Connecting BPX 8600 Switches Using MGX 8220 IMA Trunks Sample Configuration

Contents

Introduction
Prerequisites
Requirements
Components Used
Conventions
Versions
Configure
Network Diagram
Configurations
MGX 8220 IMATM-8T3T1/B - New York
MGX 8220 FRSM - New York
BPX 8600 - New York
MC 3810 - New York
MGX 8220 IMATM-8T3T1/B - Jakarta
MGX 8220 FRSM - Jakarta
BPX 8600 - Jakarta
MC 3810 - Jakarta
Verify
Troubleshoot
show Commands
version
dspln s
dspln
dspdsx3lns
dspports
dspimagrp
dspimainfo
dspplpp
dspimagrpcnt
dspimalncnt
dspimaln
Related Information

Introduction

This document provides configuration information for how to connect two BPX 8600 switches with

narrowband trunks. Each BPX 8600 switch has an MGX 8220 Edge Concentrator connected as a feeder shelf. The customer premises equipment (CPE) is connected to the feeder shelf. A four T1 inverse multiplexing over ATM (IMA) trunk group is established between two MGX 8220 IMATM-8T3T1/B service modules. A T3 trunk is established between each BPX 8600 BXM-T3 service module and the respective MGX8220 IMATM-8T3T1/B. Two Cisco multichannel (MC) 3810 routers with Frame Relay interfaces are connected to each of the MGX 8220 Frame Relay Service Modules (FRSM)-8T1. IP connectivity between two Cisco MC 3810 routers is achieved through a network interworking (NIW) connection. The MGX 8220 FRSM-8T1 service modules provide the NIW conversion. BPX 8600 switches provide the switching function for this connection.

Note: This document is designed to help you configure Cisco equipment. It is not a substitute for proper network design and planning that you can achieve with your Cisco sales engineer, systems engineer, or account manager.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these software and hardware versions:

- BPX 8600 switches
- MGX 8220 Edge Concentrators
- MC 3810 routers
- MGX 8220 IMATM/B cards

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

Versions

The versions used in this document are based on generally available releases and are not intended as strict requirements. Read the applicable release notes in order to verify that required interfaces and configurations are supported on each of the platforms.

- **MC 3810**Software—Cisco IOS® Software Release 12.0(3) and 12.0(4)THardware—Cisco MC 3810 with T1 multiflex trunk (MFT) interface
- **MGX 8220**Both Cisco MGX 8220 Edge Concentrators use the same Cisco firmware release and hardware configuration.Firmware—Cisco release 5.0.14 and the appropriate versions of service module hardware and firmware on both MGX 822s.Hardware—A Cisco IMATM model B service module is used for ATM Forum compliant IMA. Four T1 trunks are used between the

two IMATM 8T3T1/B service modules on each of the MGX 8220 Edge Concentrators. The IMATM/B service modules use RJ48 connectors for T1 lines and a coaxial connector for the T3 line. The T3 port on each of the IMATM 8T3T1/B service modules is connected to the respective BXM-T3 port on the BPX 8600 switches. The FRSM-8T1 service module uses RJ48 connectors and connects to the respective MC 3810 MFT interface.

- **BPX 8600**Both BPX 8600 switches use the same Cisco switch software version.Software—Cisco Switch Software Release 9.1.18 and the appropriate versions of card hardware and firmware as specified in the Release Notes.Hardware—The BPX 8600 switch is connected to the MGX 8220 feeder shelf with a Broadband Network Interface (BNI)-T3 card set. The BXM-T3 card set connects to the MGX 8220 IMATM/B service module. The BXM-T3 service module uses service message block (SMB) connectors. The BNI-T3 service module uses coaxial connectors.

Configure

In this section, you are presented with the information to configure the features described in this document.

Note: Use the Command Lookup Tool (registered customers only) to obtain more information on the commands used in this section.

Network Diagram

This document uses this network setup:

Configurations

This document uses these configurations:

Note: Make all physical connections before you create configurations.

