



Troubleshooting and Tuning Tips

This appendix contains the following sections:

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Note - For the latest information regarding Sun Ray Server Software patches, check:

<http://www.sun.com/software/sunray/upgrades.jsr>

Solaris operating environment patches and other software patches are available at:

<http://access1.sun.com> and on the SunSolve™ Website.

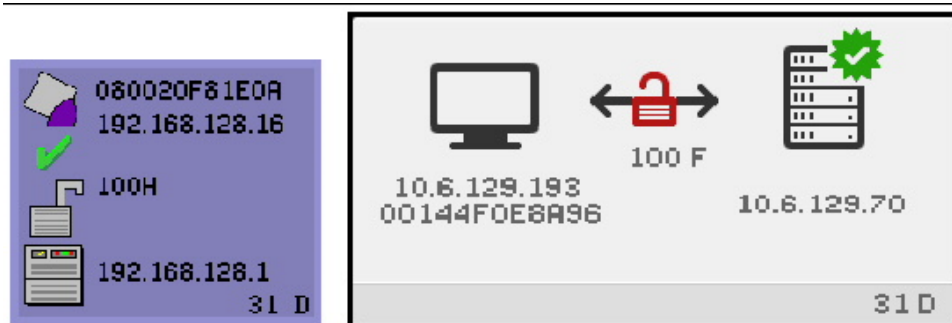
Understanding OSD

Sun Ray Server Software on-screen displays (OSD) to help administrators and others identify problems visually. The most important information about the Sun Ray DTU and its current state is displayed on the screen.

OSD Icon Topography

The original OSD supplied with earlier versions of Sun Ray Server Software and DTU firmware have now been replaced with larger icons that provide the same information in an easier to read format. It is always a good idea to make sure that you are using the latest firmware. See [Managing Firmware Versions](#). Both sets of OSD icons are composited live, based on the current state of connectivity at a given moment. Examples of the original OSD are shown at left in the figures below, with equivalent or similar examples of the newer OSD at the right.

FIGURE B-1 Layout of Old (left) and New (right) OSD Icons



The OSD icons display:

- Ethernet address
- Currently assigned IP address of the DTU
- Link status of the currently connected Sun Ray server

- Authentication Server IP address
- Icon code and DHCP state

To help you locate problems, the OSD icons display a numeric icon code followed by an alphabetic DHCP state code. You can look up the meaning of the numeric OSD message codes in [TABLE B-1](#) and the alphabetic DHCP state codes in [TABLE B-2](#), and firmware download error codes in [TABLE B-4](#). Encryption and authentication information is also displayed when appropriate.

Sun Ray DTUs can function in a private interconnect or in a simple LAN environment with only an IP address, but additional basic parameters and Sun Ray-specific vendor options are needed for more complex LAN operations, such as when a DTU is located several hops away from the Sun Ray Server's subnet.

OSD icon messages and codes are summarized in the following tables:

TABLE B-1 Icon Messages

Icon Code	Meaning
1	Sun Ray DTU is starting up and is waiting for ethernet link
2	Sun Ray DTU is downloading new firmware
3	Sun Ray DTU is storing new firmware in its flash memory
4	Either the download or storage of new firmware has failed
5	There is no session to connect with the Sun Ray
6	The server is denying access to the Sun Ray
7	Local pin entry to the smart card has failed
8	In local smart card pin entry mode
9	There is an over current condition on the USB bus, i.e., the total number of devices draws too much current. Consider using a powered hub.
11	Server is authenticated by the Sun Ray DTU and the graphic/keyboard network connection is encrypted
12	The Sun Ray DTU cannot authenticate the server but the graphic/keyboard network connection is still being encrypted
13	Server authenticated to the Sun Ray; network connection between Sun Ray and server not encrypted
14	Server not authenticated to the Sun Ray; graphic/keyboard network connection is not encrypted
15	the Sun Ray DTU is refusing to talk to the server due to the server's refusal or inability to authenticate or encrypt the network connection
16	The Sun Ray USB bus is temporarily busy servicing a high-speed device, and the keyboard or mouse may not be responsive to user input.
21	The Sun Ray DTU is booting up and is waiting on DHCP IP address and parameter assignment.
22	The Sun Ray DTU is booting up and is now waiting for the initial connection to a Sun Ray server.
23	The connection between the Sun Ray DTU and the network is down. Check the network drop cable and (if the network drop cable is okay) the network switch.
24	The Sun Ray DTU has disconnected from the previous server.

