IW SPM IP Basics

Functional description

The Interworking Spectrum Peripheral Module Internet Protocol (IW SPM IP) builds on the technology of the Spectrum Peripheral Module (SPM). The IW SPM IP provides a means of connecting the existing telephony (TDM) network to an IP based network. The hardware and software of the IW SPM IP enables such applications through:

- modularity, by insulating the frameworks and architecture from a specific implementation.

- re-usable generic functions, such as resource module (RM) loading, node and link maintenance.

- generic frameworks ready to accept device specific implementations.

- generic services such as log and alarm reporting subsystems.

In such an environment, introduction of new services means development of:

- real-time applications software on the RM

- agents for configuration and provisioning

- diagnostic and audit services for new capabilities
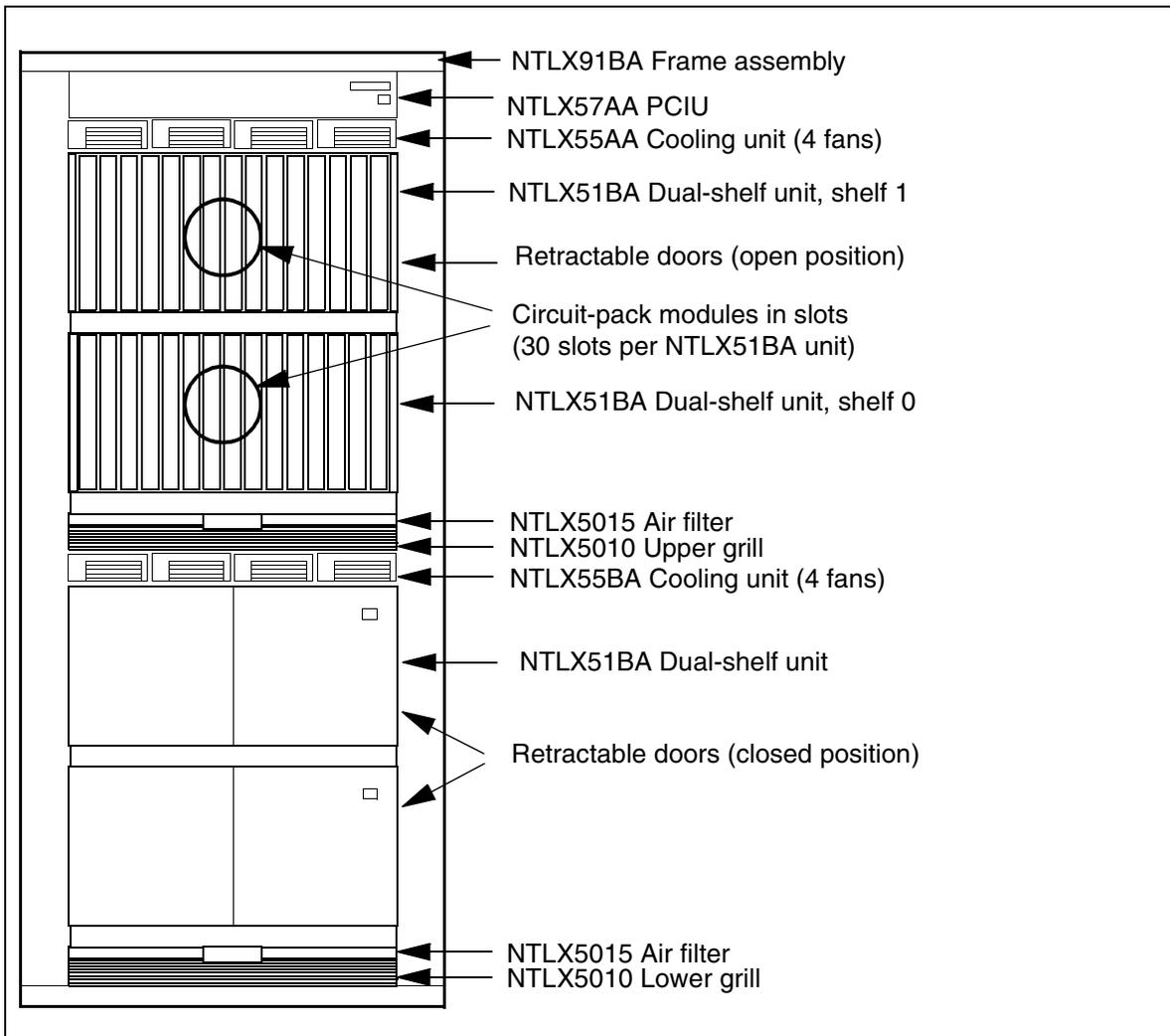
- device maintenance targets

The basic mechanical element of the IW SPM IP consists of a dual shelf assembly mounted to a common backplane. A shelf assembly contains two identical shelves. Each shelf contains modules which plug into the backplane. The modules contain circuit cards that perform a variety of functions such as call processing and high speed carrier capabilities. A standard equipment frame contains two dual shelf assemblies that provide two IW SPM IP nodes.