- MGX 8220 IMATM-8T3T1/B—New York
- MGX 8220 FRSM—New York
- BPX 8600—New York
- MC 3810—New York
- MGX 8220 IMATM-8T3T1/B—Jakarta
- MGX 8220 FRSM—Jakarta
- BPX 8600—Jakarta
- MC 3810—Jakarta

MGX 8220 IMATM-8T3T1/B - New York

Add the lines on the IMATM-8T3T1/B card to be included in the inverse multiplexing over ATM (IMA) group.

```
mgx8220a.1.8.IMATMB.a > addln 1
mgx8220a.1.8.IMATMB.a > addln 2
mgx8220a.1.8.IMATMB.a > addln 3
```

```
mgx8220a.1.8.IMATMB.a > addln 4
```

Check all lines and clear alarms before you add lines to the IMA group. It is recommended that you use contiguous lines in an IMA group. However, it is not required. An IMA group can be composed of lines 1, 3, 4, and 5.

Note: Line framing and line coding for the T1s between the two IMATM/B service modules must match.

```
mgx8220a.1.8.IMATMB.a > dsplns

  Line  Conn      Type      Status/Coding      Length      XmtClock Alarm Stats
        Type                                              Source         Alarm
  ----  ----- ------------ ------ -------- -------------  -------- ----- -----
  8.1   RJ-48 dsx1ESF          Ena/dsx1B8ZS 0-131 ft      LocalTim  No     No
  8.2   RJ-48 dsx1ESF          Ena/dsx1B8ZS 0-131 ft      LocalTim  No     No
  8.3   RJ-48 dsx1ESF          Ena/dsx1B8ZS 0-131 ft      LocalTim  No     No
  8.4   RJ-48 dsx1ESF          Ena/dsx1B8ZS 0-131 ft      LocalTim  No     No
  8.5   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  8.6   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  8.7   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  8.8   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  LineNumOfValidEntries: 8
Syntax : dsplns
mgx8220a.1.8.IMATMB.a >


mgx8220a.1.8.IMATMB.a > dspalms -ds1
  Line  AlarmState   StatisticalAlarmState
  ----  -----------  ---------------------
  8.1  No Alarms    No Statistical Alarms
  8.2  No Alarms    No Statistical Alarms
  8.3  No Alarms    No Statistical Alarms
  8.4  No Alarms    No Statistical Alarms
```

Add the IMA group and include all the added lines in the group.

```
mgx8220a1.1.8.IMATMB.a > addimagrp 1 2 1.2.3.4 1
```

where:

1	IMA group number—value ranges from 1 to 8
2	Port Type—1- UNI, 2- NNI, 3- STI, 4- Virtual trunks UNI(STI in UNI)
1.2.3.4	List of links—list of links separated by dots
1	minimum no of links—minimum number of links for the group formation;value ranges from 1 to 8. **This number must be the same at each end of the IMA group.**

Add a channel route for the IMA group with the **addchrte** command. This command creates a virtual path identifier (VPI) map listing on the IMATM and defines which cells are routed to which IMA group. If a single IMA group is defined and the VPI range being sent from the attached equipment (here, the BPX 8600) is not known, then specify the entire VPI range.

```
mgx8220a.1.8.IMATMB.a > addchrte 1 1 0 4095
```

where:

