297-1771-330

Digital Switching Systems

DMS-Spectrum Peripheral Module

Feature Description Reference Manual

DMSSPM15 Standard 06.02 April 2001

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Standard 06.02 SP15 (CSP15). Per SR NV10076, added feature 59012680 P-side link MAPCI.

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Standard 06.01 SP15 (CSP15). Added the following features for the release:

- 59014140 Memory Management SWACT Controls
- 59014147 Exceptions Handling SWACT Controller
- 59014406 PX Trunk Support on SPM
- 59018675 Support of AT&T PRI Variant for DMS-500
- 59018984 OSServices support for CEM (LX82BA)
- 59019804 CEM-750 CORE-OAM&P Support
- 59020409 Spectrum OOS RM Mate Loading
- 59025428 Support of 100/250 PRI Trunks on Same SPM for DMS500
- 59025452 AB Bit Freeze for ISUP on SPM
- 59026742 Enhance MMI Warnings
- 59027128 SPM DS-1 Assignment SOC Control

January 2001

Standard release 05.03 for SP14 (CSP 13/14). Added the following feature for SP14:

- 59017193 PRI Orig Name Delivery
- Revised the following existing feature descriptions based on internal technical review.
  - AD8529 Added an additional item to the list of limitations.

October 2000

Standard release 05.02 for SP14 (CSP13/14). Added the following features for SP14:

- 39005966 Bulk HMI Commands for CEM
- 59012158 SPM Patch Flash Refresh and Audit Interworking
- 59012246 Port Patcher to Spectrum RMs
- 59013302 Porting IEC SPM ECAN to LEC NA100 SPM
- 59013504 MTP Internal Routing for NA100 SPM
- 59013912 OC-3 Line-Timing for DMS SuperNode
- 59014578 RM Patching-CEM/RM Request Router
- 59014583 RM Patching-Message Handler Enhancements
- 59014588 RM Patching - IDM Support
- 59018431 DS-1 Provisioning for NA100
- 59018487 Reach Through Surveillance for NA100 SPM
- 59021056 SPM Carm Carrier Banner Alarm Enhancement

July 2000

Standard release 05.01 for SP14 (CSP13/14). Added the following features for SP14:

- 59012232 NGLA RDTINV provisioning
- 59014132 8-bit SLS support for routing & SS& internal routing for IEC

- 59014137 SPM isolation checks
- 59014162 SPM trap logs to the DMS core
- 59014167 CCS7 channelized access for SPM OC-3 TDM

January 2000

Standard release 03.02 for SP12 (CSP12).

December 1999

Prelimary release 03.01 for SP12 (CSP12). Added the following features for SP12:

- Added the following features for SP12:
  - AF7583 SPM PRI platform maintenance software
  - AF7786 SPM PRI trunk maintenance development
  - AF7810 SPM PRI DLC device maintenance
  - AX1336 Echo cancellation for PRI
  - 59007841 SPM node table and MAP support for MSH
  - 59007933 SPRI NI-2 Development
  - 59008485 SPERFORM support for ECAN
  - 59008910 SPM DS512 Message Channel Reconfiguration
  - 59009203 PUMA: Support for SPM Maintenance/Emergency Release
  - 59009208 PUMA: SPM Upgrade Speedup
  - 59011371 ENET REX Objection for SPM
  - 60006714 SPM ECMON Enhancements Phase 4
- Revised the following existing feature descriptions based on internal technical review.
  - AX1215 - XPM Equivalency Tools on the SPM Phase I. Added information concerning PMIST and XPMIST functionality, and added an additional item to the list of limitations.
  - AX1400 - SPM ECMON Enhancements. Added an additional item to the list of limitations, and fixed spelling error in title.
  - AX1402 Added an additional item to the list of limitations.

July 1999

Standard 02.02 for SPM11 (CSP11). Made editorial changes in feature AF7378 based on SME comments (email dated 6/29/99)

June 1999

Preliminary 02.01 for SPM11 (CSP11).

- Added the following features for SPM11:
  - — AF7378: ATM Resource Module Computing Module Maintenance
  - — AF7379: ATM Computing Module Connections Provisioning
  - — AF7380: ATM Maintenance
  - — AF7885: SPM CARRMC Support for ATM Carriers
  - — AF7895: IEC QueryPM FLT, CNTRS, FILES
  - — AF7913: New Echo Canceller Operational Measurements
  - — AX1400: SPM ECMON Enhancement
  - — AX1402: Perform Tool Enhancement for SPM
- Added the following features for SPM10:
  - — AJ5249: SPM Resource Module In Service Loading Support
  - — AX1215: XPM Equivalency Tools on SPM
  - — AX1217: SPM ECMON Enhancements

February 1999

Standard issue for SP11 (CSP11) is Standard 02.01.

October 1998

Initial standard issue for SPM01 (CSP09) is Standard 01.04.

Contents

About this document

When to use this document

Use this document to obtain infomation about the features of the Spectrum Peripheral Module (SPM).

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in *Product Documentation Directory*, 297-8991-001.

Related NTPs

Refer to the following documents for more information about SPM:

- *Spectrum Peripheral Module Service Implementation Guide*, 297-1771-301.
- *Spectrum Peripheral Module Hardware Maintenance Reference Manual*, 297-1771-550

- *Spectrum Peripheral Module Commands Reference Manual*, 297-1771-819
- SPM information is also included in the following NTPs:
  - *Trouble Locating and Clearing Procedures*
  - *Alarm Clearing Procedures*
  - *Recovery Procedures*
  - *Card Replacement Procedures*
  - *Operational Measurements*
  - *Data Schema*
  - *Logs*

1 Feature descriptions for SPM01

This document contains the feature descriptions for the SPM01 release of the Spectrum Peripheral Module (SPM). Feature information is intended to help prepare for insertion of a new software load, or to understand elements of the software. Operating company personnel involved in planning and engineering or in maintenance activites will find this information useful.

These feature descriptions provide information about SPM features. Each feature description contains the following sections:

- Functionality name
- Description
- Hardware requirements
- Limitations and restrictions
- Interactions
- Datafill
- Service orders
- Operational measurements
- Logs
- User interface
- Billing

AD8377
SPM OAM&P Data Management System

Functionality name

SPM Operation, Administration, Maintenance, and Provisioning (OAM&P) Data Management System

Description

SPM OAM&P Data Management System, feature AD8377, provides a framework for the DMS-Spectrum Peripheral Module (SPM) provisioning-data storage and access.

The data management system consists of three parts:

- the OAM database, which serves as the central data repository
- six OAM database entity sets, which define each SPM node and its subcomponents
- table-control support for SPM, which datafills and configures an SPM node

The following paragraphs describe each part.

OAM&P database

The OAM&P database stores SPM equipment data. SPM equipment data includes equipment provisioning data, which is static or semi-static, as well as equipment states and alarms, which are dynamic.

The OAM&P database provides the following services:

- permanent data storage that survives reload/restart
- backup of data to protected data storage
- backup of data to secondary storage by a table control journal
- dynamic notification of data changes for registered applications
- fast data access on a record or a field basis

OAM&P database entity set

Data describing an SPM and its subcomponents are partitioned into different levels based on the object (entity) it describes. Each level of the data partition forms an entity set. A one-to-one mapping exists between an entity set and a table control journal.

The entity sets are

- PROTGRP_ES
- NODE_ES
- SHELF_ES
- CKTPAK_ES
- LINK_ES
- CHANNEL_ES

SPM table control support

SPM configuration (provisioning) data is organized into six tables. Each table is described in the following paragraphs.

For datafill and field descriptions, refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate.

Table MNPRTGRP

Each tuple identifies a protection group within a switch. The members of a protection group may be peripherals, circuit packs, or links. Each group describes the protection relationship among entities of the same type. Datafill includes the group type and related group attributes, such as protection-switching mode and direction.

Table MNNODE

Each dual-shelf unit of an SPM is regarded as a node (two nodes per frame) . Each tuple identifies a particular SPM node. Datafill includes node identification and node location.

Table MNSHELF

Each node consists of a maximum of two shelves. Each tuple identifies a shelf for a particular node. Datafill includes shelf identification and physical shelf location.

Table MNCKTPAK

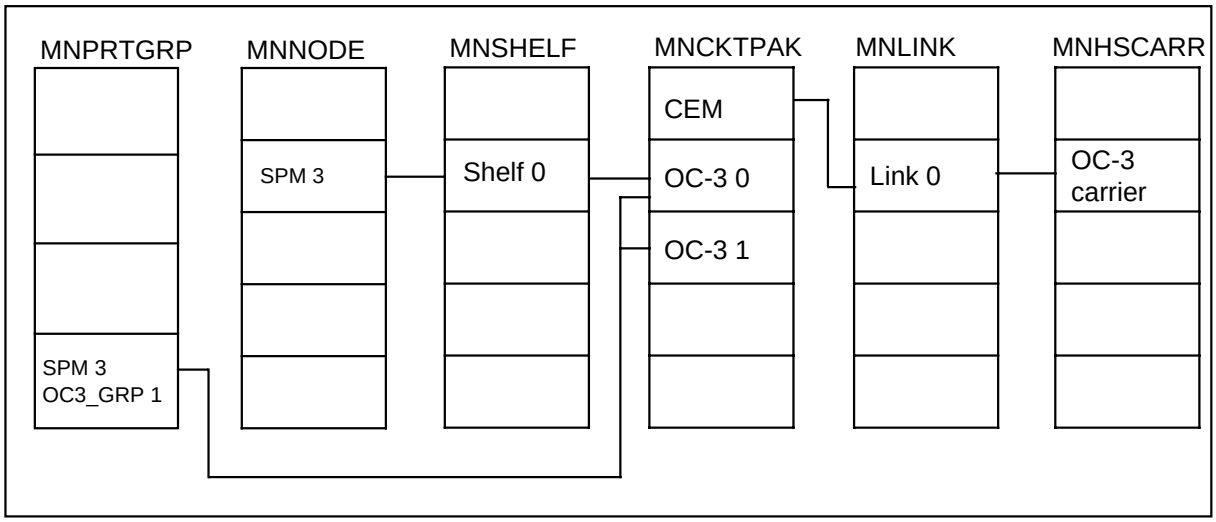
Each shelf can have a maximum of 14 circuit packs, plus one shelf interface module (SIM). Each tuple identifies a circuit pack on a shelf. Datafill includes circuit pack type, product engineering code, load name, and slot number.

AD8377
SPM OAM&P Data Management System (continued)

Table MNLINK
Each tuple identifies the set of C-side host links for an SPM node. Datafill includes connection information between an SPM node and an ENET paddleboard.

Table MNHSCARR
The OC-3 resource module (circuit pack) terminates a high-speed optical carrier. Each tuple identifies an OC-3 carrier or a subcarrier of an OC-3 carrier.

The following figure shows the relationships between the SPM tables.



Hardware requirements
SPM OAM&P Data Management System has no hardware requirements.

Limitations and restrictions
SPM OAM&P Data Management System has no limitations and restrictions.

Interactions
SPM OAM&P Data Management System does not depend on other features.

AD8377
SPM OAM&P Data Management System (end)

Datafill

To configure an SPM, the following tables must be datafilled in the following order:

1. table PMLOADS
2. table MNPRTGRP
3. table MNNODE
4. table MNSHELF
5. table MNCKTPAK
6. table MNLINK
7. table MNHSCARR

This feature does not affect office parameters.

Service orders

SPM OAM&P Data Management System does not affect SERVORD.

Operational measurements

SPM OAM&P Data Management System does not affect operational measurements.

Logs

SPM OAM&P Data Management System does not affect logs.

User interface

SPM OAM&P Data Management System does not change the user interface.

Billing

SPM OAM&P Data Management System does not affect billing.

AD8378
SPM Operational MAP

Functionality name

SPM Operational MAP

Description

SPM Operational MAP, feature AD8378, provides an interface for operating company personnel to maintain DMS-Spectrum Peripheral Module (SPM) systems using the DMS MAP terminal.

When a maintenance command relates to SPM hardware or software, the request is forwarded to the SPM common equipment module (CEM) for execution.

All command responses, including confirmations, progress markers, and command results, are sent to the CM by the SPM node and they are displayed at the MAP terminal. The MAP terminal can present messages and results in any order. Therefore, all SPM-related messages, whether command responses, error messages, or informational messages, are identified as SPM-related.

The *DMS-Spectrum Peripheral Module Commands Reference Manual* (297-1771-819) contains all the required information about the SPM commands, messages, and results.

Hardware requirements

SPM Operational MAP has no hardware requirements.

Limitations and restrictions

SPM Operational MAP has no limitations or restrictions.

Interactions

SPM Operational MAP interacts with the following features:

- AG4966, SPM OAM&P MAP Changes
- AD8377, SPM OAM&P Data Management System
- AN1880, SPM Alarm Subsystem

Datafill

SPM Operational MAP does not affect data schema tables or office parameters.

AD8378
SPM Operational MAP (end)

Service orders

SPM Operational MAP does not affect SERVORD.

Operational measurements

SPM Operational MAP does not affect operational measurements.

Logs

SPM Operational MAP does not affect logs.

User interface

SPM Operational MAP is based on DMS MAP terminal operation and uses the DMS MAP terminal for interaction with the SPM.

Billing

SPM Operational MAP does not affect billing.

AD8469
SPM Central Channel Manager

Functionality name

SPM Central Channel Manager

Description

SPM Central Channel Manager, feature AD8469, provides the functionality to track the availability of DS0 channels on the C-side and the availability of serial links. Feature AD8469 maintains the mapping between terminal identification (TID) and DS0 channels, and ensures that the channel-availability and channel-mapping data survive a DMS NORESTART SWACT.

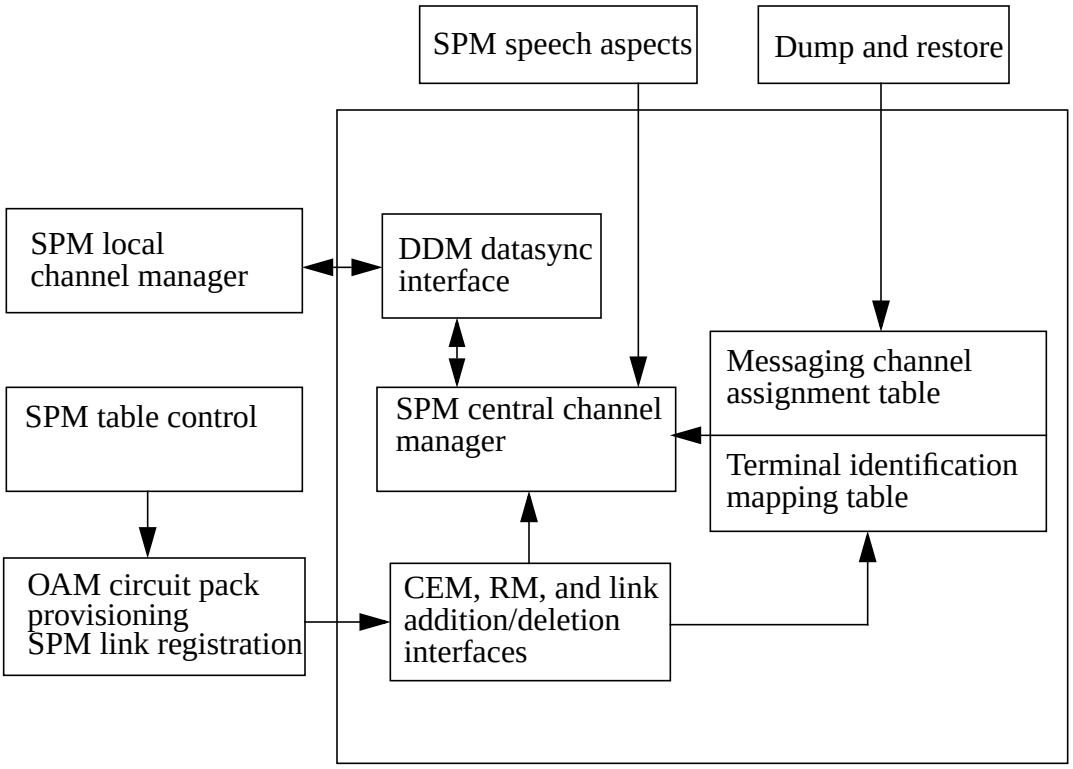
Feature AD8469 provides functionality in both the DMS computing module (CM) and the DMS-Spectrum Peripheral Module (SPM). In the CM, the functionality is called the central channel manager; in the SPM, the functionality is called the local channel manager. Communication between the two channel managers is provided by the data synchronization interfaces of the distributed data manager (DDM).

SPM Central Channel Manager provides

- interfaces for resource module and link registrations
- operations, administration, maintenance, and circuit-pack provisioning
- table control interfaces for dump and restore
- DDM data-synchronization interfaces

The following figure shows the various interworking relationships between the central channel manager and the other software elements.

AD8469
SPM Central Channel Manager (continued)



Hardware requirements

SPM Central Channel Manager requires an SPM node.

Limitations and restrictions

SPM Central Channel Manager has no limitations or restrictions.

Interactions

SPM Central Channel Manager depends on feature AR1512, Changes to Support the New SPM Node Type.

Datafill

SPM Central Channel Manager does not affect data schema tables or office parameters.

Service orders

SPM Central Channel Manager does not affect SERVORD.

AD8469
SPM Central Channel Manager (end)

Operational measurements

SPM Central Channel Manager does not affect operational measurements.

Logs

SPM Central Channel Manager does not affect logs.

User interface

SPM Central Channel Manager does not change the user interface.

Billing

SPM Central Channel Manager does not affect billing.

AD8470
SPM Central Speech Maintenance

Functionality name

SPM Central Speech Maintenance

Description

SPM Central Speech Maintenance, feature AD8470, provides the DMS computing module (CM) portion of the DMS-Spectrum Peripheral Module (SPM) speech-maintenance subsystem. The speech-maintenance subsystem is the software components that maintain the speech channels between the enhanced network (ENET) and the SPM. This feature also monitors speech-path continuity and provides messages to the SPM about speech channel loss-of-service (LOS) and return-to-service (RTS).

SPM local-speech maintenance software reports the LOS or RTS of an ENET speech channel to the SPM trunk maintenance software, because the loss of a speech channel implies the loss of a trunk.

Hardware requirements

SPM Central Speech Maintenance has no hardware requirements.

Limitations and restrictions

SPM Central Speech Maintenance has no limitations or restrictions.

Interactions

SPM Central Speech Maintenance requires the following features in order to be fully operational:

- AR1512, Changes to Support the New SPM Node Type
- AD8469, SPM Central Channel Manager
- AD1763, SPM Maintenance Phase 1
- AR1850, ENET Speech Maintenance Support for SPM

Datafill

SPM Central Speech Maintenance does not affect data schema tables or office parameters.

Service orders

SPM Central Speech Maintenance does not affect SERVORD.

AD8470
SPM Central Speech Maintenance (end)

Operational measurements

SPM Central Speech Maintenance does not affect operational measurements.

Logs

SPM Central Speech Maintenance does not affect logs.

User interface

SPM Central Speech Maintenance does not change the user interface.

Billing

SPM Central Speech Maintenance does not affect billing.

AD8507
Resource Management OAM&P

Functionality name

Resource Management Operations, Administration, Maintenance, and Provisioning (OAM&P)

> **ATTENTION**
> The voice signal processor (VSP) may not apply to all markets.

Description

Resource Management OAM&P, feature AD8507, provides communication to the computing module (CM) of the DMS switch for the following activities:

- reporting DMS-Spectrum Peripheral Module (SPM) operational measurements (OM)
- reporting SPM alarms and logs
- viewing and setting SPM node-level resource pools
- providing DMS-to-SPM configuration and control capability
- changing SPM circuit pack configurations for provisioning and sparing

SPM Resource Management (RMan) resides in the SPM common equipment module (CEM). RMan manages digital signal processor (DSP) and voice signal processor (VSP) resource modules (RM) resources.

Feature AD8507 makes SPM resource OMs, logs, and alarms visible at the MAP terminal of the DMS switch.

Call processing uses SPM resources to setup calls or to provide services on active calls. Each RM contains a set of resource pools. Each resource type in a set has one resource pool. Each pool contains a number of resources. Feature AD8507 makes resource-pool information available at the MAP terminal of the DMS switch.

SPM node maintenance software provides fault detection, notification, isolation, repair, verification, and recovery functions for individual RMs. Feature AD8507 provides SPM RMan configuration and control capability at the DMS CM level and enables the configuring and sparing of RM resources from that level.

AD8507
Resource Management OAM&P (continued)

Hardware requirements

Resource Management OAM&P requires DSP and VSP modules.

Note: For more information about VSP and DSP product engineering codes (PEC), refer to "NTLX65AA DSP RM" and "NTLX66AA VSP RM" in the *DMS-Spectrum Peripheral Module Hardware Maintenance Reference Manual* (297-1771-550).

Limitations and restrictions

Resource Management OAM&P has no limitations or restrictions.

Interactions

Resource Management OAM&P interacts with the following subsystems:

- AN1881, SPM OM Subsystem
- AD8377, SPM OAM&P Data Management System
- AN1880, SPM Alarm Subsystem
- AD8378, SPM Operational MAP
- AR0723, Base Decoupling for Distributed Data Manager
- AR1512, Changes to Support New SPM Node Type

Datafill

Resource Management OAM&P does not affect data schema tables or office parameters.

Service orders

Resource Management OAM&P does not affect SERVORD.

Operational measurements

The following operational measurement groups interacts with feature AD8507:

- ECANRMAN
- DSPRMAN

See the appropriate *Operational Measurements Reference Manual* for a complete description.

AD8507
Resource Management OAM&P (end)

Logs

Resource Management OAM&P provides logs to the DMS CM when resource exhaustion (low-water-mark events) occurs on an RM. See the appropriate *Logs Reference Manual* for a complete description of each log report.