Hardware

Description of components

As shown in the following figure, the NTLX91BA frame assembly contains two NTLX51BA dual-shelf assemblies (two complete IW SPM IPs) and the necessary support equipment.

Figure 1 The IW SPM IP frame

NTLX91BA Frame assembly
NTLX57AA PCIU
NTLX55AA Cooling unit (4 fans)
NTLX51BA Dual-shelf unit, shelf 1
Retractable doors (open position)
Circuit-pack modules in slots
(30 slots per NTLX51BA unit)
NTLX51BA Dual-shelf unit, shelf 0
NTLX5015 Air filter
NTLX5010 Upper grill
NTLX55BA Cooling unit (4 fans)
NTLX51BA Dual-shelf unit
Retractable doors (closed position)
NTLX5015 Air filter
NTLX5010 Lower grill

Each dual-shelf assembly provides 30 slots to accommodate

- two NTLX61AA shelf interface modules (SIMs)—one SIM needs to be on each shelf of the dual-shelf assembly

  The NTLX61AA shelf interface module (SIM) is the DC power conditioner for the dual-shelf assembly for the IW SPM IP. It is also the alarm interface between the common equipment modules

(CEMs) and the NTLX57AA power connection interface unit (PCIU). The SIM also provides IW SPM IP test bus access.

- two NTLX82AA or NTLX82BA common equipment modules (CEMs) for each dual-shelf assembly

The CEM contains the circuitry required to control the operation of the IW SPM IP. The CEM controls the signal processing and provides the system clock. The front of the CEM has four optical links points that connect the fiber to the ENET paddle boards through DS-512 links.

> *Note:* CEMs cannot be RST'd if they are located (and datafilled) in slots 1, 2, 7, or 8 of shelf 1 of a high-speed backplane (NTLX51BA).

- two NTLZ20 Gigabit Ethernet Modules (GEMs)

The GEM manages the physical connection to the IP and packetizing/ depacketizing Pulse Code Modulation (PCM) voice signals.

The GEM interfaces between the Serial links (S-links) of the IW SPM IP backplane and the 1000 Base SX output. CEMs route the bearer traffic over the S-links through the backplane to the GEMs. The GEMs manage any processing on the data and transmit the signals onto the IP network.


ATTENTION
Not all modules apply to all markets.

The NTLX55AA cooling unit provides forced-air cooling to the IW SPM IP equipment by four NTLX56AA fan assemblies.

The NTLX57AA PCIU serves as a central gathering point for all power and alarm cabling used within the NTLX91BA frame assembly.

The NT9X40DA paddleboard provides the IW SPM IP interface to the DMS switch and the enhanced network (ENET). The paddleboard supports four IW SPM IP DS-512 connections to the ENET.

Figure 2 IW SPM IP card layout
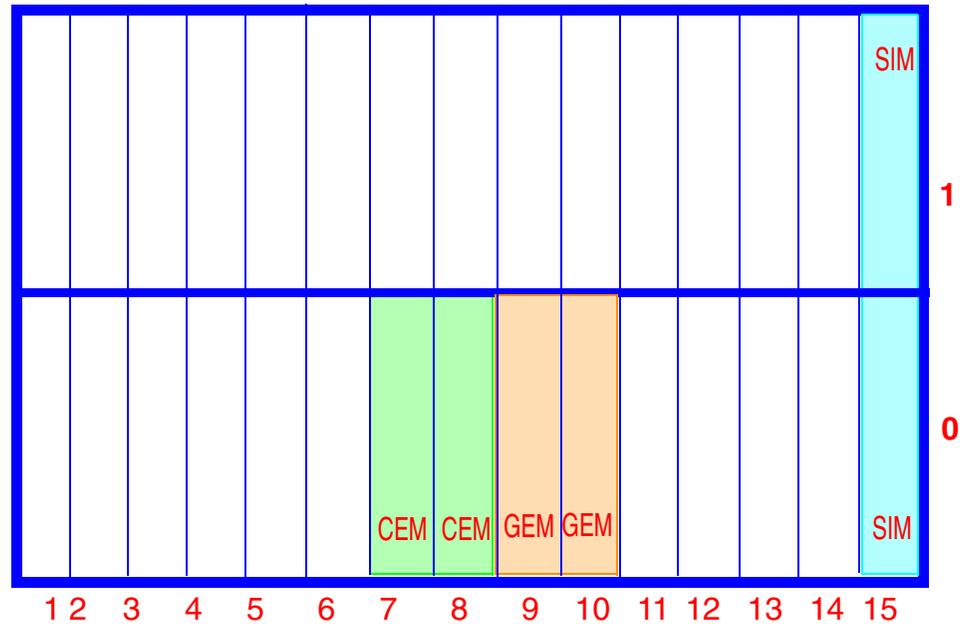
Description of tools and utilities

