SunATM™ SBus Adapters Manual Product Note

THE NETWORK IS THE COMPUTER™

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SunATM SBus Adapters Manual Product Note

This product note contains the late-breaking news for the SunATM™ 2.1 hardware and software release.

Supported Number of SunATM Adapters Per System

Table 1 lists the number of SunATM SBus adapters supported per system. Mixed configurations of SunATM-622 SBus adapters and SunATM-155 SBus adapters have not been certified.

Note – The SunATM 2.1 software is supported on systems running the Solaris™ software environment, revisions 2.4, 2.5, and 2.5.1.

Table 1 Supported SunATM SBus Adapters Per System

Platform Architecture	System Type	Supported Number of SunATM-155 Adapters 2.0 and 2.1	OR	Supported Number of SunATM-622 Adapters 2.1
sun4u	Sun Ultra™ 1 Creator Series	2		1
	Sun Ultra 1 Series	2		1
	Sun Ultra 2 Series	2		1
	Ultra Enterprise™ 1	2		1
	Ultra Enterprise 2	2		1
	Ultra Enterprise 3000	3 (1 per SBus)		2 (1 per SBus)
	Ultra Enterprise 4000	7 (1 per SBus)		2 (1 per SBus)
	Ultra Enterprise 5000	7 (1 per SBus)		2 (1 per SBus)
	Ultra Enterprise 6000	15 (1 per SBus)		2 (1 per SBus)
sun4m	SPARCstation™ Classic	1		Not Supported
	SPARCstation LX	1		Not Supported
	SPARCstation 4	1		Not Supported

Table 1 Supported SunATM SBus Adapters Per System *(Continued)*

Platform Architecture	System Type	Supported Number of SunATM-155 Adapters 2.0 and 2.1	OR	Supported Number of SunATM-622 Adapters 2.1
sun4m	SPARCstation 5	1		Not Supported
(Continued)	SPARCstation 10	1		Not Supported
	SPARCstation 10SX	1		Not Supported
	SPARCstation 20 Series	1		1
	SPARCstation 600 Series	1		Not Supported
sun4d	SPARCserver™ 1000 and 1000E	4 (1 per SBus)		1
	SPARCcenter™ 2000 and 2000E	10 (1 per SBus)		1
sun4c	SPARCstation 2	1		Not Supported
	SPARCstation IPX™	1		Not Supported

Note – The SunATM 2.1 software does not support the SunATM-155 SBus Adapters 1.0.

Supported Number of Emulated Local Area Networks

The total number of Emulated Local Area Networks (ELANs) supported per system is 16. sun4d systems, which include the SPARCserver 1000/E and SPARCcenter 2000/E series systems, do not support ELANs with SunATM-622 SBus Adapters 2.1. Refer to the *SunATM SBus Adapters Manual* for more information about Emulated Local Area Networks.

Note – The SunATM-155 SBus adapters 2.0 do not support multiple ELANs.

hyperSPARC Modules Are Not Supported

The SunATM 2.1 software and hardware does not support sun4m systems containing *hyper*SPARC™ modules. If you have purchased a SPARCstation 20 system with *hyper*SPARC modules, or if you have updated your system to use *hyper*SPARC modules, you will not be able to use this SunATM release.

To see if your machine contains *hyper*SPARC modules, type the following command:

```
# prtconf | grep Ross,RT625
```

You will see `Ross,RT625 (driver not attached)` as the result of this command if your system contains a *hyper*SPARC module.

Refer to the bug report (bugid 1267638) for more information about this issue.

Removing Links to Older SunATM 1.0 Device Entries

When removing older versions of the SunATM software with the `pkgrm` utility, certain device entries in the `/dev` and `/devices` directories will not be removed. If you are installing the SunATM 2.1 software packages on a system in which a SunATM 1.0 SBus adapter had been previously installed, you will need to remove these device entries. The SunATM 1.0 hardware used the `sa` driver (which is not supported in the SunATM 2.1 software), and previous versions of the SunATM software created the `/dev/sa` and `/devices/pseudo/clone@0:sa` device entries.

To remove these SunATM 1.0 device entries, type:

```
# rm /dev/sa
# rm /devices/pseudo/clone@0:sa
```

Installing Solaris Software Patches

Table 2 lists the Solaris software patches that are required to achieve the best SunATM network performance. Install these patches, or newer revisions of these patches, before installing the SunATM software.

Table 2 Solaris Software Patches

Solaris Software Environment Revision	**Patch**	**Description**
Solaris 2.4	101945-42	Solaris kernel patch.
	102038-02	Fixes a performance problem affecting I/O devices, such as high speed networks, on sun4m machines. **Note:** Install this patch on sun4m machines only.
Solaris 2.5	103093-06	Solaris kernel patch.
	103447-03	TCP patch.
	103169-06	Fixes IP driver and `ifconfig` command.
Solaris 2.5.1	103582-01	Fixes `/kernel/drv/tcp`.
	103630-01	Fixes IP driver and `ifconfig` command.

Please contact your local SunService representative for assistance, or contact your local SunService authorized service provider for information on how to receive and install these patches.

Increasing System Performance by Adjusting TCP/IP Parameters

Transmission Control Protocol/Internet Protocol (TCP/IP) performance over an ATM network can be poor unless you carefully configure your network. This poor performance usually occurs because the TCP/IP packets are segmented into cells for transmission by the ATM software. Therefore, a loss of a single cell can cause the loss of an entire TCP/IP packet resulting in retransmissions that may congest the network. When the destination system detects congestion, the system reduces the transmission rate, which significantly reduces the network performance.