User interface

Feature AD8507 adds the LISTRES command to the user interface to provide operating company personnel with information about node-level resources pool attributes. See the *DMS-Spectrum Peripheral Module Commands Reference Manual* (297-1771-819) for more information on the LISTRES command.

Billing

Resource Management OAM&P does not affect billing.

AD8529
ECAN Support for SPM

Functionality name

Echo Canceller (ECAN) Support for SPM

ATTENTION
The echo canceller (ECAN) may not apply to all markets.

Description

ECAN Support for SPM, feature AD8529, supports ECAN operations through the DMS computing module (CM). Feature AD8529 provides data schema table enhancements for DMS-Spectrum Peripheral Module (SPM) ECAN on individual trunk subgroups.

ECAN control parameters are contained in table SPMECAN. Entries in field SPMECIDX in table TRKSGRP point to tuples in table SPMECAN. Table SPMECAN provides datafill to control the ECAN resources for each trunk subgroup.

Hardware requirements

ECAN Support for SPM requires a voice services processor (VSP) resource module (RM).

ATTENTION
The voice signal processor (VSP) may not apply to all markets.

Note: For more information about VSP RM product engineering codes (PEC), refer to “NTLX66AA VSP RM" in the *DMS-SPM Peripheral Module Hardware Maintenance Reference Manual* (297-1771-550).

Limitations and restrictions

ECAN Support for SPM is restricted to the capacity of the RM providing the ECAN support. See the information that describes the PEC for the particular RM for more information. Support of ECAN for PTS is only available in the IEC market.

AD8529
ECAN Support for SPM (continued)

Interactions

ECAN Support for SPM has no functionality interactions.

Datafill

Two tables are used for ECAN control. The following tables and the associated index allow the system to apply internal, as well as external, ECANs to members of each trunk subgroup.

Table SPMECAN

Table SPMECAN contains all the control parameters for SPM ECAN operation. Field ECINDEX is the table key. The maximum number of tuples allowed is 256 (0 to 255). Tuples in table TRKSGRP point to tuples in table SPMECAN.

Table TRKSGRP

Table TRKSGRP provides an integer index, field SPMECIDX, which refers to table SPMECAN and associates tuples in the two tables. This option allows table TRKSGRP to support external as well as internal ECANs.

This arrangement of tables and indexes allows a trunk group to be provisioned across a digital trunk controller (DTC) and a SPM node; that is, some trunk group members are provisioned on a DTC and the others are provisioned on a SPM node. The members of a trunk group provisioned on a SPM node use field SPMECIDX, whereas trunk members on the DTC use field ECSTAT.

Field SPMECIDX

Field SPMECIDX in table TRKSGRP is an integer index (range 0 to 255) that points to a tuple in table SPMECAN. An index must exist in table SPMECAN before an index can be entered in table TRKSGRP.

Service Orders

ECAN Support for SPM does not affect SERVORD.

Operational measurements

ECAN Support for SPM generates several operational measurements (OM).

See the appropriate *Operational Measurements Reference Manual* for information about ECAN OMs.

Logs

ECAN Support for SPM generates logs.

AD8529
ECAN Support for SPM (end)

See the appropriate *Logs Reference Manual* for information about ECAN logs.

User interface

ECAN Support for SPM does not change the user interface.

Billing

ECAN Support for SPM does not affect billing.

AD8611
SPM CM Carrier Maintenance

Functionality name

SPM Computing Module (CM) Carrier Maintenance

Description

SPM CM Carrier Maintenance, feature AD8611, provides DMS MAPCI-level commands to support DMS-Spectrum Peripheral Module (SPM) synchronous optical network (SONET) carriers. Feature AD8611 also implements SPM carrier maintenance logs.

Feature AD8611 provides the MAPCI User Interface for SPM CM Carrier Maintenance and the infrastructure required to support this interface. Changes and enhancements are made to the MAPCI functionality for the following areas:

- carrier maintenance—changes the CARRIER screen and adds new screens for posting and maintaining SONET carriers
- performance monitoring—adds a new screen at the SPM CARRIER level specifically for SONET carrier performance monitoring
- alarms—changes the existing alarm banner for SONET specific alarms and adds new commands at SPM CARRIER level for alarm retrieval and manipulation

Hardware requirements

SPM CM Carrier Maintenance has no hardware requirements.

Limitations and restrictions

SPM CM Carrier Maintenance has no limitations or restrictions.

Interactions

SPM CM Carrier Maintenance interworks with the following features:

- AF6279, SPM CM Carrier Maintenance TL
- AG4961, Trunk Maintenance Changes in TL
- AG4963, Trunk Maintenance for Call Features
- AD8377, SPM OAM&P Data Management
- AD8424, Trunk Maintenance New Process
- AD8764, SPM Trunk Maintenance New Interface
- AD9277, SPM Trunk Maintenance (Phase II) in CM

AD8611
SPM CM Carrier Maintenance (continued)

Datafill

SPM CM Carrier Maintenance uses table MNHSCARR.

Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for more specific information about this table and its datafill requirements.

Service orders

SPM CM Carrier Maintenance does not affect SERVORD.

Operational measurements

SPM CM Carrier Maintenance does not affect operational measurements.

Logs

SPM CM Carrier Maintenance logs provide a record of events that reflect changes in the level of service integrity provided by a SPM node.

See the appropriate *Logs Reference Manual* for information about the following carrier logs:

- CARR300
- CARR310
- CARR500
- CARR501
- CARR510
- CARR511
- CARR512
- CARR800
- CARR810
- CARR811

User interface

Feature AD8611 adds or changes the following items:

- modifies the MAPCI banner line
- extends the existing CARRIER MAPCI screen to support SPM
- adds a new SPM carrier-level POST MAPCI screen

AD8611
SPM CM Carrier Maintenance (end)

- modifies the carrier-level DISPLAY MAPCI screen
- adds a new SPM carrier-level PERFMON MAPCI screen
- adds a new CARRUTIL CI increment to support the collection of performance monitoring (PM) data
- modifies the carrier-level DETAIL command for SPM.

The following carrier commands are introduced or changed by feature AD8611:

- POST
- LOOP
- TST
- BSY
- RTS
- OFFL
- DISP
- NEXT
- DETAIL
- LISTALM
- PERFMON
- PPQUERY
- CLEAR
- SILML
- METERPP
- HELP
- SETCARR
- GETHIST
- LISTHIST

Billing

SPM CM Carrier Maintenance does not affect billing.

AD8659
SPM Central Device Maintenance and RM Loading

Functionality name

SPM Central Device Maintenance and Resource Module (RM) Loading

Description

SPM Central Device Maintenance and RM Loading, feature AD8659, provides the following functionality:

- alarm raising and clearing for the DMS-Spectrum Peripheral Module (SPM) RM protection switch failures
- RM state change and fault report log generation
- DMS computing module (CM) support for RM software upgrades
- DMS CM support for in-service SPM common equipment module (CEM) software upgrades

To provide redundancy, similar RMs are placed in logical groups. These groups are called protection groups. A protection group is a collection of working (active) and spare (inactive) RMs. The inactive RMs provide a backup for the active RMs.

Forced protection switching occurs automatically due to a critical fault or manually due to the use of the FORCE command. A forced protection switch occurs in two-steps. First, feature AD8659 configures an inactive RM to take over the activities of the active RM. Second, the newly activated RM assumes the role of the formerly active RM. A PROTFAIL alarm generates if the protection-switch sequence fails to occur.

Hardware requirements

SPM Central Device Maintenance and RM Loading requires a provisioned SPM node.

Limitations and restrictions

SPM Central Device Maintenance and RM Loading has no limitations or restrictions.

Interactions

SPM Central Device Maintenance and RM Loading has no functionality interactions.

AD8659
SPM Central Device Maintenance and RM Loading (end)

Datafill

SPM Central Device Maintenance and RM Loading does not affect data schema tables or office parameters.

Service orders

SPM Central Device Maintenance and RM Loading does not affect SERVORD.

Operational measurements

SPM Central Device Maintenance and RM Loading does not affect operational measurements.

Logs

Feature AD8659 generates the logs in the following list. See the appropriate *Logs Reference Manual* for information about these logs.

- SPM300
- SPM331
- SPM335
- SPM500
- SPM630
- SPM650
- SPM651

User interface

Feature AD8659 adds the LOADMOD and LISTALM commands at the SPM level of the MAP terminal.

Billing

SPM Central Device Maintenance and RM Loading does not affect billing.

AD9277
Trunk Maintenance Phase 2 In CM

Functionality name

Trunk Maintenance Phase 2 in the Computing Module (CM)

Description

Trunk Maintenance Phase 2 in CM, feature AD9277, provides functionality that reduces the DMS-system load when OC3 links fail and recover. Feature AD9277 reduces CM load by

- reducing the CPU time required to return trunks to service
- resolving the CM capacity problem that occurs when nodes recover and carriers fail
- reducing the number of messages from the CM to the DMS-Spectrum Peripheral Module (SPM) nodes during maintenance activities

Feature AD9277 reduces the number of messages between the CM and the SPM nodes from 2016 (one for each DS0 trunk) to 168 (84 DS1 trunk data messages and 84 DS1 trunk reply messages).

Feature AD9277 uses the distributed data manager (DDM) to download trunk subgroup data from the CM tables to the SPM nodes during restart reloads, node recovery, and initial program load (IPL). The SPM nodes store and maintain the data for local call processing (CallP).

During node, carrier, or speech-link recovery, feature AD9277 provides the functionality to enable the CM to send a list of affected trunks to the SPM nodes. The CM sends one message for each DS1 carrier. Each message contains a list of the 24 DS0 trunks on the given DS1. The SPM nodes reformat the message for CallP and reply to the CM.

Hardware requirements

Trunk Maintenance Phase 2 in CM has no hardware requirements.

Limitations and restrictions

Trunk Maintenance Phase 2 in CM has no limitations or restrictions.

Interactions

Feature AD9277 interacts with feature AF6534, ISUP_SHR Hooks to Enable SPM Trunk Maintenance Phase 2.

AD9277
Trunk Maintenance Phase 2 In CM (end)

Datafill

Trunk Maintenance Phase 2 in CM does not affect data schema tables or office parameters.

Service orders

Trunk Maintenance Phase 2 in CM does not affect SERVORD.

Operational measurements

Trunk Maintenance Phase 2 in CM does not affect operational measurements.

Logs

Trunk Maintenance Phase 2 in CM does not affect Logs.

User interface

Trunk Maintenance Phase 2 in CM does not change the user interface.

Billing

Trunk Maintenance Phase 2 in CM does not affect billing.

AD9498
SPM DTMF Feature Control DDM Download

Functionality name

SPM Dual Tone Multi-Frequency (DTMF) Feature Control Distributed Data Manager (DDM) Download

Description

SPM DTMF Feature Control DDM Download, feature AD9498, provides the following functionality:

- transfers data from the DMS switch to update the copy of table FEATCNTL in each DMS-Spectrum Peripheral Module (SPM) node
- supervises DTMF digit collection
- downloads the index to the appropriate tuple in table FEATCNTL during call processing

DDM operation

DDM is a DMS mechanism that distributes data from the computing module (CM) to various peripherals in an office. Each peripheral retains copies of the data registered with the DDM. The DDM updates the registered data on each peripheral when

- data is synchronized during a node change-of-state
- table datafill is changed
- the hourly DDM audit detects a difference between the DMS version and the peripheral versions of the datafill

Feature AD9498 functions

Table FEATCNTL contains the data used to control feature digit-collection during SPM call processing. The DMS DMM transfers updated data from table FEATCNTL in the DMS switch to the copy of table FEATCNTL in each SPM node. This transfer occurs whenever an SPM node changes state from MANB to INSV. The data transfer occurs prior to call processing, which makes the data immediately available to the SPM node during call processing.

Feature AD9498 also provides supervision of DTMF digit collection to ensure that the correct index into table FEATCNTL is downloaded to the SPM node during call processing. Downloading a tuple index instead of an entire tuple saves time during call processing. If an inappropriate index is downloaded, the default tuple (tuple 0) is used by SPM local call processing.

Hardware requirements

SPM DTMF Feature Control DDM Download has no hardware requirements.

AD9498
SPM DTMF Feature Control DDM Download (end)

Limitations and restrictions

The following limitations and restrictions apply to SPM DTMF Feature Control DDM Download:

- The content of table FEATCNTL, which is documented in feature AD9499, is the only information controlled through the DDM.
- Only 256 tuples in table FEATCNTL are registered with the DDM.
- If the switch is either busy or equipped with many peripherals, the CM delays DDM dynamic updates to table FEATCNTL.
- DDM data synchronization for table FEATCNTL occurs only during a change-of-state from MANB to INSV.
- DTMF supervision only applies to ISDN user part (ISUP) trunks.

Interactions

SPM DTMF Feature Control DDM Download requires the following features:

- AC0148, MTP Generic Distributed Data Manager
- AD9498, SPM DTMF Feature Control Table Control

Datafill

SPM DTMF Feature Control DDM Download does not require table datafill.

Service orders

SPM DTMF Feature Control DDM Download does not affect SERVORD.

Operational measurements

SPM DTMF Feature Control DDM Download does not affect operational measurements.

Logs

SPM DTMF Feature Control DDM Download does not affect logs.

User interface

SPM DTMF Feature Control DDM Download does not change the user interface.

Billing

SPM DTMF Feature Control DDM Download does not affect billing.

AD9499
SPM DTMF Feature Control Table Control

Functionality name

SPM Dual Tone Multi-Frequency (DTMF) Feature Control Table Control

Description

SPM DTMF Feature Control Table Control, feature AD9499, provides datafill for supervising DTMF digit-detection time. The DMS-Spectrum Peripheral Modules (SPM) use DTMF digit-detection time on trunks for reorigination and for mid-call features, such as conference calling and call redirection.

Table FEATCNTL stores the digit detection times. Table FEATCNTL is downloaded to the SPM nodes by the distributed data manager (DDM). See Feature AD9498 for more information on the DDM process.

Hardware requirements

SPM DTMF Feature Control Table Control has no hardware requirements.

Limitations and restrictions

SPM DTMF Feature Control Table Control downloads only 256 tuples from table FEATCNTL.

Interactions

SPM DTMF Feature Control Table Control interacts with feature AD9498—SPM DTMF Feature Control DDM Download.

Datafill

SPM DTMF Feature Control Table Control requires datafill in table FEATCNTL. For more information on table FEATCNTL, refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate.

Service orders

SPM DTMF Feature Control Table Control does not affect SERVORD.

Operational measurements

SPM DTMF Feature Control Table Control does not affect operational measurements.

Logs

SPM DTMF Feature Control Table Control does not affect logs.

AD9499
SPM DTMF Feature Control Table Control (end)

User interface

SPM DTMF Feature Control Table Control does not change the user interface.

Billing

SPM DTMF Feature Control Table Control does not affect billing.

AD9500
SPM ECAN PTS Support in the Telecom Layer

Functionality name

SPM Echo Canceller (ECAN) Per Trunk Signaling (PTS) Support in Telecom Layer

> **ATTENTION**
> The echo canceller (ECAN) may not apply to all markets.

Description

SPM ECAN PTS Support in the Telecom Layer, feature AD9500, provides the telecom layer changes required to provide DMS command module (CM) support for DMS-Spectrum Peripheral Module (SPM) echo cancellers on PTS trunks. Feature AD9500 adds a field to table TRKSGRP that associates an SPM echo canceller with a PTS trunk group.

Feature AD9500 adds field SPMECIDX to table TRKSGRP. When datafill for a PTS trunk is entered in this field, it indicates that

- SPM echo cancellers can be allocated to the PTS trunk
- a tuple exists in table SPMECAN that has a key value that matches the entry in field SPMECIDX in table TRKSGRP
- the tuple in table SPMECAN contains echo-canceller command and control parameters

How field SPMECIDX is used in call processing

For voice calls involving trunks on an SPM node, DMS call-control software determines if SPM echo cancellers are required. If the trunk is a PTS trunk, DMS call control checks field SPMECIDX to determine

- if an entry is present in field SPMECIDX for the trunk—the presence of an entry indicates that the trunk can use SPM echo cancellers, but does not ensure that the echo canceller resources are actually available
- the index into table SPMECAN, which indicates the echo-canceller configuration details that are required by DMS call control to set the control parameters for the echo-canceller resource

AD9500
SPM ECAN PTS Support in the Telecom Layer (continued)

Hardware requirements

SPM ECAN PTS Support in the Telecom Layer requires an ECAN voice services processor (VSP).

ATTENTION
The voice signal processor (VSP) may not apply to all markets.

Limitations and restrictions

SPM ECAN PTS Support in the Telecom Layer has VSP-dependent limitations or restrictions. See the appropriate ECAN VSP documents for additional information.

A tuple must be entered in table SPMECAN before its index can be entered in field SPMECIDX in table TRKSGRP. A tuple in table SPMECAN cannot be deleted if its index is entered in table TRKSGRP.

Interactions

SPM ECAN PTS Support in the Telecom Layer interacts with the following features:

- AD8529, ECAN Support for SPM
- AD9523, SPM ECAN ISUP Code Changes

Datafill

SPM ECAN PTS Support in the Telecom Layer uses table TRKSGRP and table SPMECAN. See feature AD8529 for a description of the functionality provided by table TRKSGRP and table SPMECAN.

Service orders

SPM ECAN PTS Support in the Telecom Layer does not affect SERVORD.

Operational measurements

SPM ECAN PTS Support in the Telecom Layer does not affect operational measurements.

Logs

SPM ECAN PTS Support in the Telecom Layer does not affect logs.

AD9500
SPM ECAN PTS Support in the Telecom Layer (end)

User interface

SPM ECAN PTS Support in the Telecom Layer does not change the user interface.

Billing

SPM ECAN PTS Support in the Telecom Layer does not affect billing.

AD9617
SPM Monitoring Capability

Functionality name

SPM Echo Canceller (ECAN) Monitoring Capability

> **ATTENTION**
> The echo canceller (ECAN) may not apply to all markets.

Description

SPM ECAN Monitoring Capability, feature AD9617, provides the functionality to monitor the DMS-Spectrum Peripheral Module (SPM) ECANs. The ECAN monitoring capabilities introduced by feature AD9617 consist of

- a DMS computing module (CM) MAPCI-level command: SPMECMON
- automatic ECAN-resource performance monitoring
- three ECAN performance monitoring (PM) logs

SPMECMON command

The SPMECMON command can be used to monitor ECAN and to provide

- immediate MAP-level displays of the ECAN performance characteristics of the echo-canceller-equipped trunks that are involved in an echo-canceller-enabled call, regardless of the call processing state; to avoid call-processing degradation, the SPMECMON READ command can only be repeated at five-second intervals
- continuous reporting of the average ECAN-performance for all calls on each trunk group member, SPM node, or all SPM systems—the reports generate log SPM660
- a MAP-level display that lists the first 100 trunk circuits that have ECAN-performance monitoring enabled

Refer to the *DMS-Spectrum Peripheral Module Commands Reference Manual* (297-1771-819) for more information on the SPMECMON command.

Automatic ECAN resource monitoring

SPM system software continuously monitors the performance of the pool of ECAN resources. When the performance of an ECAN resource degrades, the ECAN resource sends an SOS message to the CM.

AD9617
SPM Monitoring Capability (continued)

Command SPMECMON does not affect automatic ECAN monitoring. Automatic SOS message generation is controlled by the datafill in table SPMECAN.

Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for more information about table SPMECAN.

Logs

Feature AD9617 can generate the following logs:

- SPM310—generates when degraded ECAN performance is detected by automatic monitoring
- SPM660—generates to report the results of continuous performance monitoring
- SPM661—generates to report each successful SPMECMON ON or SPMECMON OFF command; SPM661 also generates when a continuously-monitored SPM node is removed from service

Refer to the appropriate *Logs Reference Manual* for more information.

Hardware requirements

SPM ECAN Monitoring Capability requires a VSP RM.

ATTENTION
The voice signal processor (VSP) may not apply to all markets.

Limitations and restrictions

The following limitations and restrictions apply to SPM ECAN Monitoring Capability:

- Only 100 trunks per DMS may be monitored at one time due to capacity limitations.
- Only ECAN-equipped SPM systems can be performance monitored.
- SPMECMON can be used with SPMs only.

AD9617
SPM Monitoring Capability (end)

- All prior knowledge of successfully-enabled continuous performance-monitoring requests are lost during one night processes.
- Continuous monitoring is not affected by trunks being taken into or out of service. If a trunk is deleted however, an SPM661 log generates.

Interactions

SPM ECAN Monitoring Capability has no functionality interactions.

Datafill

SPM ECAN Monitoring Capability does not require datafill in data schema tables or office parameters.

Service orders

SPM ECAN Monitoring Capability does not affect SERVORD.

Operational measurements

SPM ECAN Monitoring Capability does not affect operational measurements.

Logs

SPM ECAN Monitoring Capability adds the following logs:

- SPM310—automatic performance-monitoring events
- SPM660—continuous performance-monitoring reports
- SPM661—information on SPMECMON command results

The log system records responses to requests and provides both continuous and automatic performance monitoring reports.

Refer to the appropriate *Logs Reference Manual* for more information.

User interface

SPM ECAN Monitoring Capability adds the SPMECMON command.

Billing

SPM ECAN Monitoring Capability does not affect billing.

AF6652
SPM PTS Trunk Maintenance Hooks

Functionality name

SPM Per Trunk Signaling (PTS) Trunk Maintenance Hooks

Description

SPM PTS Trunk Maintenance Hooks, feature AF6652, provides code changes in the telecom layer of the DMS computing module (CM) to support PTS on the DMS-Spectrum Peripheral Modules (SPM). Feature AF6652 provides the following functionalities:

- enables PTS trunks to be provisioned on SPM nodes
- downloads PTS trunk subgroup and membership data to the SPM
- supports PTS trunk maintenance, which includes changes to the MAPCI interface to support SPM trunk maintenance
- supports the lineup and downloading of executables (execs) to the SPM nodes
- supports the SPM nodes during DMS CM warm switch of activity (SWACT)

Feature AF6652 provides functionalities that are primarily hooks and procedure variables that make use of existing software modules. See feature AF6653 for additional information on PTS trunk provisioning.