Icon Code	Meaning
26	The Sun Ray DTU has connected to the server and is waiting for graphics traffic.
27	The Sun Ray DTU is broadcasting to locate a Sun Ray server since either it was not provided with Sun Ray specific DHCP parameters or all of the specified servers are not responding.
28	VPN connection being attempted
29	VPN connection established
30	VPN connection error
	Icons 31 through 34 display network status when the three audio keys are pressed simultaneously.
31	The network link is up, the server is authenticated, and graphics/keyboard network connections are not encrypted.
32	The network link is up, the server is not authenticated, and graphics/keyboard network connections are encrypted.
33	The network link is up, the server is authenticated and graphics/keyboard are encrypted.
34	The network link is up, the server is not authenticated and graphics/keyboard are not encrypted.
35	The DTU has been disconnected from its server, either by a STOP-Q session disconnect event or by the VPN session timeout value having been set and exceeded.
50	The server is refusing to talk to the Sun Ray DTU due to the Sun Ray's refusal or inability to authenticate or encrypt the network connection

TABLE B-2 DHCP State Codes

DCHP State Code	Meaning
A	DCHP only provided IP address with no additional parameters.
B	DCHP provided IP address, subnet mask, and router, but Sun Ray vendor-specific parameters are missing.
C	DHCP provided IP address and Sun Ray vendor-specific parameters, but subnet mask and router are missing.
D	DHCP provided all expected parameters.
	Codes E, F, H, and I are valid only with OSD icon 28
E	VPN Phase 1 IKE initiated.
F	VPN Phase 1 IKE complete.
H	VPN Phase 2 initiated.
I	VPN Phase 2 complete.

DCHP State Code	Meaning
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TABLE B-3 Power LED

DTU Hardware State	Action to Take
Off	Check to see if the DTU is plugged in. Replace the DTU.
Amber	Hardware fault. Replace the DTU.
Blinking	PROM is corrupted. Check that firmware downloads are properly configured and enabled, then power cycle the DTU.
Card reader LED remains on even when smart card is removed	Card reader hardware problem. Replace the DTU.

TABLE B-4 Firmware Download Error Codes and Messages

Error Code	Error Message
E	FW Load: No server
F	FW Load: Name too long
G	FW Load: Bad read
H	FW Load: Bad signature
I	FW Load: Failed decompression
J	FW Load: Invalid module type
K	FW Load: Version mismatch
L	FW Load: Not enough memory
M	FW Load: Prevented by barrier
N	FW Load: Invalid HW version
O	FW Load: Flash write error

NOTE: - Firmware download error codes are valid only with OSD icon 2.

Sun Ray Desktop Unit Startup

The first display a user should see is depicted below:

FIGURE B-2 DTU Startup OSD



This icon indicates that the DTU has passed the power-on self test but has not detected an Ethernet signal yet. This icon is displayed as part of the normal startup phase and is usually displayed for only a few seconds.

▼ If this icon stays on for more than 10 seconds

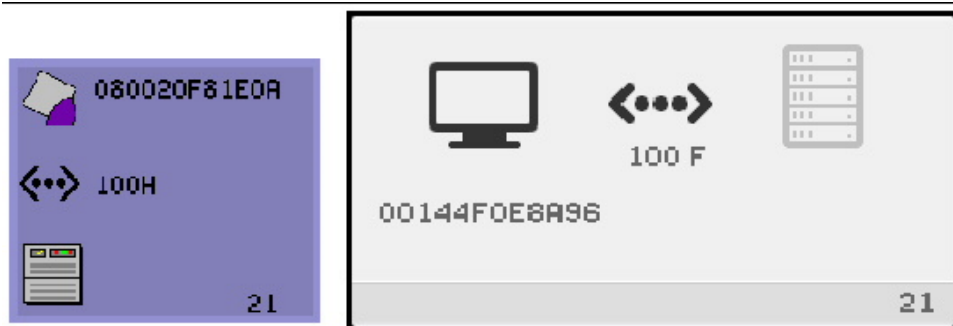
1. Check that the Ethernet cable is correctly plugged into the DTU and the other end is plugged in to the correct hub, switch, or network outlet.

