SX-2000 | Application Services Unit

INSTALLATION & MAINTENANCE GUIDE

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About The SX-2000 ApSU®

The Mitel Networks^{TM} SX-2000 Application Services Unit (ApSU) is a fiber connected MiTAI^{TM} server for the SX-2000 that replaces the Application Fiber Card (AFC). It is a low cost and maintenance-free unit that supports:

- MiTAI remote clients Version 10 or later,
- Mitel Client/Server TSP 3.0 or later.
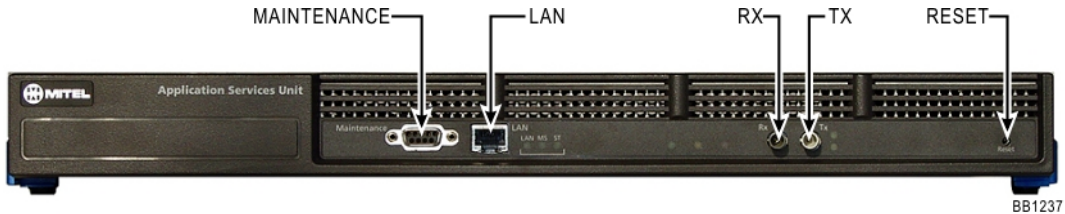
SX-2000 Light CTI Connectivity

Currently, the MiTAI server for the SX-2000 resides on a PC and communicates with the SX-2000 PBX via fiber optic cable using the AFC (Application Fiber Card).
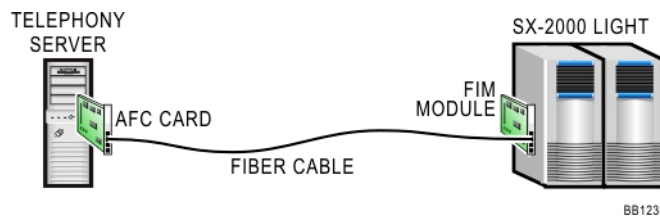
SX-2000 CTI Connectivity using the AFC - Application Fiber Card

The AFC is being replaced with the SX-2000 ApSU which provides a MiTAI server that will be able to service multiple MiTAI and TAPI clients over the network using standard network cards. The SX-2000 ApSU will reduce the overall cost of hardware and simplify the deployment and maintenance of telephony applications.
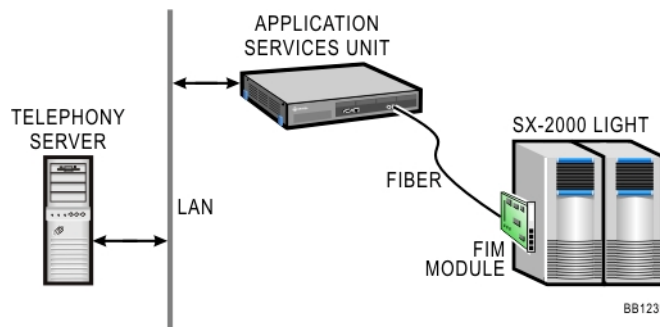
SX-2000 CTI connectivity using the SX-2000 Application Services Unit

Installing The SX-2000 ApSU

Required Components

To install the SX-2000 Applications Services Unit (SX-2000 ApSU), you require:

- SX-2000 ApSU
- RJ45 Ethernet cable for connecting to the LAN
- fiber-optic cable that is connected to the SX-2000 PBX
- personal computer (PC) with a connection to the same LAN as the SX-2000 ApSU, an FTP client and Hyperterminal or a similar program for communicating over a serial port
- serial cable to connect the SX-2000 ApSU to the PC's COM port.

Note: Some Windows operating systems such as XP or 2000 may already have an FTP client and Hyperterminal included.

Installation Instructions

The following instructions assume that the SX-2000 ApSU has the factory-installed SX-2000 ApSU software already installed.

1. Log into a CDE session on the SX-2000 PBX.

Note: You program the SX-2000 ApSU on the SX-2000 in exactly the same manner as the AFC card.

2. Program a Fiber Distributed Digital Services Unit (FD DSU) in the Cabinet Assignment form for the physical location identifier (PLID) of the Fiber Interface Module (FIM) carrier card that will be used to connect to the SX-2000 ApSU.