Hardware requirements

SPM PTS Trunk Maintenance Hooks has no hardware requirements.

Limitations and restrictions

SPM PTS Trunk Maintenance Hooks has no limitations or restrictions.

Interactions

SPM PTS Trunk Maintenance Hooks has no functionality interactions.

Datafill

SPM PTS Trunk Maintenance Hooks does not require datafill in data schema tables or office parameters.

Service orders

SPM PTS Trunk Maintenance Hooks does not affect SERVORD.

AF6652
SPM PTS Trunk Maintenance Hooks (end)

Operational measurements

SPM PTS Trunk Maintenance Hooks does not affect operational measurements.

Logs

SPM PTS Trunk Maintenance Hooks does not affect logs.

User interface

SPM PTS Trunk Maintenance Hooks does not change the user interface.

Billing

SPM PTS Trunk Maintenance Hooks does not affect billing.

AF6653
SPM PTS Trunk Provisioning and Static Data

Functionality name

SPM PTS Trunk Provisioning and Static Data

Description

SPM PTS Trunk Provisioning and Static Data, feature AF6653, provides code changes in the shared layer of the DMS computing module (CM) to support per-trunk signaling (PTS) on the DMS-Spectrum Peripheral Module (SPM).

Feature AF6653 provides the following capabilities:

- provisioning of PTS trunks in table TRKMEM
- provisioning of AB-bit, multi-frequency (MF), and dual-tone multi-frequency (DTMF) resources for digital-signal-processor (DSP) resource modules (RM) in table MNCKTPAK
- downloading of terminal-type data
- downloading of PTS subgroup data
- SPM PTS trunk maintenance
- provisioning of the SPM executables (execs) lineup
- downloading of the execs to the SPM nodes
- SPM support for CM warm switch-of-activity (SWACT)
- changes to SPM trunk-conversion commands to support PTS

PTS trunks provisioning

PTS trunks are provisioned in table TRKMEM. When a trunk is entered in table TRKMEM, feature AF6653 checks to ensure that sufficient AB-bit resources are provisioned in table MNCKTPAK. If AB-bit resources are insufficient, the addition or conversion of the trunk is denied. Feature AF6653 handles MF and DTMF resources in the same way.

AB-bit provisioning

AB-bit resources are provisioned in table MNCKTPAK. When a reduction in AB-bit resources is entered in table TRKMEM, feature AF6653 checks to ensure that sufficient AB-bit resources are available to handle all PTS trunks. If the AB-bit resources are insufficient, feature AF6653 denies the datafill change request.

AF6653
SPM PTS Trunk Provisioning and Static Data (continued)

Terminal-type data downloading

The data describing the terminal type associated with a trunk member is downloaded to the SPM node in the following ways:

- Feature AF6653 sends a dynamic update to all in-service CEMs on each SPM node when a trunk is successfully provisioned in table TRKMEM.
- If there is a static-data mismatch between a CEM and the CM, feature AF6653 sends an audit message every 30 min. The audit message includes all the terminal-type data for previously-failed dynamic updates.
- A bulk update is sent to each CEM after it is manually busied (MANB) and returned to service (RTS).

See table MNNODE in the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate.

PTS-subgroup data downloading

To reduce CM-to-CEM messaging, individual busy (BSY) messages and individual RTS messages are bundled together and downloaded to the SPM node in the following ways:

- When a trunk is successfully provisioned in table TRKMEM, feature AF6653 bundles the PTS-subgroup data and sends it in a dynamic update to all in-service CEMs on each SPM node.
- Feature AF6653 sends an audit message every 30 min. If there is a static data mismatch between a CEM and the CM, feature AF6653 updates the data in the CEM.
- A bulk update is sent to each CEM that is MANB and RTS.

PTS trunk maintenance

The PTS trunk-maintenance software component of feature AF6653 interacts with the following CM software components:

- SPM speech maintenance—when a C-side speech link changes state, PTS trunk maintenance receives a list of the affected trunks; if the C-side link is still in service, PTS trunk maintenance attempts to RTS the trunks; if the C-side link is out of service, PTS trunk maintenance sets the trunks to carrier failure (CFL) state; the SPM node receives all trunks-state messages in bulk
- SPM node maintenance—when the state of an SPM node changes, PTS trunk maintenance receives a notice; if the node is in service, PTS trunk maintenance attempts to RTS the trunks on that node; if the node is out of

AF6653
SPM PTS Trunk Provisioning and Static Data (continued)

service, PTS trunk maintenance sets the trunks to the peripheral busy (PMB) state

- SPM carrier maintenance—when a carrier state changes, PTS trunk maintenance receives a notice; if the carrier is in service, PTS trunk maintenance attempts to RTS the trunks on that carrier; if the carrier is out of service, PTS trunk maintenance sets the trunks to CFL
- MAPCI interface—operating company personnel can BSY or RTS individual trunks from the MAP terminal; trunk lockout (LO) state includes the OC3 and DSP states; both of these devices must be provisioned and RTS for the CM to automatically RTS LO trunks

PTS trunk-maintenance software also interacts with SPM local PTS trunk-maintenance software to provide an interface between the CM and the SPM node. This interface handles bundled messages—and the RTS and BSY messages—for SPM local call processing.

Executable lineup provisioning

An executable (exec) is a sequence of call processing instructions. An exec lineup is a list of execs that can be downloaded to a peripheral. Feature AF6653 introduces two exec lineups in the transport layer to support SPM PTS.

See table MNNODE in the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for additional information on the datafill for exec lineups.

Executable downloading

Feature AF6653 downloads execs to an SPM node when the node goes into service. If the execs fail to download, log SPM340 generates, for additional information on the datafill for exec lineups.

CM warm SWACT

CM warm SWACT is the process used to upgrade DMS switch software. Feature AF6653 provides procedures to support SWACT and exec pre-loading with the SPM system.

SPM trunk conversion

Trunk conversion is the movement of trunks from

- an SPM node to an external peripheral module (XPM)
- one SPM node to another SPM node
- one carrier on an SPM node to another carrier on an SPM node

AF6653
SPM PTS Trunk Provisioning and Static Data (continued)

Feature AF6653 provides SPM trunk-conversion commands at the TTP;LEVEL of the MAPCI terminal. The commands are contained in the SPMTKCNV level. The commands are CONVERT and DISPLAY.

Feature AF6653 also changes the TTP;LEVEL;TRKCONV command to support trunks on SPM nodes.

Refer to the *DMS-Spectrum Peripheral Module Commands Reference Manual* (297-1771-819) for additional information on trunk-conversion commands. .

Hardware requirements

SPM PTS Trunk Provisioning and Static Data requires DSP RMs.

Limitations and restrictions

SPM PTS Trunk Provisioning and Static Data has no limitations or restrictions.

Interactions

SPM PTS Trunk Provisioning and Static Data requires feature AF6652, SPM PTS Trunk Maintenance Hooks.

Datafill

Tables TRKMEM, MNCKPAK, and MNNODE require appropriate datafill.

Service orders

SPM PTS Trunk Provisioning and Static Data does not affect SERVORD.

Operational measurements

SPM PTS Trunk Provisioning and Static Data does not affect operational measurements.

Logs

SPM PTS Trunk Provisioning and Static Data affects the following SPM logs related to the distributed data manager (DDM) audit:

- SPM340: CM WarmSwact SPM Report—generates when the execs on one CEM or both CEMs fail to update during a CM warm SWACT.
- SPM700: SPM Trunk Subgroup DDM Audit—generates when a DDM audit fails to update a subgroup on an SPM node.
- SPM701: SPM Trunk Subgroup DDM Audit—generates when a DDM audit successfully updates a subgroup in an SPM node.

AF6653
SPM PTS Trunk Provisioning and Static Data (end)

- SPM702: SPM Trunk Subgroup DDM Dynamic Update—generates when a DDM dynamic update fails for a subgroup on an SPM node.
- SPM703: SPM Trunk Member DDM Audit—generates when a DDM audit updates a trunk member on an SPM node.
- SPM704: SPM Trunk Member DDM Dynamic Update—generates when a DDM dynamic update fails for a trunk member on an SPM node.

User interface

SPM PTS Trunk Provisioning and Static Data changes commands and provides additional commands at the MAPCI user interface. See “SPM trunk conversion" in this feature description for additional information.

Billing

SPM PTS Trunk Provisioning and Static Data does not affect billing.

AG4961
Trunk Maintenance in the Telecom Layer

Functionality name

Trunk Maintenance in the Telecom Layer

Description

Trunk Maintenance in the Telecom Layer, feature AG4961, changes the DMS computing module (CM) telecom layer to support

- DMS-Spectrum Peripheral Module (SPM) general trunk maintenance:
  - — fault handling
  - — system recovery
  - — software audits
- manual testing of trunks at the trunk test position (TTP)
- trunk datafill

SPM trunk maintenance

Fault handling

For interoffice ISUP trunks, feature AG4961 notifies the far-end office when system failures occur, takes down active calls, sets the trunk to the appropriate state, and sends a BLOCK message sequence to the far-end office.

System recovery

Feature AG4961 returns trunks to the appropriate state during restarts and during system failures.

Software audits

Feature AG4961 uses existing trunk maintenance audits for SPM ISUP trunks.

SPM TTP commands

Feature AG4961 introduces the following commands at the SPM TTP-level of the MAP terminal:

- Busy (BSY)
- Installation busy (INB)
- Return to service (RTS)
- Force release call (FRLS)
- Post (POST)—an SPM ISUP trunk
- Query (QRY)—an SPM ISUP trunk

AG4961
Trunk Maintenance in the Telecom Layer (continued)

Feature AG4961 also provides these commands at the MANUAL and MONITOR sub-levels of the TTP.

Refer to the *DMS-Spectrum Peripheral Module Commands Reference Manual* (297-1771-819) for additional information.

Trunk datafill

Feature AG4961 adds the following new fields to table TRKMEM:

- SPMNO
- SPMCKTNO
- SPMCKTTS

Feature AG4961 expands field MEMVAR in table TRKMEM to include SPM systems and the DS1s that can be provisioned on an OC-3 module.

Refer to the *Data Schema Reference Manual* or the data schema section of the *Translation Guide*, as appropriate, for more information.

Hardware requirements

Trunk Maintenance in the Telecom Layer has no hardware requirements.

Limitations and restrictions

Trunk Maintenance in the Telecom Layer has no limitations or restrictions.

Interactions

Trunk Maintenance in the Telecom Layer interacts with the following features:

- Feature AF6279, SPM Carrier Maintenance Subsystem
- Feature AR1763, SPM Node Maintenance Subsystem
- Feature AD8470, SPM Speech Link Subsystem

Datafill

Trunk Maintenance in the Telecom Layer has no datafill requirements.

Service Orders

Trunk Maintenance in the Telecom Layer does not affect SERVORD.

Operational measurements

Trunk Maintenance in the Telecom Layer does not affect OMs.

AG4961
Trunk Maintenance in the Telecom Layer (end)

Logs

Trunk Maintenance in the Telecom Layer does not affect Logs.

User interface

Trunk Maintenance in the Telecom Layer does not change the user interface.

Billing

Trunk Maintenance in the Telecom Layer does not affect billing.

AG4963
Trunk Maintenance for Call Features

Functionality name

Trunk Maintenance for Call Features

Description

Trunk Maintenance for Call Features, feature AG4963, supports the DMS-Spectrum Peripheral Module (SPM) by adding SPM specific changes to the existing DMS trunk-maintenance software.

Trunk Maintenance for Call Features provides the following capabilities for SPM:

- trunk provisioning
- trunk maintenance
- manual trunk test position (TTP)

Trunk provisioning

Feature AG4963 supports the changes to table TRKMEM that are implemented by feature AG4961.

Trunk maintenance

Feature AG4963 provides the following trunk maintenance functions:

- busy (BSY) and return to service (RTS) commands
- advice of trunk state changes during BSY and RTS
- support for the POST GROUP command
- support for call processing busy (CPB) and IDLE commands

Manual TTP

Feature AG4963 supports the manual TTP commands implemented by feature AG4961.

Hardware requirements

Trunk Maintenance for Call Features has no hardware requirements.

Limitations and restrictions

Trunk Maintenance for Call Features supports ISUP call processing only.

AG4963
Trunk Maintenance for Call Features (end)

Interactions

Feature AG4963 interacts with the following features:

- AD8470, SPM Central Speech Maintenance
- AR1512, Changes to Support New SPM Node Type
- AR1675, TL Changes for SPM Node Type, Base AR 1512

Datafill

Trunk Maintenance for Call Features has no datafill requirements.

Service Orders

Trunk Maintenance for Call Features does not affect SERVORD.

Operational measurements

Trunk Maintenance for Call Features does not affect operational measurements.

Logs

Trunk Maintenance for Call Features does not affect logs.

User interface

Trunk Maintenance for Call Features does not change the user interface.

Billing

Trunk Maintenance for Call Features does not affect billing.

AG4966
SPM OAM&P MAP Changes

Functionality name

SPM Operations, Administration, Maintenance, and Provisioning (OAM&P) MAP Changes

Description

SPM OAM&P MAP Changes, feature AG4966, changes the DMS telecom-layer modules to recognize the DMS-Spectrum Peripheral Module (SPM) at run time and to support the SPM at the MAP interface. The changes appear in the Resource Processor MAP (module RPMMIUI) and in the DMS Peripheral Module Maintenance (module HWTYPES) software.

Hardware requirements

SPM OAM&P MAP Changes has no hardware requirements.

Limitations and restrictions

SPM OAM&P MAP Changes has no limitations or restrictions.

Interactions

SPM OAM&P MAP Changes has no functionality interactions.

Datafill

SPM OAM&P MAP Changes does not affect data schema tables or office parameters.

Service orders

SPM OAM&P MAP Changes does not affect SERVORD.

Operational measurements

SPM OAM&P MAP Changes does not affect operational measurements.

Logs

SPM OAM&P MAP Changes does not affect logs.

User interface

SPM OAM&P MAP Changes does not change the user interface.

Billing

SPM OAM&P MAP Changes does not affect billing.

AN1880
SPM Alarm Subsystem (CM Portion)

Functionality name

SPM Alarm Subsystem (Computing Module [CM] Portion)

Description

SPM Alarm Subsystem (CM Portion), feature AN1880, provides a subsystem that captures, stores, and displays DMS-Spectrum Peripheral Module (SPM) alarms through the DMS CM. Feature AN1880 provides the following capabilities:

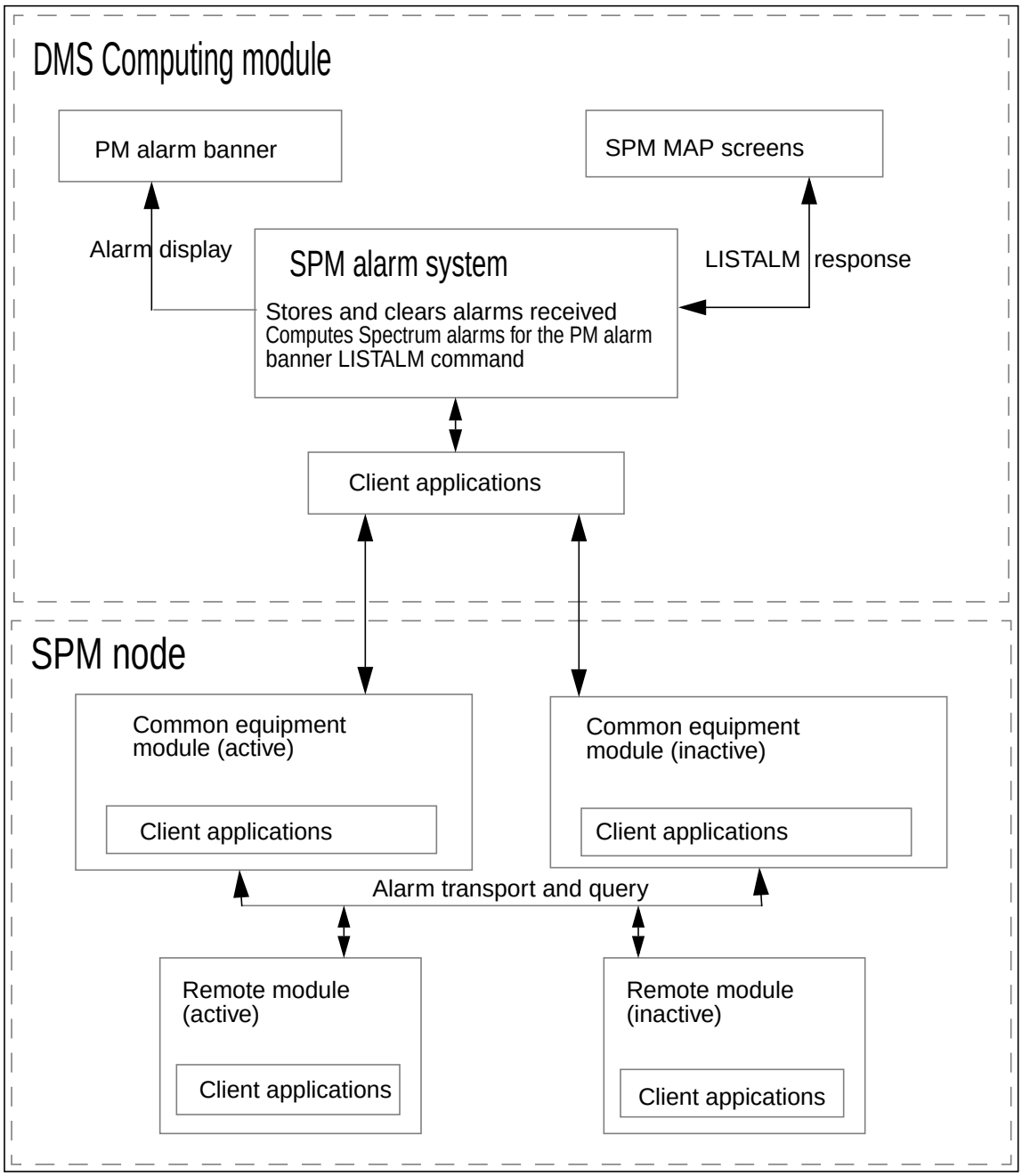
- alarm data definition
- alarm provisioning
  - — alarms can be datafilled as reportable or non-reportable
  - — alarm severity (critical, major, minor) can be provisioned for each alarm
- an alarm subsystem interface in the CM for client applications
- alarm processing and alarm filtering
- alarm calculation and alarm display
  - — calculation of the most severe alarm from all SPM nodes
  - — display of the SPM alarms on the alarm banner on the MAPCI screen
- generation of state-change alarms
- a MAP command to query alarms
- alarm data maintenance

The SPM clients that generate alarms provide a means to transport those alarm signals from the CEM to the CM and a means to receive the signals in the CM. The receiving component in the CM passes the alarm signal to the SPM alarm subsystem. The alarm subsystem

1. stores the alarm
2. filters the alarm to determine if it is reportable at the MAP level
3. triggers a recalculation of the alarm severity to report the highest-level alarm
4. displays the highest-level alarm under the PM alarm banner
5. makes the LISTALM command available at the MAP screen

AN1880
SPM Alarm Subsystem (CM Portion) (continued)

The following figure is a simplified block diagram of the SPM alarm subsystem.



AN1880
SPM Alarm Subsystem (CM Portion) (end)

Hardware requirements

SPM Alarm Subsystem has no hardware requirements.

Limitations and restrictions

SPM Alarm Subsystem has no limitations or restrictions.

Interactions

SPM Alarm Subsystem has no functionality interactions.

Datafill

SPM Alarm Subsystem does not require data schema tables or office parameters.

Service Orders

SPM Alarm Subsystem does not affect SERVORD.

Operational measurements

SPM Alarm Subsystem does not affect operational measurements.

Logs

SPM Alarm Subsystem does not affect logs.

User interface

SPM Alarm Subsystem adds the LISTALM command to the MAPCI screen. Refer to the *Spectrum Peripheral Module Commands Reference Manual* (297-1771-819) for more information about the LISTALM command.

Billing

SPM Alarm Subsystem does not affect billing.

AN1881
SPM OM Subsystem

Functionality name

SPM Operational Measurements (OM) Subsystem (Computing Module [CM] portion)

Description

SPM OM Subsystem (CM Portion), feature AN1881, provides the integration of DMS-Spectrum Peripheral Module (SPM) OMs into the DMS OM system. Feature AN1881 provides generic mechanisms for collecting SPM OMs using the DMS distributed data manager (DDM).

Feature AN1881 adds the following SPM OM subsystems:

- user interface (module SPMOMUI)
- delivery system change notification (module SPMOMCNF)
- delivery system command interpreter (module SPMOMCI)
- common definitions (module SPMOMIDS)
- OM/DDM mapper interface (module SPMOMPUI)
- OM DDM interface (module SPMCMOMI)

Hardware requirements

SPM OM Subsystem has no hardware requirements.

Limitations and restrictions

SPM OM Subsystem has no limitations or restrictions.

Interactions

SPM OM Subsystem has no functionality interactions.

Datafill

SPM OM Subsystem does not affect data schema tables or office parameters.

Service orders

SPM OM Subsystem does not affect SERVORD.

Operational measurements

SPM OM Subsystem does not affect base operational measurements.

AN1881
SPM OM Subsystem (end)

Logs

SPM OM Subsystem does not affect logs.

User interface

SPM OM Subsystem does not change the user interface.

Billing

SPM OM Subsystem does not affect billing.

