Carrier VoIP

IW SPM IP Basics

NN10015-111

Document status: Standard
Document version: 05.03
Document date: 20 October 2006

New in this release

The following sections detail what's new in *IW SPM IP Basics* for release (I)SN09U.

Features

Release (I)SN09U contains no feature updates.

Other changes

Release (I)SN09U contains no other changes.

IW SPM IP description

The Interworking Spectrum Peripheral Module Internet Protocol (IW SPM IP) is a bridge used to connect an existing Time Division Multiplex (TDM) telephony network to an Internet Protocol (IP) network. The IW SPM IP uses a sparing strategy to eliminate the IW SPM IP as a single point of failure.

IW SPM IP hardware

The IW SPM IP network element is based on the technology used for the Spectrum Peripheral Module (SPM) network element and uses the same frame and backplane assemblies as the SPM.

The basic mechanical element of the IW SPM IP is a dual shelf assembly mounted on a common backplane. An IW SPM contains two identical dual shelf assemblies.

A dual shelf assembly in turn contains two identical shelves. Each shelf contains resource modules, which plug into the backplane. Some resource modules must be located only in specific slots in order to function properly.

The resource modules contain circuit cards that perform a variety of functions such as call processing and high speed carrier capabilities.

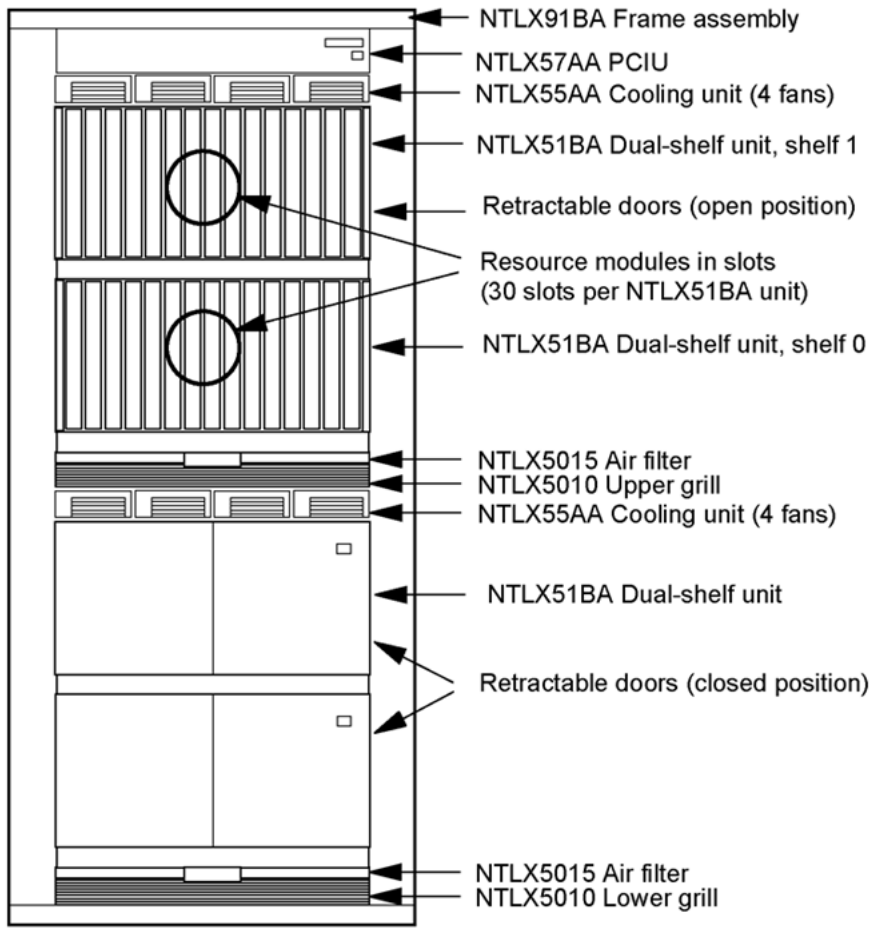
An IW SPM requires 32 MB LIU7 external routers for networks that use LPP/FLPP SS7 platforms in order to bring the IW SPM into service. Any attempt to bring an IW SPM into service without 32 MB external routers results in a commissioning failure.

