SAM21 Shelf Controller Basics

What's new for SN06

After the CS 2000 SAM21 Manager server application is upgraded and migrated to the server that hosts the CS 2000 Management Tools, the CS 2000 SAM21 Manager client application is started from a web browser rather than a console.

Enhancements to fault management have been made in this release. The Shelf Controllers now store a copy of many of the bootloads for the cards in the shelf and can bootload those cards over the backplane to reduce dead shelf recovery (DSR) time. Additionally, Shelf Controllers with ATM interfaces are capable of provisioning mate shelf Controllers with the connection set provisioning in the event that communication between the Shelf Controller and the CS 2000 SAM21 Manager is unavaiable.

Operational measurements (OM) are available from Shelf Controllers with ATM interfaces. The statistics are gathered by the SNMP Poller on the host that provides the CS 2000 Management Tools and interpretation of that data is completed by an OSS tool.

Functional description

The Cabinetized Services Application Module (CSAM) consists of one or two Services Application Module (SAM21) shelves mounted in a Nortel Networks C28 Model B (C28B) cabinet.

The SAM21 shelf has 21 chassis slots. The platform for the SAM21 shelf is the Motorola CPX8221 cPCI. Two slots are dedicated for MCP750HA PowerPC (PPC) Shelf Controller (SC) cards and two for hot swap controllers (HSC).

Two Shelf Controllers are required for each shelf. These cards reside in slots 7 and 9 of the SAM21 shelf. The Shelf Controllers:

- manage the hardware states of the other cards in the SAM21 shelf
- communicate with the CS 2000 SAM21 Manager to enable adminstration of cards in the shelf
- forwards alarms to the CS 2000 SAM21 Manager related to environmental alarms
- forwards alarms to the CS 2000 SAM21 Manager related to the hardware states of the cards in the shelf
- in some Asynchronous Transfer Mode (ATM) networks the Shelf Controller is equipped with an ATM interface to enable Classical IP over ATM (CIPOA) communication between the Gateway Controllers in the SAM21 shelf and media gateways on the ATM network

The active Shelf Controller automatically recovers cards in the shelf that experience a software error. The Shelf Controller polls the cards in the shelf with a boot audit process to determine if the cards are in-service. If a card is not in-service, Motorola firmware on the card attempts a Network Autoboot to restore service. If the Network Autoboot fails, the active Shelf Controller initiates an autoboot of the card to restore service. Refer to the *SAM21 Shelf Controller Fault Management*, NN10226911 or NN10089911 for more information.

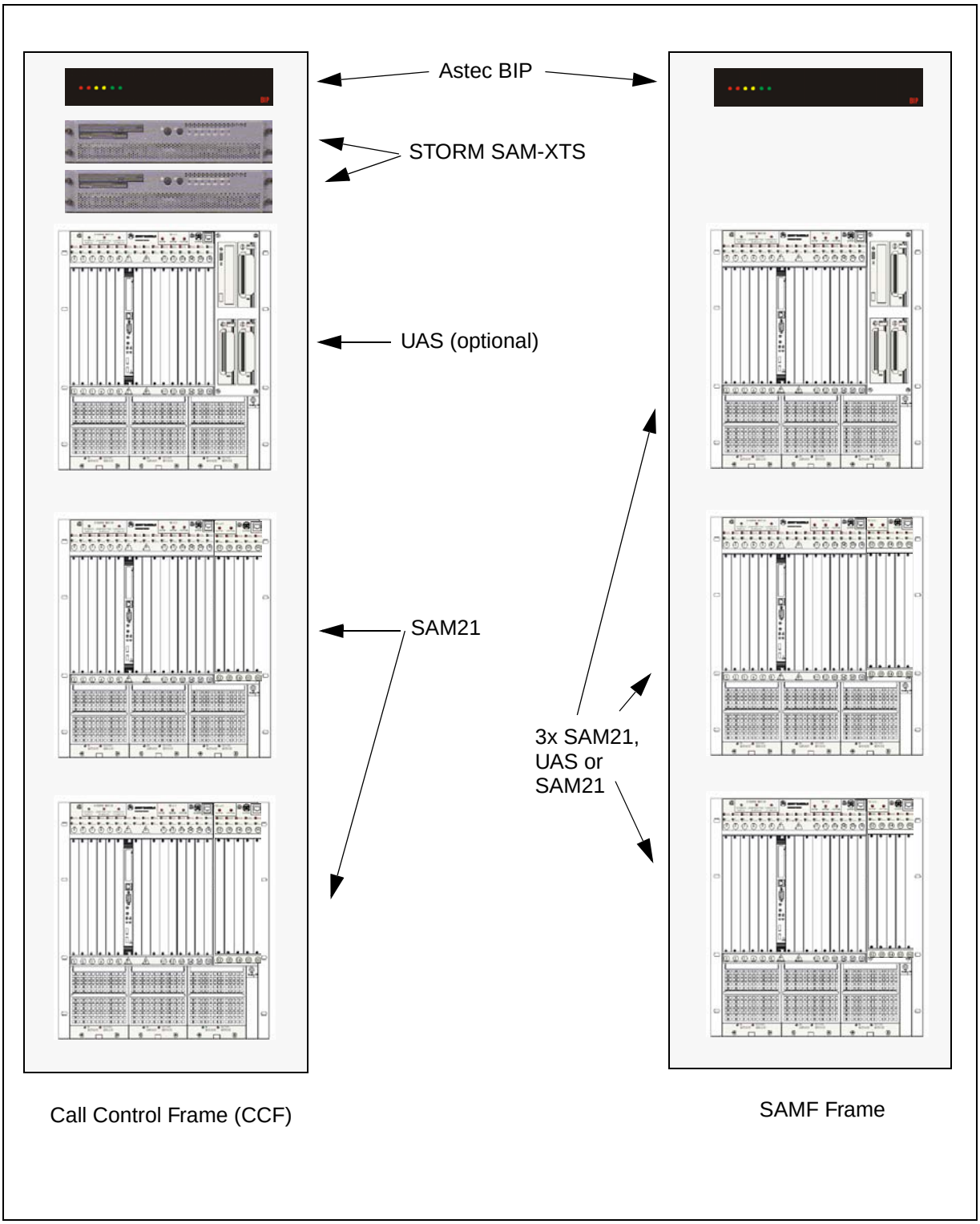
Each card in the shelf stores its own firmware in flash memory. During the software upgrade of each card, the Shelf Controller can check if a newer firmware version is available and apply the new firmware on the card. This option is enabled by checking the “FW Flash Enable” checkbox on the Provisioning panel of the CS 2000 SAM21 Manager for the card. For more information, refer to the Upgrades document for the card type. The *SAM21 Platform Base Release Notes* indicate if a firmware upgrade is available for the release.