AN1891
SPM SYNC Operational MAP

Functionality name

SPM Synchronization (SYNC) Operational MAP

Description

SPM SYNC Operational Map, feature AN1891, provides the following capabilities:

- a messaging interface to process alarm and log messages between DMS-Spectrum Peripheral Module (SPM) nodes and the command module (CM)
- the generation of synchronization logs
- updates to synchronization alarms in the alarm database
- updates to the clock information on the MAP command interpreter (MAPCI) common equipment module (CEM) screen

Hardware requirements

SPM SYNC Operational MAP has no hardware requirements.

Limitations and restrictions

SPM SYNC Operational MAP has no limitations or restrictions.

Interactions

This feature adds an interface to the MAPCI CEM screen. Feature AD8378 created the MAPCI CEM screen. This feature does not affect call processing.

Datafill

SPM SYNC Operational MAP does not affect data schema tables or office parameters.

Service orders

SPM SYNC Operational MAP does not affect SERVORD.

Operational measurements

SPM SYNC Operational MAP does not affect operational measurements.

AN1891
SPM SYNC Operational MAP (end)

Logs

SPM SYNC Operational MAP creates the following logs:

- SPM301 with a minor alarm — indicates the clock oscillator tuning range has reached 70%
- SPM301 with a major alarm — indicates the clock oscillator tuning range has reached 90%
- SPM332 — indicates the clock reference swtiched from xxx to yyy by zzz action
- SPM501 — indicates the clock mode changed from xxx to yyy

Refer to the appropriate *Logs Reference Manual* for additional information.

User interface

This feature created a command on the MAPCI CEM screen that provides the ability to switch the clock source. The switch must be in sync before this activity is allowed.

Billing

SPM SYNC Operational MAP does not affect billing.

AN1895
PRSM SPM Support

Functionality name

Post-Release Software Manager (PRSM) SPM Support

Description

PRSM SPM Support, feature AN1895, provides additions to the DMS PRSM to enable it to track

- DMS-Spectrum Peripheral Module (SPM) nodes
- SPM loadfiles
- post-release software updates (PRSU) built into the SPM loadfiles

SPM nodes

Feature AN1895 adds SPM nodes to the PRSM database when a node name is entered in table MNCKTPAK. Feature AN1895 checks the loadname datafill for new or revised tuples in table MNCKTPAK and applies all the PRSUs registered for that loadname. If an SPM node is removed from table MNCKTPAK, the node and its associated PRSU information is removed from the PRSM database.

SPM loadfiles

Feature AN1895 adds an SPM loadfile to the PRSM database when a loadname is entered or changed in table PMLOADS. Feature AN1895 also loads the PRSM database with any PRSUs that apply to that loadfile. The PRSM adds these PRSUs to any SPM peripheral that has the same loadname as the loadname added or changed in table PMLOADS. If an SPM loadfile is deleted from table PMLOADS, the PRSM takes no action.

If a loadfile already exists in the PRSM database when it is added to table PMLOADS, no action occurs in the PRSM database. If discrepancies exist between the PRSM database and the loadfile, they are resolved by the PRSM status audit or by operating company personnel using the PRSM DBAUDIT command.

PRSU auditing

The PRSM runs a daily status audit using the DBAUDIT command. The status audit applies to all the nodes in an office. The status audit updates loadfiles with the PRSUs that transfer during one-night processes (ONP). The status audit also maintains the integrity of the PRSM database and the data in the SPM nodes. The PRSM DISADMIN command can be used to query the administrative information built into PRSUs.

AN1895
PRSM SPM Support (continued)

Hardware requirements

PRSM SPM Support has no hardware requirements.

Limitations and restrictions

During ONP on the inactive side, storage devices that contain SPM loadfiles are not available. Therefore, some SPM PRSU information does not appear in the PRSM database until the post-switch activity (SWACT) phase and the subsequent DBAUDIT command executes.

SPM PRSU status information in the PRSM database is controlled by the datafill in table PMLOADS or table MNCKTPAK, or both. Therefore, the PRSM database may be inaccurate for a brief period of time until the SPM node is reloaded with the loadfile that is datafilled in table PMLOADS. If the SPM node fails to reload, the PRSM database can indicate that SPM PRSUs are applied to an SPM peripheral when they are not. The DBAUDIT command must run, either manually or automatically, to apply them.

Interactions

PRSM SPM Support has no functionality interactions.

Datafill

PRSM SPM Support does not require data schema tables or office parameters.

Service orders

PRSM SPM Support does not affect SERVORD.

Operational measurements

PRSM SPM Support does not affect operational measurements.

Logs

PRSM SPM Support generates a PRSM400 summary log for each SPM PRSU when a loadfile is entered in table PMLOADS.

User interface

Feature AN1895 adds command SPMLFINFO to the CI level of the MAP terminal. Command SPMLFINFO shows PRSM information and release information about SPM loadfiles.

Refer to the *DMS-Spectrum Peripheral Module Commands Reference Manual* (297-1771-819) for additional information..

AN1895
PRSM SPM Support (end)

The PRSM SELECT command can generate reports for SPM destinations and PRSUs. Feature AN1895 adds the DESTID field to the SELECT reports, which identifies SPM destinations

Feature AN1895 enhances the PRSM DISADMIN command to show administrative information about SPM nodes.

Feature AN1895 enhances the PRSM DBAUDIT command to accept any SPM loadfile or destination name.

Billing

PRSM SPM Support does not affect billing.

AR1498
ENET Support for SPM

Functionality names

Enhanced Network (ENET) Support for SPM

> **ATTENTION**
> The enhanced network (ENET) may not apply to all markets.

Description

The feature description for AR1498 also contains information for the following features:

- AR1725, ENET Maintenance Support for NT9X40DA and Integrated Link Maintenance (ILM) Hardware (HW) Utilities
- AR1726, ENET Maintenance Support for ILM and SPM
- AR1850, ENET Speech Maintenance Support for SPM

These four features provide the changes required to accommodate DMS-Spectrum Peripheral Module (SPM) nodes on the DMS switch by providing ENET support for the following items:

- integrated link maintenance (ILM) peripheral links to SPM nodes
  - — adds ENET support for ILM datafill
  - — provides ENET channel allocation and management
  - — adds an interface between central ILM and ENET
  - — supports ENET-to-ILM commands
  - — expands ENET product engineering codes (PEC) to accommodate the NT9X40DA paddleboard
- NT9X40DA ENET paddleboard and ILM HW utilities
  - — changes table ENCDINV to accommodate PEC NT9X40DA
  - — revises hardware testing systems to accommodate NT9X40DA
  - — changes ILM messaging and audit frequency
  - — revises ENET insert and extract routines and updates the following tests
    - – bit error rate test (BERT)
    - – P-side fiber link test

AR1498
ENET Support for SPM (continued)

  - card test
  - check maintenance utility
- revises ENET connection controls to accommodate NT9X40DA

- ENET maintenance and ILM interaction
  - provides messaging handshakes between ENET maintenance and ILM
  - adds a wide-band ENET-to-ILM connection
  - changes the ENET diagnostics, log reporting, and operational measurements (OM) systems to handle the ILM link
- speech maintenance on SPM nodes
  - changes the ENET integrity failure reporting and testing system to accommodate SPM nodes
  - updates the MAP screen commands, alarms, and displays to support the ILM link
  - changes the ENET P-side messaging and node relocation software to include the ILM links
  - updates the ENET REX test to ignore the unused DS30 links
  - changes the OM usage counters to ignore DS30 links and updates the counters to recognize multiple links to an SPM node
  - provides a facility data link (FDL) handler for the NT9X40DA ENET paddleboard

Hardware requirements

ENET Support for SPM requires the NT9X40DA ENET paddleboard. The ENET paddleboard supports a hard-clad silica fiber link. This paddleboard uses a quad-link controller (QLC) and has a micro-processor on board to handle the QLC. The QLC has five insert/extract points.

ENET Support for SPM requires the ENET 16 megabyte processor board (NT9X13KA) to accommodate the additional software required in the ENET.

Limitations and restrictions

ENET Support for SPM has no limitations and restrictions.

AR1498
ENET Support for SPM (end)

Interactions

All four ENET Support for SPM features interact with each other and they interact with the following features:

- AR1516, ILM Support for SPM, Phase I
- AR1770, ILM Support for SPM, Phase II

Datafill

ENET Support for SPM does not require datafill.

Service orders

ENET Support for SPM does not affect SERVORD.

Operational measurements

ENET Support for SPM does not affect operational measurements.

Logs

ENET Support for SPM changes the following logs:

- ENET211
- ENET308
- ENET311

User interface

ENET Support for SPM changes commands, alarms, and screen displays at the MAP terminal.

Billing

ENET Support for SPM does not affect billing.

AR1725
ENET Maintenance Support for NT9X40DA and ILM HW Utilities

Functionality names

ENET Maintenance Support for NT9X40DA and Integrated Link Maintenance (ILM) Hardware (HW) Utilities

ATTENTION
The enhanced network (ENET) may not apply to all markets.

Description

This feature contains the changes associated with feature AR1498, ENET Support for SPM. A complete description of AR1498 follows.

The feature description for AR1498 also contains information for the following features:

- AR1725, ENET Maintenance Support for NT9X40DA and Integrated Link Maintenance (ILM) Hardware (HW) Utilities
- AR1726, ENET Maintenance Support for ILM and SPM
- AR1850, ENET Speech Maintenance Support for SPM

These four features provide the changes required to accommodate DMS-Spectrum Peripheral Module (SPM) nodes on the DMS switch by providing ENET support for the following items:

- integrated link maintenance (ILM) peripheral links to SPM nodes
  - — adds ENET support for ILM datafill
  - — provides ENET channel allocation and management
  - — adds an interface between central ILM and ENET
  - — supports ENET-to-ILM commands
  - — expands ENET product engineering codes (PEC) to accommodate the NT9X40DA paddleboard
- NT9X40DA ENET paddleboard and ILM HW utilities
  - — changes table ENCDINV to accommodate PEC NT9X40DA
  - — revises hardware testing systems to accommodate NT9X40DA
  - — changes ILM messaging and audit frequency

AR1725
ENET Maintenance Support for NT9X40DA and ILM HW Utilities

  - — revises ENET insert and extract routines and updates the following tests
    - – bit error rate test (BERT)
    - – P-side fiber link test
    - – card test
    - – check maintenance utility
  - — revises ENET connection controls to accommodate NT9X40DA
- ENET maintenance and ILM interaction
  - — provides messaging handshakes between ENET maintenance and ILM
  - — adds a wide-band ENET-to-ILM connection
  - — changes the ENET diagnostics, log reporting, and operational measurements (OM) systems to handle the ILM link
- speech maintenance on SPM nodes
  - — changes the ENET integrity failure reporting and testing system to accommodate SPM nodes
  - — updates the MAP screen commands, alarms, and displays to support the ILM link
  - — changes the ENET P-side messaging and node relocation software to include the ILM links
  - — updates the ENET REX test to ignore the unused DS30 links
  - — changes the OM usage counters to ignore DS30 links and updates the counters to recognize multiple links to a SPM node
  - — provides a facility data link (FDL) handler for the NT9X40DA ENET paddleboard

Hardware requirements

ENET Support for SPM requires the NT9X40DA ENET paddleboard. The ENET paddleboard supports a hard-clad silica fiber link. This paddleboard uses a quad-link controller (QLC) and has a micro-processor on board to handle the QLC. The QLC has five insert/extract points.

ENET Support for SPM requires the ENET 16 megabyte processor board (NT9X13KA) to accommodate the additional software required in the ENET.

AR1725
ENET Maintenance Support for NT9X40DA and ILM HW Utilities (end)

Limitations and restrictions

ENET Support for SPM has no limitations and restrictions.

Interactions

All four ENET Support for SPM features interact with each other and they interact with the following features:

- AR1516, ILM Support for SPM, Phase I
- AR1770, ILM Support for SPM, Phase II

Datafill

ENET Support for SPM does not require datafill.

Service orders

ENET Support for SPM does not affect SERVORD.

Operational measurements

ENET Support for SPM does not affect operational measurements.

Logs

ENET Support for SPM changes the following logs:

- ENET211
- ENET308
- ENET311

User interface

ENET Support for SPM changes commands, alarms, and screen displays at the MAP terminal.

Billing

ENET Support for SPM does not affect billing.

AR1726
ENET Maintenance Support for ILM and SPM

Functionality names

ENET Maintenance Support for ILM and SPM)

ATTENTION
The enhanced network (ENET) may not apply to all markets.

Description

This feature contains the changes associated with feature AR1498, ENET Support for SPM. A complete description of AR1498 follows.

The feature description for AR1498 also contains information for the following features:

- AR1725, ENET Maintenance Support for NT9X40DA and Integrated Link Maintenance (ILM) Hardware (HW) Utilities
- AR1726, ENET Maintenance Support for ILM and SPM
- AR1850, ENET Speech Maintenance Support for SPM

These four features provide the changes required to accommodate DMS-Spectrum Peripheral Module (SPM) nodes on the DMS switch by providing ENET support for the following items:

- integrated link maintenance (ILM) peripheral links to SPM nodes
  - — adds ENET support for ILM datafill
  - — provides ENET channel allocation and management
  - — adds an interface between central ILM and ENET
  - — supports ENET-to-ILM commands
  - — expands ENET product engineering codes (PEC) to accommodate the NT9X40DA paddleboard
- NT9X40DA ENET paddleboard and ILM HW utilities
  - — changes table ENCDINV to accommodate PEC NT9X40DA
  - — revises hardware testing systems to accommodate NT9X40DA
  - — changes ILM messaging and audit frequency

AR1726
ENET Maintenance Support for ILM and SPM (continued)

  - — revises ENET insert and extract routines and updates the following tests
    - – bit error rate test (BERT)
    - – P-side fiber link test
    - – card test
    - – check maintenance utility
  - — revises ENET connection controls to accommodate NT9X40DA
- ENET maintenance and ILM interaction
  - — provides messaging handshakes between ENET maintenance and ILM
  - — adds a wide-band ENET-to-ILM connection
  - — changes the ENET diagnostics, log reporting, and operational measurements (OM) systems to handle the ILM link
- speech maintenance on SPM nodes
  - — changes the ENET integrity failure reporting and testing system to accommodate SPM nodes
  - — updates the MAP screen commands, alarms, and displays to support the ILM link
  - — changes the ENET P-side messaging and node relocation software to include the ILM links
  - — updates the ENET REX test to ignore the unused DS30 links
  - — changes the OM usage counters to ignore DS30 links and updates the counters to recognize multiple links to an SPM node
  - — provides a facility data link (FDL) handler for the NT9X40DA ENET paddleboard

Hardware requirements

ENET Support for SPM requires the NT9X40DA ENET paddleboard. The ENET paddleboard supports a hard-clad silica fiber link. This paddleboard uses a quad-link controller (QLC) and has a micro-processor on board to handle the QLC. The QLC has five insert/extract points.

ENET Support for SPM requires the ENET 16 megabyte processor board (NT9X13KA) to accommodate the additional software required in the ENET.

AR1726
ENET Maintenance Support for ILM and SPM (end)

Limitations and restrictions

ENET Support for SPM has no limitations and restrictions.

Interactions

All four ENET Support for SPM features interact with each other and they interact with the following features:

- AR1516, ILM Support for SPM, Phase I
- AR1770, ILM Support for SPM, Phase II

Datafill

ENET Support for SPM does not require datafill.

Service orders

ENET Support for SPM does not affect SERVORD.

Operational measurements

ENET Support for SPM does not affect operational measurements.

Logs

ENET Support for SPM changes the following logs:

- ENET211
- ENET308
- ENET311

User interface

ENET Support for SPM changes commands, alarms, and screen displays at the MAP terminal.

Billing

ENET Support for SPM does not affect billing.

AR1850
ENET Speech Maintenance Support for SPM

Functionality names

ENET Speech Maintenance Support for SPM

ATTENTION
The enhanced network (ENET) may not apply to all markets.

Description

This feature contains the changes associated with feature AR1498, ENET Support for SPM. A complete description of AR1498 follows.

The feature description for AR1498 also contains information for the following features:

- AR1725, ENET Maintenance Support for NT9X40DA and Integrated Link Maintenance (ILM) Hardware (HW) Utilities
- AR1726, ENET Maintenance Support for ILM and SPM
- AR1850, ENET Speech Maintenance Support for SPM

These four features provide the changes required to accommodate DMS-Spectrum Peripheral Module (SPM) nodes on the DMS switch by providing ENET support for the following items:

- integrated link maintenance (ILM) peripheral links to SPM nodes
  - — adds ENET support for ILM datafill
  - — provides ENET channel allocation and management
  - — adds an interface between central ILM and ENET
  - — supports ENET-to-ILM commands
  - — expands ENET product engineering codes (PEC) to accommodate the NT9X40DA paddleboard
- NT9X40DA ENET paddleboard and ILM HW utilities
  - — changes table ENCDINV to accommodate PEC NT9X40DA
  - — revises hardware testing systems to accommodate NT9X40DA
  - — changes ILM messaging and audit frequency

AR1850
ENET Speech Maintenance Support for SPM (continued)

— revises ENET insert and extract routines and updates the following tests

– bit error rate test (BERT)

– P-side fiber link test

– card test

– check maintenance utility

— revises ENET connection controls to accommodate NT9X40DA

- ENET maintenance and ILM interaction

— provides messaging handshakes between ENET maintenance and ILM

— adds a wide-band ENET-to-ILM connection

— changes the ENET diagnostics, log reporting, and operational measurements (OM) systems to handle the ILM link

- speech maintenance on SPM nodes

— changes the ENET integrity failure reporting and testing system to accommodate SPM nodes

— updates the MAP screen commands, alarms, and displays to support the ILM link

— changes the ENET P-side messaging and node relocation software to include the ILM links

— updates the ENET REX test to ignore the unused DS30 links

— changes the OM usage counters to ignore DS30 links and updates the counters to recognize multiple links to an SPM node

— provides a facility data link (FDL) handler for the NT9X40DA ENET paddleboard

Hardware requirements

ENET Support for SPM requires the NT9X40DA ENET paddleboard. The ENET paddleboard supports a hard-clad silica fiber link. This paddleboard uses a quad-link controller (QLC) and has a micro-processor on board to handle the QLC. The QLC has five insert/extract points.

ENET Support for SPM requires the ENET 16 Mbyte processor board (NT9X13KA) to accommodate the additional software required in the ENET.

AR1850
ENET Speech Maintenance Support for SPM (end)

Limitations and restrictions

ENET Support for SPM has no limitations and restrictions.

Interactions

All four ENET Support for SPM features interact with each other and they interact with the following features:

- AR1516, ILM Support for SPM, Phase I
- AR1770, ILM Support for SPM, Phase II

Datafill

ENET Support for SPM does not require datafill.

Service orders

ENET Support for SPM does not affect SERVORD.

Operational measurements

ENET Support for SPM does not affect operational measurements.

Logs

ENET Support for SPM changes the following logs:

- ENET211
- ENET308
- ENET311

User interface

ENET Support for SPM changes commands, alarms, and screen displays at the MAP terminal.

Billing

ENET Support for SPM does not affect billing.

AR1940
SPM Central Application Speech Aspects

Functionality name

SPM Central Application Speech Aspects

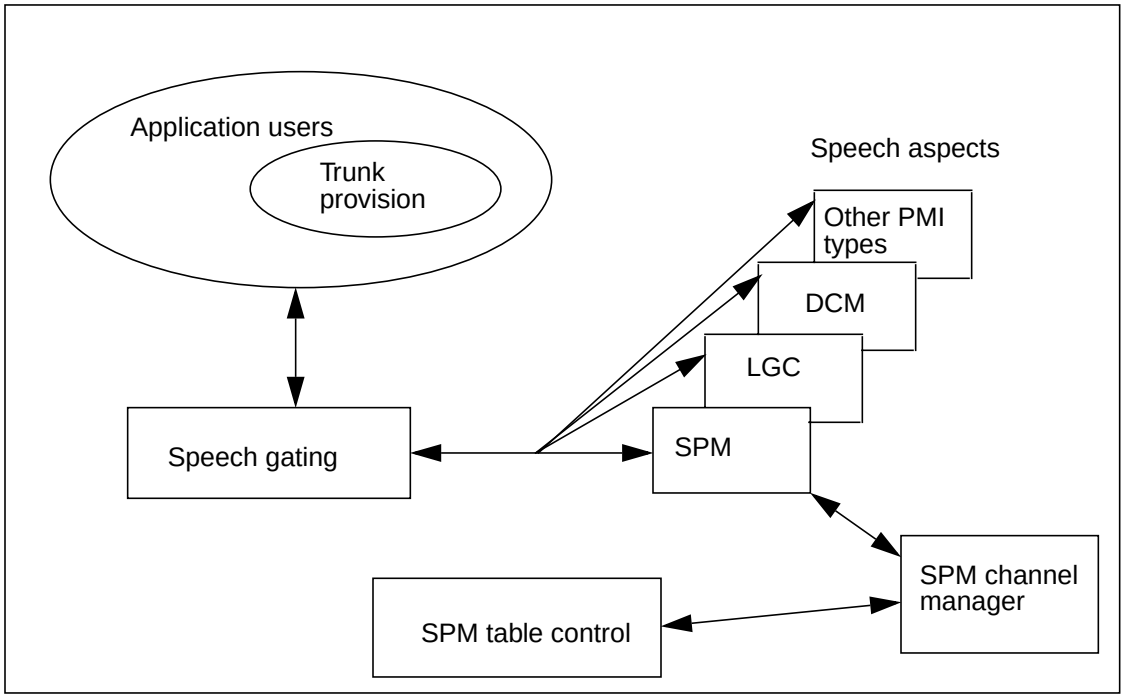
Description

SPM Central Application Speech Aspects, feature AR1940, uses the services of the DMS-Spectrum Peripheral Module (SPM) central channel manager (feature AD8469) to provide the following speech services in the DMS computing module (CM):

- making speech connections
  - — reserve and release speech channels
  - — reserve a speech channel on a specific C-side link
  - — reserve a specific speech channel on a designated C-side link
- querying active speech connections by getting the network path-end associated with a given terminal identifier (TID)
- translating the endpoints of a speech connection by getting the TID associated with a given C-side channel

These speech services are called by call processing, table control software, and speech maintenance software to reserve DS-0 channels on P- and C-side links for data and voice connections as shown in the following figure.