1	Range number—value ranges from 1 to 128
1	IMA trunk number—value ranges from 1 to 8
0	Min. VPI value—0-255 (UNI/VpTrkUNI), 0-1023(STI), 0-4095(NNI)
4095	Max. VPI value—0-255 (UNI/VpTrkUNI), 0-1023(STI), 0-4095(NNI). **In this case, the port type is NNI so the max. value of 4095 is used.**

```
mgx8220a.1.8.IMATMB.a > dspaimgrp 1
   IMA Group number                  : 1
   Port type                         : NNI
   Lines configured                  : 1.2.3.4
   Enable                            : Enabled
   IMA Port state                    : Active
   IMA Group Ne state                : operational
   PortSpeed (cells/sec)             : 14364
   GroupTxAvailCellRate (cells/sec) : 14364
   ImaGroupTxFrameLength(cells)      : 128
   LcpDelayTolerance (IMA frames)   : 1
   ReadPtrWrPtrDiff  (cells)         : 4
   Minimum number of links           : 1
   MaxTolerableDiffDelay (msec)      : 275
   Lines Present                     : 1.2.3.4 --> verify all configured links are
present.
   ImaGroupRxImaId                   : 0x2
   ImaGroupTxImaId                  : 0x2
   Observed Diff delay (msec)        : 0
   Clock Mode                        : CTC
   GroupAlpha                        : 2
   GroupBeta                         : 2
   GroupGamma                        : 1
Type <CR> to continue, Q<CR> to stop:
   GroupConfiguration                : 1
   IMAGrp Failure status             : No Failure
   Timing reference link             : 3
```

Verify that the IMATM-8T3T1/B port payload scrambling configuration is the same at both ends of the IMA trunk. Payload scrambling was developed in order to ensure that the ATM cell payload does not resemble a cell header. It is significant only locally. Specifically, each side of an ATM interface must have the same payload scrambling value, but all ATM interfaces in the network do not require the same configuration.

```
mgx8220a.1.8.IMATMB.a > dspports

No ATM T1/E1 UNI ports currently active
 List of IMA groups:
 ===================
ImaGrp PortType  Conf  Avail  Lines configured   Lines present   Tol Diff  Port e
                 rate   rate                                    Delay(ms)
------ -------- -----  ------  ---------------   --------------- --------- ------
 8.1   NNI     14364    3591  1.2.3.4           1.2.3.4           275       Active
  NextPortNumAvailable:  8
mgx8220a.1.8.IMATMB.a > dsppplpp 1
  PhysicalPortNumber:             1
  CellFraming:                    ATM
  CellScramble:                   No Scramble
  Plpp Loopback:                  No Loopback
  Single-bit error correction:   Disabled
```

MGX 8220 FRSM - New York

Verify the existing lines.

```
mgx8220a.1.9.FRSM.a > dsplns
  Line  Conn      Type      Status/Coding      Length      XmtClock Alarm Stats
        Type                                              Source         Alarm
  ----  ----- ------------ ------ -------- -------------  -------- ----- -----
  9.1   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  9.2   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  9.3   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  9.4   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  9.5   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  9.6   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  9.7   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  9.8   RJ-48 dsx1ESF          Dis/dsx1B8ZS 0-131 ft      LocalTim
  LineNumOfValidEntries: 8
Syntax : dsplns
```

Enable the line connected to the Multichannel (MC) 3810 router.

Note: Line framing and line coding for the T1 between the Frame Relay Service Module (FRSM) and MC 3810 must match.

```
mgx8220a.1.9.FRSM.a > addln 1

Enable the logical port and configure for Frame Relay service.

mgx8220a.1.9.FRSM.a > addport 1 1 2 1 24 1
```

where:

1	port number—values that range from 1-192 are accepted for T1 and 1-2481.
1	line number—value ranges from 1 to 8.

2	DS0 speed—1 for 56K, 2 for 64K
1	beginning slot—beginning time slot in 1 base
24	number of slot—number of DS0 time slots assigned to
1	port type—values 1-3, 1=frame relay, 2=FUNI mode-1a, 3=frForward

Configure the logical port to use local management interface (LMI) signaling. This example uses StrataLMI with asynchronous updates enabled and enhanced LMI disabled.

```
mgx8220a.1.9.FRSM.a > cnfport 1 S 2 n
```

1	port number—values that range from 1-192 are accepted for T1 and 1-2481.
S	LMI signalling— (N)one (S)trataLMI au-AnnexAUNI du-AnnexDUNI an-AnnexANNI dn-AnnexDNNI. **Must match LMI on MC3810.**
2	asyn UPD/UFS—(UPD = Update Status, UFS = Unsolicited Full Status) (n or 1) = both dis, (y or 2) = UPD en, 3 = UFS en, 4 = both en
n	Enhanced LMI—(N or n) disable (Y or y) enable