All tools and utilities for IW SPM IP hardware are provided through the Maintenance and Administrative Position (MAP) screens. MAP screens and commands help operating company personnel to operate and maintain the IW SPM IP at the node level, as well as to maintain the modules (circuit packs) within the IW SPM IP.

Bridge Maintenance is performed by commands in the IWBMCI tool. This tool allows operating personnel to view the state of the bridges on the IW-SPM.

Timing configurations

The IW SPM IP supports external synchronization interface (ESI) timing. ESI line Timing takes advantage of the high phase resolution and sampling frequency provided by the IW SPM IP in order to improve synchronization performance. The main benefits of ESI Timing are to allow timing directly from the Building Integrated Timing Supply (BITS) network and to provide Stratum 3E holdover performance when the BITS links are lost.

Software

Software loads

Some IW SPM IP loads are patchable through corrective post-release software updates (PRSUs). Patchable loads and nonpatchable loads have different file name standards.

IW SPM IP load file name standards for patchable loads

There are two types of patchable IW SPM IP software loads: base IW SPM IP software loads, and pre-patched IW SPM IP loads (PPSLs). PPSLs have PRSU files built in to the IW SPM IPIW SPM IP load file. PPSLs do not reduce the number of PRSUs for a given load, but they reduce the number of PRSUs applied manually to the load.

The load file name for base IW SPM IP software loads must follow the format ZZANNZZ_NNNNNN.

The load file name for PPSLs must follow the format ZZANNZZ_NNNNNNZN.

where

Z
is letter (A through Z)

A
is alphanumeric (A through Z, 0 through 9)

N
is numeric (0 through 9)

The following table explains the meaning communicated by each IW SPM IP load file name.

Table 1 Explanation of IW SPM IP load file names for patchable loads

Character position	Explanation	Examples
1 through 3 (ZZA)	(processor type) Character positions 1 through 3 indicate the processor type. The processor type remains constant over software releases.	CEM GEM
4 and 5 (NN)	(milestone release number) Character positions 4 and 5 indicate the milestone release number. The milestone release number changes when Nortel Networks releases a new milestone load.	17
6 and 7 (ZZ)	(patchable load release) Character positions 6 and 7 increment with each patchable load released.	AA AB
8 (_)	Character position 8 is the delimiter for the postfix index.	_
9 through 14 (NNNNNN)	(postfix index) Character positions 9 through 14 indicate the postfix index. The postfix index changes when Nortel Networks releases a new maintenance or emergency load.	010001 010002
16 through 17 (ZN)	(PPSL index) Character positions 16 through 17 indicate the optional PPSL index.	A1 B2

Note 1: Patchable IW SPM IP load file names must contain 14 or 17 characters, for example, IWS17AA_010000.

Note 2: The two letters of the patchable load release increment in unison with the last two numbers of the postfix index. For example, the first IW SP17 load file name would have a patchable load release of AA. The last two letters of the postfix index would be 00. Thus, the first IW SP17 load file would be IWS17AA_010000. Subsequent IW SP17 load file names would increment to IWS17AB_010001, IWS17AC_010002, and so on.

Use the following figures to help explain the IW SPM IP load file naming standards. Use these CEM load file names as examples only. The same naming standards apply to patchable RMs.

