	Vedere mobilità non-smart card.

O

Termine	Descrizione
OSD	On-screen display (visualizzazione su schermo) La DTU Sun Ray utilizza le icone OSD per avvertire gli utenti di potenziali problemi di connettività o all'avvio.

P

Termine	Descrizione
PAM	Pluggable Authentication Module (modulo di autenticazione collegabile) Gruppo di oggetti caricabili in modo dinamico che consente agli amministratori di sistema di scegliere tra i servizi di autenticazione utente disponibili.
Sessione PAM	Handle PAM singolo e stato di runtime associati a tutti gli elementi e i dati PAM.
patch	Insieme di file e directory che sostituiscono o aggiornano file e directory esistenti che impediscono l'esecuzione corretta del software sul computer. Il software patch deriva da un pacchetto specifico e può essere installato solo se il pacchetto che corregge è già presente
PCM	Pulse Code Modulation.
criteri	Vedere criteri di autenticazione
GUI a comparsa	Meccanismo che consente l'immissione dei parametri di configurazione di una DTU Sun Ray mediante la tastiera collegata.
porta	(1) Posizione per il trasferimento dei dati in entrata e in uscita rispetto a un computer. (2) Astrazione utilizzata dai protocolli di trasmissione di Internet per distinguere fra più connessioni simultanee a un singolo host di destinazione.
POST	Power-on self test.
ciclo alimentazione	Riavvio della DTU mediante il cavo di alimentazione.

pseudo sessione	Sessione Sun Ray associata a uno pseudo token e non a un token smart card.
pseudo token	Un utente che accede a una sessione Sun Ray senza smart card viene identificato dal tipo incorporato della DTU e dal suo indirizzo MAC, noto come pseudo token. Vedere token.

R

Termine	Descrizione
RDP	Microsoft Remote Desktop Protocol.
hotdesking regionale	Nota in origine come AMGH (Automatic Multigroup Hotdesking, hotdesking multigruppo automatico), questa funzionalità SRSS consente agli utenti di accedere alle proprie sessioni attraverso domini di dimensioni maggiori e distanze fisiche più elevate rispetto a quanto fosse possibile nelle versioni precedenti di SRSS. Gli amministratori abilitano tale funzionalità definendo la modalità di mappatura delle sessioni utente a un elenco espanso di server in gruppi di failover multipli.
RDS	Remote Desktop Services. Formalmente noto come servizi Terminal. Vedere servizi Terminal di Windows
RHA	Remote Hotdesk Authentication (autenticazione hotdesk remota), miglioramento per la sicurezza che richiede l'autenticazione di SRSS prima della riconnessione dell'utente a una sessione esistente. RHA non è applicabile alle sessioni chiosco, create per consentire l'accesso anonimo che non richiede autenticazione. È possibile gestire i criteri RHA mediante l'opzione corrispondente della GUI o il comando <code>utpolicy</code> .
riavvio	È possibile riavviare i servizi Sun Ray mediante il comando <code>utrestart</code> con le opzioni di riavvio a caldo o di riavvio a freddo dalla GUI. Il riavvio a freddo termina tutte le sessioni Sun Ray a differenza del riavvio a caldo.

S

capovolgimento schermo	Possibilità di visualizzare la panoramica delle schermate individuali create in origine da un gruppo multihead su una DTU Sun Ray con un head singolo.
server	Sistema che fornisce servizi o risorse a uno o più client.
servizio	In un ambiente SRSS, qualsiasi applicazione che si possa collegare direttamente alle DTU Sun Ray. Può includere server audio, video, Xserver, l'accesso ad altri sistemi e il controllo dei dispositivi della DTU.
sessione	Gruppo di servizi associati a un token di autenticazione. È possibile associare una sessione a un token incorporato in una smart card. Vedere token.
mobilità della sessione	La capacità della sessione di "seguire" l'ID di login dell'utente o un token inserito in una smart card.
smart card	In genere, una scheda di plastica contenente un microprocessore in grado di eseguire calcoli. Le smart card utilizzabili per inizializzare una sessione Sun Ray o per eseguire il collegamento contengono identificatori quali il tipo di card e l'ID. È possibile registrare i token smart card nel Sun Ray Data Store o per mano dell'amministratore Sun Ray o, se quest'ultimo lo stabilisce, per mano dell'utente stesso.
token smart card	Token di autenticazione contenuto in una smart card. Vedere token.
SNMP	Simple Network Management Protocol
spanning tree	Algoritmo intelligente che consente ai bridge di mappare una topologia ridondante eliminando il loop dei pacchetti nelle LAN.
switch store and forward	Tale switch legge e memorizza l'intero frame in entrata in un buffer, verifica la presenza di errori, legge e cerca gli indirizzi MAC, quindi inoltra il frame completo alla porta di uscita.
sottorete	Schema di lavoro che divide una singola rete logica in reti fisiche di minori dimensioni per semplificare il routing.
sistema	Il sistema Sun Ray consiste di DTU Sun Ray, server, software del server e reti fisiche che li collegano.

