Guida all'installazione di
Sun Ray Connector for Windows OS 2.2 (Solaris)

February 2011

ORACLE

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Indice

Installazione in Solaris (tutti gli argomenti)

SRS 5 System Requirements

This page provides the product requirements for the SRS 5 release, which includes SRSS 4.2 and SRWC 2.2.

Sun Ray Server Operating System Requirements

The following table provides the supported Sun Ray server operating systems for the SRSS 4.2 and SRWC 2.2 releases.

Platform	Releases
Solaris	• Solaris 10 5/09 or later on SPARC and x86 platforms • Solaris 10 5/09 or later on SPARC and x86 platforms with Solaris Trusted Extensions
Linux	• Oracle Linux 5.4 and 5.5 (32-bit and 64-bit) • SuSE Linux Enterprise Server (SLES) 10 with Service Pack 2 (32-bit and 64-bit) • Red Hat Enterprise Linux 5 Update 3 server (32-bit and 64-bit)

For additional operating system requirements, see Additional Software Requirements.

SRWC 2.2 System Requirements for Components

The following table provides a software support matrix for all the components of SRWC.

> **Note**
> Windows 7 and Windows 2008 R2 support requires the SRWC 2.2 patch, version -02 or greater.

	Windows XP SP 2 (64-bit)	Windows XP SP 3 (32-bit)	Windows 2003 R2 SP2 (32-bit/64-bit)	Windows Vista SP 2 (32-bit/64-bit)	Windows 2008 SP 2 (32-bit/64-bit)	Windows 7 (32-bit/64-bit)	Windows 2008 R2 (64-bit)
Windows Remote Desktop Connection Support	✓	✓	✓	✓	✓	✓	✓
SRWC Component							
Multimedia Redirection • Supported only with Windows Media Player 10 and 11	✓	✓	✓				
Adobe Flash Acceleration • Supported only with Internet Explorer version 7 and 8, 32-bit • Adobe Flash 9 content with all Adobe Flash Players from versions 9 and 10	✓	✓	✓				
USB Redirection • Supported only with Sun Ray server running Solaris 10 5/09 or later • Supported only in Full Screen Windows Kiosk Mode	✓	✓					
Audio Input	✓	✓	✓				
Session Directory/Session Broker			✓		✓		✓
32-bit Color				✓	✓	✓	✓
	Windows XP SP 2 (64-bit)	Windows XP SP 3 (32-bit)	Windows 2003 R2 SP2 (32-bit/64-bit)	Windows Vista SP 2 (32-bit/64-bit)	Windows 2008 SP 2 (32-bit/64-bit)	Windows 7 (32-bit/64-bit)	Windows 2008 R2 (64-bit)

> **Note**
> Multimedia redirection, Adobe Flash acceleration, and USB redirection require additional software to be installed on the Windows server. For detailed information, see How to Install the Sun Ray Connector Windows Components.

Licensing

The Sun Ray Software can be licensed as follows:

- Per Named User Plus - is defined as an individual authorized by the customer to use the programs which are installed on a single server or multiple servers, regardless of whether the individual is actively using the programs at any given time.

- Per Sun Ray Device - is defined as any licensed software or hardware device, whether from Oracle or a 3rd party, that accesses a Sun Ray Server environment using the ALP (Appliance Link Protocol), an Oracle Virtual Desktop Infrastructure server environment using ALP or RDP (Remote Desktop Protocol), or an Oracle Secure Global desktop environment using the AIP (Adaptive Internet Protocol).

Connecting to a Sun Ray Software environment via a Sun Ray client or the Oracle Virtual Desktop Access client without an appropriate software license is prohibited.

Daemon proxy

Solo in ambiente Solaris, Sun Ray Windows Connector utilizza un daemon denominato `uttscpd` come proxy per le interazioni con Sun Ray Data Store. Per impostazione predefinita viene usata la porta 7014. È disponibile anche un comando, `uttscrestart`, che consente all'amministratore di riavviare `uttscpd`.

Durante l'installazione, il programma di installazione richiede un gruppo UNIX valido ed esistente a cui assegnare i file binari del daemon proxy e di Sun Ray Windows Connector. Questo gruppo viene usato per stabilire una connessione sicura tra Sun Ray Connector e il proxy. Il proxy convalida e consente i collegamenti da un file binario solo se appartiene a questo gruppo. Non utilizzare questo gruppo per altri utenti o componenti.

> **Nota**
> Il riavvio del daemon `uttscpd` non influisce sulle sessioni esistenti di Sun Ray Windows Connector.

Porte e protocolli

In questa pagina vengono indicati i requisiti per porte e protocolli di SRWC. Per i requisiti relativi a porte e protocolli specifici di SRSS, vedere la pagina Porte e protocolli di SRSS.