A link light on the switch or hub indicates that the connection is alive.

2. If the DTU is connected through a hub or a switch, make sure that the hub or switch is powered on and configured correctly.

After the Sun Ray DTU has verified its network connection, the user should see this OSD:

FIGURE B-3 Network Connection Verified



This icon indicates that the DTU has detected the Ethernet carrier but has not yet received its initial parameters or IP address from DHCP. This icon is displayed as part of the normal startup phase and is usually displayed for only a few seconds.

▼ If this icon stays on for more than 10 seconds

1. Make sure that the DHCP server is configured correctly, is up and running, and has not run out of IP addresses to assign to clients.
2. Verify that your DHCP server is configured properly for network parameters.

After the DHCP server has allocated an IP address, the icon is updated with the unit's IP address; if the response is inadequate, the Sun Ray DTU issues a `DHCP inform` request to attempt to obtain the Sun Ray vendor-specific parameters. The Sun Ray DTU continues all the way through booting with just a DHCP supplied IP address but usually functions better with some additional parameters.

At this point, depending on whether you have configured your Sun Ray servers to run on a LAN or a dedicated interconnect, OSD 21A or 21B may display.

Code 21 A indicates that the DTU got an IP address and is waiting for a `DHCP inform` response to other parameters.

Code 21 B indicates that the DTU got an IP address and IP router and is waiting for Sun Ray vendor-specific options from DHCP `inform`.

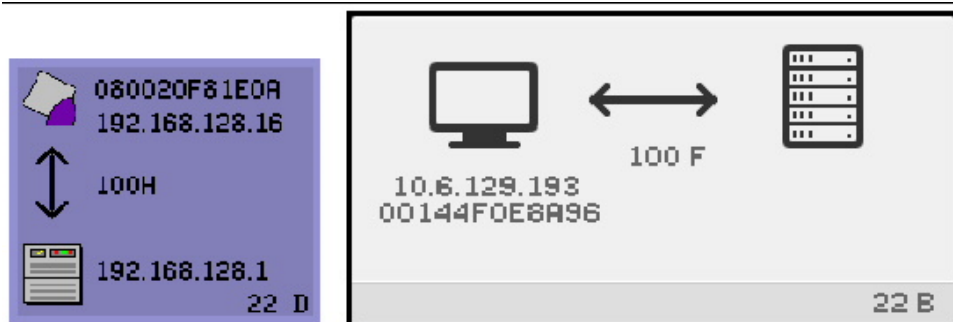
Note - If you see a 21 A or 21 B with a DTU IP address in a LAN deployment, the Sun Ray DTU is trying to use DHCP `inform` to get Sun Ray-specific parameters.

▼ Actions to Take

1. For LAN configurations with other (non-Sun Ray) DHCP services but no `bootp` proxy agent, verify the DHCP server and the Sun Ray vendor tags.
2. For routed configurations, verify that the `bootp` proxy agent is configured correctly in the Sun Ray DTU's subnet and that it points to one of the Sun Ray servers in the failover group.
3. For non-routed private interconnect configurations, the Sun Ray server also performs the functions of a DHCP server. Verify that it is configured properly for DHCP services.

When DHCP finishes, the Sun Ray DTU tries to connect to a Sun Ray server and the Authentication Manager running on it.

FIGURE B-4 Waiting to Connect to Authentication Manager



This icon indicates that the DTU has received its initial parameters from DHCP but has not yet connected to the Sun Ray Authentication Manager. This icon is displayed as part of the normal startup phase and is usually displayed for only a few seconds.