T

TCP/IP	Il Transmission Control Protocol/Internet Protocol (TCP/IP) è un protocollo di rete che consente la comunicazione fra diverse reti collegate, computer con architetture hardware differenti e diversi sistemi operativi.
thin client	i thin client accedono in remoto ad alcune risorse di un server, ad esempio la capacità di elaborazione e di memoria. Le DTU Sun Ray utilizzano il server per tutte le attività di elaborazione e memorizzazione.
scatto	Intervallo di tempo a partire da un evento di rete specifico. Si definisce come 1/100 di secondo, secondo la convenzione SNMP.
valore di timeout	Intervallo di tempo massimo consentito fra i diversi tentativi di comunicare della DTU con la gestione delle autenticazioni
token	Il sistema Sun Ray richiede che ciascun utente presenti un token utilizzato dalla gestione delle autenticazioni per consentire o negare l'accesso al sistema e alle sessioni. Il token comprende un tipo e un ID. In caso di una smart card, vengono utilizzati il tipo e l'ID della smart card come token. Se non si utilizza una smart card, verranno utilizzati come pseudo token il tipo e l'ID (l'indirizzo Ethernet o l'indirizzo MAC dell'unità) incorporati nella DTU. Con sessioni mobili abilitate, questo pseudo token consente a un utente di eseguire il login in una sessione esistente da diverse posizioni senza una smart card; in tal caso, il nome utente viene associato alla sessione. Uno pseudo token utilizzato per una sessione mobile viene chiamato token mobile. È inoltre possibile creare dei token alias per consentire agli utenti l'accesso alla medesima sessione con un numero di token fisici superiore a uno.
lettore di token	DTU Sun Ray dedicata alla lettura di smart card e alla restituzione degli identificatori associabili ai proprietari delle card (gli utenti).
server attendibile	Server che appartengono al medesimo gruppo di failover e che sono dunque attendibili l'uno nei confronti dell'altro.

U

URI	Uniform Resource Identifier, il termine generico per tutti i nomi e indirizzi che fanno riferimento a oggetti del World Wide Web.
sessione utente	Sessione in esecuzione su un server Sun Ray a cui un utente (identificato da un token smart card o da uno pseudo token) ha eseguito il login.

V

VC-1	Nome non ufficiale dello standard di codifica video SMPTE 421M, ora supportato per i dischi Blu-ray e Windows Media Video 9.
desktop virtuale	Macchina virtuale contenente un'istanza desktop in esecuzione e gestita all'interno dell'infrastruttura desktop virtuale: generalmente un desktop Windows XP o Vista a cui si accede mediante RDP.
frame buffer virtuale	Porzione di memoria sul server Sun Ray che contiene lo stato attuale della visualizzazione dell'utente.

W

Termine	Descrizione
riavvio a caldo	Vedere riavvio.
WMA	Formato file di compressione dati e codec Windows Media Audio sviluppati da Microsoft.
gruppo di lavoro	Insieme di utenti associati che si trovano vicini uno all'altro. Un gruppo di DTU Sun Ray collegate a un server Sun Ray fornisce servizi a un gruppo di lavoro.
sistema Windows	All'interno della documentazione relativa a SRWC, "sistema Windows" indica un sistema operativo Windows accessibile da una DTU Sun Ray mediante SRWC. Un Terminal Server di Windows costituisce un esempio di un sistema Windows.
Terminal Server di Windows	Server su cui è in esecuzione un software Windows Server con i servizi Terminal di Windows abilitati.

servizio Terminal di Windows	Componente Microsoft Windows che rende le applicazioni e i desktop Windows accessibili a utenti e client remoti. A seconda della versione di Windows, tale funzionalità viene chiamata servizi Terminal, servizi Desktop remoto o connessione Desktop remoto.
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X

Termine	Descrizione
Xnewt	Il nuovo Xserver predefiniti per Sun Ray Server Software 4.1 e versioni successive su Solaris.
Xserver	Processo che controlla un'unità video bitmap su X Window System. Esegue le operazioni richieste dalle applicazioni client. Sun Ray Server Software contiene due Xserver: Xsun, Xserver predefinito nelle versioni precedenti di SRSS e Xnewt, Xserver predefinito per SRSS 4.1 e versioni successive. Xnewt consente l'utilizzo delle funzionalità multimediali più recenti.

Y

Termine	Descrizione
YUV	Semplice meccanismo senza perdita di informazione utilizzato per memorizzare immagini o sequenze di immagini.

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