3. Program a "Communications Proc" card for the second circuit in the same cabinet in the System Configuration form. For example, if the cabinet used for the SX-2000 ApSU is #4, the System Configuration form should display PLID 4 1 1 as "Fiber Interface". PLID 4 1 2 should then be programmed as "Communication Proc". When the SX-2000 ApSU is operational, the Installed Card Type field should be displayed as "Communication Proc".

4. Connect the PC to the SX-2000 ApSU using the serial cable.

5. Connect the SX-2000 ApSU to the LAN with the Ethernet cable.

6. Connect the SX-2000 ApSU to the SX-2000 PBX with the fiber cable.

7. Initiate the serial-port communications program (for example, Hyperterminal) on the PC. Settings should be defined as 38400, 8-N-1 and flow control should be set to 'None'.

8. Connect the power cable to the SX-2000 ApSU. It should initiate automatically and output should begin appearing in the Hyperterminal window on the PC screen. If the SX-2000 ApSU has already been powered up, a soft reset can be performed by using the Reset button recessed into the front of the SX-2000 ApSU's casing.

Note: As with other fiber connections, the two green LED's beside the SX-2000 ApSU's fiber connectors should be lit steady. If not, try switching the connections so that the red connector is inserted where the blue connector was and the blue connector is inserted where the red connector was previously.

9. Press any key on the keyboard when prompted by Hyperterminal to stop the auto-boot process. A prompt should appear reading: `[MC269AA Boot]-:`

Note: If the SX-2000 ApSU is left in this mode (displaying the prompt and waiting for input), it will eventually restart automatically.

10. Enter `p` at the prompt to display the current boot parameters of the SX-2000 ApSU.

Note: Some fields will not be displayed if they have no value. The `c` command will allow you to set or change the values for all the fields.

The output from the `p` command should resemble the following (values will be different and additional fields may be displayed):

```
[MC269AA Boot]-: p

boot device         : flash
unit number         : 0
processor number    : 0
file name           : vxworks
inet on ethernet (e) : 10.10.10.2:ffffff00
gateway inet (g)    : 10.10.10.1
flags (f)           : 0x0
other (o)           : flash,c:/,xqt,apsumain.cmd

[MC269AA Boot]-:
```

11. Enter `c` at the Hyperterminal prompt to change boot parameters. You will be prompted to provide values for each parameter:

- Press Enter to cause existing values to be retained
- Type the `.` (period) key to clear the field
- Type the `–` (dash) key to go to the previous field
- Press ctrl-D to exit and save the current session.

Note: The `p` command will not display fields if they have no value; the `c` command will always permit all field values to be set or changed.

Boot Parameter	Notes/Comments
`boot device`	Do not change this value. `flash` indicates that the vxworks image stored in the SX-2000 ApSU's flash file system will be used. This is the default setting.
`processor number`	Do not change this value.
`host name`	Do not change this value. It is not used when the boot device is `flash`.
`file name`	Should always be `vxworks` as this is the name used in the SX-2000 ApSU software.
`inet on ethernet (e)`	This is the fixed IP address the SX-2000 ApSU will use on the LAN to it is connected. The subnet mask is appended to the IP address in hexadecimal format following a colon. For example, if the SX-2000 ApSU is to have the IP address 10.10.10.2 and the subnet mask is to be 255.255.255.0, this field would have the value `10.10.10.2:ffffff00`.
`inet on backplane (b)`	Leave blank.

Boot Parameter	Notes/Comments
`host inet (h)`	Do not change this value. It is not used when the boot device is `flash`.
`gateway inet (g)`	The IP address of the gateway for the LAN to which the SX-2000 ApSU is connected.
`user (u)`	Do not change this value. It is not used when boot device is `flash`.
`FTP password (pw) (blank = use rsh)`	Do not change this value. Is not used when boot device is `flash`.
`flags (f)`	Leave value as 0x0.
`target name (tn)`	Can leave blank.
`startup script (s)`	Leave blank.
`other (o)`	Must have the value: "flash,c:/,xqt,apsumain.cmd". This entry instructs the SX-2000 ApSU software to mount the flash filesystem as a 'C:/' drive, and to execute the "apsumain.cmd" command file. The contents of the "apsumain.cmd" file are what starts up the SX-2000 ApSU core software, loads the files into RAM and starts the HCI server and MiTAI server software running.