▼ If the icon displays for more than a few seconds or if the DTU continues to reset after the icon is displayed

1. Make sure that Sun Ray services, including the Authentication Manager, are up and running on the Sun Ray server.

In a LAN configuration or other routed environment:

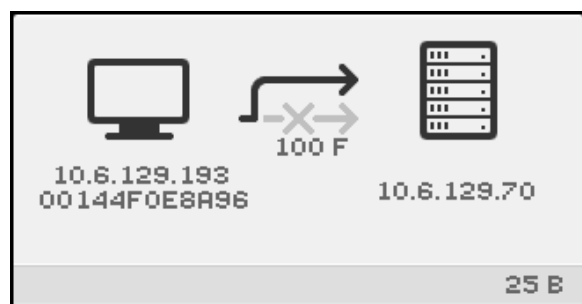
2. Make sure that the Authentication Manager can be reached from the IP address assigned to the DTU.
3. Verify that the routing information the DTU receives is correct.
4. Run `utquery` for the DTU's IP address.

The `utquery` command displays the parameters a Sun Ray DTU has received. If `utquery` fails to display an `AuthSrvr` parameter, the DHCP server for Sun Ray parameters may not be reachable or may not be configured properly. Confirm that the `DHCPServer` and `INFORMServer` values are appropriate. If not, look at your `bootp` relay configurations and DHCP server configurations for network and Sun Ray parameters. For details of these parameters, see the `utquery` man page.

To Restart DHCP on a Solaris server, type the following as superuser:

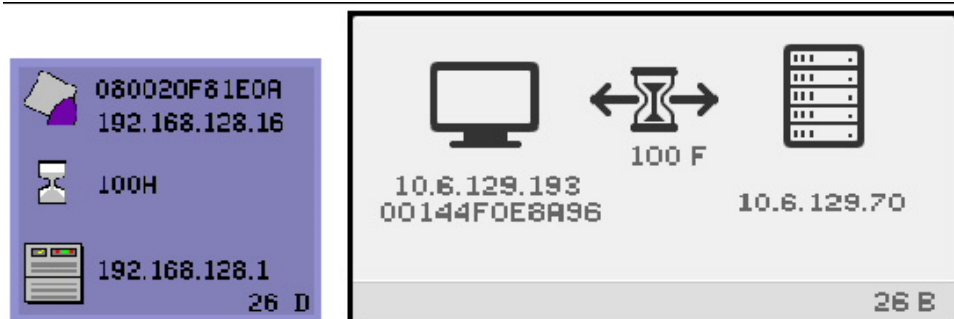
```
# /etc/init.d/dhcp stop # /etc/init.d/dhcp start
```

FIGURE B-5 Redirection OSD



This OSD indicates that the DTU is being redirected to a new server. This can occur for any of several reasons, including load balancing.

FIGURE B-6 Wait for Session OSD



This OSD represents the transition state for the Sun Ray DTU. If it is displayed for an extended period, there is probably no X Window server running.

The current wait icon is a white “X” cursor. In earlier releases, the wait icon was displayed as a green newt cursor.

Tip - If you suspect that the configuration files have been corrupted, please see [Determine the Integrity of the Configuration Files](#) in the *Sun Ray Server Software 4.1 Installation and Configuration Guide*.

Wait Icon Cursor for Default Session Type

This section applies to a normal `d tlog ir` session.

The `Xnewtserver` is indirectly started by the `d tlog ir` daemon. In the process of starting the `Xsu` server, the `d tlog ir` daemon reads two configuration files:

- `/etc/dt/config/Xservers`
- `/etc/dt/config/Xconfig`

If, after several retries, the `Xsu` process does not start, the `d tlog ir` daemon just gives up. The problem can usually be traced back to an older version of the `d tlog ir` daemon or the configuration files for the `d tlog ir` daemon.

The `d tlog ir` daemon has been part of the Solaris operating environment since long before Sun Ray Server Software existed. The Sun Ray administration model uses the `d tlog ir` daemon in new ways, and certain bugs in the `d tlog ir` daemon have become apparent. Patches to fix these bugs in the `d tlog ir` daemon are available.

