CHAPTER 3

# Configuration and Management

## BPX Configuration (Preliminary)

This chapter contains preliminary procedures. Refer to the *Command Reference*, the *AXIS Reference Manual*, and *StrataCom ISC* for more detailed information.

The BPX node can be accessed through a local control port (over an RS-232 or Ethernet TCP/IP link. An administration screen from a control terminal or from the StrataView Plus Network Management Station (NMS) can issue BPX commands. Remote control terminal access is possible using a Virtual Terminal (vt) command if the node has been configured with a name and at least one trunk to the network has been established.

For frame relay connections in both tiered and non-tiered networks StrataView Plus provides end-to-end configuration management using the Connection Manager. When the IPX is configured as an Interface Shelf, it can not be reached by the vt command, and frame relay end-to-end connections are configured from StrataView Plus via the Connection Manager over an in-band LAN connection. (Note: Telnet can be used to access an interface shelf (e.g., IPX shelf or AXIS shelf) if a SV+ workstation is not available to provide in-band management.)

The only type of IPX shelf connections supported for Rel. 8.2 are frame relay to frame relay connections and frame relay interworking connections. However, on the IPX, all types of DAXCONS (connections in and out the same IPX shelf) are supported, voice, data, etc. For Release 8.2, the AXIS shelf includes frame relay interworking connections, ATM connections, and FUNI connections.

### Initial Setup

The basic tasks to configure an BPX are as follows:

- Set up the node
  - configure the node name (cnfname).
  - configure the time zone (cnftmzn).
  - configure date (cnfdate)
  - configure the LAN interface (cnflan).
  - configure the auxiliary or terminal ports to support any necessary external devices such as a local printer, an autodial modem, or an external multiplexer attached to the unit (cnfprt, cnfterm, cnftermfunc).

- Set up the trunks to other routing nodes
  - — verify the correct cards are in both the local and remote nodes (dspcds).
  - — up the trunk at each node (uptrk).
  - — configure any parameters required for the trunk at each node (cnftrk).
  - — set up Y redundancy if desired (addyred)
  - —
- **If using an IPX/IGX Interface Shelf, configure it as shelf**
  - — Up the trunk from the AIT/BTM to the BPX using (uptrk). Shelf trunks for the IPX/IGX must be upped on both the Routing Hub and the Shelf before the Shelf can be joined to the Routing Network
  - — Contact StrataCom ISC to configure IPX/IGX shelf option.
  - — At the BPX, add the IPX/IGX as a shelf to the BPX (addshelf).

Figure 3-1 and Figure 3-2 are examples of the screens displayed when “dspnode” is entered at a BPX and at one of its IPX shelves, respectively. The “dspnode” screen displayed at the “hubone’ bpx node shows that it is connected to the “shlf3ipx” node via BNI trunk 3.3. The “dspnode” screen displayed at the “shlf3ipx” node show that it is connected to the bpx via AIT trunk 8.

**Figure 3-1 The dspnode command from BPX “hubone”**

```
hubone           TN    edgar       BPX 15    8.2.1    Nov. 20 1995 08:09 PST

                          BPX Interface Shelf Information

Trunk    Name      Type      Alarm
 1.2     shlf1Axis  AXIS       OK
 1.3     shlf2Axis  AXIS       OK
 3.1     shlf1IPX   IPX/AF     OK
 3.2     shlf2IPX   IPX/AF     OK
 3.3     shlf3IPX   IPX/AF     OK
 4.1     shlf4IPX   IPX/AF     OK
 4.3     shlf5IPX   IPX/AF     OK


Last Command: dspnode
```

**Figure 3-2 Telnet at IPX shelf “Shlf3IPX” , AIT trunk 8 to BPX “hubone”**

```
shlf3IPX           TN    edgar       IPX 8     8.2.1    Nov. 20 1995 09:24 PDT

                         BPX Switching Shelf Information

Trunk    Name      Type      Alarm
   8     hubone    BPX       MAJ




Last Command: dspnode
```

- Axis Shelf
  - At the BPX, add the AXIS as a shelf to the BPX (addshelf).
- Set up ATM service lines and ports.
  - Activate the line (upln).
  - Configure the line (cnfln).
  - Activate the ports (upport).
  - Configure the ports (cnfport)
- Set up ATM connections
  - Add connections (addcon).
  - Configure a connection type (cnfcontyp).
- Set up ATM to frame relay (ATF) connections
  - Add the connections (addcon).
  - Configure connection classes (cnfcls).
  - Configure connection groups (addcongrp).
- Setup Interface Shelf Frame Relay Connections in Tiered Networks
  - Refer to the SV+ Operations Manual
  - Only frame relay connections are supported from the IPX Interface Shelf and these are added and managed by the SV+ Connection Manager via the SNMP protocol. All connections are treated as end-to-end.