Display and verify the configuration of the logical port.

```
mgx8220a.1.9.FRSM.a > dspports

    Port   Ena/Speed EQServ  SignalType   T391 T392 N391 N392 N393   Type   AlarI
                     Ratio
  -------- --- ----- ------ ------------ ---- ---- ---- ----  ---- -------- -----
  9.1.1    Mod/1536k   1     StrataLMI      10   15     6    3    4 frameRel  No f
  Number of ports:               1
  PortDs0UsedLine1:              0x00ffffff
  PortDs0UsedLine2:              0x00000000
  PortDs0UsedLine3:              0x00000000
  PortDs0UsedLine4:              0x00000000
  PortDs0UsedLine5:              0x00000000
  PortDs0UsedLine6:              0x00000000
  PortDs0UsedLine7:              0x00000000
  PortDs0UsedLine8:              0x00000000
  PortNumNextAvailable:          154
Syntax : dspports
```

Now add the connection, and enable the network internetworking function.

Note: Connection values are not optimized and are used for example only.

```
mgx8220a.1.9.FRSM.a > addchan 100 1 100 1536000 1
```

where:

1	channel number—value ranges from 16 to 1015
100	port number—values ranges from 1-192 are accepted for T1 and 1-2481
1	DLCI number—value ranges from 0 to 1023. **Must match DLCI on MC3810.**
1536000	committed rate—0-1536000 bps for T1; 0-2048000 bps for E1
1	chan type—values 1-5, 1=NIW 2=SIW-transparent 3=SIW-xlation 4=FUNI 5=frForward

BPX 8600 - New York

Add the MGX 8220 as a feeder shelf to the BPX 8600 switch with the **addshelf** command. Before you add the shelf to the switch, activate the T3 trunk with the **uptrk** command.

```
bpx8600a             TRM   SuperUser       BPX 8600
9.1.18
Sept. 28 2000  08:28 PST
TRK     Type     Current Line Alarm Status
Other
End
 2.1    T3       Clear - OK
-


Last Command: uptrk 2.1


Next Command:
```

Check the trunk and clear any alarms before you issue the **addshelf** command.

```
bpx8600a             TRM   SuperUser       BPX 8600
9.1.18    Sept. 28 2000  08:31 PST
                  BPX 8600 Interface Shelf Information
Trunk    Name      Type          Part Id   Ctrl Id
Alarm
 2.1     mgx8220a  AXIS             -         -      MIN


Last Command: addshelf 2.1 A

Shelf has been added
Next Command:
```

Now activate the T3 trunk on the BXM-T3 to the MGX 8220 IMATM/B with the **uptrk** command.

```
bpx8600a             TRM   SuperUser       BPX 8600
9.1.18
Sept. 28 2000  08:31 PST
```

```
TRK     Type      Current Line Alarm Status
Other
End
 1.4    T3        Major - AIS (BLU)
-
 2.1    T3        Clear - OK
mgx8220a(AXIS)



Last Command: uptrk 1.4


Next Command:
```

The default Transmit Rate for a T3 trunk on the BPX switch is 96000 cells per second (cps). Reduce the value of the Transmit Rate for this trunk in order to match the value to that of four T1s by with the **cnftrk** command. The value is rounded off by the switch.

```
bpx8600a             TN    StrataCom       BPX 8600
9.1.18
Sept. 28 2000  08:39 PST
TRK  1.4 Config    T3    [9962 cps]     BXM slot:     1
Transmit Rate:        10000               VPC Conns
disabled:    No
Subrate data rate:     --                  Line framing:
PLCP
Line DS-0 map:         --                       coding:
--
Statistical Reserve:   1000    cps              recv
impedance:   --
Idle code:             7F hex                   cable
type:       --
Max Channels/Port:     256
length:     0-225 ft.
Connection Channels:   256                  Pass sync:
Yes
Traffic:   V,TS,NTS,FR,FST,CBR,VBR,ABR     Loop clock:
No
SVC Vpi Min:           0                    HCS Masking:
Yes
SVC Channels:          0                    Payload
Scramble:      No
SVC Bandwidth:         0      cps           Frame
Scramble:        --
Restrict CC traffic:   No                   Virtual Trunk
Type:    --
Link type:             Terrestrial          Virtual Trunk
VPI:     --
Routing Cost:          10                   Deroute delay
time:    0 seconds

Last Command: cnftrk 1.4 10000


Next Command:
```