Operazioni di SRWC

Per le operazioni di base di SRWC (accesso alla porta RDP), nel firewall del server Windows la porta TCP 3389 deve essere aperta per consentire le connessioni in ingresso. Nel firewall del server Sun Ray dove è in esecuzione SRWC, la porta TCP 3389 deve essere aperta per consentire le connessioni in uscita.

Reindirizzamento multimediale

Per il reindirizzamento multimediale, nel firewall del server Windows la porta TCP 6000 deve essere aperta per consentire le connessioni in ingresso. Nel firewall del server Sun Ray (dove SRWC è in esecuzione), la porta TCP 6000 deve essere aperta per consentire le connessioni in uscita.

English

Installazione di SRWC (Solaris)

Di seguito è riportata la procedura di disinstallazione di SRWC (Sun Ray Connector for Windows) in un server Sun Ray con sistema operativo Solaris.

Procedura

1. Diventare superutente del server Solaris Sun Ray.
   Per evitare errori dello script di installazione derivanti dalle impostazioni dell'ambiente utente, usare il seguente comando:

   ```
   % su - root
   ```

2. Creare un gruppo UNIX dedicato per l'utilizzo di Sun Ray Windows Connector.

```
# groupadd <nome gruppo>
```

nome gruppo indica il nome da assegnare al gruppo. Il primo carattere del nome deve essere alfabetico. Non aggiungere utenti a questo gruppo.

3. Passare alla directory dell'immagine di installazione SRWC che contiene il programma di installazione di SRWC.
4. Installare il software SRWC.

```
# ./installer
```

5. Quando richiesto, specificare il nome del gruppo da utilizzare per SRWC (il gruppo creato nel passaggio 2).

```
Enter the name of a pre-existing group for use by Sun Ray Connector: <group-name>
```

6. Al termine dell'installazione eseguire lo script di configurazione automatico.

```
# /opt/SUNWuttsc/sbin/uttscadm -c
```

Lo script `uttscadm` avvia il daemon proxy SRWC (`uttscpd`) e aggiunge una voce per `uttscpd` nel file `/etc/services`, usando la porta 7014 per impostazione predefinita. `uttscpd` è descritto nella sezione Daemon proxy.

7. Riavviare i servizi Sun Ray se viene richiesto.

```
# /opt/SUNWut/sbin/utrestart
```

Se lo script `uttscadm` non lo richiede, non è necessario riavviare i servizi Sun Ray.

Attività aggiuntive

Al termine dell'installazione di SRWC, potrebbe essere necessario eseguire attività aggiuntive.

Operazione	Descrizione
Installazione dei componenti di Sun Ray Windows Connector	Indica la procedura di installazione dei componenti SRWC nel sistema Windows, che includono reindirizzamento multimediale, accelerazione Adobe flash, driver audio Sun Ray e reindirizzamento USB.
Configurazione di Solaris Trusted Extensions	Per garantire il corretto funzionamento di Sun Ray Windows Connector su un server Solaris Trusted Extensions, il sistema Windows a cui accedere deve essere reso disponibile al livello desiderato.
Configurazione dell'accesso alla stampante	Affinché le stampanti accessibili mediante il server Sun Ray (stampanti di rete visibili o locali) siano accessibili mediante SRWC, è necessario eseguire alcune operazioni iniziali di configurazione.
Configurazione di una sessione chiosco	Per impostare un accesso personalizzato o limitato a Windows, configurare un'implementazione del chiosco per Sun Ray Windows Connector.

Argomenti correlati

- Disinstallazione di SRWC

How to Install the Sun Ray Connector Windows Components

This procedure provides the steps to install the following SRWC components on the Windows system:

- Multimedia redirection - Enhanced performance for Windows Media Player.
- Adobe Flash acceleration - Enhanced playback capabilities for Adobe Flash content.
- Sun Ray audio driver - Enhanced audio and video synchronization for multimedia content.

- USB redirection - Enables access to USB devices connected to a Sun Ray DTU from a Windows session.
- Audio input - Enables audio recording on a Sun Ray DTU from a Windows session.

Before You Begin

- For information about how to install and configure SRSS 4.2 and SRWC 2.2, see the Sun Ray Server Software 4.2 and the Sun Ray Connector for Windows OS Version 2.2 documentation.
- If you want to install the Sun Ray Connector Windows components by using the `*.msi` files, you can use a 3rd-party tool to extract the `*.msi` files from the `srs-wininstaller.exe` file.