An SS7 network exclusively requires 32 MB external routers, as a single 8 MB router causes all routers to scale down to the lower capacity. Only non SS7 applications, such as XLIU and EIU, support 8 MB external routers.

Description of hardware components

The figure "IW SPM IP frame and components" (page 6) shows the IW SPM IP frame and its components. The figure "IW SPM IP resource module locations in a dual shelf assembly" (page 9) shows the resource module locations for each dual shelf in an IW SPM IP.

IW SPM IP frame and components



The table " IW SPM IP components" (page 6) lists and describes the hardware components and the role of each component in the IW SPM IP. Not all resource modules apply to all markets.

IW SPM IP components

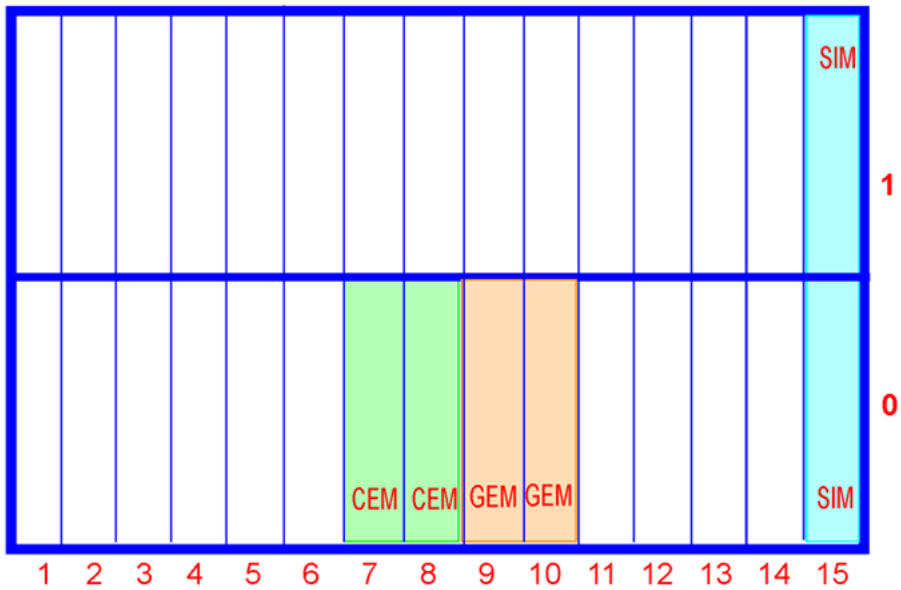
IW SPM IP component	Description
NTLX91BA frame assembly	Frame and backplane assembly. Same frame assembly as used in SPM and MG4K network elements.

IW SPM IP component	Description
NTLX51BA dual-shelf assemblies	Each frame assembly contains two identical dual shelf assemblies. Each dual shelf assembly contains 30 slots, 15 slots per shelf, to accept resource modules (RMs). Some slots are reserved for specific RMs, as described below and shown in the figure "IW SPM IP resource module locations in a dual shelf assembly" (page 9).
NTLX61AA Shelf Interface Modules (SIMs)	SIMs have dedicated slots in the IW SPM IP shelves and both must always be provisioned. • Two SIMs are located in each dual shelf assembly with one SIM located in each slot 15 of shelves 0 and 1. • SIMs act as the DC power conditioner for the dual-shelf assembly for the IW SPM IP. • SIMs serve as the alarm interface between the common equipment modules (CEMs) and the NTLX57AA power connection interface unit (PCIU).
NTLX82AA or NTLX82BA Common Equipment Modules (CEMs)	CEMs have dedicated slots in the IW SPM IP shelves and both must always be provisioned. • Two CEMs are located slots 7 and 8 of each shelf 0 of each dual shelf assembly. • CEMs control the signal processing and provide the system clock. • CEMs have four front mounted optical points to connect fiber to the ENET paddle boards using DS-512 links. • CEMs route the bearer traffic over the S-links through the backplane to the GEMs. • CEMs cannot be returned to service if they are located (and datafilled) in slots 1, 2, 7, or 8 of shelf 1 of a high-speed backplane (NTLX51BA).