▼ To Identify a Hung Session

- As superuser, type:

```
# /opt/SUNWut/sbin/utdesktop -l -v
```

▼ To Kill a Hung Session

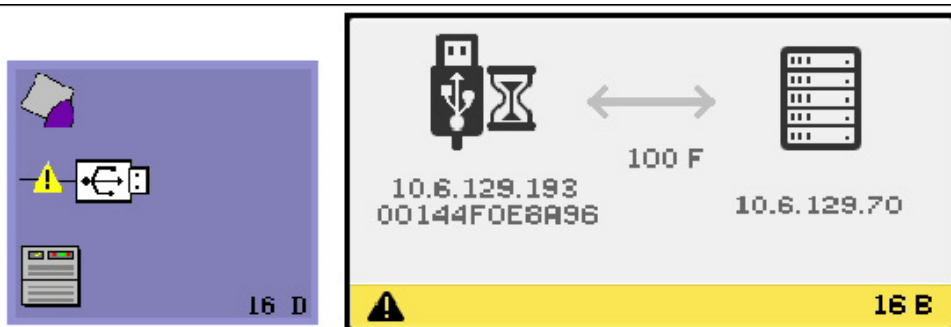
- As superuser, type:

```
# /opt/SUNWut/sbin/utsession -k -t token
```

▼ Actions to Take

1. Check the messages file `/var/opt/SUNWut/log/messages` to verify the version number.
2. Correct, if necessary, with `utadm -l`.

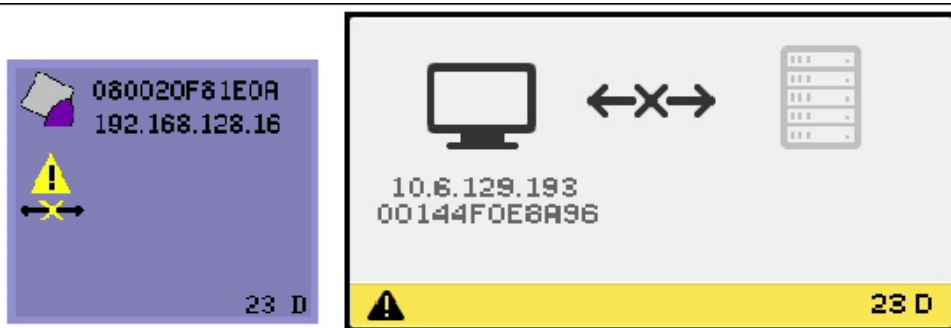
FIGURE B-7 Bus Busy



This icon indicates that the Sun Ray USB bus is temporarily busy servicing a high-speed device, and the keyboard or mouse may not be responsive to user input.

This icon typically appears only during an unusually long print job and disappears when the job is done. This is an informational OSD; there is no particular action to take unless it is necessary to kill the print job.

FIGURE B-8 No Ethernet Signal

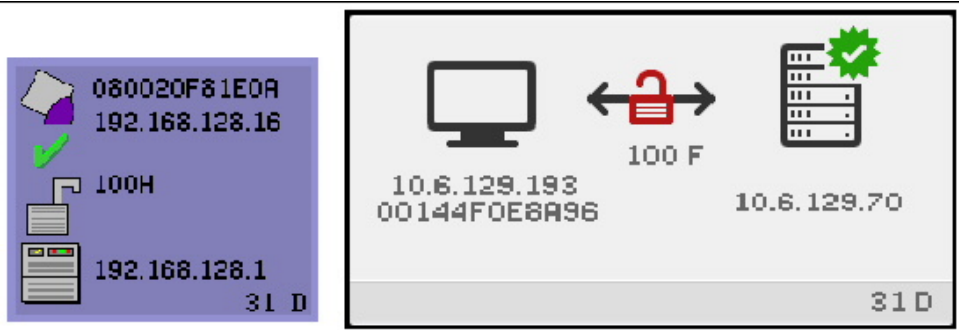


This icon indicates that the DTU has an Ethernet address and an IP address but has lost the Ethernet signal. This icon is displayed only after the DTU successfully boots and receives an IP address, but then loses its Ethernet signal.

▼ Actions to Take

1. Check that the Ethernet cable is correctly plugged in to the back of the DTU and the other end is plugged into the correct switch or network outlet.
2. If the DTU is connected through a hub or switch, make sure that the hub or switch is on and configured correctly.