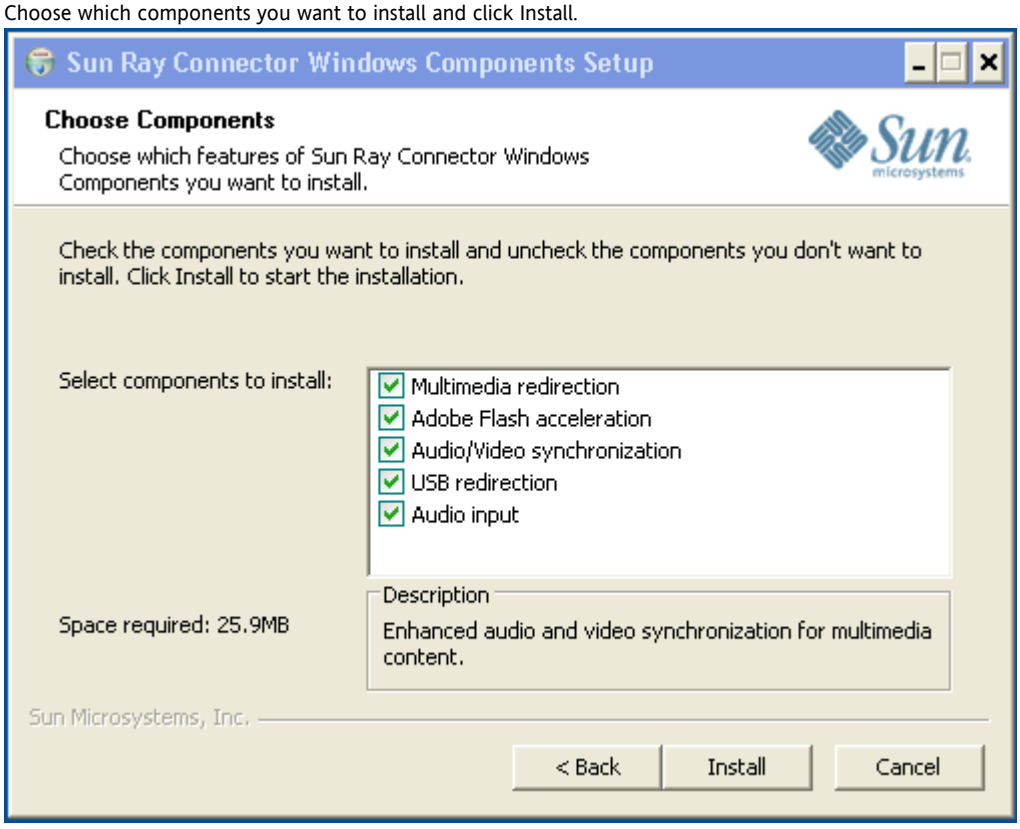
> **Note**
> To bypass the installation UI, you can run `srs-winstaller /S` from the command line.

Steps

1. Log in to the Windows system as Administrator.
2. If you plan to install the USB Redirection component on a Virtual Machine (VM), you must add USB drivers on some VMs if they do not provide drivers by default. See How to Add USB Drivers to a Virtual Machine for details.
3. The Windows system must have access to the SRWC image.

```
<SRWC_image>/srwc2.2/Sun_Ray_Connector_Windows_Components_1.0
```

4. Copy the `srs-winstaller.exe` file from the SRWC image to the Windows system.
5. Double-click the `srs-winstaller` icon to start the Sun Ray Connector Windows Components Setup Wizard.
6. Review the License Agreement and click I Agree.
7. Choose which components you want to install and click Install.



8. Click Finish once the installation has finished.
   Restart the Windows system if instructed.
9. Go to the following sections (next steps) based on the features you installed.
   - Multimedia Redirection - Next Steps
   - Adobe Flash Acceleration - Next Steps
   - Sun Ray Audio Driver - Next Steps
   - USB Redirection - Next Steps

Multimedia Redirection - Next Steps

Additional Requirements for H.264 (MPEG-4)

The multimedia component does not include audio/video demux and decoders for H.264 (MPEG-4) streams. To ensure that MPEG-4 video streams are accelerated properly, you need to download some third-party or freeware solutions.

Consider the following freeware:

- MatroskaSplitter: http://haali.cs.msu.ru/mkv/
- ffdshow: http://sourceforge.net/project/showfiles.php?group_id=173941

Alternatively, you can use a third-party codec, such as the SDK codec from MainConcept: http://www.mainconcept.com

For the MainConcept codec, the following items are required:

- MPEG splitter
- MPEG decoder
- MP4 splitter
- MP4 decoder
- H.264 decoder

Many other solutions are possible. Not all solutions are listed here.

Xinerama Limitation

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. Audio/video synchronization of H.264 and VC-1 support is limited to the primary DTU, and the videos cannot be synchronized between DTUs. H.264 and VC-1 videos may still be rendered by the application in the same manner as they would be rendered on Sun Ray 1 DTUs.