— Frame relay connections terminated at an AXIS Shelf are added and managed by the SV+ Connection Manager via the SNMP protocol. All connections are treated as end-to-end.

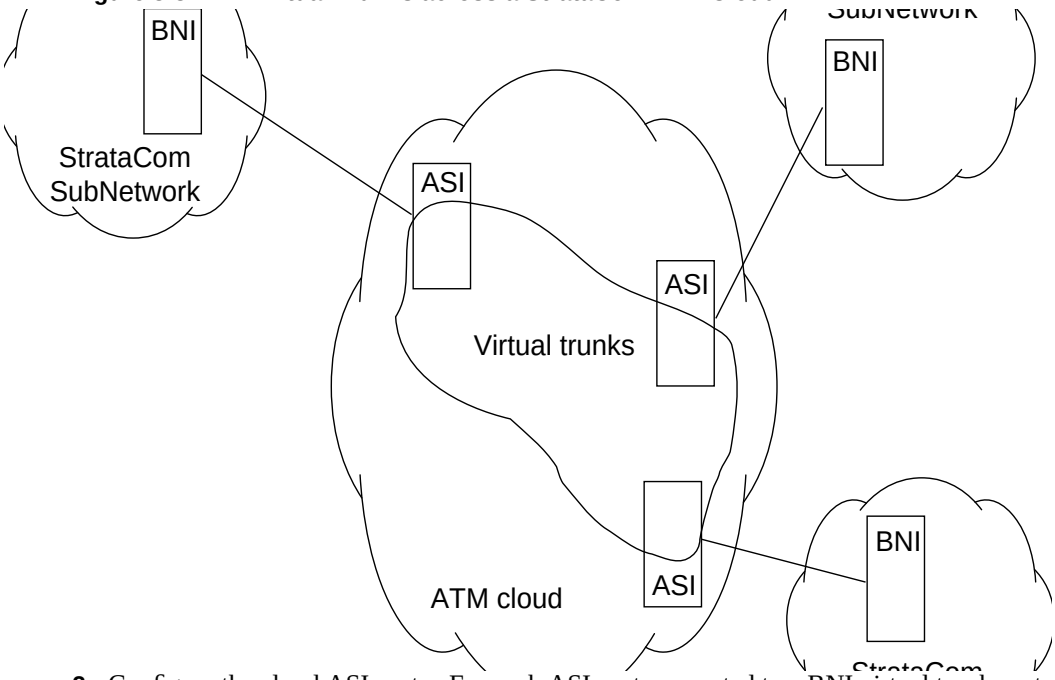
— ATM connections terminated at an AXIS IPX Shelf are added and managed using the Command Line Interface on the AXIS. All connections are treated as end-to-end.

## Adding Virtual Trunks

This section details the steps for setting up a virtual trunk. Virtual trunking is an optional feature that must be enabled by StrataCom prior to adding virtual trunks. Also, revision levels of ASI and BNI firmware must be current. The following procedure assumes that StrataCom equipment is used in the ATM Cloud as well as in the StrataCom subnetworks. In this case, a BNI output from the subnetwork is connected to an ASI UNI input at the ATM Cloud (Figure 3-3). Proceed as follows:

**1** In the ATM cloud network, physically connect an ASI port at the cloud edge to each BNI port in the StrataCom Network that is intended to have virtual trunks.

**Figure 3-3 Virtual Trunks across a StrataCom ATM Cloud**




**2** Configure the cloud ASI ports. For each ASI port connected to a BNI virtual trunk port, do the following:

**upln <slot.port>**

**upport <slot.port>**

**cnfport <slot.port>** and set the *shift* parameter to "N" for no shift if the cloud contains StrataCom nodes.

3 Execute **addcon**. In the cloud network, add a virtual path ASI connection for each virtual trunk that is to route through the cloud. An example of this syntax for this is:

**addcon joker 5.1.1.* swstorm 6.2.10.***

where 5.1 and 6.2 are ASI ports hooked up and configured for virtual trunking. Daxcons are acceptable.

Note that the third number is the VPI which must correspond to the virtual trunk VPI configured with cnftrk in step 4.