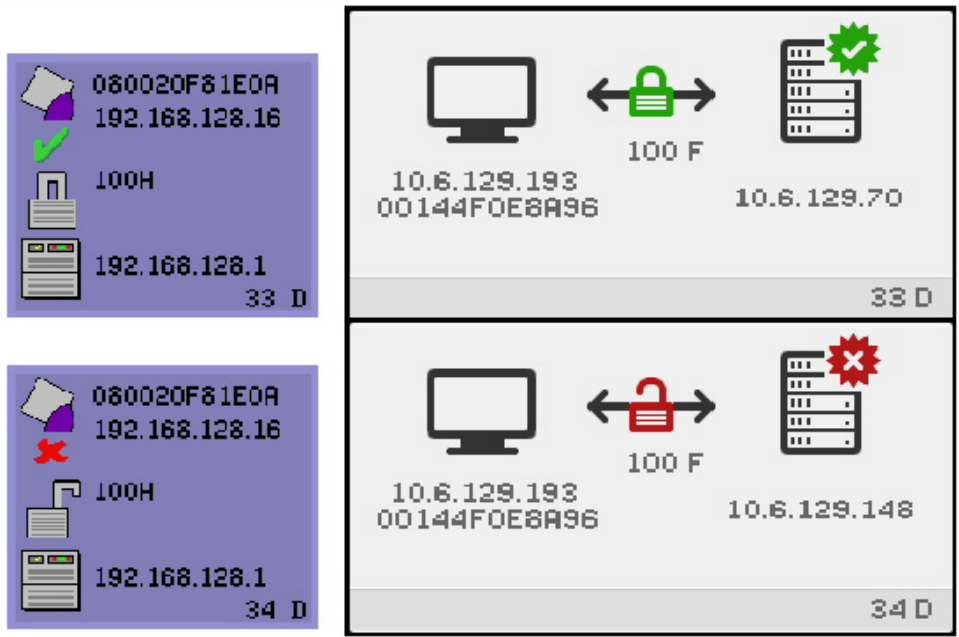
FIGURE B-9 Ethernet Address



This OSD shows the Ethernet address, currently assigned IP address, currently connected server, encryption status, DHCP state, and link speed and mode. 10 stands for 10 Mbps, and 100 for 100 Mbps. F stands for full duplex, H stands for half-duplex mode. To display this OSD with current information, press the three audio volume keys simultaneously.

Tip - To get the same effect on non-Sun keyboard, disconnect and reconnect the Ethernet cable.

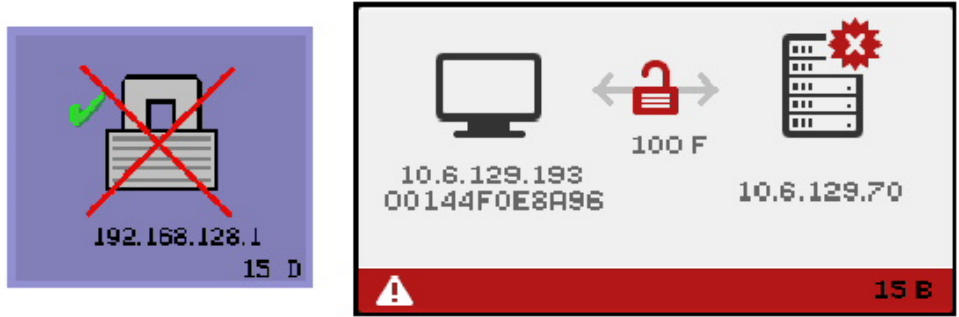
FIGURE B-10 Ethernet Address OSD with Different Encryption and Authentication States



Session Connection Failures

The following icons are displayed in the event of a possible security breach.

FIGURE B-11 Session Refused by DTU



Icon 15D indicates that the DTU is refusing to connect to a server because it is unable to verify the validity of the Sun Ray server. This error can occur only if an unknown Sun Ray server intercepts the messages and tries to emulate a valid Sun Ray server. This is a session security breach.

A graphically similar icon displaying the number 50 indicates that the server is refusing to grant a session to the DTU because the DTU is unable to fulfill the server's security requirements.

▼ Actions to Take

1. Check the DTU's firmware version.

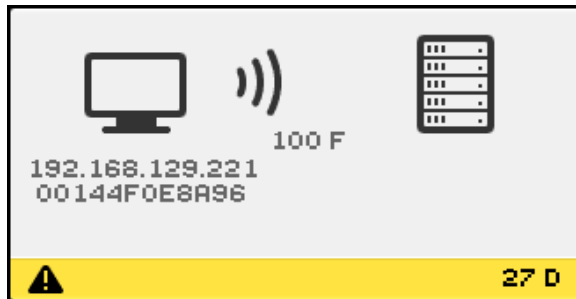
This error may occur with firmware versions earlier than 2.0 if the server is configured for hard security mode.