IW SPM IP component	Description
NTLZ20 Gigabit Ethernet Modules (GEMs)	GEMs have dedicated slots in the IW SPM IP shelves and both must always be provisioned. • GEMs are located in slots 9 and 10 of each shelf 0 of a dual shelf assembly. • GEMs manage the physical connection to the IP and the packetizing/depacketizing Pulse Code Modulation (PCM) voice signals. • GEMs interface 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. • GEMs manage data processing and transmit the signals onto the IP network.
NTLX44AA Synchronization Resource Module (SRM)	SRMs provides a timing and synchronization interface. The SRM receives clocking information through DS1 input links from a Timing Signal Generator (TSG) which provides Stratum 1 accuracy.
NTLX55AA cooling unit	The cooling unit provides forced-air cooling to the IW SPM IP frame and components using four NTLX56AA fan assemblies.
NTLX57AA power connection interface unit (PCIU)	Serves as a central gathering point for all power and alarm cabling used within the NTLX91BA frame assembly.
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.

The figure "IW SPM IP resource module locations in a dual shelf assembly" (page 9) shows the locations of resource modules in an IW SPM IP dual frame assembly. The cards shown in this illustration are mandatory positions for each resource module shown.

IW SPM IP resource module locations in a dual shelf assembly



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 operate and maintain the IW SPM IP at the node level as well as to maintain the resource modules 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.

Patchable IW SPM IP load file names must contain 14 or 17 characters. 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.

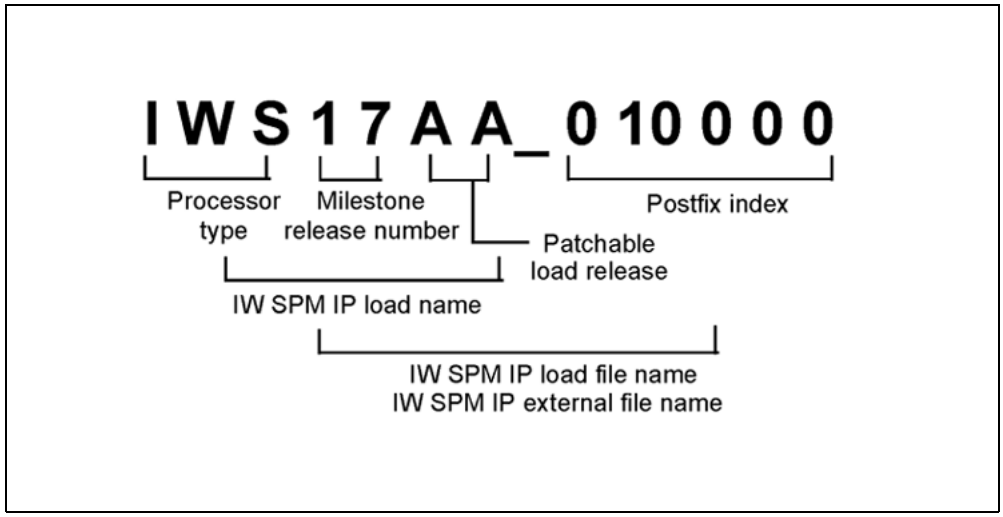
Explanation of IW SPM IP load file names for patchable loads

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 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