Note: The trunk numbered 1.4 is in Alarm because the remote side of the trunk is not activated. The trunk goes from Alarm to Clear Ok only when both sides of the trunk have been activated.

MC 3810 - New York

```
r3810a#conf t
r3810a(config)#cont t1 0
r3810a(config-controller)#framing esf
r3810a(config-controller)#linecode b8zs
r3810a(config-controller)#channel-group 0 timeslots 1-24 speed  64
r3810a(config-controller)#no shut
r3810a(config-controller)#int s0:0
r3810a(config-if)#ip address 2.2.2.2 255.255.255.0
r3810a(config-if)#encapsulation frame-relay
r3810a(config-if)#frame-relay map ip 2.2.2.1 100 broadcast -> associate the DLCI to
the IP address r3810a(config-if)#no shut
```

MGX 8220 IMATM-8T3T1/B - Jakarta

The configuration for the MGX 8220 IMATM/B service module is identical to the MGX 8220 IMATM/B for New York. Repeat the steps listed for this configuration in order to configure the IMATM/B.

MGX 8220 FRSM - Jakarta

The configuration for the MGX 8220 FRSM service module is identical to the MGX 8220 FRSM for New York. Repeat the steps listed in this configuration in order to configure the FRSM.

BPX 8600 - Jakarta

Add the MGX 8220 as a feeder shelf to the BPX 8600 switch. Activate the BXM-T3 trunk, as mentioned in this document, for the BPX 8600 in New York. Also, configure the Transmit Rate for a BXM-T3 trunk in order to match the other end of the trunk.

Add the trunk between the nodes with the **addtrk** command. This command is executed at one of the nodes that terminates the trunk. A trunk must be free of major alarms before you can add it.

```
bpx8600b            TRM   StrataCom       BPX 8600
9.1.18
Sept. 28 2000  08:40 PST
TRK       Type     Current Line Alarm Status
Other End
 2.1      T3       Clear - OK
mgx8220b(AXIS)
13.1      T3       Clear - OK
bpx8600a/1.4


Last Command: addtrk 13.1

Next Command:
```

Now add the connection on the BPX 8600 switch with the **addcon** command.

```
addcon 2.1.9.300 bpx8600a 2.1.9.100 atfr 3000 * * * * * * * *
Add these connections (y/n)?y
```

```
bpx8600b            TRM   StrataCom       BPX 8600
9.1.18
Sept. 28 2000  08:40 PST
 Local           Remote      Remote
Route
 Channel         NodeName    Channel          State  Type
Avoid COS O
 2.1.9.300       bpx8600a    2.1.9.100        Ok     atfr
0  L



Last Command: addcon 2.1.9.300 bpx8600a 2.1.9.100 atfr
3000 * * * * * * * * y
```

Verify the added connection:

```
bpx8600b       TN   StrataCom       BPX 8600  9.1.18
Sep. 28 2000 09:47 PST
Conn:  2.1.9.300        bpx8600a    2.1.9.100
atfr      Status:OK
    PCR(0+1)    % Util    CDVT(0+1)    FBTC       SCR
MBS     PLC
   3000/3000   100/100  250000/250000   y      3000/3000
1000/1000    3
Owner: LOCAL  Restriction: NONE  COS: 0

Path:   bpx8600b13.1-- 1.4bpx8600a
Pref:   Not Configured




bpx8600b      BNI-T3    : OK           bpx8600a  BNI-T3
: OK
              Line  2.1 : OK                     Line
2.1 : OK
              OAM Cell RX: Clear                 NNI
: OK
              NNI       : OK

This Command: dspcon 2.1.9.300

Continue?y



------------------------------------------------------
------------------------

Conn:  2.1.9.300        bpx8600a    2.1.9.100
atfr      Status:OK
   PCR(0+1)        % Util       CDVT(0+1)            SCR
MBS
```

```
 3000/3000         100/100     250000/250000
3000/3000          1000/1000
Policing     VC Qdepth      EFCI          IBS
    3       1280/1280      35/35         1/1



Last Command: dspcon 2.1.9.300

Next Command:
```