You can achieve better network performance from the SunATM hardware and software by adjusting your application's socket buffer size. You will need to set this parameter to different values, depending on which version of the Solaris software environment your system is using (see Table 3). Refer to the application's documentation for instructions on how to set the socket buffer size.

Table 3 Socket Buffer Size Per Solaris Software Revision

Solaris Software Environment Revision	**Socket Buffer Size**
Solaris 2.4	24 Kbytes
Solaris 2.5, 2.5.1	48 Kbytes

Setting the TCP Congestion Window in the Solaris 2.4 Software Environment

If you are running the SunATM software on a machine using the Solaris 2.4 software environment, you will also need to set the TCP congestion window to 64 Kbytes.

To set the TCP congestion window to 64 Kbytes, type the following command each time you reboot your system:

```
ndd -set /dev/tcp tcp_cwnd_max 65535
```

This command must be executed each time you reboot your system, so you should add it to a run control (rc) script. The SunATM software is started at boot time by the `/etc/rc2.d/S00sunatm` run control script, so you should add the entire `ndd` command shown above to the beginning of this script. Refer to your Solaris documentation for more information about editing run control scripts.

Improving the Performance of NFS Version 3

When running Network File System (NFS) Version 3 on a SunATM network, you may notice poor network performance. By default, the version of the NFS protocol used between the client and the server is the highest one available on both systems. If both the SunATM server and client are using the version 2.5 or 2.5.1 of the Solaris software environment, both systems will use the NFS version 3 software to share resources. This section describes two workarounds which will improve the NFS Version 3 performance on a SunATM network.

Note – These workarounds only apply when using Classical IP over a SunATM network, or when local area network (LAN) Emulation interfaces are configured to use a 9218 byte maximum transmission unit (MTU). These workarounds will not affect LAN Emulation interfaces using 1500 or 4528 MTU sizes. Use the `ifconfig -a` command to find out the MTU size of your LAN Emulation interfaces.

Refer to the bug report (bugid 1260524) for more information about this NFS Version 3 performance issue.

Decreasing the NFS Read and Write Buffer Sizes

The best way to increase NFS performance on a SunATM network is to decrease the read and write buffer sizes to 4096 bytes on NFS filesystems mounted over a SunATM network. To set the read and write buffer sizes to 4096 bytes, use the `rsize` and `wsize` parameters when mounting the NFS filesystem.

For example, to mount a NFS Version 3 filesystem on a SunATM network, type:

```
# mount -o rsize=4096,wsize=4096 server:/usr/src /usr/src
```

Setting the Driver Configurations

If the previous workaround does not solve your NFS performance problems, then you can set the TCP receive highwater mark to 65535 bytes in order to increase NFS performance. Change this setting only if you cannot use the previous workaround.

To set the TCP receive highwater mark to 65535 bytes, use the `ndd` command:

```
ndd -set /dev/tcp tcp_recv_hiwat 65535
```

This command should be performed each time you reboot, so you should add the entire `ndd` command shown above to the `/etc/rc2.d/S00sunatm` run control script. Refer to your Solaris documentation for more information about editing run control scripts.

Changes to the SunATM SBus Adapters Manual

This section contains additions and corrections to the *SunATM SBus Adapters Manual* (part number 802-6504-10).

`atmadmin` *Software Configuration*

When configuring a Classical Internet Protocol (IP) standalone machine, you will need to set the destination IP hostname, the destination IP address, and the permanent virtual circuit (PVC) parameters *in addition* to the local IP hostname and address. Currently Table 4-3 on page 4-8 in the manual states that the only additional parameter needed for a standalone configuration is the PVC parameter.

The table rows should be:

Group	Parameters	Possible Values	Default Values	Required?
Classical IP	IP Hostname/Address	Valid IP hostname and address	No default	For Classical IP
	PVC	32 <= n < 1024	32	For Classical IP Standalones
	Destination IP hostname and address	Valid IP hostname and address	No default	For Classical IP Standalones

Sample SunATM Configurations

Classical IP Configuration

Section 5.2.3, “Sample Classical IP Configurations,” contains an error in the example of manual address configuration. The example on page 5-13 should be:

6. Manual address configuration: Hosts are connected to a switch that does not support ILMI.

   a. `/etc/aarconfig` on server:

```
set prfx = 45:00:00:00:00:00:00:00:0f:00:00:00:00
Interface Host    ATM Address                    VCI    Flag
ba0       -       $prfx:$sunmacsel0              -      L
ba0       -       -                              -      m
```

   b. `/etc/aarconfig` on server:

```
set prfx = 45:00:00:00:00:00:00:00:0f:00:00:00:00
Interface Host    ATM Address                    VCI    Flag
ba0       -       $prfx:$macsel                  -      l
ba0       -       $prfx:$sunmacsel0              -      s
ba0       -       -                              -      m
```

LAN Emulation Configuration

Section 5.2.3, “Sample LAN Emulation Configurations,” contains an error in the example of a basic LAN Emulation client. The example on page 5-19 should be:

1. Basic LAN Emulation client. The ATM and MAC address of a frequently used server is provided. The LECS provides the name of the Emulated LAN.

```
set srvr_mac = 08:00:20:01:02:03

Interface     MAC_Address/ELAN Name      ATM_Address           VCI       Flag
lane0         -                          $myaddress            -            l
lane0         $srvr_mac                  $prefix:$srvr_mac:00  -            t
```