AR1940
SPM Central Application Speech Aspects (continued)



Hardware requirements

SPM Central Application Speech Aspects has no hardware requirements.

Limitations and restrictions

SPM Central Application Speech Aspects requires the following features in order to be fully operational:

- AR1512—Changes to Support the New SPM Node Type
- AD8469—SPM Central Channel Manager

Interactions

SPM Central Application Speech Aspects have no functionality interactions.

Datafill

SPM Central Application Speech Aspects do not affect data schema tables or office parameters.

Service Orders

SPM Central Application Speech Aspects do not affect SERVORD.

AR1940
SPM Central Application Speech Aspects (end)

Operational measurements

SPM Central Application Speech Aspects do not affect operational measurements.

Logs

SPM Central Application Speech Aspects do not affect logs.

User interface

SPM Central Application Speech Aspects do not change the user interface.

Billing

SPM Central Application Speech Aspects do not affect billing.

AR2330
PUMa: Peripheral Upgrade Functions in the SHR Layer

Functionality name

PUMa: Peripheral Upgrade Functions in the SHR (shared) Layer

Description

PUMa: Peripheral Upgrade Functions in the SHR Layer, feature AR2330, has the following two purposes:

- provide upgrades for DMS peripherals other than the DMS-Spectrum Peripheral Module (SPM)
- provide support for SPM in DMS PANTHER (PM upgrade automation initiative)

Feature SD0007 provides the DMS telecom-layer changes that are necessary to support the SPM in the PMUPGRADE (PM upgrade automation tool) utility.

Supporting SPM in the PMUPGRADE utility

The DMS PMUPGRADE utility supports the SPM through the following PMUPGRADE subcommands:

- DISPLAY NODES—displays the SPM nodes with the loads datafilled in table MNCKTPAK
- DISPLAY LOADS—displays the loads datafilled in table PMLOADS, which includes the SPM loads
- START FILECOPY—selects the correct SPM replacement loads from the load distribution medium for the default SPM loads
- START PLAN—places SPM upgrade tasks into the PMUPGRADE upgrade plan, as specified in the PM release document; DISPLAY PLAN—lists the upgrade plan

Hardware requirements

PUMa: Peripheral Upgrade Functions in the SHR Layer has no hardware requirements.

Limitations and restrictions

For SPM upgrades, PANTHER supports the milestone release process only.

The maximum number of loads that can be associated with an SPM node is 16.

AR2330
PUMa: Peripheral Upgrade Functions in the SHR Layer (end)

Interactions

Feature AR2330 interacts with the following features:

- AR1305, PUMa: Product Upgrade Manager
- AR1712, PUMa: Peripheral Upgrade Planning
- AR1713, PUMa: Peripheral Upgrade Framework
- AR2300, PUMa: XPM Upgrade function

Together, these features automate the upgrading for most of the Series II and SPM software.

Datafill

PUMa: Peripheral Upgrade Functions in the SHR Layer has no datafill requirements.

Service orders

PUMa: Peripheral Upgrade Functions in the SHR Layer does not affect SERVORD.

Operational measurements

PUMa: Peripheral Upgrade Functions in the SHR Layer does not affect operational measurements.

Logs

PUMa: Peripheral Upgrade Functions in the SHR Layer does not affect logs.

User interface

PUMa: Peripheral Upgrade Functions in the SHR Layer does not change the user interface.

Billing

PUMa: Peripheral Upgrade Functions in the SHR Layer does not affect billing.

BY46272
Trunk Conversion Facility

Functionality name

Trunk Conversion Facility

Description

Trunk Conversion Facility, feature BY46272, adds a new TTP level on the MAP screen.

Feature BY46272 provides commands to change Trunk provisioning for the DMS-Spectrum Peripheral Module (SPM). Feature BY46272 also provides a single MAPCI command to move a posted trunk member to another location and to return that trunk member to service in the new location.

Feature BY46272 also displays carrier information, such as the trunks that reside in the 24 timeslots of a DS-1 carrier circuit. Feature BY46272 can move any trunk from an origination carrier to a new location on a destination carrier.

Hardware requirements

Trunk Conversion Facility has no hardware requirements.

Limitations and restrictions

Trunk Conversion Facility has no limitations or restrictions.

Interactions

Trunk Conversion Facility has no functionality interactions.

Datafill

Trunk Conversion Facility does not affect data schema tables or office parameters.

Service orders

Trunk Conversion Facility does not affect SERVORD.

Operational measurements

Trunk Conversion Facility does not affect operational measurements.

Logs

Trunk Conversion Facility does not affect logs.

BY46272
Trunk Conversion Facility (end)

User interface

Trunk Conversion Facility changes the user interface by adding or changing commands as follows:

- LEVEL is changed in the TTP directory. SPMTKCNV and SPM were added to the TTP MAP level.
- CONVERT is added to the SPMTKCNV directory. The CONVERT command converts a posted trunk to a specified trunk, then posts the new trunk member again. Next, the command returns the changed trunk member to service. Before conversion, the command checks if the trunk can be converted. No action is taken if conversion should not be performed.
- DISPLAY is added to the SPMTKCNV directory. The DISPLAY command displays a given carrier in one of the two positions shown on SPMTKCNV level screen.
- SWAP is added to the SPMTKCNV directory. The SWAP command reverses the displayed arrow direction and swaps the origination with the destination.
- CVCARR is added to the SPMTKCNV directory. The CVCARR (or CVC) command moves all trunks from the displayed origination carrier into successive free slots on the second displayed carrier, which is the destination carrier.
- UNDO is added to the SPMTKCNV directory. The UNDO commnand reverses the action of the CONVERT and CVCARR commands modifying the data base.

Billing

Trunk Conversion Facility does not affect billing.

MS0026
DMS-BUS Support for SPM during ONP

Functionality name

DMS-Bus Support for SPM during ONP

Description

DMS-Bus Support for the DMS-Spectrum Peripheral Module (SPM) during the one-night process (ONP)—feature MS0026—provides support during ONP for the transfer of the DMS-BUS port connections used by SPM nodes. Feature MS0026 ensures that the SPM nodes use the same message switch (MS) ports when the SPM data schema tables are transferred from the active to the inactive side during the ONP switch of activity (SWACT).

Hardware requirements

DMS-BUS Support for SPM during ONP has no hardware requirements.

Limitations and restrictions

DMS-BUS Support for SPM during ONP has no limitations or restrictions.

Interactions

DMS-BUS Support for SPM during ONP has no functionality interactions.

Datafill

DMS-BUS Support for SPM during ONP does not affect data schema tables or office parameters.

Service orders

DMS-BUS Support for SPM during ONP does not affect SERVORD.

Operational measurements

DMS-BUS Support for SPM during ONP does not affect operational measurements.

Logs

DMS-BUS Support for SPM during ONP does not affect logs.

User interface

DMS-BUS Support for SPM during ONP does not change the user interface.

Billing

DMS-BUS Support for SPM during ONP does not affect billing.

2 Feature descriptions for SPM10

This document contains the feature descriptions for the SPM10 release of the Spectrum Peripheral Module (SPM). Feature information is intended to help prepare for insertion of a new software load, or to understand elements of the software. Operating company personnel involved in planning and engineering or in maintenance activites will find this information useful.

These feature descriptions provide information about SPM features. Each feature description contains the following sections:

- Functionality name
- Description
- Hardware requirements
- Limitations and restrictions
- Interactions
- Datafill
- Service orders
- Operational measurements
- Logs
- User interface
- Billing

AF7611
OC-3 Trunk Provisioning

Functionality name

OC-3 Trunk Provisioning

Description

The Soectrum Peripheral Module (SPM) system serves as a high-capacity feeder into the existing DMS-100 switch. It directly terminates an optical carrier-level 3 (OC-3) synchronous optical network (SONET) carrier. The SPM system feeds the individual DS-0 traffic from the carrier into the DMS-100.

The SPM system occupies a position in the digital multiplex system (DMS) architecture similar to the existing digital trunk controller (DTC) peripheral. But instead of terminating T-1 trunks, the SPM terminates a single OC-3 fiber trunk. This single OC-3 fiber trunk represents more than four times as many trunks as a single DTC. The SPM is both a logical extension and a fundamental architectural improvement over existing XMS-based peripheral module (XPM) peripherals.

The OC-3 Trunk Provisioning feature allows only DMS-100 switches with OC-3 SPMs to provision the following trunk types if supported:

- per-trunk signaling (PTS)
- integrated services digital network (ISDN) user part (ISUP)

The OC-3 Trunk Provisioning feature modifies table control software. With this feature, supported trunk types can be datafilled while unsupported trunk types cannot be datafilled.

AF7611
OC-3 Trunk Provisioning (continued)

The following table identifies the PTS and ISUP trunk types this feature supports or does not support for datafill. These trunk types are limited to DMS-100 SPM.

OC-3 Trunk Provisioning support of trunk types

ISUP & PTS supported	PTS supported	ISUP & PTS unsupported
ATC, IBNTI, IBNTO, IBNT2, IT, TI, TO, T2	CELL, ES, OC, PX, SC	AI, AN, A5, CA, DA, DS0, E911, IET, IR, IS, LOOPA, LPBK, MAINT, NFA, NU, OI, OP, OS, PRA, P2, RC, RONI, ROTL, SOCKT, TD, TDDO, TL, TOPS, TOPSARU, TOPSVL, TTL2, T101, T105, UT, VR, X75, ZI

The OC-3 Trunk Provisioning feature supports the following PTS protocols:

- wink start
- delay dial
- immediate dial
- loop start foreign exchange subscriber (FXS)
- ground start FXS
- loop start foreign exchange office (FXO)
- ground start FXO
- seize protocol

The OC-3 Trunk Provisioning feature supports the following PTS signaling types:

- dual-tone multifrequency (DTMF)
- multifrequency (MF)
- dial pulse

Hardware requirements

OC-3 Trunk Provisioning has no hardware requirements.

AF7611
OC-3 Trunk Provisioning (end)

Limitations and restrictions

Modifications to table TRKMEM allows supported PTS and ISUP trunk types to be provisioned. Unsupported trunk types cannot be provisioned.

DMS-100 switches with OC-3 SPMs can provision only the PTS and ISUP trunk types, signaling types, and protocols listed in this document.

The OC-3 Trunk Provisioning feature does not permit any of the following items to be provisioned on SPM:

- line loop
- ISDN loop
- plain old telephone service (POTS) phone
- proprietary phone (PPhone)
- attendant console
- N12 logical terminal identifier (LTID)
- echo cancellation

Interactions

OC-3 Trunk Provisioning has no functionality interactions.

Datafill

OC-3 Trunk Provisioning does not affect data schema tables or office parameters.

Service orders

OC-3 Trunk Provisioning does not affect SERVORD.

Operational measurements

OC-3 Trunk Provisioning does not affect operational measurements.

Logs

OC-3 Trunk Provisioning does not affect logs.

User interface

OC-3 Trunk Provisioning does not change the user interface.

Billing

OC-3 Trunk Provisioning does not affect billing

AJ5249
SPM RM In-service Loading Support

Functionality name

SPM RM In-service Loading Support

Description

In-service resource module (RM) loading supports Spectrum Peripheral Module (SPM) office upgrade. To upgrade an SPM, you must first upgrade the RMs of the SPM. An RM upgrade has two stages: transferring a new load to the RM and activating the new load on the RM. The load transfer stage takes three to four times longer than the load activation stage.

During the load transfer stage, the feature writes the complete load record into FLASH memory on the RM. The feature then copies the load from FLASH memory to the RAM during the load activation stage. As a result, the RM is out of service only during the load activation stage.

There are two designs for in-service RM loading

- single RM in-service loading
- RM to RM loading

In the single RM in-service loading design, operating company personnel download a new load from the computing module (CM) into the RM FLASH memory. This download is done by way of the message switch (MS), enhanced network (ENET), and inactive common equipment module (CEM). The RM remains in-service during load transfer. After the load transfer completes, the feature copies the new load from FLASH memory into random access memory (RAM). The new load then begins running on the RM.

In the RM to RM loading design, the operating company personnel transfer the load from a source RM to a destination RM. The feature first reads the new load from the FLASH memory of the source RM. The feature then writes the new load into the FLASH memory of the the destination RM. This transfer is done by way of the inactive CEM. The destination RM remains in-service during the load transfer stage. After load transferring completes, the destination RM copies the new load from FLASH memory into RAM. The new load then begins running on the RM.

When the SPM contains multiple RMs of the same type, use the RM to RM loading design. To upgrade the SPM, first use the single RM in-service loading design to load one RM of each type. Then perform RM to RM loading within the same SPM.

AJ5249
SPM RM In-service Loading Support (continued)

The RM to RM loading design has the following two advantages over the single RM in-service loading design:

- because of a shorter message path within the SPM, a three to four times improvement in loading time
- because load transfer occurs within the SPM, a reduced load on the CM, MS, and ENET

Hardware requirements

SPM RM In-service Loading Support has no hardware requirements.

Limitations and restrictions

The following limitations and restrictions apply to SPM RM In-service Loading Support:

- single RM in-service loading
  - — the RM must be in-service
  - — the RM must be inactive
- RM to RM loading
  - — both RMs must be within the same SPM
  - — both RMs must be of the same type (digital signal processor [DSP] RM to DSP RM, optical carrier-level 3 [OC-3] RM to OC-3 RM, or voice signal processing (VSP) RM to VSP RM)

    Note: VSP (echo cancellation) is not available for DMS-100 application.

  - — both RMs must be in-service (INSV or ISTB) before loading begins
  - — the destination RM must be inactive before loading begins
  - — both CEMs must be in-service (INSV or ISTB)

Interactions

SPM RM In-service Loading Support has no functionality interactions.

Datafill

SPM RM In-service Loading Support does not affect data schema tables or office parameters.

AJ5249
SPM RM In-service Loading Support (continued)

Service orders

SPM RM In-service Loading Support does not affect SERVORD.

Operational measurements

SPM RM In-service Loading Support does not affect operational measurements.

Logs

SPM RM In-service Loading Support does not affect logs.

User interface

SPM RM In-service Loading Support introduces identical changes to the LoadMod command in directories SPMDSPDIR and SPMOC3DIR. This feature also introduces the new Abtk command to these same directories.

LoadMod command

The LoadMod command is a menu command used to load the circuit pack. When using the LoadMod command, you cannot select the NOWAIT or NOREPLY option if the ALL parameter is specified. The ALL parameter is optional. If you do not specify the ALL parameter, the command defaults to operating on the RM posted by the current MAP (maintenance and administration position) terminal. If you specify the ALL parameter, the LoadMod command operates on all the RMs selected by the Post set.

You cannot use the InSvld and Mate parameters together. The InSvld parameter is the in-service loading indicator. If you specify this parameter, the LoadMod command executes an in-service loading through the CM. The Mate parameter is the RM to RM loading indicator. If you specify this parameter, the LoadMod command executes an RM to RM loading. The RM specified by parameter Mate Unit acts as the source RM.

You cannot use the File Name and Mate parameters together. The File Name parameter is the name of the load file. If you specify this parameter, the featue uses the specified load file for loading.

The command syntax for the LoadMod command is Loadmod: load the circuit pack.

The following figure shows the parameters available for use with the LoadMod command in directory SPMDSPDIR.

AJ5249
SPM RM In-service Loading Support (end)

```
Parms:  [<File Name>    STRING]
        [<InSvld>       {INSVLD}]
        [<Mate>         {MATE <Mate Unit> {0 TO 27}}]
        [<All>          {ALL}]
        [<Options>      {NOWAIT,
                        NOREPLY}]
```

The following figure shows the parameters available for use with the LoadMod command in directory SPMOC3DIR.

```
Parms:  [<File Name>    STRING]
        [<InSvld>       {INSVLD}]
        [<Mate>         {MATE <Mate Unit> {0 TO 1}}]
        [<All>          {ALL}]
        [<Options>      {NOWAIT,
                        NOREPLY}]
```

Abtk command

The Abtk command is an unlisted menu command used to abort the in-progress in-service loading task on the RM. The SPM RM In-service Loading Support feature supports the Abtk command only for in-service RM loading and mate RM loading. The Abtk command has no general application and you cannot apply it to another maintenance command.

The command syntax for the Abtk command is Abtk: Abort all active tasks on the circuit pack. There are no parameters used with the Abtk command.

Billing

SPM RM In-service Loading Support does not affect billing.

AX1215
XPM Equivalency Tools on SPM: PHASE I

Functionality name

Extended Peripheral Module (XPM) Equivalency tools on the Spectrum Peripheral Module (SPM): Phase I.

Description

This feature is the first phase in improving the tool set for the Spectrum Peripheral Module (SPM) by consolidating several isolated tools in the SPM and applying their functionality on the MAPCI level.

> ***Note:*** Full XPM tools equivalency is not supported in this release. Please refer to the Limitations and Future Enhancements section of this document for a summary of nonequivalencies.

A tool, known as PERFORM, currently exists for the XPM. This is a MAPCI-based tool which umbrellas several subtools. These tools provide statistical analysis on an operating peripheral, such as occupancy of each processor in a given peripheral, call-processing delays, call-processing data block usage, and information on call-processing events within the peripheral. An objective of this feature is to implement PERFORM functionality for the SPM on the MAPCI level. The following subtools are implemented under SPERFORM for the SPM:

- Spectrum Module Activity (SMACT)
- SPM USAGE (SUSAGE)

This feature also enhances the functionality of the PMIST and XPMIST tools. Prior to this feature, certain internal functions did not work properly for the SPM. The messages sent by PMIST and XPMIST to the CEM are now formatted correctly for the SPM. This feature adds capabilities to PMIST and XPMIST that first performs a check to determine if the inserted message is being sent to an SPM (instead of an XPM or other peripheral module). If so, the format of the inserted message is modified to be compatible with the SPM messaging protocol. PMIST and XPMIST now have the same functionality as their XPM counterparts.

SPERFORM functionality

The SPERFORM tool is made available for the SPM. The MAPCI interface for this tool is provided, along with SPM specific statistical data similar to that currently available for the XPM. To accomplish this, SPERFORM has two new subtools added which are specifically for the SPM (SMACT and SUSAGE). These tools are based on the original XPM PERFORM subtools,

AX1215
XPM Equivalency Tools on SPM: PHASE I (continued)

slightly modified to be compatible with SPM architecture and existing SPM measurement tools.

- SMACT. The SMACT tool is developed to provide users with information about the occupancy of the CEM processor, origination and termination counts, real time in the CEM processor and monitor the other resources.
- SUSAGE. This tool, based on USAGE which is originally found on the XPM PERFORM tool, collects information on call processing events that occur in the SPM. These events may be messages, logs, or OMs.

Hardware requirements

This feature requires an SPM to function. The user posts an SPM for SPERFORM to show up as an option.

Limitations and restrictions

Some XPM tools PERFORM functionality is not implemented in this feature because of a lack of an equivalent reporting mechanism for the SPM. These are as follows:

- Call Processing Swerrs measurement category (USAGE tool)
- Other Swerrs measurement category (USAGE tool)
- Application Class Occupancy (SMACT tool) currently reports the occupancy of all applications running and does not identify specific applications such as Callp, OC3, etc.
- The occupancy output found in SMACT only applies to the CEM. Currently, RM occupancy data is not reported to the CEM and therefore not available in the SMACT tool.
- network integrity found (USAGE tool)
- network integrity not found (USAGE tool)
- parity error (USAGE tool)
- integrity lost (USAGE tool)
- Bad Digit (USAGE tool)

Several XPM tools functionality are not implemented in this feature because no SPM equivalent exists. Furthermore, some XPM tool measurements are

AX1215
XPM Equivalency Tools on SPM: PHASE I (continued)

incompatible with the SPM architecture and therefore not logical to attempt to implement on the SPM. These are the following such tool features:

- P-Side Channel measurement category (PMACT tool)
- Universal Tone Receiver measurement category (PMACT tool). This has been replaced with DTMF and MF categories, which are the UTR equivalents on the SPM and shown in the SMACT tool.
- UTR Deny message measurement (USAGE tool). This has been replaced with DTMF Deny and MF Deny categories, which are the UTR equivalents on the SPM and shown in the SUSAGE tool.
- LCM Block message measurement (USAGE tool)
- ISP (PERFORM subtool for DTCI)
- INTLRS (PERFORM subtool for DTCI)

When you quit from the SPERFORM tool, the display does not redraw data for the SPM. This is because the original SPM PERFORM tool did not erase the three lines of XPM display data, thus retaining them when you terminate the tool. However, the SPM displays ten lines of data which does not allow any room for the additional SPERFORM tool display. Therefore field display definitions were delted, making it impossible to redraw the SPM information when the SPERFORM tool exits.

You must gracefully stop SPERFORM tools before any cold or warm restarts.

Future Enhancements

A method for counting Swerrs is needed to implement the Call Processing Swerrs and Other Swerrs categories.

A mechanism for measuring and reporting RM occupancy to the CEM may be implemented in the future to provide a more complete picture of SPM processor occupancy.

A mechanism for measuring and reporting several USAGE categories is needed. These categories are network integrity found, network integrity not found, parity error, integrity lost.

In the future, SPERFORM may be modified so that the user must select a particular CEM or RM to enter SPERFORM. Data will be collected based on the selected CEM/RM instead of the active CEM, which is used at this time.

AX1215
XPM Equivalency Tools on SPM: PHASE I (end)

Interactions

AX1215 has no functionality interactions.

Datafill

AX1215 does not affect data schema tables or office parameters.

Service orders

AX1215 does not affect SERVORD.

Operational measurements

AX1215 does not affect operational measurements.