When the cloud is a public ATM service and not a StrataCom cloud, the VPI is provided by the carrier, as well as the guaranteed BW associated with the VPI.

The CBR/VBR/ABR parameters must also correspond to the Virtual Trunk Type of the virtual trunk. For T3, set PCR to the bandwidth of the virtual trunk, and CDVT to 24000 for the connection so that the ASI does not drop cells. These are values that StrataCom recommends based on testing.

4 Configure BNI virtual trunks. On the BNIs that connect to the cloud ASI ports, configure up to 32 virtual trunks, as follows:

**uptrk <slot.port.vtrk>**

**cnftrk <slot.port.vtrk>**

For **cnftrk**, make sure that the virtual trunk type and the VPI correspond to the ASI Virtual Path connections that have been set up.

**addtrk <slot.port.vtrk>**

For further information, refer to the *Command Reference Manual.*

# BPX Management

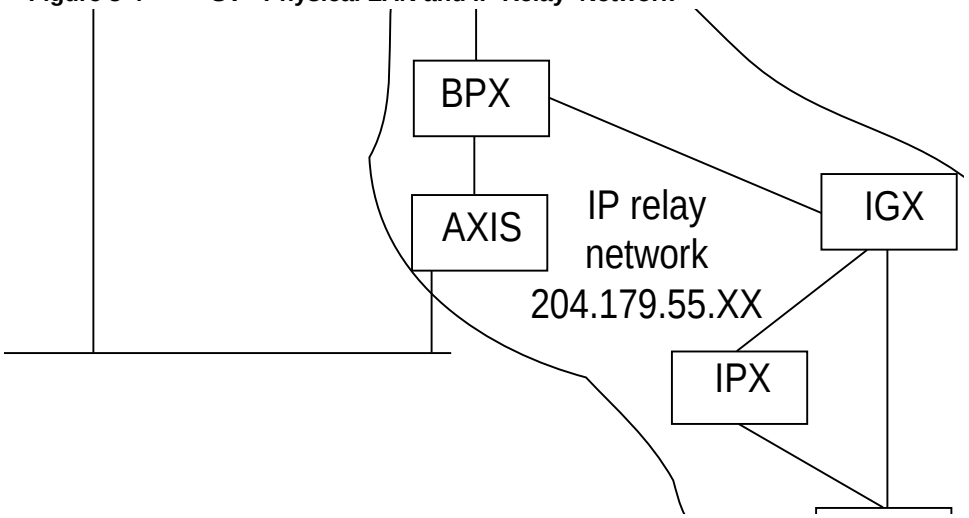
You can monitor, manage and troubleshoot the BPX using the StrataView Plus Network Management Station. Commands are issued to a BPX node through the Node Administration window. Frame Relay connections are added via the StrataView Plus Connection Manager. You can display and monitor the network's topology, monitor alarms, events, and statistics. Refer to the StrataView Plus Operations Guide for more information.

For detailed configuration information, refer to the *Command Reference Manual.*

# IP, IP Relay Configuration (Preliminary)

In setting up network management for a network, both the SV+ workstation and network nodes need to be configured. SV+ communicates over a standard physical LAN network to a gateway node or nodes, but a separate in-band IP relay network is setup for all nodes via a gateway node for SNMP and TFTP in-band communication over the node trunks (Figure 3-4).

**Figure 3-4 SV+ Physical LAN and IP Relay Network**




## Installing SV+ and Associated Applications

Refer to the *StrataView Plus Installation* manual, the *Command Reference*, and the *AXIS Reference Manual* for additional information.

## Configure SV+ Workstation (example)

**1** Enter physical IP addresses and physcial LAN node names (with a letter“p”, for example to differentiate from IP relay name) in /etc/hosts and enter IP relay addresses and actual node names.

```
beacon% more /etc/hosts
#
# Sun Host Database
#
# If the NIS is running, this file is only consulted when booting
#
127.0.0.1       localhost
#
204.179.61.121  beacon loghost



# node physical ethernet LAN addresses

204.179.61.104 nw1bpx1p
204.179.61.71 nw1axi1p

# node ip relay addresses

204.179.55.101 nw1ipx1
204.179.55.102 nw1ipx2
204.179.55.103 nw1ipx3
204.179.55.xxx nw1igx1
204.179.55.111 nw1bpx1
204.179.55.105 nw1axi1
```

If the workstation is connected to the corporate network, add any IP addresses and associated names of hosts that you may want to connect to your workstation, as the NIS is disabled.