MC 3810 - Jakarta

The configuration for the MC 3810 is also identical to the MC 3810 for New York. Repeat the steps listed for this configuration in order to configure the IMATM/B.

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Note: Refer to Important Information on Debug Commands before you use **debug** commands.

show Commands

Command summary:

- **version**
- **dspIns**
- **dspIn**
- **dspdsx3Ins**
- **dspports**
- **dspimagrp**
- **dspimainfo**
- **dspplpp**
- **dspimalncnt**
- **dspimaln**

version

```
mgx8220a.1.8.IMATMB.a > version

***** Cisco Systems, Inc. AXIS IMATM Card *****
```

```
    Firmware Version    = 5.0.12

    Backup Boot version =  IMA_BT_1.0.02

    IMATM Xilinx file = imatm_b_xilinx.h

VxWorks (for Cisco Systems, Inc.) version 5.1.1-R3000.

Kernel: WIND version 2.4.

Made on Thu Jun 22 11:22:38 PDT 2000.

Boot line:
```

dsplns

```
mgx8220a.1.8.IMATMB.a > dsplns

  Line  Conn      Type     Status/Coding      Length     XmtClock Alarm Stats
        Type                                           Source         Alarm
  ----  ----- ------------ ------ -------- ------------- -------- ----- -----

  8.1   RJ-48 dsx1ESF         Ena/dsx1B8ZS 0-131 ft      LocalTim  No    No
  8.2   RJ-48 dsx1ESF         Ena/dsx1B8ZS 0-131 ft      LocalTim  No    No
  8.3   RJ-48 dsx1ESF         Ena/dsx1B8ZS 0-131 ft      LocalTim  No    No
  8.4   RJ-48 dsx1ESF         Ena/dsx1B8ZS 0-131 ft      LocalTim  No    No
  8.5   RJ-48 dsx1ESF         Dis/dsx1B8ZS 0-131 ft      LocalTim
  8.6   RJ-48 dsx1ESF         Dis/dsx1B8ZS 0-131 ft      LocalTim
  8.7   RJ-48 dsx1ESF         Dis/dsx1B8ZS 0-131 ft      LocalTim
  8.8   RJ-48 dsx1ESF         Dis/dsx1B8ZS 0-131 ft      LocalTim

LineNumOfValidEntries: 8
```

dspln

```
mgx8220a.1.8.IMATMB.a > dspln 1

  LineNum:                   1
  LineConnectorType:         RJ-48
  LineType:                  dsx1ESF
  LineEnable:                Enabled
  LineCoding:                dsx1B8ZS
  LineLength:                0-131 ft
  LineXmtClockSource:        LocalTiming
  LineLoopbackCommand:       NoLoop
  LineSendCode:              NoCode
  LineUsedTimeslotsBitMap:   0xffffffff
  LineLoopbackCodeDetection: codeDetectDisabled
  LineBERTEnable:            Disable
  LineNumOfValidEntries: 8
```

dspdsx3lns

```
mgx8220a.1.8.IMATMB.a > dspdsx3lns

  Line       Type         Coding      Length       Criteria   AIScBitsCheck
  ----  --------------  --------  -------------  ----------- -------------
  8.1   dsx3CbitParity  dsx3B3ZS  LessThan225ft  3 out of 8  Ignore C-bits

  LineNumOfValidEntries: 1

Syntax : dspdsx3lns
```