For more information on Xinerama, see About Multihead Configurations.

Adobe Flash Acceleration - Next Steps

For Adobe Flash animations, users must enable "Third party browser extensions" in their browser's Internet Options.

Sun Ray Audio Driver - Next Steps

Caution
For audio to work properly, the Sun Ray audio driver must be set as the default. If users have changed their default audio driver, they must perform the following procedure to make the Sun Ray audio driver the default.# From the Windows Desktop, choose Settings->Control Panel.

1. Click Sounds & Audio Devices.
2. Click the Audio tab.
3. If the Sun Ray RDP Audio Driver is not the default, select it and click Apply.
4. Close your browser and reopen it.

USB Redirection - Next Steps

Under MyComputer, right-click Properties > Hardware > DeviceManager, the `utSrSession` under the `System devices` entry should be displayed (Click image to enlarge).

See How to Verify that USB Redirection is Active for information about how to verify that USB redirection is working from a new session.

Configurazione di Solaris Trusted Extensions per l'accesso a Windows

Di seguito è riportata la procedura di configurazione di Solaris Trusted Extensions per l'accesso a Windows.

Procedura

Per garantire il corretto funzionamento di Sun Ray Windows Connector su un server Solaris Trusted Extensions, il sistema Windows a cui accedere deve essere reso disponibile al livello desiderato.

1. Rendere disponibile il sistema Windows per il modello `public`.
    a. Avviare Solaris Management Console.

    ```
    # smc &
    ```

    b. Effettuare le seguenti selezioni in Management Tools (Strumenti di gestione):
        i. Selezionare hostname:Scope=Files, Policy=TSOL.
        ii. Selezionare System Configuration (Configurazione di sistema)>Computers and Networks (Computer e reti)>Security Templates (Modelli di protezione)>public.
    c. Scegliere Action (Azione)>Properties (Proprietà)>Hosts Assigned to Template (Host assegnati al modello).
    d. Selezionare Host.
    e. Digitare l'indirizzo IP del sistema Windows, ad esempio 10.6.100.100.
    f. Fare clic su Aggiungi.
    g. Fare clic su OK.
2. Configurare la porta 7014 come porta multi-livello per il daemon `uttscpd`.
    a. Avviare Solaris Management Console se non è ancora in esecuzione:

    ```
    # smc &
    ```

    b. Selezionare hostname:Scope=Files, Policy=TSOL.
    c. Selezionare System Configuration->Computers and Networks->Trusted Network Zones (Aree di rete attendibili)->global.
    d. Scegliere Action->Properties.
    e. Attivare le porte facendo clic su Add nella sezione Multilevel Ports for Shared IP Addresses (Porte multilivello per indirizzi IP condivisi).
    f. Aggiungere il numero di porta 7014, selezionare il protocollo TCP e fare clic su OK.
    g. Riavviare i servizi di rete.

    ```
    # svcadm restart svc:/network/tnctl
    ```

    h. Verificare che questa porta sia indicata come porta condivisa.

    ```
    # /usr/sbin/tninfo -m global
    ```

3. Creare voci per il daemon `uttscpd` in ognuna delle zone locali in cui Sun Ray Windows Connector verrà avviato.
   La voce del file `/etc/services` per il daemon proxy SRWC viene creata automaticamente nella zona globale al momento della configurazione; è tuttavia necessario creare le voci corrispondenti nelle zone locali.

   Queste voci possono essere create manualmente o con un'attivazione in loopback del file `/etc/services` della zona globale nelle zone locali, per l'accesso in lettura.

   Per creare questa voce manualmente, inserire la voce seguente nel file della zona locale.

   ```
   uttscpd      7014/tcp       # SRWC proxy daemon
   ```

4. Riavviare il server Sun Ray.

   ```
   # /usr/sbin/reboot
   ```

Installazione del pacchetto di integrazione per JDS (Java Desktop System) - Solaris

Il pacchetto di integrazione per Sun JDS (Java™ Desktop System) per il sistema operativo Solaris contiene un'interfaccia dalla riga di comando denominata `uttscwrap`, che migliora l'integrazione di Sun Ray Windows Connector con il desktop JDS in Solaris 10. Il pacchetto di integrazione per JDS è incluso nella directory Supplemental dell'immagine software di Sun Ray Windows Connector.

Vedere Avvio di una sessione Windows in JDS (Java Desktop System) per informazioni su come utilizzare `uttscwrap` in seguito all'installazione.

Procedura

1. Diventare superutente del server Solaris Sun Ray.

   ```
   % su - root
   ```

2. Accedere alla directory `Supplemental` dell'immagine di SRWC.
   Nel seguente esempio, l'immagine è stata attivata su `/cdrom/cdrom0`.