12. After you review the fields described in the table above, the message `Bootline saved in flash` should be displayed in the Hyperterminal window followed by the prompt.

13. Enter the `p` command to verify that all fields have the correct values. If one or more values are incorrect, use the `c` command to configure them.

14. After the parameters are correct, enter the `@` command to reboot the SX-2000 ApSU. The SX-2000 ApSU will boot with the new parameters.

CAUTION: In the event that the SX-2000 ApSU does not reset after entering the @ command, press the recessed Reset button on the front of the SX-2000 ApSU's casing to complete the reset cycle.

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15. Configuration is complete and the MiTAI server running in the SX-2000 ApSU is now in service.

You will need to change the configuration of the MiTAI clients to include the IP address of the SX-2000 ApSU for their server. You should also verify that MiTAI clients are configured to use Port Number 8000.

Installing The MiTAI Client

To initiate installation of the MiTAI Client, insert the Local Runtime disc into the CD-ROM drive of your PC and complete the following procedure:

Note: If the installation procedure does not begin automatically, run the `setup.exe` executable program from the root directory of the Local Runtime CD.

1. When the Copyright Information screen appears, click **Next**.

2. Review the Software Agreement and if you agree to comply by the license, click **Yes**.

3. A Systems Detection screen will appear displaying attributes of your PC. Click **Next**.

4. In the Settings screen, select whether you wish to use Default settings or settings from a pre-existing MiTAI.dat file. After making your selection, click **Next**.

5. The Path screen will display the name of the directory in which the MiTAI Client will be installed. You may modify this if you wish the software to be installed into a different location on your PC. Click **Next** when finished.

6. The Folder screen will prompt you to select where you would like the MiTAI Client software to appear on your Windows Start menu. Click **Next** when finished.

7. Review the settings displayed on the Review Settings screen and click **Next** when finished.

8. The Restart screen will prompt you to restart your PC once the installation is complete. Click **Finish** to conclude the installation program.

Note: Once the MiTAI Client has been installed on your PC, it requires further configuration as described below.

Configuring The MiTAI Client

1. Open the Windows Control Panel by:
   - In Windows 2000, click **Start**, select **Settings** and then click **Control Panel**.
   - In Windows XP, click **Start** and then click **Control Panel**.

2. Double-click on the **Mitel Remote Access** applet.

3. In the dialog box that appears, enter the Host Name or IP address of the SX-2000 ApSU.

Upgrading The SX-2000 ApSU Software

The following instructions assume that the SX-2000 ApSU has already been installed and configured correctly.

You can install a new software load on the SX-2000 ApSU into its file system without taking it out of service or affecting service.

Note: New software loads will only take effect after the SX-2000 ApSU is rebooted/reset.

1. Connect to the SX-2000 ApSU using an FTP client.

2. When prompted for a User ID or password, press **Enter**.

3. To review files currently on the SX-2000 ApSU, enter the `dir` command in the FTP client.

4. In the FTP client, set the transfer mode to binary by entering the `bin` command.

5. Transfer all of the new SX-2000 ApSU files to the SX-2000 ApSU using the `put` or `mput` commands.

6. Use the `dir` command to verify that all of the new files have been transferred by comparing file sizes and dates.

7. Exit the FTP client.

The SX-2000 ApSU will continue to operate using the old software until the next time that it is reboot/reset. To immediately put the new SX-2000 ApSU software into service, reboot/reset the SX-2000 ApSU by using the Reset button.

About The SX-2000 ApSU Software Load

The following is a complete list of the files that should reside on the SX-2000 ApSU. There is only one directory in the SX-2000 ApSU file system. The easiest way to view the SX-2000 ApSU file

system is with an FTP client to connect to the SX-2000 ApSU. This can be done while the SX-2000 ApSU is running without interfering with its operation.