Note: This document does not discuss the HSC. In the event of a HSC failure or need for replacement, contact Nortel Networks support personnel.

Hardware

Figure PTE2000 frames shows a block diagram of a Call Control Frame used in the CS 2000 - Compact product, and a SAMF frame used with either a CS 2000 or CS 2000 - Compact.

Figure 1 PTE2000 frames



Tools and utilities

All tools and utilities for the SAM21 Shelf Controllers are provided by the CS 2000 SAM21 Manager. The CS 2000 SAM21 Manager client is a Graphical User Interface (GUI) applet that is started from a Java enabled web browser. The workstation with the web browser is customer supplied. The server application runs on the machine that hosts the CS 2000 Management Tools.

Software

Software loads

The software loadname for the SAM21 Shelf Controller is named 9.x.y.zzzzzzzzzz

where

9
is the version number for the SN06 release

x
is an integer value for the major version

y
is an integer value for the minor version

zzzzzzzzzz
is an integer value for the maintenance version

Once installed on the CS 2000 Core Manager, the software is labelled as `SAM21 Platform v9`.

Delivery and ordering processes

Software for the Shelf Controllers is available by electronic transfer or by Digital Audio Tape (DAT). The SAM21 Shelf Controller software is delivered as a fileset to be installed on the CS 2000 Core Manager.

The ordering code for the NCL is SAM20006. The ordering code for MNCL releases is SAM2M006.

Upgrade and patch system

Software upgrade of the Shelf Controller is completed through the CS 2000 SAM21 Manager. The Shelf Controller software is not patchable.

OAM&P strategy

Operations, administration, maintenance and provisioning for the Shelf Controllers is available through the CS 2000 SAM21 Manager client.

Interfaces

Network interfaces and protocols

The network interface to the Shelf Controller is a 10/100 Base T interface on the faceplate of the Shelf Controller. This interface uses TCP/IP to communicate with other components in the Succession network and to communicate with the CS 2000 SAM21 Manager. BOOTP and TFTP protocols are used on this interface to boot the Shelf Controller. SNMP is used to coordinate messages between the Shelf Controllers and the CS 2000 SAM21 Manager client and server.

User interfaces

The CS 2000 SAM21 Manager provides the user interface to the SAM21 and SCs.

Many windows for the CS 2000 SAM21 Manager client have a help button. When the help button is clicked, the client application checks the entries in the various fields and provides help text for entries that are incorrect. For example, the following figure is the help text when an

attempt is made to reprovision a MAC address for a shelf controller with less than 12 characters.