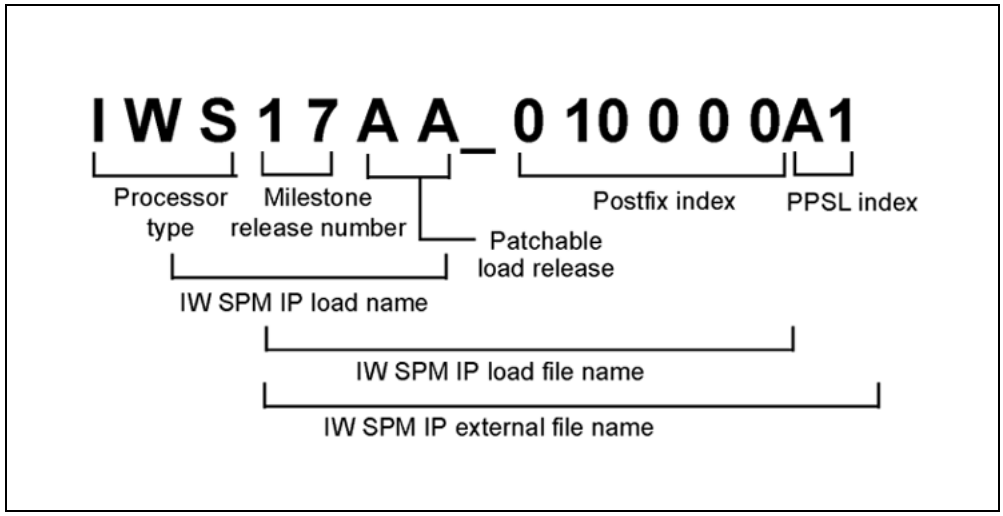
Character position	Explanation	Examples
8 (_)	Character position 8 is the delimiter for the postfix index.	_
9 through 14 (NNNNNN)	Postfix index Character positions 9 through 14 indicate the postfix index. The postfix index changes when Nortel releases a new maintenance or emergency load.	010001 010002
16 through 17(ZN)	PPSL index Character positions 16 through 17 indicate the optional PPSL index.	A1 B2

The figures "IW SPM IP load file name standards for patchable loads" (page 10) and "IW SPM IP load file naming standards for PPSLs" (page 12) 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.

IW SPM IP load file naming standards for patchable base loads



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.

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

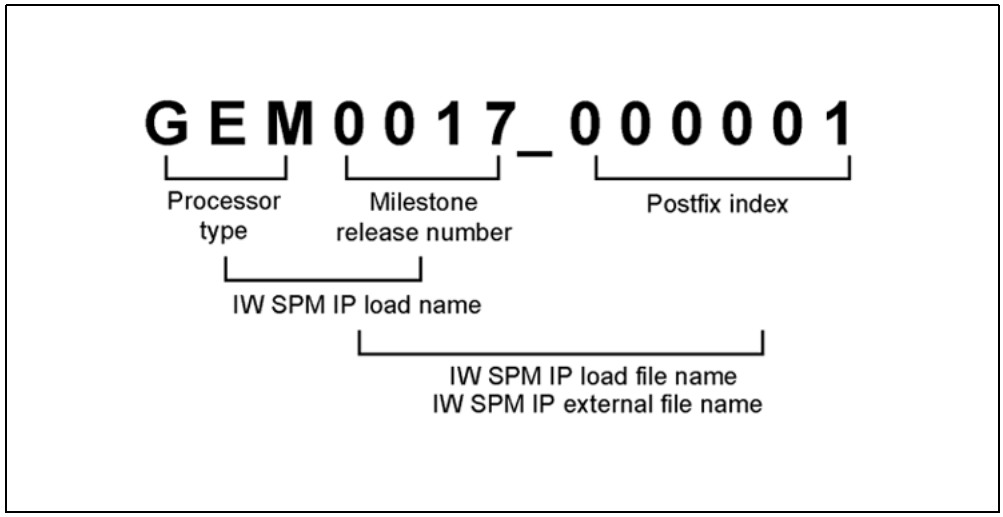
Explanation of IW SPM IP load file names for nonpatchable loads

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 releases a new milestone load.	0017

Character position	Explanation	Examples
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 releases a new maintenance or emergency load.	000001 000002

Use the figure "IW SPM IP load file name standards for nonpatchable loads" (page 12) to help explain the nonpatchable IW SPM IP load file naming standards. Use this COH load file name for example only.

IW SPM IP load file naming standards for nonpatchable loads



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. The distribution media (CDROM, DAT tape or SLM tape) load 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 resource module. This is done using the MAP command interface.

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

- common equipment modules (CEM)

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

OAMP strategy

Operations, administration, 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.

Carrier VoIP

IW SPM IP Basics

Publication: NN10015-111
Document status: Standard
Document version: 05.03
Document date: 20 October 2006

To provide feedback or report a problem in this document, go to www.nortel.com/documentfeedback.

The information in this document is sourced in Canada, the United States of America, and the United Kingdom.