   ```
   # cd /cdrom/cdrom0/Supplemental/JDS_Integrator/Solaris_10+/Packages/i386|sparc
   ```

3. Installare il pacchetto di integrazione per JDS (`SUNWuttscwrap`).

   ```
   # pkgadd -d .
   ```

   Il comando `uttscwrap` è installato nella directory `/opt/SUNWuttscwrap/bin`. Per ulteriori informazioni sul comando `uttscwrap`, vedere la pagina man `uttsc`(1).

Disinstallazione di SRWC

Di seguito è riportata la procedura di disinstallazione di SRWC (Sun Ray Connector for Windows) in un server Sun Ray.

Procedura

1. Come superutente, aprire una finestra della shell nel server Sun Ray.
   Per evitare errori dello script di installazione derivanti dalle impostazioni dell'ambiente utente, usare il seguente comando:

   ```
   % su - root
   ```

2. Prima della disinstallazione del software SRWC, annullarne la configurazione.

```
# /opt/SUNWuttsc/sbin/uttscadm -u
```

   Nel sistema operativo Solaris, la voce `uttscpd` viene rimossa dal file `/etc/services` e il daemon proxy SRWC viene arrestato.

3. Rimuovere il software SRWC.

```
# /opt/SUNWuttsc/sbin/uninstaller
```

Aggiornamento (tutti gli argomenti)

Aggiornamento di SRWC

Di seguito è riportata la procedura di aggiornamento alla versione più recente di SRWC (Sun Ray Connector for Windows). Per eseguire l'aggiornamento da una versione precedente di Sun Ray Windows Connector, è necessario eseguire il programma di installazione e lo script di configurazione `uttscadm`.

Procedura

1. Passare alla directory immagine del CD-ROM di Sun Ray Windows Connector.
   Ad esempio:

```
# cd /cdrom/cdrom0
```

2. Installare il software Sun Ray Windows Connector.

```
# ./installer
```

   Lo script del programma di installazione indica la versione di Sun Ray Windows Connector già installata nel sistema.
   Ad esempio:

```
Sun Ray Connector 2.1 is currently installed.
Do you want to uninstall it
and install Sun Ray Connector 2.2?
Accept (Y/N):
```

3. Rispondere Y o N al prompt "Accept (Y/N)".
   a. Rispondere N per lasciare installata la versione esistente.
   b. Rispondere Y per disinstallare la vecchia versione del software di Sun Ray Windows Connector e installare quella più recente. L'archivio dati di Sun Ray esistente (SRDS) non viene rimosso né modificato con la procedura di aggiornamento.
4. Eseguire nuovamente lo script di configurazione automatico.

```
# /opt/SUNWuttsc/sbin/uttscadm -c
```

Glossary

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

If you would like to add a term to the list, use the Add Comment link at the bottom of the page.

A

Term	Description
AAC	Advanced Audio Coding, a "lossy" compression format capable of delivering relatively high quality at relatively low bit rates.
alias token	An alias token that enables a card owner to access the same Sun Ray session with more than one physical token. This token can be useful when a user needs a duplicate smart card.
ALP	The Sun Appliance Link Protocol, a suite of network protocols that enable communication between Sun Ray servers and DTUs.
AMGH	Automatic Multigroup Hotdesking. See regional hotdesking.
AH	Authentication headers used as part of an IPSec implementation.
authentication policy	The Authentication Manager uses the selected authentication module to determine what tokens are valid and which users, as token owners, have access to the system and sessions.
authentication token	Although all tokens are used by the Authentication Manager to grant or deny access to Sun Ray sessions, this term usually refers to a user's smart card token. See token.

B

Term	Description
backplane bandwidth	Sometimes also referred to as "switch fabric." A switch's backplane is the pipe through which data flows from an input port to an output port. Backplane bandwidth usually refers to the aggregate bandwidth available among all ports within a switch.
barrier mechanism	To prevent clients from downloading firmware that is older than the firmware that is already installed, the administrator can set a barrier mechanism. The barrier mechanism symbol BarrierLevel is defined by default in the DHCP table of Sun Ray servers running version 2.0 or later of Sun Ray Server Software.
bpp	Bits per pixel.

C

Term	Description
CABAC	Context-adaptive binary arithmetic coding, a "lossless" entropy coding technique used in H.264/MPEG-4 AVC video encoding.
CAM	Controlled Access Mode, also known as kiosk mode. As of SRSS 4.0, the CAM module was replaced by a rewritten Kiosk module.
card reader	See token reader.
category 5	The most common type of wiring used in LANs. It is approved for both voice and data at up to 100 Mhz. Also called "cat 5."
client-server	A common way to describe network services and the user processes (programs) of those services.
codec	A device or program capable of encoding or decoding a digital data stream or signal.
cold restart	Pressing the Cold Restart button terminates all sessions on a given server before restarting Sun Ray services. See restart.
cut-through switch	The switch begins forwarding the incoming frame onto the outbound port as soon as it reads the MAC address while continuing to receive the remainder of the frame.