Logs

The SPERFORM tool generates an SPRF 67x log by the subtools used by the SPM. Since this tool adds subtools for the SPM, the SPRF 67x log is generated by these SPM subtools in the same way as XPM PERFORM subtools create PRFM200 logs. The logs are accessible in LOGUTIL and are a compilation of the results of a SPERFORM subtool, taken every minute.

The SMACT tool generates a SPRF 670 log, whereas the SUSAGE tool generates a SPRF 671 log.

User interface

This feature introduces the SPERFORM directory and the SMACT and SUSAGE subdirectories. The SPM directory is modified to allow entry into SPERFORM through the MAPCI option number 17, or by typing SPERFORM.

Billing

AX1215 does not affect billing.

AX1217
SPM ECMON Enhancements

Functionality name

SPM Echo Canceller Monitor CI command (ECMON) Enhancements.

Description

SPM ECMON is used to monitor performance of echo cancellers (ECAN) on the Spectrum Peripheral Module (SPM). The description of the existing (phase I) functionality of the SPM ECMON can be found in AD9617.

This feature enhances the performance monitoring capabilities of SPM ECMON. The monitoring is achieved by the CI command SPMECMON on the core.

This feature adds the following functionality:

- Continuous echo canceller performance monitoring capabilities activated on a specific Resource Module Number and Resource Number on a SPM basis.
- Capability of Disabling continuous EC performance monitoring based on Resource Module Number and Resource Number.
- Status reports that list Resource Module Number and Resource Number with continuous echo canceller performance monitoring enabled on an SPM.
- Capability of displaying status reports that lists continuously monitored echo canceller resources and trunk members on an SPM, and system-wide basis.
- Capability of reporting to the MAP, SPM logs or both on:
  - — manual trunk-based READ commands
- Capability of disabling continuous EC performance monitoring for echo canceller resources and trunk members on an SPM, and system-wide basis.

Hardware requirements

This feature does not affect any hardware configurations or settings. The SPMECMON command is only valid when used for trunks that are set up for internal echo cancellation and assigned to an echo canceller equipped SPM.

AX1217
SPM ECMON Enhancements (continued)

Limitations and restrictions

AX1217 contains the following limitations/restrictions:

- Performance monitoring only functions with echo canceller equipped SPMs.
- SPMECMON is supported for SPMs only.
- All prior knowledge of successfully enabled continuous performance monitoring requests will be lost during an ONP.
- For continuous monitoring, monitoring will not be affected by trunks being taken in and out of service. However, should a continuous monitored trunk be deleted, that trunk will be disabled and a SPM661 log will be generated.
- For continuous monitoring, monitoring will not be affected by resources being taken in and out of service. However, should a continuous monitored resource be deleted, that resource will be disabled and a SPM661 log will be generated.
- If SPM is taken out of service, all continuous monitored trunks for that SPM will be disabled and SPM log 661 will be generated.
- For capacity reasons only 100 selections of RM-RNs per DMS250 may be monitored at one time.
- If a selected resource is spared, monitoring will be discontinued for that resource.

Interactions

AX1217 has no functionality interactions.

Datafill

AX1217 does not affect data schema tables or office parameters.

Service orders

AX1217 does not affect SERVORD.

Operational measurements

AX1217 does not affect operational measurements.

Logs

AX1217 modifies the following Logs: SPM660, SPM661

AX1217
SPM ECMON Enhancements (end)

User interface

AX1217 modifies the SPMECMON command in the PROGDIR directory.

Billing

AX1217 does not affect billing.

3 Feature descriptions for SPM11

This document contains the feature descriptions for the SPM11 release of the Spectrum Peripheral Module (SPM). Feature information is intended to help prepare for insertion of a new software load, or to understand elements of the software. Operating company personnel involved in planning and engineering or in maintenance activites will find this information useful.

These feature descriptions provide information about SPM features. Each feature description contains the following sections:

- Functionality name
- Description
- Hardware requirements
- Limitations and restrictions
- Interactions
- Datafill
- Service orders
- Operational measurements
- Logs
- User interface
- Billing

AF7885
SPM CARRMC SUPPORT ATM CARRIERS (CM)

Functionality name

Spectrum Peripheral Module Carrier Maintenance Support Asynchronous Transfer Mode Carriers (CM)

Description

Currently SPM supports OC-3 SONET carrier definitions and maintenance functionality. SPM CARRMC Support ATM Carriers feature supports the definition of a new ATM specific carrier type, STS3cp. The feature provisions and maintains the ATM specific carriers on the SPM.

The feature enables the following functionalities:

- provisions the STS3cp carrier in table MNHSCARR
- supports the following commands on the MAP level to maintain the carriers:
  - Post
  - Offl
  - Bsy
  - RTS
  - Loop
  - Disp
  - Next
  - Detail
  - ListAlm
  - Quit
  - Sub-level Perfmon
  - SilMl
  - MeterPP
  - PPQuery
  - Clear

Hardware requirements

SPM CARRMC Support ATM Carriers feature has no hardware requirements.

AF7885
SPM CARRMC SUPPORT ATM CARRIERS (CM) (end)

Limitations and restrictions

The following limitations and restrictions apply to SPM CARRMC Support ATM Carriers feature:

- The feature does not collect (archive) the performance parameters for SPM ATM into the DRM system.
- The feature does not support the CI command CARRUTIL and its functions.

Interactions

SPM CARRMC Support ATM Carriers feature interacts with the following features:

- HAL De-coupling, ATM HAL and Clearcase
- STS-3C - Defect, Performance Monitoring, and Carrier Agents
- Config Mgmt

Datafill

SPM CARRMC Support ATM Carriers feature provisions the new STS3cp carrier in table MNHSCARR.

Service orders

SPM CARRMC Support ATM Carriers feature does not affect SERVORD.

Operational measurements

SPM CARRMC Support ATM Carriers feature does not affect operational measurements.

Logs

To support the SPM ATM carriers, this feature uses the same logs that support SPM OC3 carriers.

User interface

SPM CARRMC Support ATM Carriers feature provides the capability to POST the new ATM STS3cp carrier at the carrier MAP level. It also supports the commands necessary to maintain the carriers.

Billing

SPM CARRMC Support ATM Carriers feature does not affect billing.

AF7895
IEC QUERYPM FLT, CNTRS, FILES

Description

Feature AF7895 addresses IEC requirements to provide the User Interface area of Spectrum software with “XPM equivalent functionality". The feature satisfies these requirements by enhancing the QueryPM command in the SPM menu level.

Specifically, this feature adds a new parameter, called OPTION, to the QueryPM command. This parameter has two possible values: FLT, CONFIG, and FILES. Details about the new parameter are given later in this document. Information about another new option, DIAGHIST, can be found in feature AF7896 - IEC QUERYPM DIAGHIST.

This feature adds the following options to the QueryPM command in the SPM menu level.

- FLT. The QUERYPM FLT command provides a list of devices, on the posted SPM, that are currently reporting a fault condition.
- CONFIG. QUERYPM CONFIG displays both the default load names and the currently running loads i all devices on the posted SPM.
- FILES. QUERYPM FILES displays the default load names and the currently running loads in all devices on the posted SPM. It also displays the Flash Loader's load file for each device that supports Flash Loader functionality.

Hardware requirements

AF7895 has no hardware requirements.

Limitations and restrictions

This feature is part of the Spectrum product. The new functionality added by this feature is valid only for offices that contain SPM software and hardware.

Interactions

Feature AF7895 has some interaction with table control, and makes use of the standard SPM interfaces that allow communication between the User Interface software and the actual SPM hardware devices. However, this feature does not alter any of the interfaces; it merely enhances the QueryPM command to allow for retrieval of additional information from table control and the SPM devices.

Datafill

AF7895 does not affect data schema tables or office parameters.

AF7895
IEC QUERYPM FLT, CNTRS, FILES (end)

Service orders

AF7895 does not affect SERVORD.

Operational measurements

AF7895 does not affect operational measurements.

Logs

AF7895 does not affect Logs.

User interface

AF7895 adds functionality, in the form of three new options (FLT, CONFIG, and FILES) to the QueryPM command of the SPM menu level; it does not affect any other user interface components.

Billing

AF7895 does not affect billing.

AF7913
New Echo Canceller OMs

Functionality name

New Echo Canceller Operational Measurements.

Description

This feature adds two new Operational Measurements (OM) for Echo Canceller (ECAN) resource usage from Spectrum (SPM) peripherals of DMS. They are as follows:

- The total number of attempts to allocate an ECAN resource per SPM node.
- The total number of seconds during the OM collection period for which at least one ECAN resource was allocated (being used) from the pool.

In order to provide the two new OMs, three new OM registers are added to the existing OM group ECANRMAN . Since the count of the number of allocation attempts for ECAN resources on an SPM during an OM collection period can exceed the limit of the size of an OM register, the purpose of one of the new registers is to handle the case of overflow of the total attempts count.

The new OM registers in group ECANRMAN are described in the following subsections.

- Total Allocation Attempts (ATMPTS). This register contains a count of the total number of attempts to allocate (get) an echo canceller resource from the ECAN pool per SPM during one OM transfer (collection) period.
- Total Attempts Overflow (ATMPTSOV). This register contains a count of the total number of times during one OM collection period the register ATMPTS has overflowed.
- Usage Seconds (USGSECS). This register contains a count of the number of seconds during the collection period for which at least one ECAN resource was allocated from the pool.

Hardware requirements

AF7913 has no hardware requirements.

Limitations and restrictions

The restrictions of the OM Base Subsystem of DMS and DDM for transport of OMs to the CM from CEM's of SPM peripherals:

- OM group register sizes of 2 bytes or maximum value of 65535
- OM group sizes of 32 registers
- OM Collection periods of 5, 15 or 30 minutes.

AF7913
New Echo Canceller OMs (continued)

- Transfers of OMs from peripherals occurring one minute before the end of the collection period, and
- For the special case of a 30 minute collection period, an intermediate transfer occurs at the 14 minute mark into the collection, as well as at the 29 minute mark at the end of the collection.

Interactions

This feature, AF7913, interacts with the following features or subsystems in DMS:

- AD8507 SPM Resource Management OAM&P: This feature provides the RMAN OMs for SPM01.
- AN1881 SPM OM Transport Subsystem: The SPM OM Transport Subsystem (SOTS) is responsible for transporting OMs from SPM peripherals to the CM of DMS. RMAN uses SOTS on the CM and CEM to define the RMAN OM Groups and targets necessary to process their data.
- The OM Base Subsystem of DMS: CM RMAN also registers with the OM Base subsystem of DMS for the definition, collection and processing of OMs.

Datafill

AF7913 does not affect data schema tables or office parameters.

Service orders

AF7913 does not affect SERVORD.

Operational measurements

AF7913 adds the following three new registers for two new ECAN OMs.

- ATMPTSOV
- ATMPTS
- USGSECS

The SPM contains a set of OMs which are common to all node-level resource pools, and each pool can have its own additional specific OMs. See AD8507 for more information.

AF7913
New Echo Canceller OMs (end)

Logs

Feature AF7913 does not affect Logs. Please refer to feature AD8507's Log section for details of RMAN Logs which exist in releases SPM01, SP10 and SP11.

User interface

Feature AF7913 does not change the user interface. Please refer to AD8507 for details of RMAN MMI interfaces which exist in SP11 from release SPM01.

Billing

Feature AF7913 does not affect billing.

AF7932
Scheduled OMs for SPM

Feature name

Scheduled OMs for SPM

Description

This feature supports the scheduling of ISDN user part (ISUP) operational measurements (OM) at 15-minute intervals for the NA100 Spectrum Peripheral Module (SPM) product. Every 15-minutes, an OM report is sent to the computing module (CM) containing the ISUPUSAG OM group data. The OM report is sent whether or not the OM registers are full.

The 15-minute interval matches the ISUP OM reporting provided by the digital trunk controller for SS7 (DTC7).

Hardware requirements

Scheduled OMs for SPM has no hardware requirements.

Limitations and restrictions

The limitations and restrictions that follow apply to Scheduled OMs for SPM:

- NA011 or newer front end load installed
- SP11 or newer SPM load installed

If the operating company personnel abort loading while upgrading the front end to NA011, all OM counts are lost for the 15-minute interval at the time of the abort.

Interactions

Scheduled OMs for SPM does not interact with other functionalities.

Datafill

Scheduled OMs for SPM does not change data schema tables or office parameters.

Service orders

Scheduled OMs for SPM does not change the Service Order System (SERVORD).

Operational measurements

Scheduled OMs for SPM adds NA100 SPM to the call processing messages counted by OM group ISUPUSAG.

AF7932
Scheduled OMs for SPM (end)

Logs

Scheduled OMs for SPM does not change logs.

User interface

Scheduled OMs for SPM does not change the user interface.

Billing

Scheduled OMs for SPM does not generate billing records or changes.

AX1400
SPM ECMON Enhancements (SP11/SHR11)

Functionality name

Spectrum Peripheral Module (SPM) Echo Canceller Monitor (ECMON) Enhancements (SP11/SHR11).

Description

SPM ECMON is used to monitor performance of echo cancellers (ECAN) on the Spectrum Peripheral Module (SPM). The description of the existing functionality of the SPM ECMON can be found in feature AD9617 and AX1217.

This feature enhances the performance monitoring capabilities of SPM ECMON by adding the following additional functionality:

- Option of output (MAP, LOG or BOTH) for continuous echo canceller performance monitoring based on a specific Resource Module Number (RM) and Resource Number (RN) for a SPM.
- Option of output (MAP, LOG or BOTH) for continuous echo canceller performance monitoring on a trunk member basis.
- A new set of AUTO commands to enable/disable/query automatic echo canceller performance monitoring.
- Combined Loss field - ACOM in table SPMECAN. This field is used for the customer to specify the expected minimum value of the Combined Loss.

Hardware requirements

AX1400 has no hardware requirements.

Limitations and restrictions

AX1400 has the following limitations or restrictions:

- If the continuous monitoring is enabled with the performance data directed to MAP or LOG and the user logs out of the MAP or suppress the LOG, then the ECAN information will be lost.
- SPMECMON is supported for SPM equipped internal echo cancellers only. For capacity reasons only 100 selections of RM-RNs and 100 trunk members per DMS250 may be monitored at one time.
- All prior knowledge of successfully enabled continuous performance monitoring requests will be lost during an ONP.
- For continuous monitoring, monitoring status (ON or OFF) will not be affected by trunks or RM-RN resources being taken in and out of service.

AX1400
SPM ECMON Enhancements (SP11/SHR11) (end)

- If SPM is taken out of service, all continuous monitored trunks and RM-RN resources for that SPM will be disabled and SPM log 661 will be generated.
- The calls that were already set up when the AUTO command is issued, will not be affected by this command.
- The automatic monitoring is set to the default mode - TABLE mode whenever a SPM is brought to in-service status.
- A maximum of 50 SPMECMON CI commands can be issued at the same time.
- To change the output option for a monitored trunk member or RM-RN resource , first turn off continuous monitoring. Then turn on contuous monitoring with the new output option.

Interactions

All SPM functionality required to support this feature is provided in the SP11 release. See AX1390 for more information.

Datafill

AX1400 adds the ACOM field in table SPMECAN.

Service orders

AX1400 does not affect SERVORD.

Operational measurements

AX1400 does not affect operational measurements.

Logs

AX1400 modifies SPM660, SPM310, and SPM661.

User interface

AX1400 changes the SPMECMON command in the PROGDIR directory. does not change the user interface.

Billing

AX1400 does not affect billing.

AX1402
SPERFORM Tool Enhancement for SPM

Functionality name

SPERFORM Tool Enhancement for SPM

Description

This feature enables users to access SPERFORM from the node-based SPM level as well as at the processor-based RM level. This architectural change provided a framework for future enhancements such as making SPERFORM available at the RM level with RM-specific subtool options for different RM types.

In addition, this feature enhances the existing SPERFORM tool for the Spectrum Peripheral Module (SPM). It increases the scope of the SUSAGE subtool of SPERFORM by collecting information on integrity and parity.

Finally, this feature changes the names of the existing subtools, SUSAGE and SMACT, to SPUSAGE and SPMACT respectively because of SPM naming conventions.

The SPERFORM tool currently exists for the SPM. This is a MAPCI-based tool which umbrellas several subtools. These tools provide statistical analysis on an operating peripheral, such as occupancy of each processor in a given peripheral, call processing delays, call-processing data block usage, and information on call processing events within the peripheral.

Hardware requirements

AX1402 has no hardware requirements.

Limitations and restrictions

One XPM tool in the PERFORM functionality was not implemented in this feature due to lack of an equivalent reporting mechanism for the SPM. It is the Other Swerrs measurement category (USAGE tool).

This feature does not implement the functionality of several SPM tools because no SPM equivalent exists. Furthermore some measurements made by XPM tools are not compatible with the SPM architechture and therefore are not logical to implement on the SPM. These tools are the following:

- LCM Block message measurement (USAGE tool)
- INTLRS (PERFORM subtool for DTCI)

AX1402
SPERFORM Tool Enhancement for SPM (end)

While the the SPERFORM tools runs, if you perform a switch of activity (SWACT) or if the SPM goes out-of-service, the tool stops with a reason of “SPM_DROP."

Interactions

AX1402 has no functionality interactions.

Datafill

AX1402 does not affect data schema tables or office parameters.

Service orders

AX1402 does not affect SERVORD.

Operational measurements

AX1402 does not affect operational measurements.

Logs

This feature updates the SPRF 670 log for the SPMACT subtool to reflect the name change of SMACT to SPMACT.

This feature also updates the SPRF 671 log for the SPUSAGE subtool to reflect the name change, and to include the four new SPUSAGE fields into the log report.

User interface

AX1402 changes the following directories:

- SPERFORM. Changes subcommands SMACT and SUSAGE
- SMACT. Changes directory name to SPMACT
- SUSAGE. Changes directory name to SPUSAGE

Billing

AX1402 does not affect billing.

4 Feature descriptions for SP12

This section contains the feature descriptions for the SPM12 release of the Spectrum Peripheral Module (SPM). Feature information is intended to help prepare for insertion of a new software load, or to understand elements of the software. Operating company personnel involved in planning and engineering or in maintenance activites will find this information useful.

These feature descriptions provide information about SPM features. Each feature description contains the following sections:

- Functionality name
- Description
- Hardware requirements
- Limitations and restrictions
- Interactions
- Datafill
- Service orders
- Operational measurements
- Logs
- User interface
- Billing

AF7583
SPM PRI platform maintenance software

Feature name

SPM PRI platform maintenance software

Description

This feature provides the operations, administration, maintenance, and provisioning (OAM&P) capabilities in the Computing Module (CM) to support a Data Link Controller (DLC) Resource Module (RM).

This feature has been divided into the following pieces:

- DLC RM device registration
- DLC RM device provisioning
- Data Download
- DLC RM device MAPs/CI design
- DLC device alarms
- DLC device logs

This feature closely follows similar development for ATM support. See the chapter for feature AF7378, “SPM ATM RM CM device maintenance software.”

Hardware requirements

SPM PRI platform maintenance software has no hardware requirements.

Limitations and restrictions

SPM PRI platform maintenance software has no limitations or restrictions.

Datafill

SPM PRI platform maintenance software makes the following changes to provisioning database datafill:

- Table MNCKTPAK - added “DLC” to the range of valid circuit paks and “NTLX72AA” to the range of valid PEC codes.
- Table MNPRTGRP - added “DLC_GRP” to the range of valid PROTGRPS.

Service orders

SPM PRI platform maintenance software does not affect SERVORD.

AF7583
SPM PRI platform maintenance software (continued)

Operational measurements

SPM PRI platform maintenance software does not affect operational measurements.

Logs

SPM PRI platform maintenance software does not change logs.

This feature uses existing SPM logs to report on the condition of a DLC RM device. These logs include the following:

- SPM300 - generated when a device fault occurs.
- SPM331 - generated when a device has a protection switch failure.
- SPM500 - generated when a device changes states.
- SPM630 - generated when a successful sparing event has occurred.

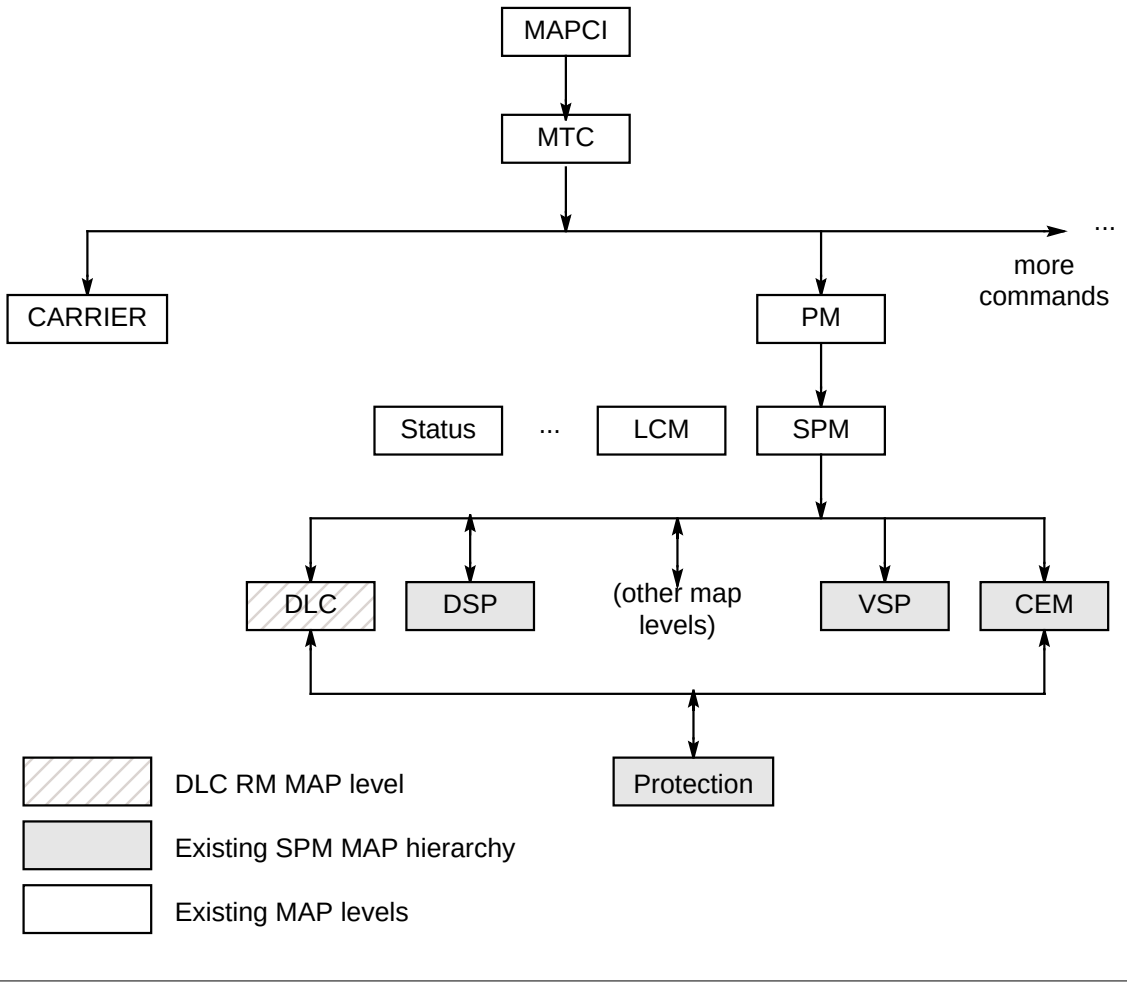
User interface

DLC device MAP structure

The ATM RM MAP structure conforms to the standard MAP interface used for the existing OC3, DSP, ATM, and VSP RM HMI.