Here is sample output from an FTP client session:

```
ftp 10.10.10.2
Connected to 10.10.10.2.
220 VxWorks FTP server (VxWorks 5.4) ready.
User (10.10.10.2:(none)):
331 Password required
Password:
230 User logged in
ftp> dir
200 Port set okay
150 Opening BINARY mode data connection
-rwx---A--  1 user    group            81 Jan  1  1980 DATETAG.TXT
-rwx---A--  1 user    group           406 Jan  1  1980 APSUMAIN.CMD
-rwx---A--  1 user    group       1974134 Jan  1  1980 HCIVXWK.OUT
-rwx---A--  1 user    group        730865 Jan  1  1980 MITAIVXW.OUT
-rwx---A--  1 user    group       2177933 Jan  1  1980 VXWORKS
-rwx---A--  1 user    group        300019 Jan  1  1980 MTC.LOG
-rwx---A--  1 user    group        469265 Jan  1  1980 APSUCORE.O
-rwx---A--  1 user    group         22344 Jan  1  1980 PRI_FPGA.BIN
-rwx---A--  1 user    group           271 Jan  1  1980 APSUAPPS.CMD
226 Transfer complete
ftp: 790 bytes received in 0.11Seconds 7.18Kbytes/sec.
```

The files include:

Filename	Notes
APSUAPPS.CMD	Script that launches HCI and MiTAI once the message system between the ApSU and the SX-2000 PBX is up and running
APSUCORE.O	SX-2000 ApSU system software
APSUMAIN.CMD	Startup script that launches the system software after a reboot/reset.
DATETAG.TXT	Plain text file that identifies the load of software installed on the SX-2000 ApSU.
HCIVXWK.OUT	HCI server.
MITAIVXW.OUT	MiTAI server.
MTC.LOG	Log file containing the logs generated on this SX-2000 ApSU. This is a circular file that contains only the most recent logs (guarantees that the size of the file never grows too large for the available storage space).
PRI_FPGA.BIN	Low-level SX-2000 ApSU system software component.
VXWORKS	Operating system running the SX-2000 ApSU software

Typically, SX-2000 ApSU software builds are located in a directory named Install. The contents of the Install directory will be all of the files that need to be copied to the SX-2000 ApSU file system. Software builds will normally be identified by number such as SX-2000 ApSU build 1.0.0.1.

The following is an example of the upgrade files stored in an Install directory:

```
    Friday, December 20, 2002 11:52 AM         469271 apsucore.o
  Thursday, December 19, 2002 10:46 AM            499 apsumain.cmd
    Friday, December 20, 2002 11:51 AM             81 Datetag.txt
    Friday, December 20, 2002 11:57 AM        1974152 hcivxwk.out
    Friday, December 20, 2002 11:58 AM         731289 mitaivxw.out
  Thursday, December 19, 2002 10:45 AM          22344 pri_fpga.bin
    Friday, December 20, 2002 11:53 AM        2177279 vxworks
    Friday, December 20, 2002 11:56 AM            271 apsuapps.cmd
```

Troubleshooting

Use the following procedures to resolve any problems you may encounter with the SX-2000 ApSU.

Check The LED Indicators

Check the LEDs on the front panel of the SX-2000 ApSU.

LED	Status	Indicates
MS	Lit steady	Whether or not the message link to the SX-2000 PBX is functioning. If it is lit, the message link is up which is the operational state.
ST	Blinking on and off every ½ second	The SX-2000 ApSU has not locked up and that different tasks are still getting CPU time. If the ST LED is on all the time or off all the time, the SX-2000 ApSU has probably locked up and will require a reboot/reset.

FTP Client Cannot Connect To SX-2000 ApSU

1. Verify that the SX-2000 ApSU is operational by checking its LED's.

2. Verify that the FTP client is connecting to the correct IP address for the SX-2000 ApSU using the `ping` command to test the IP address of the SX-2000 ApSU. If no reply is received, there may be a network problem between the PC and the SX-2000 ApSU or there may be a problem with the SX-2000 ApSU itself.

3. If the IP address of the SX-2000 ApSU is not known, the following procedure must be used. You will need to take the SX-2000 ApSU out of service.

   - Connect to the serial port of the SX-2000 ApSU and initiate the Hyperterminal application on the PC.

   - Reboot/reset the SX-2000 ApSU.