D

Term	Description
DHCP	Dynamic Host Configuration Protocol, a means of distributing IP addresses and initial parameters to the DTUs.

domain	A set of one or more system boards that acts as a separate system capable of booting the OS and running independently of any other board.
DTU	Desktop Terminal Units, the original name of Sun Ray desktop units. These units are also referred to as Sun Ray thin clients, Sun Ray ultra-thin clients, and Sun Ray virtual display terminals.

E

Term	Description
ESP	Encapsulating Security Payloads, used as part of IPSec.
Ethernet	Physical and link-level communications mechanism defined by the IEEE 802.3 family of standards.
Ethernet address	The unique hardware address assigned to a computer system or interface board when it is manufactured. See MAC address.
Ethernet switch	A unit that redirects packets from input ports to output ports. It can be a component of the Sun Ray interconnect fabric.

F

Term	Description
failover	The process of transferring processes from a failed server to a functional server.
failover group	Two or more Sun Ray servers configured to provide continuity of service in the event of a network or system failure. Sometimes abbreviated as FOG or HA (for high availability). The term high availability refers to the benefit of this type of configuration; the term failover group refers to the functionality.
filling station	Any private network configured for Sun Ray services or any shared network in which the Sun Ray DHCP server is the only DHCP server. When a DTU's firmware is downgraded to an earlier version because it connects to a server running the earlier version, it needs to be connected to a filling station so that it can download newer firmware.
firmware barrier	See barrier mechanism.
FOG	See failover group.
fps	Frames per second.
frame buffer	Video output device that drives the video display. See virtual frame buffer.

G

Term	Description
GEM	Gigabit Ethernet.
group-wide	Across a failover group.

H

Term	Description
H.264	A standard for video compression developed by MPEG and VCEG for a wide range of bit rates and resolutions. Also known as MPEG-4 AVC (Advanced Video Coding) and MPEG-4 Part 10.
HA	High availability. Sun Ray HA groups have traditionally been called failover groups.
head	Colloquial term for a screen, or display, or monitor, especially in a context where more than one is used in conjunction with the same keyboard and mouse, as in "multihead" feature.

high availability	See failover. The term high availability refers to a benefit of this type of configuration. The term failover group refers to the functionality.
hotdesking	The ability for a user to remove a smart card, insert it into any other DTU within a server group, and have the user's session available for instantaneous access to the user's windowing environment and current applications from multiple DTUs.
hot key	A predefined keyboard shortcut used to trigger certain activities either on the DTU or within the Sun Ray session running on the Sun Ray server. A hot key is used to bring up the Settings screen on the Sun Ray DTU.
hot-pluggable	A property of a hardware component that can be inserted into or removed from a system that is powered on. USB devices connected to Sun Ray DTUs are hot-pluggable.

I

Term	Description
idle session	A session that is running on a Sun Ray server but to which no user (identified by a smart card token or a pseudo-token) is logged in.
IKE	Internet Key Exchange, a component of IPSec.
interconnect fabric	All the cabling and switches that connect a Sun Ray server's network interface cards to the Sun Ray DTUs.
intranet	A private network that uses internet protocols and is confined to an organization.
IP address	A unique number that identifies each host or other hardware system on a network. An IP address is composed of four integers separated by periods. Each decimal integer must be in the range 0-255 (for example, 129.144.0.0).
IP address lease	The assignment of an IP address to a computer system for a specified length of time, rather than permanently. IP address leasing is managed by the Dynamic Host Configuration Protocol (DHCP). The IP addresses of Sun Ray DTUs are leased.
IPSec	The Internet Protocol (Security) set of protocols seeks to secure IP communications by encoding data packets through authentication headers (AH) and encapsulating security payloads (ESP) and by providing a key exchange mechanism (IKE).

K

Term	Description
kiosk mode	A facility to run sessions under an anonymous user account without a UNIX login. Kiosk sessions provide a preconfigured, usually restricted, software environment. The term kiosk mode was used interchangeably with CAM in earlier versions of SRSS. As of SRSS 4.0, this module was completely rewritten and is now officially called kiosk mode.