Currently the SPM user-interface is based on the DMS MAPCI interface. The SPM MAP hierarchy, including the new DLC RM MAP level, is shown in the following figure.

AF7583
SPM PRI platform maintenance software (continued)



Note: This figure is not an exhaustive set of MAP levels. Its intent is merely to show the placement of the DLC MAP level.

This SPM hierarchy allows the user to post one or more SPMs from the PM level and to SELECT a given RM from the posted SPM level. However, changes were required to add the new DLC RM sublevel, which is accessed from the posted SPM level with the SELECT command.

AF7583
SPM PRI platform maintenance software (continued)

Using the Select command from the SPM MAP level

The SELECT command changes only by adding the DLC to the set of supported RMs. The following is the map display of the SELECT command:

```
>MAPCI nodisp;mtc;pm;post spm0;
MAPCI:
MTC:
PM:
POST:
POST:
>help select
SELECT: Post specified CPKs for maintenance
Parms: [<All CPKs> {AllCPKs}]
       [<CPK Type>... {CEM [<All> {All}]
                           [<UNIT>... {0 to 1}],
                      {OC3 [<All> {All}]
                           [<UNIT>... {0 to 1}],
                      {DSP [<All> {All}]
                           [<UNIT>... {0 to 27}],
                      {VSP [<All> {All}]
                           [<UNIT>... {0 to 27}],
                      {ATM [<All> {All}]
                           [<UNIT>... {0 to 1}],
                      {DLC [<All> {All}]
                           [<UNIT>... {0 to 1}]}]
       [<CPK State>... {SysB,
                        ManB,
                        OffL,
                        CBsy,
                        ISTb,
                        InSv}]
```

The SPM screen gives a summary of an entire SPM. It shows a table consisting of all the modules in an SPM, their slot numbers, activity status (A: active or I: inactive), and service state (such as Insv). Once in SPM screen, the user can ‘select’ one or more devices. The following figure shows the proposed screen layout for displaying the new DLC RM in the SPM node MAP.

AF7583
SPM PRI platform maintenance software (continued)

```
123456789012345678901234567890123456789012345678901234567890123456789012345678
  CM    MSN    IOD    NET    PM    CCS    LNS      Trks       Ext       APPL
   .      .      .      .      .      .      .         .          .          .

DLC                              SysB      ManB   OffL    Cbsy   ISTb    InSv
0 Quit              PM             0         0      0       0      0       1
2                   SPM            0         0      0       0      0       1
3 Listset             DLC          0         0      0       0      0       1
4
5                SPM  5    DLC 0     Act    INSV
6 Tst
7 Bsy            Loc : Row A   FrPos 13   ShPos  20  ShId  1 Slot  22   Prot Grp  :  1
8 RTS            Default Load: Loadyy                                   Prot Role : Working
9 Offl
10 LoadMod
11
12 Next
13 Select_
14 Querymod
15 ListAlm
16 Prot
17
18

   ADMIN
Time   14:12>
```

Commands

The follwing table lists the purpose of the twelve commands available on the DLC MAP display.

(Sheet 1 of 3)

Function	Command	Command Number	Description
listing a post set	ListSet	3	This command provides a list of the posted entities in a post set.
quit	Quit	0	This command enables the user to quit out of the current MAP level.
testing	Tst	6	This command enables the user to manually run In-Service (InSv) and Out-of-Service (OOS) diagnostics on the selected device.

AF7583
SPM PRI platform maintenance software (continued)

(Sheet 2 of 3)

Function	Command	Command Number	Description
busying	Bsy	7	This command enables the user to manually place the selected device into an OSS state called manually busy (MANB).
return to service	Rts	8	This command enables the user to manually bring the selected device from an OOS state (MOOS or SOOS) back to a ready or InSv state.
offline	OffL	9	This command enables the user to set the selected device into an OFF LINE state.
loading	LoadMod	10	This command enables the user to manually download a specific loadfile to the selected device.
scanning through a set	Next	12	This command enables the user to select the “next” RM in the postset. ***Note:*** If no more RMs are available in the posted set, a message displays and returns to the SPM level.
selecting an RM	Select_	13	This command enables you to select another device of any type configured to this SPM node.
info query	QueryMod	14	This command enables the user to manually query local/CM information on the selected device.

AF7583
SPM PRI platform maintenance software (end)

(Sheet 3 of 3)

Function	Command	Command Number	Description
listing alarms	ListAlm	15	This command lists all alarms that are set against the posted RM. If there are no alarms set, it indicates such for each possible alarm severity. If no alarms sets are available, the command indicates this for each possible alarm severity.
protection switching	Prot	16	This command enables the user to enter a new map level. The new map level allows the user to switch activity between the working and protection SPM RMs.

For additional information on these commands, see the *Spectrum Peripheral Module Commands Reference Manual*, 297-1771-819.

Billing

SPM PRI platform maintenance does not generate billing records.

AF7786
SPM PRI trunk maintenance development

Feature name

SPM PRI trunk maintenance development

Description

The Spectrum peripheral module (SPM) is a multi-application platform that provides an OC-3 interface to the DMS SuperNode. This feature offers the ability to perform trunk maintenance and provisionong of primary rate interfaces (PRIs) on an SPM node.

Hardware requirements

The SPM PRI trunk maintenance development feature has no hardware requirements.

Limitations and restrictions

These limitations and restrictions apply to the SPM PRI trunk maintenance development feature:

- This feature supports the NTNA Protocol variant for the UCS market on the DMS250 switch.
- The maximum number of PRI D-Channels that can be provisioned on the SPM node is limited to 84.

Interactions

The SPM PRI trunk maintenance development feature interacts with the following subsystems: CallP, Carrier Maintenance, Speech Link Maintenance, Trunk Maintenance, Node Maintenance, and DDM.

Datafill

The SPM PRI trunk maintenance development feature introduces a new table, MNPRIID. This table provisions the PRI interface ID against the carrier listed in table MNHSCARR. Only the SPM node type uses this table.

The SPM PRI trunk maintenance development feature does not add, modify, or delete any office parameters.

Service orders

The SPM PRI trunk maintenance development feature does not change the Service Order System (SERVORD).

AF7786
SPM PRI trunk maintenance development (end)

Operational measurements

The SPM PRI trunk maintenance development feature does not change operational measurements (OM).

Logs

The SPM PRI trunk maintenance development feature introduces the following new logs:

- SPM705 - generated when the dynamic update of table ISDNPROT fails.
- SPM706 - generated when an audit updates table ISDNPROT
- SPM707 - generated when the dynamic update of table ISDNPARM fails
- SPM708 - generated when an audit updates table ISDNPARM

User interface

SPM PRI trunk maintenance development does not change the user interface.

Billing

The SPM PRI trunk maintenance development feature does not generate new billing records or modify existing billing record formats.

AF7810
SPM PRI DLC Device Maintenance

Functionality name

Spectrum Peripheral Module Primary Rate Interface Data Link Controller device maintenance.

Description

Feature AF7895 addresses IEC requirements to provide the User Interface area of Spectrum software with “XPM equivalent functionality". The feature satisfies these requirements by enhancing the QueryPM command in the SPM menu level.

Specifically, this feature adds a new parameter, called OPTION, to the QueryPM command. This parameter has two possible values: FLT and FILES. Details about the new parameter are given later in this document. Information about another new option, DIAGHIST, can be found in feature AF7896 - IEC QUERYPM DIAGHIST.

To comply with the Spectrum User Interface requirements stated in the *DMS-250 Feature Specifications Document for IEC SP11 Content, this feature adds the following options to the QueryPM command in the SPM menu level.*

- FLTThe QUERYPM FLT command provides a list of devices, on the posted SPM, that are currently reporting a fault condition.
- FILESQUERYPM FILES displays the default load names and the currently running loads in all devices on the posted SPM. It also displays the Flash Loader's load file for each device that supports Flash Loader functionality.

Hardware requirements

AF7810 has no hardware requirements.

Limitations and restrictions

This feature is part of the Spectrum product. The new functionality added by this feature is valid only for offices that contain SPM software and hardware. AF7810 has no limitations or restrictions.

Interactions

Feature AF7895 has some interaction with table control, and makes use of the standard SPM interfaces that allow communication between the User Interface software and the actual SPM hardware devices. However, this feature does not alter any of the interfaces; it merely enhances the QueryPM command to allow

AF7810
SPM PRI DLC Device Maintenance (end)

for retrieval of additional information from table control and the SPM devices.AF7810 has no functionality interactions.

The following paragraphs describe the interactions between AF7810 and other functionalities.

Datafill

AF7810 does not affect data schema tables or office parameters.

Service orders

AF7810 does not affect SERVORD.

Operational measurements

AF7810 does not affect operational measurements.

Logs

AF7810 does not affect Logs.

User interface

This feature adds functionality, in the form of two new options (FLT and FILES), to the QueryPM command of the SPM menu level; it does not affect any other MM components.AF7810 does not change the user interface.

Billing

AF7810AF7810 does not affect billing.

AX1336
SPM ECAN PRI Support in Shared Layer

Functionality name

Spectrum Peripheral module (SPM) Echo Canceller (ECAN) Primary Rate Interface (PRI) Support in Shared Layer.

Description

The purpose of this feature is to implement Shared Layer (SHR11) changes required to support CM provisioning of SPM integrated echo cancellers for PRI trunks. Since an option to table TRKSGRP (for PRI trunks only) was already added in feature AD9501, this feature only makes the option visible.

This feature uses information and code from feature AD9501 and adds code that makes option SPMECIDX in table TRKSGRP visible to the user. This feature also adds a cross reference check to make sure that the index specified in table TRKSGRP exists in table SPMECAN for PRI trunks.

The SPM architecture is required to support three standard network protocols, SS7, PTS and PRI. In response to SS7 provisioning issues, the CSP06 feature AD8529 added a new table, called SPMECAN. This table allows SPM echo canceller control parameters (a total of 12) to be datafilled inside the CM. Feature AD8529 also added a new option to table TRKSGRP for SS7 trunks, called SPMECIDX. This option is used to associate a tuple in table SPMECAN with an SS7 trunk sub-group.

For PTS provisioning, the CSP07 feature AD9500 added a new option to table TRKSGRP for PTS trunks called SPMECIDX. This option is used to associate a tuple in table SPMECAN with a PTS trunk sub-group.

For PRI trunks, AD9501 added a new option in table TRKSGRP for PRI trunks, called SPMECIDX. The SPMECIDX option is represented as an integer with a defined range from 0 to 255. However AD9501 did not make the option visible to the user (craftperson). This feature makes the option visible.

Hardware requirements

AX1336 has no hardware requirements.

Limitations and restrictions

AX1336 has no limitations or restrictions.

Interactions

AX1336 has no functionality interactions.

AX1336
SPM ECAN PRI Support in Shared Layer (end)

Datafill

AX1336 creates new option SPMECIDX in table TRKSGRP.

Service orders

AX1336 does not affect SERVORD.

Operational measurements

AX1336 does not affect operational measurements.

Logs

AX1336 does not affect Logs.

User interface

AX1336 does not change the user interface.

Billing

AX1336 does not affect billing.

59007841
SPM node table and MAP support for MSH

Feature name

SPM node table and MAP support for multi-service hub (MSH)

Description

Nortel Network's Succession Network initiative is based on the SPM. Succession Networks offer an architecture called a Multi-service Hub (MSH) consisting of three classes of SPM:

- DMS Call Processing (DMSCP) class. An SPM of this class connects to a DMS ENET and functions as a DMS call processing peripheral. A DMSCP-class SPM offers all the functionality of a legacy SPM configuration prior to the Succession Networks initiative.
- Succession Media Gateway 4000 Distributed Access (SMG4KDA) class. An SPM of this class, which communicates with the DMS computing module via an ATM network, serves as a distributed access point to DMS call processing capabilities. An SPM of this class does not connect to the ENET.
- Inter-working (IW) class. An SPM of this class connects to a DMS ENET and functions as a inter-working bridge between DMS call processing peripherals and SMG4KDA SPM .

This feature provides enhancements to existing SPM table control and MAP software to support the IW- and SMG4kDA-class SPMs in the DMS computing module.

Hardware requirements

IW- and SMG4KDA-class SPMs use a new backplane which supports four high-speed slots. The SHPEC of the new backplane is NTLX51BA.

Limitations and restrictions

The limitations and restrictions that follow apply to this feature, SPM node table and MAP support for MSH:

- SMG4KDA SPM circuit pack datafill can not be entered in table MNCKTPAK. It must be done on the Element Manager.
- Only CEM and ATM circuit packs are allowed to be datafilled on an IW SPM (as IW SPM does not require any other circuit pack types to function.)
- At the PM MAP level, you cannot POST SPMs by class name. Creating post sets by SPM class variant can be done by the new POSTCLS command at SPM MAP level.

59007841
SPM node table and MAP support for MSH (continued)

Interactions

This feature, SPM node table and MAP support for MSH, changes the tuple layout in table MNNODE to add support for SPM classes constituting the Succession Network.

Datafill

This feature, SPM node table and MAP support for MSH, changes tables MNNODE, MNSHELF, and MNCKTPAK.

This feature changes table MNNODE to support MSH. The new CLASS field indicates the SPM's node class and therefore its role in Succession Networks. New refinements and values are now available for the IW and SMG4KDA node classes.

Changes to table MNSHELF include a new value for the FRTYPE field and new values for the FRPEC and SHPEC fields. These PEC codes are for the new frame and shelf assemblies for the IW and SMG4KDA node classes.

In table MNCKTPAK, there are new circuit pack datafill restrictions. These restrictions enforce provisioning rules for card provisioning in the new IA and SMG4KDA node classes.

Service orders

SPM node table and MAP support for MSH does not change the Service Order System (SERVORD).

Operational measurements

SPM node table and MAP support for MSH does not change operational measurements (OMs).

Logs

SPM node table and MAP support for MSH does not change logs.

User interface

SPM node table and MAP support for MSH modifies several MAP displays. Changes include:

- The SPMDIR MAP directory now contains a new command, POSTCLS.
- This feature modifies the LISTRES, TRNSL, SPERFORM, UPGRADE, QUERYPM, LISTALM, and SELECT commands on the SPMDIR MAP directory when the posted SPM is an SMG4KDA node. These commands are not applicable to SMG4KDA nodes, so the MAP display now prints an

error message when you attempt these commands. These commands are applicable, and function as usual, for IW or DMSCP node types.

Billing

SPM node table and MAP support for MSH does not generate billing records or changes.

59007933
SPRI NI-2 Development

Feature name

SPRI NI-2 Development

Description

SPRI NI-2 Development provides integrated services digital network primary rate interface (ISDN PRI) functionality on the Spectrum Peripheral Module (SPM) for the local exchange carrier (LEC) DMS-100 market. This feature provides support for ISDN PRI on an SPM for the DMS-100 switch based on the NI-2 protocols.

SPRI NI-2 provides the following functionalities:

- restart procedures
- restart and service message collisions
- link recovery enhancements
- backup D-channel and nonfacility associated signaling (NFAS)
- B- and D-channel audit and state mismatch detection
- location indicators
- operational measurements
- logs
- trunk conversion

Hardware requirements

SPRI NI-2 Development has no hardware requirements.

Limitations and restrictions

SPRI NI-2 Development has no limitations or restrictions.

Interactions

SPRI NI-2 Development does not interact with other functionalities.

Datafill

SPRI NI-2 Development does not change data schema tables or office parameters.

59007933
SPRI NI-2 Development (end)

Service orders

SPRI NI-2 Development does not change the Service Order System (SERVORD).

Operational measurements

Operational measurements (OM) are a useful surveillance tool for PRI. The OMs provide information that is used for real-time maintenance activities. The following OM groups are associated with ISDN-PRI:

- DSICARR
- PM/SPM
- PRADCHL2
- PRAFAC
- TRK

Except for OM group PRADCHL2, feature SPRI NI-2 Development does not affect the format of these OMs. In OM group PRADCHL2, SPRI NI-2 Development expands key field EXTERNAL_DCH_CKT by one digit to allow for the larger circuit number range required by SPM.

Logs

SPRI NI-2 Development affects the following logs:

- ISDN401
- ISDN402

User interface

SPRI NI-2 Development does not change the user interface.

Billing

SPRI NI-2 Development does not generate billing records or changes.

59008485
SPERFORM support for ECAN

Feature name

SPERFORM support for ECAN

Description

SPERFORM support for ECAN provides Phase 3 capabilities for the SPM performance monitoring tool.

The SPERFORM tool provides statistical analysis on an operating peripheral. The tool gathers performance information about processor occupancy, call-processing delays and data block usage, and call-processing events within the peripheral.

Phases of development leading to the current SPERFORM tool include the following:

- Phase 1 - development of partial equivalency to the XPERFORM tool designed for the XPM peripheral
- Phase 2 - modification of SPERFORM architecture to make the tool available at the RM level of the MAP command interface in addition to the existing SPM level. Phase 2 also provides integrity and parity measurements available in the SPUSAGE subtool.
- Phase 3 - creates an RMACT level in the MAP command interface. Development also includes three new fields (ECAN, COT, and TONE SYN) the the SPMACT subtool display of SPERFORM at the SPM level. Enhancements also exist to the SPUSAGE SPM subtool to include three new fields (ECAN DENY, COT DENY, and TONE SYN DENY).

Hardware requirements

SPERFORM support for ECAN has no hardware requirements.

59008485
SPERFORM support for ECAN (continued)

Limitations and restrictions

The limitations and restrictions that follow apply to SPERFORM support for ECAN: are as follows:

- This feature does not implement the "other swerrs" measurement category included in the XPM PERFORM tool because of a loack of equivalent reporting mechanism in the SPM.
- This feature does not implement either of the following capabilities because no SPM equivalent capability exists:
  - — LCM block message measurement in the USAGE tool
  - — INTLRS in the PERFORM subtool for DTCI interfaces

Interactions

SPERFORM support for ECAN does not interact with other functionalities.

Datafill

SPERFORM support for ECAN does not change data schema tables or office parameters.

Service orders

SPERFORM support for ECAN does not change the Service Order System (SERVORD).

Operational measurements

SPERFORM support for ECAN does not change operational measurements (OM).

Logs

SPERFORM support for ECAN modifies the following log reports:

- SPRF670 - adds the new fields ECAN, ECANAVAIL, ECANHIGH, COT, COTAVAIL, COTHIGH, TONE, TONEAVAIL, and TONEHIGH.
- SPRF671 - adds the new fields ECAN_DNY, COT_DNY, and TONE_DNY

You must start these two logs from within the SPERFORM process.

User interface

SPERFORM support for ECAN introduces the RMACT directory level of the MAP command interface. Beginning with SP12, SPERFORM you may

59008485
SPERFORM support for ECAN (end)

access the SPERFORM tool from either the SPM or the RM level (if that RM supports the SPERFORM tool).

This feature adds the three fields ECAN, COT, and TONE to the SPMACT MAP display. This feature also adds the three new fields ECAN_DNY, COT_DNY, and TONE_DENY to the SPUSAGE map display.

Billing

SPERFORM support for ECAN does not generate billing records or changes.