   - Watch the output from the SX-2000 ApSU carefully as it is displayed. The messages displayed will include the IP address that the SX-2000 ApSU is configured with on the line that begins with `inet on ethernet`. For example:

```
                         VxWorks System Boot


Copyright 1984-1996   Wind River Systems, Inc.


CPU: MC271BA
Version: 5.3.1
BSP version: 1.0.1.14
Creation date: Dec  4 1998, 15:28:28
Press *any* key to stop this auto-boot...
 3
 2
 1
 0


auto-booting...

boot device          : flash
unit number          : 0
processor number     : 0
file name            : vxworks
inet on ethernet (e) : 10.10.10.2:ffffff00
gateway inet (g)     : 10.10.10.1
flags (f)            : 0x0
other (o)            : flash,c:/,xqt,apsumain.cmd
```

4. If the steps listed above do not resolve the problem, perform a reboot/reset.

    -   Connect to the SX-2000 ApSU via the serial connector and start the Hyperterminal application on the PC.

    -   Reboot/reset the SX-2000 ApSU.

    -   Press any key on the keyboard when prompted by Hyperterminal to stop the auto-boot process. A prompt should appear reading: `[MC269AA Boot]-:`

    -   Enter `c` and change the value of the **boot device** parameter from `flash` to `qu`. The remaining values can remain unchanged but the **boot device** must be set to `qu` for the `Q` command to function. If the parameter is not defined properly, entering the `Q` command will lock up the SX-2000 ApSU and it will need to be rebooted/reset.

    -   Enter `Q` to initiate a quick reboot that will create the flash file system and bring up just the FTP server. It will not try to start the HCI or MiTAI servers.

Note: When the SX-2000 ApSU is running in this mode, the **ST** LED will not blink.

MiTAI Client Cannot Connect To MiTAI Server On SX-2000 ApSU

1. Verify that the SX-2000 ApSU is operational by checking its LED's.

2. Verify that the MiTAI Client is configured with the SX-2000 ApSU's IP address and the Port Number is defined as 8000.

3. Verify that the SX-2000 ApSU's IP address returns data when tested using the `ping` command.

4. Connect to the SX-2000 ApSU using FTP and enter the `dir` command to verify that the correct files are present.

5. Use FTP to copy the MTC.LOG file from the SX-2000 ApSU onto the PC using the `get` command. This is a circular log and so while it may be read using any text editor, the latest log messages may not be at the bottom of the file. Interpreting the unprocessed log file is

best left to product support and design personnel. If the logs viewer application is available, it can be used to copy the logs onto the PC and read the log messages.

Reconfiguring The SX-2000 ApSU Flash Memory

1. Connect a serial cable (34800, straight-through cable) to the maintenance port of the SX-2000 ApSU.

2. Ensure that you are using a PC connected to the same Network as the SX-2000 ApSU (on the same subnet or accessible via a router).

3. Copy the following files obtained from Mitel Networks Product Support to a folder on the PC's hard drive:

   - Datetag.txt,
   - ApSUmain.cmd,
   - ApSUapps.cmd,
   - Hcivxwk.out,
   - mitaivxw.out,
   - vxworks,
   - mtc.log,
   - apcucore.o,
   - pri_fpga.bin

4. Disconnect the fiber-optic cable from the SX-2000 ApSU to prevent it from resetting.

5. Open a terminal emulator program using the serial connection (38400, 8-N-1) to the SX-2000 ApSU.

6. Reset the ApSU.

7. Stop the automatic countdown by pressing any key.

8. At the `[MC269AA Boot]-:` prompt, enter `c` to change the boot parameters.

9. Change the **boot device** parameter from `flash` to `qu`.

10. Enter `R` to reformat the file system on the SX-2000 ApSU.

CAUTION: All files in the SX-2000 ApSU will be deleted! The SX-2000 ApSU will initialize with just an FTP server operational. This is similar to the `Q` command but with the addition of reformatting the file system.

The file system has now been reformatted. Use FTP to transfer a copy of all the SX-2000 ApSU software files onto the SX-2000 ApSU file system.

The boot parameters will need to be changed back to their original settings. Use the reboot procedure described above to change the boot parameters back although only the **boot device** and **other** parameters need to be changed back since the other revised parameters will be ignored when **boot device** is set to `flash`. Once the parameters have been changed using the `c` command, reboot the SX-2000 ApSU to bring it back into service.

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