dspports

```
mgx8220a.1.8.IMATMB.a > dspports

List of IMA groups:
  ===================
ImaGrp PortType  Conf  Avail  Lines configured  Lines    present   Tol Diff  Port
                       rate   rate                                    Delay(ms)
   ------ -------- -----  ------  ---------------  ---------------    --------- -----
    8.1    NNI     14364  14364     1.2.3.4          1.2.3.4             275
Active
  NextPortNumAvailable:  4
Syntax : dspimagrps (or dspaimgrps)

mgx8220a.1.8.IMATMB.a >
```

dspimagrp

```
mgx8220a.1.8.IMATMB.a > dspimagrp 1
   IMA Group number                  : 1
   Port type                         : NNI
   Lines configured                  : 1.2.3.4
   Enable                            : Enabled
   IMA Port state                    : Active
   IMA Group Ne state                : operational
   PortSpeed (cells/sec)             : 14364
   GroupTxAvailCellRate (cells/sec) : 14364
   ImaGroupTxFrameLength(cells)      : 128
   LcpDelayTolerance (IMA frames)    : 1
   ReadPtrWrPtrDiff  (cells)         : 4
   Minimum number of links           : 1
   MaxTolerableDiffDelay (msec)      : 275
   Lines Present                     : 1.2.3.4  -->  all the configured links are
present
   Observed Diff delay (msec)        : 0
   Clock Mode                        : CTC
   GroupAlpha                        : 2
   GroupBeta                         : 2
   GroupGamma                        : 1
   GroupConfiguration                : 1
   IMAGrp Failure status             : No Failure
   Timing reference link             : 1
   ImaGroupTxImaId                   : 0x0
   ExpectedGroupRxImaId              : 0x1
```

dspimainfo

```
mgx8220a.1.8.IMATMB.a > dspimainfo
Link  Group    NeTx          NeRx       FeTx          FeRx     TxLID  RxID
               State         State      State         State
-------------------------------------------------------------------
   1   1   Active        Active       Active        Active       0   0
   2   1   Active        Active       Active        Active       1   1
   3   1   Active        Active       Active        Active       2   2
   4   1   Active        Active       Active        Active       3   3
```

dspplpp

```
mgx8220a.1.8.IMATMB.a > dspimainfo
Link  Group    NeTx          NeRx       FeTx          FeRx     TxLID  RxID
               State         State      State         State
-------------------------------------------------------------------
   1   1   Active        Active       Active        Active       0   0
   2   1   Active        Active       Active        Active       1   1
   3   1   Active        Active       Active        Active       2   2
   4   1   Active        Active       Active        Active       3   3
```

dspimagrpcnt

```
mgx8220a.1.8.IMATMB.a > dspimainfo
Link  Group    NeTx          NeRx       FeTx          FeRx     TxLID  RxID
               State         State      State         State
-------------------------------------------------------------------
   1   1   Active        Active       Active        Active       0   0
   2   1   Active        Active       Active        Active       1   1
   3   1   Active        Active       Active        Active       2   2
   4   1   Active        Active       Active        Active       3   3
```

dspimalncnt

```
mgx8220a.1.8.IMATMB.a > dspimainfo
Link  Group    NeTx          NeRx       FeTx          FeRx     TxLID  RxID
               State         State      State         State
-------------------------------------------------------------------
   1   1   Active        Active       Active        Active       0   0
   2   1   Active        Active       Active        Active       1   1
   3   1   Active        Active       Active        Active       2   2
   4   1   Active        Active       Active        Active       3   3
```

dspimaln

```
mgx8220a.1.8.IMATMB.a > dspimainfo
Link  Group    NeTx          NeRx       FeTx          FeRx     TxLID  RxID
               State         State      State         State
-------------------------------------------------------------------------
   1    1   Active        Active       Active        Active       0    0
   2    1   Active        Active       Active        Active       1    1
   3    1   Active        Active       Active        Active       2    2
   4    1   Active        Active       Active        Active       3    3
```

Related Information

- **AUSM-8T1/B-to-3620 IMA Sample Configuration**
- **Guide to New Names and Colors for WAN Switching Products**