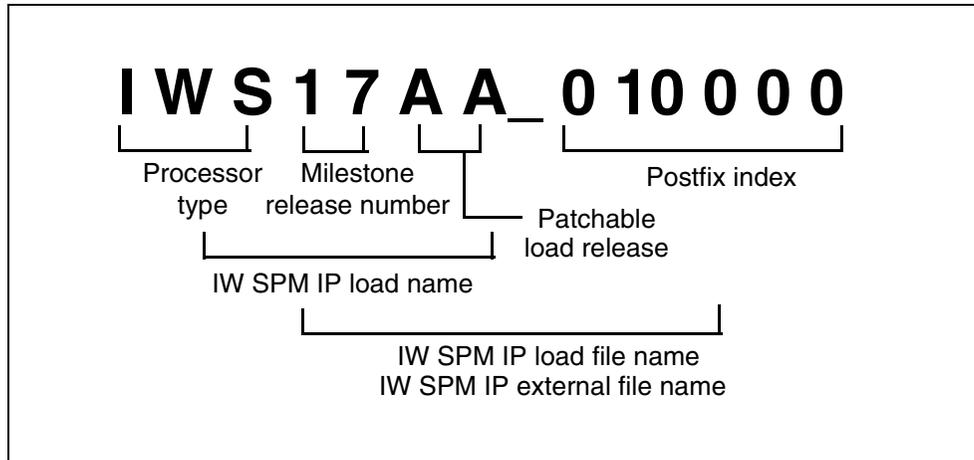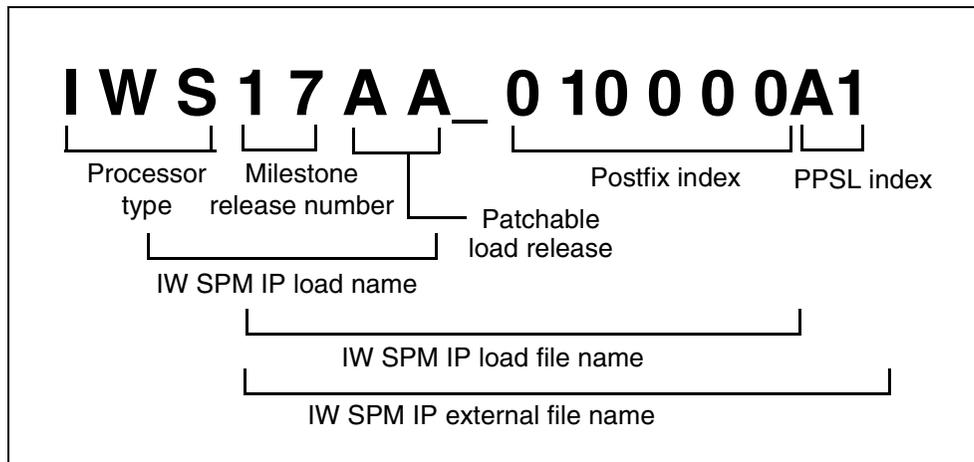**Figure 3 IW SPM IP load file naming standards for patchable base loads**

Figure 4 IW SPM IP load file naming standards for PPSLs

IW SPM IP load file name standards for nonpatchable loads
The load file name for nonpatchable IW SPM IP software loads must follow the format ZZANNNN_NNNNNN

where

Z
is letter (A through Z)

A
is alphanumeric (A through Z, 0 through 9)
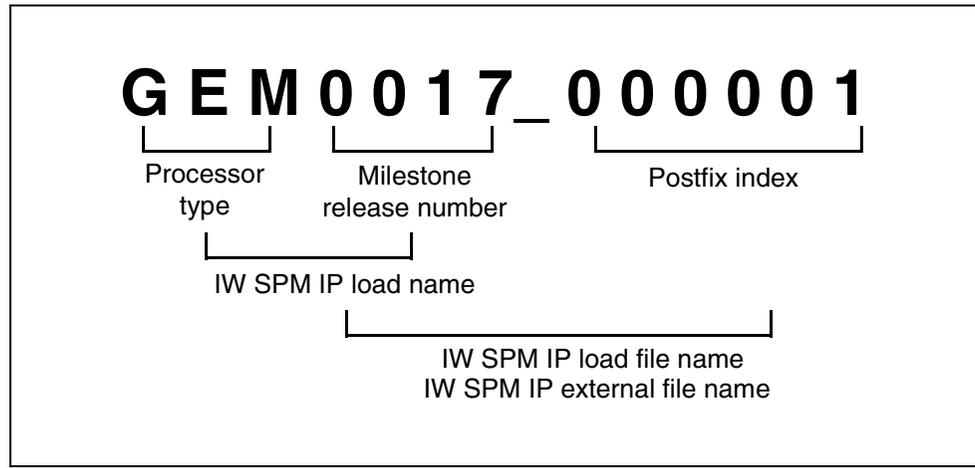
N
    is numeric (0 through 9)

The following table explains the meaning communicated by each IW SPM IP load file name.