L

Term	Description
LAN	Local Area Network. A group of computer systems in close proximity that can communicate with one another through connecting hardware and software.
layer 2	The data link layer. The OSI (Open Standards Interconnection) model contains seven layers. Layer 2 is concerned with procedures and protocols for operating the communication lines between networks as well as clients and servers. Layer 2 also has the ability to detect and correct message errors.
local host	The CPU or computer on which a software application is running.
local server	From the DTU's perspective, the most immediate server in the LAN.

M

Term	Description
MAC address	Media Access Control. A MAC address is a 48-bit number programmed into each local area network interface card (NIC) at the time of manufacture. LAN packets contain destination and source MAC names and can be used by bridges to filter, process, and forward packets. 8:0:20:9e:51:cf is an example of a MAC address. See also Ethernet address
managed object	An object monitored by the Sun Management Center software.
mobile token	If mobile sessions are enabled, this pseudo-token enables a user to log in to an existing session from different locations without a smart card, in which case the user name is associated with the session. This type of pseudo-token is called a mobile token.
mobility	For the purposes of the Sun Ray Server Software, the property of a session that enables it to follow a user from one DTU to another within a server group. On the Sun Ray system, mobility requires the use of a smart card or other identifying mechanism.
modules	Authentication modules are used to implement various site-selectable authentication policies.
MPPC	Microsoft Point-to-Point Compression protocol.
MTU	Maximum Transmission Unit, used to specify the number of bytes in the largest packet a network can transmit.
multicasting	The process of enabling communication between Sun Ray servers over their Sun Ray network interfaces in a failover environment.
multihead	See head.
multiplexing	The process of transmitting multiple channels across one communications circuit.

N

Term	Description
NAT	See network address translation.
namespace	A set of names in which a specified ID must be unique.
network address	The IP address used to specify a network.
network address translation	Network address translation (NAT) typically involves the mapping of port numbers to allow multiple machines (Sun Ray DTUs, but not Sun Ray servers) to share a single IP address.
network interface	An access point to a computer system on a network. Each interface is associated with a physical device. However, a physical device can have multiple network interfaces.
network interface card	Abbreviated as NIC. The hardware that links a workstation or server to a network device.
network latency	The time delay associated with moving information through a network. Interactive applications such as voice, video displays, and multimedia applications are sensitive to these delays.
network mask	A number used by software to separate the local subnet address from the rest of a given Internet protocol address. An example of a network mask for a class C network is `255.255.255.0`.
network protocol stack	A network suite of protocols, organized in a hierarchy of layers called a stack. TCP/IP is an example of a Sun Ray protocol stack.
NIC	Network interface card.
non-smart card mobility	A mobile session on a Sun Ray DTU that does not rely on a smart card. NSCM requires a policy that allows pseudo-tokens.
NSCM	See non-smart card mobility.

O

Term	Description
OSD	On-screen display. The Sun Ray DTU uses OSD icons to alert the user of potential start-up or connectivity problems.

P

Term	Description
PAM	Pluggable Authentication Module. A set of dynamically loadable objects that gives system administrators the flexibility of choosing among available user authentication services.
PAM session	A single PAM handle and runtime state associated with all PAM items, data, and the like.
patch	A collection of files and directories that replace or update existing files and directories that prevent proper execution of the software on a computer system. The patch software is derived from a specified package format and can be installed only if the package it fixes is already present.
PCM	Pulse Code Modulation.
policy	See authentication policy.
Pop-up GUI	A mechanism that enables configuration parameters for a Sun Ray DTU to be entered from the attached keyboard.
port	(1) A location for passing data in and out of a computer system. (2) The abstraction used by Internet transport protocols to distinguish among multiple simultaneous connections to a single destination host.
POST	Power-on self test.
power cycling	Using the power cord to restart a DTU.
pseudo-session	A Sun Ray session associated with a pseudo-token rather than a smart card token.
pseudo-token	A user accessing a Sun Ray session without a smart card is identified by the DTU's built-in type and MAC address, known as a pseudo-token. See token.

R

Term	Description
RDP	Microsoft Remote Desktop Protocol.
regional hotdesking	Originally known as Automatic Multigroup Hotdesking (AMGH), this SRSS feature enables users to access their sessions across wider domains and greater physical distances than was possible in earlier versions of SRSS. Administrators enable this feature by defining how user sessions are mapped to an expanded list of servers in multiple failover groups.
RDS	Remote Desktop Services. Formally known as Terminal Services. See Windows Terminal Services.
RHA	Remote Hotdesk Authentication, a security enhancement that requires SRSS authentication before users can reconnect to an existing session. RHA does not apply to Kiosk sessions, which are designed for anonymous access without authentication. RHA policy can be administered either through a GUI option or with the `utpolicy` command.
restart	Sun Ray services can be restarted either from the `utrestart` command or with the Warm Restart or Cold Restart options through the GUI. A a cold restart terminates all Sun Ray sessions; a warm restart does not.