2. Upgrade the firmware.

As an alternative, confirm whether your site requires hard security mode. If not, the session can be enabled with soft security mode.

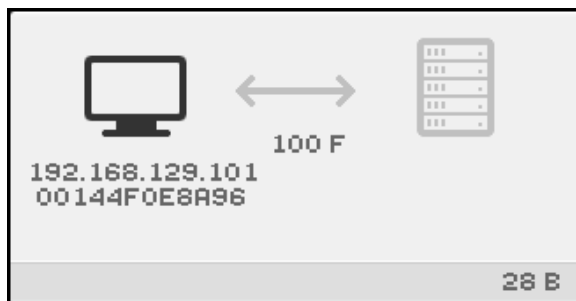
The following icon is displayed if the DTU is broadcasting to locate a server and either no servers respond or Sun Ray specific DHCP parameters have not been supplied correctly.

FIGURE B-12 DHCP Broadcast Failure



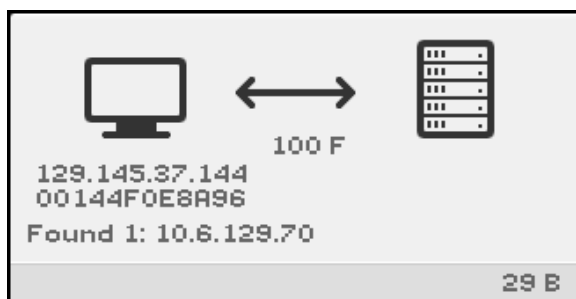
The following icon is displayed while a DTU is trying to establish a VPN connection.

FIGURE B-13 Establishing a VPN Connection



When the VPN connection is established, the following icon is displayed.

FIGURE B-14 VPN Connection Established



Firmware Download Diagnostics

When firmware download error occurs, OSD icon 4 (see [FIGURE B-15](#)) displays the appropriate error code and a descriptive text string. These error codes are listed in [TABLE B-4](#).

Note - These error messages appear in English even in localized versions of Sun Ray Server Software.

FIGURE B-15 OSD Icon 4 Displays Firmware Download Error Messages



Firmware Download OSD

The following OSD are typical of those that may display when new firmware is downloaded to a DTU from a Sun Ray server.

FIGURE B-16 Firmware Download in Progress



This icon indicates that the DTU is currently downloading new flash PROM software from the Sun Ray server.

▼ Actions to Take

1. Wait until the download is complete.

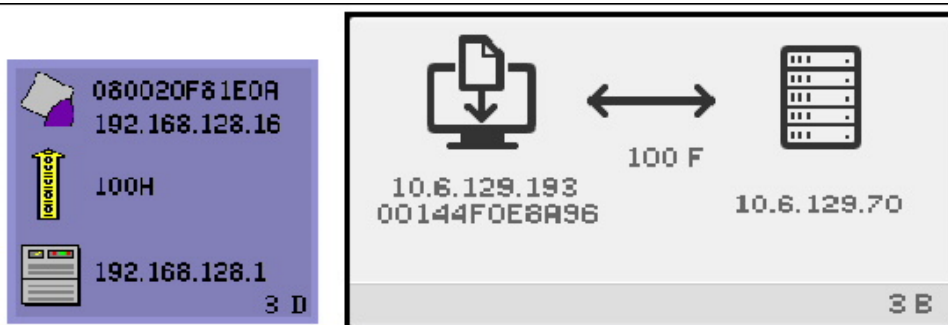
Downloading and saving the new PROM software usually takes less than a minute. If you interrupt the download, the DTU has to download new PROM software the next time it reboots.