Table 2 Explanation of IW SPM IP load file names for nonpatchable loads

Character position	Explanation	Examples
1 through 3 (ZZA)	(processor type) Character positions 1 through 3 indicate the processor type. The processor type remains constant over software releases.	COH
4 through 7 (NNNN)	(milestone release number) Character positions 4 through 7 indicate the milestone release number. The milestone release number changes when Nortel Networks releases a new milestone load.	0017
8 (_)	Character position 8 is the delimiter for the postfix index.	_
9 through 14 (NNNNNN)	(postfix index) Character positions 9 through 14 indicate the postfix index. The postfix index changes when Nortel Networks releases a new maintenance or emergency load.	000001 000002

Note: The IW SPM IP load file name must contain all 14 characters, for example, COH17_000001.

Use the following figure to help explain the nonpatchable IW SPM IP load file naming standards. Use this COH load file name for example only.

Figure 5   IW SPM IP load file naming standards for nonpatchable loads

GEM0017_000001

Processor type   Milestone release number   Postfix index

IW SPM IP load name

IW SPM IP load file name
IW SPM IP external file name

Delivery and ordering processes

The addition of an IW SPM IP frame or a PCL upgrade to a site with in-service IW SPM IPs triggers Nortel to schedule/provision the applicable IW SPM IP non-computing module load (NCL). The required IW SPM IP NCL is determined by pre-defined Engineering rules.

An IW SPM IP NCL order scheduled in Software Capacity and Scheduling/Unified Networks Integrated Tool Environment (SCS/UNITE) automatically generates a load shipment milestone. This milestone is fed to the Satellite Distribution Center. A load tape is manufactured and shipped with the applicable NCL Release Document and Maintenance Release Notes to the IW SPM IP NCL shipment address defined in SCS.

Upgrade and patch system

Software upgrades for the IW SPM IP are completed by upgrading each circuit pack. This is done via the MAP screen.

At SP17, IW SPM IP patching is available for the following loads:

- common equipment modules (CEM)

Note: At this time, Nortel Networks has no plans to extend patching functionality to the LX85 and LX86 (COH) loads.

OAM&P strategy

Operations, adminstration, maintenance, and provisioning for the IW SPM IP is available through the MAP commands.

User interfaces

The MAP acts as the user interface for data provisioning, alarm surveillance, controls, and performance monitoring.

Customer support

IW SPM IP technical bulletins

IW SPM IP technical bulletins are available online. They provide information and procedures that are not available in documentation but have high urgency. The following procedure demonstrates how to access IW SPM IP Customer Advisory Bulletins (CABs) and Emergency Warning Bulletins (EWBs).

Procedure 1 Accessing IW SPM IP technical bulletins

In a WWW browser

1 Go to "http://www.nortelnetworks.com/"

2 Click on on the left side for "Customer Support."

3 Click on the link for "Customer Service Requests."

4 In the "Select a Product" pulldown menu, select "Spectrum Peripheral Module (IW SPM IP)" and press the Go button.

5 When the User Certificate message appears, click the "OK" button.

6 Enter your NAIL username and password when prompted.

> *Note:* You must have a valid NAIL user account to access IW SPM IP technical bulletins.

7 From this point, two options are available for finding bulletins: Performance Search and Product Bulletins.

Ifyou choose	Do
"Performance Search"	step 8
"Product Bulletins"	step 12

8 Once the "Performance Search" page opens, enter "IW SPM IP" in the first "Search Criteria" field.

9 In the "Documents" field, select "GBS".

10 Click the "Submit Search" button.

11 Click on the link in the "Id" field to read the bulletin. Go to step 16.

12 Once the "Product Bulletins" page opens, click on the "Global Bulletin System" link.

13   In the "Bulletin Type" field, select one or more of the following:

- DMS-250 CUSTOMER ADVISORY BULLETIN

- DMS-250 EMERGENCY WARNING BULLETIN

- DMS-500 CUSTOMER ADVISORY BULLETIN

- DMS-500 EMERGENCY WARNING BULLETIN

Note: To select multiple items, hold down the Control key when clicking the left mouse button.

14   Click the Submit button to continue.

15   Click on the link in the "Number" field to read the bulletin.

16   You have completed this procedure.

IW SPM IP training courses

Nortel Networks offers several training courses for the IW SPM IP. To schedule a training course, contact Nortel Networks at 1-877-662-5669.