2 Enter name of gateway node in config.sv, using physical LAN name.g., nw1bpx1p. Note; normally, a bpx is used for the gateway node because of its greater processing power.

**0|Network1|nw1bpx1p|9600|0|7|6|0|30|1024|8.1|**

3 Enter IP Relay subnet mask at end of rc.local file:

**# route add for SV+**

**route add net 204.179.55.0 nw1ipx1p 1**

---

**Note** The route add command is for all nodes in the 204.179.55.0 subnetwork. The name "nw1bpx1p" is the name associated with the physical LAN port on the gateway node, e.g., nw1bpx1

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4 Contact Corporate Network Administrator, but in order for workstation to use /etc/hosts, it must not be able to access the NIS directory. A work around is to perform the following:

**mv /etc/defaultdomain /etc/defaultdomain_old**

# Network Node Configuration (Preliminary)

## Adding nodes, adding trunks, shelves, etc.

Refer to the applicable Reference manuals, IPX, BPX, IGX, AXIS, etc., for node installation and operation.

As a minimum, the nodes need to be configured with name (cnfname), date (cnfdate), time (cnftime), timezone (cnftmzn), and trunks upped (uptrk) and added (uptrk or addshelf, as applicable. Connections can also be added now, or added later, after configuring the nodes for operation with the SV+ NMS manager.

For information on upgrading the nodes to a later version of switch software or card firmware refer to Appendix A. For information on upgrading system and card firmware on the AXIS, refer to Appendix B.

## Configuring the IPX, IGX, and BPX for SV+ NMS Operation

On IPX, BPX, IGX nodes the following commands are used to configure the nodes for operation with SV+: **cnflan, cnfnwip, cnfstatmast, cnfsnmp**. The AXIS is configured with **cnfifip** and **cnfstatsmgr**. The cnflan command is only necessary for nodes or shelves in which the LAN port is actually connected to a physical Ethernet LAN,

## Configuring the AXIS for SV+ NMS Operation (example)

At installation, initial access to the AXIS is provided by the control port.

1 Connect a terminal running svlite to the control port on the AXIS workstation.

2 Login

```
login: “LoginID”

password:
card number: 3

xxxxAXIS.1.3.ASC.a >
```

3 Name the shelf

```
xxxxAXIS.1.3.ASC.a > cnfname nw1axi1
```

4 Set the date:

```
nw1nw1axi1.1.3.ASC.a > cnfdate 05/02/96
```

5 Set the time:

```
nw1saxi1.1.3.ASC.a > cnftime 15:31:00
```

6 Enter Help for a list of commands:

```
nw1saxi1.1.3.ASC.a > Help
```

7 Check versions of ASC, and Service Module (e.g., FRSM, AUSM) Firmware

```
nw1axi1.1.3.ASC.a > version
***** Stratacom Inc. AXIS ASC Card *****2
    Firmware Version    = 2.1.12b_______
    Backup Boot version = model-B BT_2.0.0_______
    ASCFRSM Xilinx file = asc025.h
    ASCBNM Xilinx file  = bnmt3andsrefix
VxWorks (for STRATACOM) version 5.1.1-R3000.
Kernel: WIND version 2.4.
Made on Thu May 2 16:42:36 PDT 1996.
Boot line:
sl(0,0)

cc
```

8 Enter Ethernet LAN port IP address

```
nw1axi1.1.3.ASC.a > cnfifip
cnfifip "-ip <ip addr> -if <Interface> -msk <NetMask> -bc <Brocast addr>
"
  -ip <IP addr> where IP addr = nnn.nnn.nnn.nnn
  -if <Interface> where Interface = 26,28,37, 26: Ethernet, 28: Slip 37: ATM
  -msk <NetMask> where NetMask = nnn.nnn.nnn.nnn
  -bc <BrocastAddr> where BrocastAddr = nnnnnnnn,  n is hexdecimal, ethernet only



nw1axi1.1.3.ASC.a > cnfifip -ip 204.179.61.71 -if 26
```

You are configuring ethernet port are you sure? enter yes/no: yes

**9** Enter IP Relay Address for SNMP Management and Stats Collection

```
nw1axi1.1.3.ASC.a > cnfifip -ip 204.179.55.105 -if 37
```

You are configuring atm port are you sure? enter yes/no: yes

**10** Configure stat master address (IP of SV+ workstation)

```
cnfstatsmgr "<ip address>"
```

```
nw1axi1.1.3.ASC.a > cnfstatsmgr 204.179.61.121      {this is IP address of SV+ workstn}
```