If the firmware download fails, the following syslog message indicates that the barrier level has been set to prevent Sun Ray DTUs with SRSS 4.1 firmware from automatically downloading an earlier version of the firmware:

```
Firmware upgrade/downgrade not allowed! Barrier is 310 Firmware level is C
```

2. Check `/var/opt/SUNWdt/log/messages` to confirm that your configuration is set up properly.

FIGURE B-17 Saving PROM Software



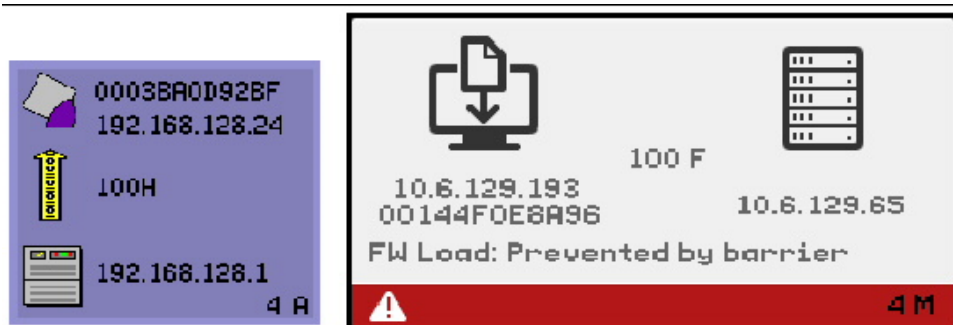
This icon indicates that the DTU has just downloaded new PROM software from the Sun Ray server and is saving it to the DTU's PROM.

▼ Actions to Take

- **Wait until the download is done.**

Downloading and saving the new PROM software usually takes less than a minute. If you interrupt the download, the DTU has to download new PROM software the next time it reboots.

FIGURE B-18 Firmware Download Failed



This icon indicates that the DTU has failed to download new firmware. OSD 4 now includes error code text, as shown above.

Token Reader Icons

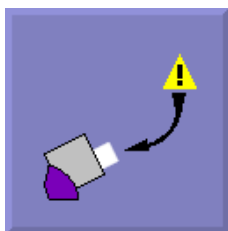
When a site policy disallows pseudo-sessions, DTUs configured as token readers display the Card Reader icon instead of the Login Dialog box card.

Note - The token reader was called the card reader in earlier releases. The smart card token itself is an integrated circuit embedded in or printed on the card, and it is data on the token that is read when a user inserts a card. In practice, the terms *card reader* and *token reader* are used interchangeably.

FIGURE B-19 Card Reader OSD



FIGURE B-20 Card Read Error OSD



This icon indicates that the Card Read Error OSD icon appears whenever the firmware is unable to read the card due to one of the following causes:

- The DTU is running old firmware.
- The card contacts are dirty, the contacts on the card reader are dirty, or the card is not properly inserted.
- The card is malfunctioning.
- The card is of a type that the firmware is not configured to read.
- There is an error in the configuration for reading this type of card.

▼ Actions to Take

1. Upgrade the firmware.
2. Replace the card.

FIGURE B-21 Prompt for Card Insertion OSD



If the current authentication policy allows access only by card, this OSD icon appears and prompts the user to insert a card.

FIGURE B-22 Access Denied OSD



This icon indicates that the Access Denied OSD icon appears when the current authentication policy denies access to the presented token. Specifically, this icon is displayed if a disabled card has been inserted into a DTU.

The Sun Ray administration model has seven user session types:

- Default--Normal user login
- Register--User self-registration
- Kiosk--Anonymous user operation
- Insert card--User smart card required
- Card error--Unrecognized user smart card type
- No entry--User's smart card token is blocked
- Session Refused--The server refuses to grant a session to a DTU that does not meet the server's security requirements

The first three session types have normal login processes. When there is a problem, the administrator should examine:

- Sun Ray Server configuration files



Caution - Sun Ray Server Software modifies certain system configuration files. In most cases, these changes are identified with SRSS-specific comments. Please do not change these modifications.

- Any locally modified Xserver startup files
- d #login status

Although the last four session types display icons on the Sun Ray DTU, they do not have login processes at all. The icons indicate that the user must take steps before a successful login is possible. If the user immediately removes and reinserts the smart card, the icon disappears, but the Wait for Session OSD remains.

These last four session types and their OSDs should not cause alarm. The user can:

- Insert a recognized smart card in the correct orientation
- Ask the Sun Ray administrator to grant access
- Ask the Sun Ray administrator to download the correct firmware

Authentication Manager Errors