S

screen flipping	The ability on a Sun Ray DTU with a single head to pan to individual screens that were originally created by a multihead group.
server	A computer system that supplies computing services or resources to one or more clients.
service	For the purposes of the Sun Ray Server Software, any application that can directly connect to the Sun Ray DTU. It can include audio, video, Xservers, access to other machines, and device control of the DTU.

session	A group of services associated with an authentication token. A session may be associated with a token embedded on a smart card. See token.
session mobility	The ability for a session to "follow" a user's login ID or a token embedded on a smart card.
smart card	Generically, a plastic card containing a microprocessor capable of making calculations. Smart cards that can be used to initiate or connect to Sun Ray sessions contain identifiers such as the card type and ID. Smart card tokens may also be registered in the Sun Ray Data Store, either by the Sun Ray administrator or, if the administrator chooses, by the user.
smart card token	An authentication token contained on a smart card. See token.
SNMP	Simple Network Management Protocol
spanning tree	An intelligent algorithm that enables bridges to map a redundant topology and eliminates packet looping in Local Area Networks (LANs).
store-and-forward switches	The switch reads and stores the entire incoming frame in a buffer, checks it for errors, reads and looks up the MAC addresses, and then forwards the complete good frame out onto the outbound port.
subnet	A working scheme that divides a single logical network into smaller physical networks to simplify routing.
system	The Sun Ray system consists of Sun Ray DTUs, servers, server software and the physical networks that connect them.

T

TCP/IP	Transmission Control Protocol/Internet Protocol (TCP/IP) is a networking protocol that provides communication across interconnected networks between computers with diverse hardware architectures and operating systems.
thin client	Thin clients remotely access some resources of a computer server, such as compute power and large memory capacity. The Sun Ray DTUs rely on the server for all computing power and storage.
tick	The time interval since a specific network event. It is defined as 1/100th of a second, which is the usual SNMP convention.
timeout value	The maximum allowed time interval between communications from a DTU to the Authentication Manager.
token	The Sun Ray system requires each user to present a token, which the Authentication Manager uses to allow or deny access to the system and to sessions. A token consists of a type and an ID. If the user uses a smart card, the smart card's type and ID are used as the token. If the user is not using a smart card, the DTU's built-in type and ID (the unit's Ethernet, or MAC, address) are used instead as a pseudo-token. If mobile sessions are enabled, a user can log in to an existing session from different locations without a smart card, in which case the user name is associated with the session. A pseudo-token used for mobile sessions is called a mobile token. Alias tokens can also be created to enable users to access the same session with more than one physical token.
token reader	A Sun Ray DTU that is dedicated to reading smart cards and returning their identifiers, which can be associate with card owners (users).
trusted server	Servers in the same failover group that "trust" one another.

U

URI	Uniform Resource Identifier, the generic term for all types of names and addresses that refer to objects on the World Wide Web.
user session	A session that is running on a Sun Ray server and to which a user (identified by a smart card token or a pseudotoken) is logged in.

V

VC-1	Informal name of the SMPTE 421M video codec standard, now a supported standard for Blu-ray Discs and Windows Media Video 9.

virtual desktop	A virtual machine containing a desktop instance that is executed and managed within the virtual desktop infrastructure, usually a Windows XP or Vista desktop accessed through RDP.
virtual frame buffer	A region of memory on the Sun Ray server that contains the current state of a user's display.

W

Term	Description
warm restart	See restart.
WMA	Windows Media Audio data compression file format and codec developed by Microsoft.
work group	A collection of associated users who exist in near proximity to one another. A set of Sun Ray DTUs that are connected to a Sun Ray server provides computing services to a work group.
Windows system	Throughout the SRWC documentation, "Windows system" indicates a Windows OS that can be accessed from a Sun Ray DTU using SRWC. A Windows Terminal Server is one example of a Windows system.
Windows Terminal Server	A server running Windows Server software with Windows Terminal Services enabled.
Windows Terminal Service	A Microsoft Windows component that makes Windows applications and desktops accessible to remote users and clients. Depending on the Windows release, this feature may be called Terminal Services, Remote Desktop Services, or Remote Desktop Connection.

X

Term	Description
Xnewt	The new default Xserver for Sun Ray Server Software 4.1 and later on Solaris.
Xserver	A process which controls a bitmap display device in an X window system. It performs operations on request from client applications. Sun Ray Server Software contains two Xservers: Xsun, which was the default Xserver in previous versions of SRSS, and Xnewt, which is the default Xserver for SRSS 4.1 and later. Xnewt enables the latest multimedia capabilities.

Y

Term	Description
YUV	Simple, lossless mechanism to store images or a sequence of images.