59008910
SPM DS512 Message Channel Reconfiguration

Feature name

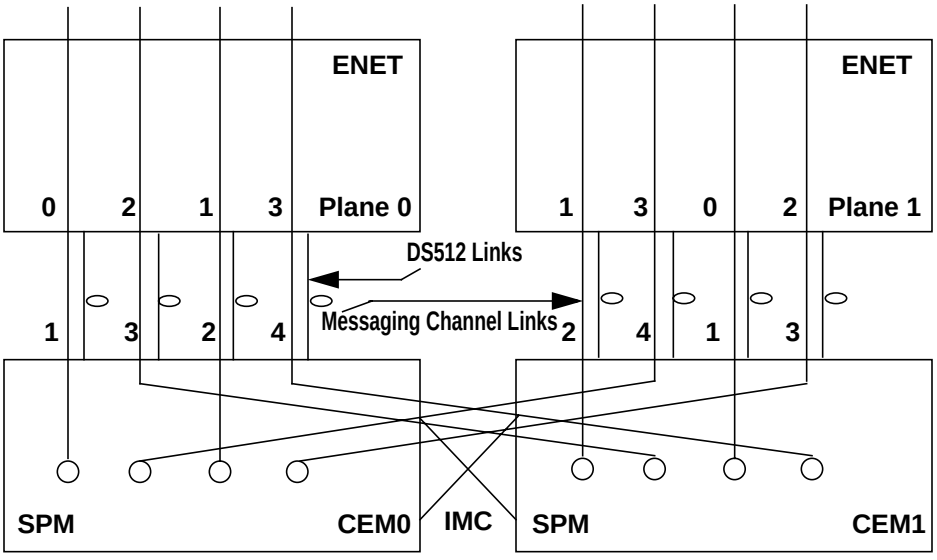
SPM DS512 Message Channel Reconfiguration

Description

Prior to SP12, a dual shelf configuration was necessary to avoid a possible isolation condition in a single shelf configuration. In a single shelf configuration, if either enhanced network (ENET) plane had a major failure or was taken out of shelf, the common equipment module (CEM) connected to it was isolated from the CM with regard to messaging. The isolation would result in a CEM switch of activity (SWACT) to restore service. To avoid isolation and the resultant SWACT, beginning with SP01, Nortel Networks supported only the dual shelf configuration in the field.

Spectrum Peripheral Module (SPM) DS512 Message Channel Reconfiguration allows a single shelf ENET configuration by having each CEM send messages through both ENET planes. When one ENET shelf has a major failure or is taken out of shelf, the CEM in the same plane is able to send messages through the other ENET plane. As a result, a CEM SWACT is not necessary. Figure Single shelf ENET messaging channel link configuration shows the SP12 single shelf ENET messaging channel link reconfiguration.

Single shelf ENET messaging channel link configuration



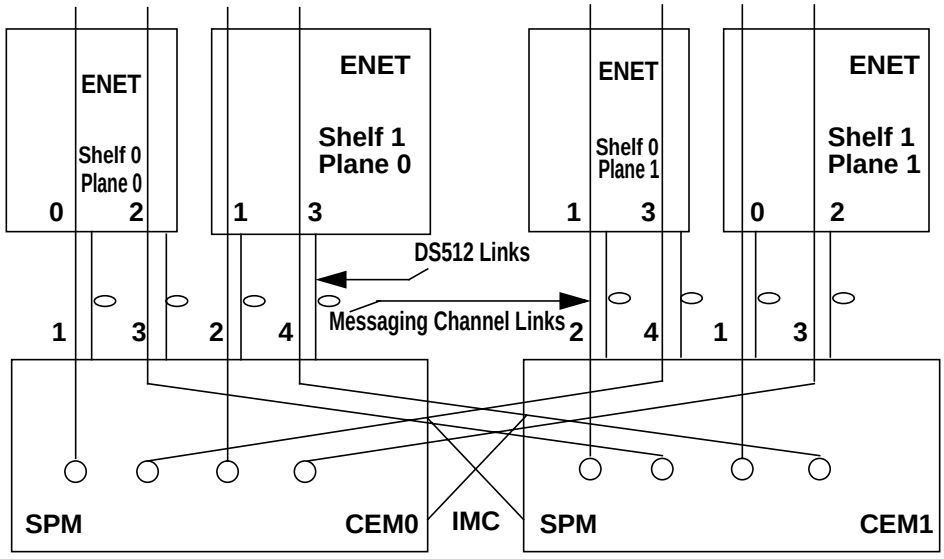
59008910
SPM DS512 Message Channel Reconfiguration (continued)

The single shelf ENET messaging channel link reconfiguration provides the following benefits:

- reduces cost of new installations because of lower total ENET unit cost
- uses two shelves instead of four shelves for the ENET
  - — potentially reduces frame cost
  - — preserves shelving capacity
  - — reduces the possibility of outages by reducing the need to move existing cards

As seen in Figure Single shelf ENET messaging channel link configuration, two message channel links from each ENET plane are crossed over through existing CEM backplane connections. This same reconfiguration can be used in existing dual shelf ENET messaging channel link configurations, as seen in Figure Dual shelf ENET messaging channel link configuration. While the dual shelf reconfiguration eliminates the CEM to CM isolation, all new installations will be single shelf ENET configurations.

Dual shelf ENET messaging channel link configuration



Hardware requirements

Reconfigure the DS512 fiber links between the ENET planes and SPM CEM planes for single shelf or dual shelf ENET configurations.

59008910
SPM DS512 Message Channel Reconfiguration (continued)

Upgrade the CEM to NTLX82AA.

Limitations and restrictions

Reconfigure the DS512 fiber links between the ENET planes and SPM CEM planes for single shelf or dual shelf ENET configurations.

Upgrade the CEM to NTLX82AA.

If one of the CEM planes has a major hardware failure or is taken out of shelf, the messaging channels that had been passing through the CEM become unavailable.

SPM DS512 Message Channel Reconfiguration creates the possibility of a 50% loss in messaging capacity if

- one of the ENET planes has a major failure
- one of the ENET planes is taken out of shelf

Preventing CEM isolation from the CM offsets the potential 50% loss in messaging capacity.

Interactions

The changes needed by SPM DS512 Message Channel Reconfiguration are implemented in both the Shared (SHR12) and SPM (SP12) design release units (DRU). Each activity depends on completion of the other activity for the feature to work correctly.

Datafill

SPM DS512 Message Channel Reconfiguration adds a new table, XOVERSTA. There is one tuple for each SPM node in the office. Each tuple consists of an index key equal to the node number, followed by a yes-or-no flag. If the flag is Y, the message channels for the SPM are configured in the crossover configuration. If the flag is N, the message channels are configured in the original, straight down configuration. The table cannot be edited by the customer.

Service orders

SPM DS512 Message Channel Reconfiguration does not change the Service Order System (SERVORD).

59008910
SPM DS512 Message Channel Reconfiguration (end)

Operational measurements

SPM DS512 Message Channel Reconfiguration does not change operational measurements (OM).

Logs

SPM DS512 Message Channel Reconfiguration does not change logs.

User interface

SPM DS512 Message Channel Reconfiguration introduces a new CI command, SPMXMSG. Use this command to set and check for SPM message channel crossover. See the *DMS-SPM Commands Reference Manual* for more information.

Billing

SPM DS512 Message Channel Reconfiguration does not generate billing records or changes.

59009203
PUMA: Support for SPM Maintenance/Emergency Release

Feature name

PUMA: Support for SPM Maintenance/Emergency Release

Description

PUMA: Support for SPM Maintenance/Emergency Releases provides the following enhancements to the PMUPGRADE and SWUPGRADE PM tools:

- support the maintenance and emergency NA-100 Spectrum Peripheral Module (SPM) software delivery processes
- support common equipment module (CEM) patching as part of the NA-100 SPM software delivery processes

PUMA: Support for SPM Maintenance/Emergency Releases enhances a milestone peripheral module (PM) upgrade in the following ways:

- The system performs a secondary filecopy on the CEM patches as well as the SPM loads.
- The system patches the CEMs as well as loads the SPMs during a milestone PM upgrade.

PUMA: Support for SPM Maintenance/Emergency Releases enhances each maintenance or emergency SPM upgrade in the following ways:

- The system performs a primary filecopy on the SPM loads and CEM patches.
- The system generates an SPM upgrade plan.
- The system loads the SPMs and patches the CEMs as part of the SPM upgrade.

Hardware requirements

PUMA: Support for SPM Maintenance/Emergency Release has no hardware requirements.

59009203
PUMA: Support for SPM Maintenance/Emergency Release (continued)

Limitations and restrictions

The limitations and restrictions that follow apply to PUMA: Support for SPM Maintenance/Emergency Release:

- Feature 59009203 provides support for the maintenance and emergency NA-100 SPM software delivery processes. It does not provide support for any other software delivery processes.
- Feature 59009203 provides support for CEM and resource module (RM) patches during the filecopy operation, and for CEM patching during the automated SPM loading. It does not provide support for RM patching during the automated SPM loading, PAL-style of patching after loading, or imaging after patching.
- You cannot use PANTHER for a maintenance or emergency software upgrade and a milestone software upgrade at the same time. The milestone software upgrade must complete before a maintenance or emergency software upgrade begins.
- The PMUPGRADE tool supports the delivery of maintenance and emergency SPM software to the DMS switch by
  - — system load module (SLM) cartridge tape
  - — file transfer protocol (FTP) electronic software delivery from a drop-box

Interactions

PUMA: Support for SPM Maintenance/Emergency Release interacts with the following features:

- AR1305, Product Upgrade Manager
- AR1712, PANTHER: Peripheral Upgrade Planning
- AR1713, PUMA: Peripheral Upgrade Framework
- AR2330, PUMA: Peripheral Upgrade Functions in the SHR Layer
- SD0910, PUMA: Electronic Software Delivery
- SD1150, PUMA: SPM Software Update Functions
- SD1160, PUMA: Support for SPM Software
- 59009208, PUMA: SPM Upgrade Speedup

Datafill

PUMA: Support for SPM Maintenance/Emergency Release does not change data schema tables or office parameters.

59009203
PUMA: Support for SPM Maintenance/Emergency Release (end)

Service orders

PUMA: Support for SPM Maintenance/Emergency Release does not change the Service Order System (SERVORD).

Operational measurements

PUMA: Support for SPM Maintenance/Emergency Release does not change operational measurements (OM).

Logs

PUMA: Support for SPM Maintenance/Emergency Release does not change logs.

User interface

PUMA: Support SPM Maintenance/Emergency Releases changes the nonmenu SET command in directory PMUPGDIR.

Changes to the SET command introduce a new SPM patch destination volume. The changes allow operating company personnel to copy SPM patches to volumes separate from XMS-based peripheral module (XPM) and integrated services node (ISN) patches. The system checks and copies both CEM and RM patches.

Introduce the SPM patch destination volume by typing

```
>SET SPMPATCH <volume_name>
```

and pressing the Enter key.

where

volume_name
is the new SPM patch destination volume

Example

59009208
PUMA: SPM Upgrade Speedup

Feature name

PUMA: SPM Upgrade Speedup

Description

Feature 59009208, PUMA: SPM Upgrade Speedup reduces total loading time during an automated Spectrum Peripheral Module (SPM) upgrade by at least 60 percent. This feature accomplishes the time savings by implementing concurrent loading for both common equipment module (CEM) and resource module (RM) circuit packs.

Feature 59009208, PUMA: SPM Upgrade Speedup introduces the following two types of concurrent loading:

- in-service loading RMs in up to four different protection groups concurrently

  An example is loading SPM 0 OC3 0 and SPM 1 OC3 0 at the same time.

- in-service loading up to four CEMs on four different SPMs concurrently

  An example is in-service loading SPM 0 CEM 0 and SPM 1 CEM 0 at the same time.

Hardware requirements

PUMA: SPM Upgrade Speedup has no hardware requirements.

Limitations and restrictions

The limitations and restrictions that follow apply to PUMA: SPM Upgrade Speedup:

- PANTHER limited to concurrent loading of four in-service RMs
- PANTHER limited to concurrent loading of four in-service CEMs

Interactions

PUMA: SPM Upgrade Speedup interacts with the following features:

- AR1305, Product Upgrade Manager
- AR1712, PUMA: Peripheral Upgrade Planning
- AR1713, PUMA: Peripheral Upgrade Framework
- AR2330, PUMA: Peripheral Upgrade Functions in the SHR Layer
- SD1160, PUMA: Support for SPM Software Delivery
- SD1150, PUMA: SPM Software Update Functions

59009208
PUMA: SPM Upgrade Speedup (end)

Datafill

PUMA: SPM Upgrade Speedup does not change data schema tables or office parameters.

Service orders

PUMA: SPM Upgrade Speedup does not change the Service Order System (SERVORD).

Operational measurements

PUMA: SPM Upgrade Speedup does not change operational measurements (OM).

Logs

PUMA: SPM Upgrade Speedup does not change logs.

User interface

PUMA: SPM Upgrade Speedup does not change the user interface.

Billing

PUMA: SPM Upgrade Speedup does not generate billing records or changes.

59011371
ENET REX Objection for SPM

Feature name

ENET REX Objection for SPM

Description

ENET REX Objection for SPM modifies the routine exercise (REX) enhanced network (ENET) test rejection criteria. The feature adds new isolation tests to existing peripheral module (PM) and XMS-based peripheral module (XPM) isolation checks. The modified REX test ensures that the REX test does not execute on an ENET plane when doing so causes isolation of a Spectrum Peripheral Module (SPM) node. The shelf not being tested must remain inservice and at least one inservice DS512 link must connect to the active common equipment module (CEM). ENET REX Objection for SPM ensures against SPM node isolation in both single shelf and dual shelf ENET configurations.

ENET REX Objection for SPM does not completely abort a REX test. A REX test on an ENET plane executes on each ENET shelf in sequence. If the REX test cannot execute on a shelf, the test skips that shelf and continues testing on the next shelf in the sequence. After the REX test tries to run on all shelves, the test cycles through the previously rejected shelves. The REX test runs on only those shelves skipped because of a higher priority event. The REX test completes up to three full cycles before aborting.

Hardware requirements

You must use ENET REX Objection for SPM in the SPM DS512 crossover configuration and the dual shelf ENET configuration.

Limitations and restrictions

ENET REX Objection for SPM checks for node isolation only during the time that a REX test is preparing to execute.

Interactions

ENET REX Objection for SPM supports both the dual shelf and the single shelf ENET configuration.

Datafill

ENET REX Objection for SPM does not change data schema tables or office parameters.

59011371
ENET REX Objection for SPM (end)

Service orders

ENET REX Objection for SPM does not change the Service Order System (SERVORD).

Operational measurements

ENET REX Objection for SPM does not change operational measurements (OM).

Logs

Log ENET510 generates when a REX test is not run for a particular reason. ENET REX Objection for SPM prevents REX from running when the links of an ENET shelf are not in service. The ENET510 log generates with the existing reason, “inappropriate_pslink_status".

User interface

ENET REX Objection for SPM does not change the user interface.

Billing

ENET REX Objection for SPM does not generate billing records or changes.

60006714
SPM ECMON Enhancements Phase 4

Feature name

SPM ECMON Enhancements Phase 4

Description

Echo canceller monitor command interpreter (CI) command for Spectrum Peripheral Module (SPM ECMON) monitors echo cancellers (ECAN) on the SPM. SPM ECMON Enhancements Phase 4 improves the performance monitoring capabilities of SPM ECMON. This feature enhances performance monitoring capabilities by the CI command SPMECMON on the core.

The following features provide existing phase 1, 2, and 3 functionality of the SPM ECMON:

- AD9617
- AX1217
- AX1400

SPM ECMON Enhancements Phase 4 provides the following additional functionality:

- shows the current control parameters and current state of the echo canceller
- provides SPM ECMON continuous monitoring on a range of trunk members or resource modules (RM)
- based on capacity testing, increases the capability from monitoring 100 trunk members or 100 ECANS at a time to 600 trunk members or 320 ECANS at a time

Hardware requirements

SPM ECMON Enhancements Phase 4 has no hardware requirements.

60006714
SPM ECMON Enhancements Phase 4 (continued)

Limitations and restrictions

The limitations and restrictions that follow apply to SPM ECMON Enhancements Phase 4:

- There is a limit of 100 on the size of the range for the commands that monitor a range of trunk members or resources.
- ECAN information is lost if both the following conditions are met.
  - — continuous monitoring is enabled with the performance data directed to the MAP display or a log
  - — the user logs out of the MAP or suppresses the log
- There is a limit on the number of selections of RMs, resource numbers (RN), and trunk members for each DMS-250 that can be monitored at one time.

Interactions

Feature 59009972, SPM ECMON Enhancements, provides all SPM functionality required to support SPM ECMON Enhancements Phase 4.

Datafill

SPM ECMON Enhancements Phase 4 does not change data schema tables or office parameters.

Service orders

SPM ECMON Enhancements Phase 4 does not change the Service Order System (SERVORD).

Operational measurements

SPM ECMON Enhancements Phase 4 does not change operational measurements (OM).

Logs

SPM ECMON Enhancements Phase 4 modifies the following logs:

- SPM660
- SPM661

60006714
SPM ECMON Enhancements Phase 4 (end)

User interface

SPM ECMON Enhancements Phase 4 improves the SPMECMON CI command to allow the following additional functions:

- show the current control parameters and current state of echo canceller
- enable and disable continuous echo canceller performance monitoring for echo canceller resources and trunk members on a range basis
- based on capacity testing, increase the capability from monitoring 100 trunk members or 100 ECANS at a time to 600 trunk members or 320 ECANS at a time

Billing

SPM ECMON Enhancements Phase 4 does not generate billing records or changes.

5 Feature descriptions for SP14

This section contains the feature descriptions for the SPM14 release of the Spectrum Peripheral Module (SPM). Feature information is intended to help prepare for insertion of a new software load, or to understand elements of the software. Operating company personnel involved in planning and engineering or in maintenance activites will find this information useful.

These feature descriptions provide information about SPM features. Each feature description contains the following sections:

- Functionality name
- Description
- Hardware requirements
- Limitations and restrictions
- Interactions
- Datafill
- Service orders
- Operational measurements
- Logs
- User interface
- Billing

39005966
Bulk HMI Commands for CEM

Feature name

Bulk HMI Commands for Common Equipment Module (CEM)

Description

This feature is one of several that improve the performance and robustness of offices containing 18 or more SPM nodes.

This feature introduces four new human-machine interface (HMI) commands. These new commands offer the following capabilities.

- The BulkRts, BulkBsy, and BulkOffL commands facilitate state-change maintenance activities simultaneously on multiple SPM nodes. This ability can significantly increase the efficiency of office-wide maintenance activities.
- The QueryPM command allows the convenient display of CEM information, such as slot number, unit number, state and activity status.

This feature also renames the three existing bulk HMI commands and modifies their output to present a more convenient display.

- LoadAll becomes BulkLoad
- SwactAll becomes BulkSwact
- AbtkAll becomes BulkAbtk

For additional information, see the section of this publication for the related feature 59018308: SPM Large System Enhancements.

Hardware requirements

The “Bulk HMI Commands for CEM” feature has no hardware requirements.

Limitations and restrictions

The following limitations and restrictions apply to this feature:

- This feature supports bulk state change commands for the CEM only. This feature does not implement bulk status commands for resource modules (RMs).
- This feature does not support the BulkTst command.
- Bulk commands do not override on-going system maintenance.
- The integrated node maintenance (INM) system-agent concurrency auditor does not function under all restart windows.

39005966
Bulk HMI Commands for CEM (continued)

For additional information on the commands that this feature introduces or modifies, see the *DMS-Spectrum Peripheral Module Commands Reference Manual*, 297-1771-819.

Interactions

This feature interacts with the existing SPM upgrade CI commands by adding optional parameters to three upgrade commands.

This feature does not interact with call processing features.

Datafill

This feature does not change data schema tables or office parameters.

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This feature does not change operational measurements (OM).

Logs

This feature does not change logs.

User interface

The Bulk HMI Commands for CEM feature introduces significant changes to the user interface. These changes affect the SPM upgrade directory.

This feature renames three existing commands:

- Loadall (renamed to BulkLoad)
- Swactall (renamed to BulkSwact)
- Abtkall (renamed to BulkAbtk)

This feature also adds four new bulk maintenance commands:

- BulkRts - Use the BulkRts (Bulk Return To Service) command to change the state of each selected CEM from the manually-busy state (ManB) to the in-service (InSv) state. Note that if the attempt fails, the CEM is left in one of the following states: ISTb, SYSB, or MANB. The BulkRts command

39005966
Bulk HMI Commands for CEM (end)

displays a summary report showing the outcome of the request on each CEM.

- BulkBsy - Use the BulkBsy command to change the state of the selected CEM to the manually busy (ManB) state. BulkBsy also changes the state to ManB from an offline state (OffL), an in-service state (InSv), an in-service trouble state (ISTb), or a system busy state (SysB)
- BulkOffL - Use the BulkOffL command to change the state of the selected CEMs to offline. BulkOffL is applicable only when the state of the CEM is ManB. Note that the ManB-to-OffL transition applies to both CEMs (whole node) even if only one CEM has been selected.
- BulkLoad - The BulkLoad command loads all the inactive CEMs of all the InSv SPMs in an office. This feature enhances and renames the LoadAll command by allowing it to perform loading for selected CEMs. The BulkLoad command displays a summary report that shows the outcome of the request on each individual CEM.
- BulkSwact - The BulkSwact command enhances and renames the former SwactAll command by providing a choice of CEMs to select for a switch of activity (swact).
- BulkAbtk - The BulkAbtk command aborts all the bulk maintenance operations running on the SPM..
- QueryPM - .The QueryPM command displays miscellaneous information about the SPM, such as the shelf number, slot number, unit number, and state and activity status for all the datafilled modules (CEM, DSP, VSP, OC3, ATM, or DLC).

Billing

This feature does not generate billing records or make changes to the billing system.

59010382
Black Box Fraud Prevention on SPM

Feature name

Black Box Fraud Prevention on Spectrum Peripheral Module (SPM)

Description

Black Box Fraud Prevention was developed to eliminate fraud based on manipulation of the answer signal from the recipient's side during call interaction. Prior to NA08, the DMS-100 and DMS-200 talk path was independent of the DMS switch receiving answer supervision on the trunk. It was possible for private branch exchange (PBX) customers, resellers, and carriers at the terminating end to abuse the billing system. The abuse was accomplished by delaying or not sending the answer supervision after the terminating end had answered.

Black Box Fraud Prevention was addressed first on the DMS-300 Gateway Switch. To reduce the operating company's' exposure to Black Box Fraud, the DMS-300 feature was extended to DMS-100 and DMS-200 switches in NA08. During NA09, Black Box Fraud Prevention was enhanced to include a timer that takes down a call if answer supervision is not received during a specified time-out value. Primary rate interface (PRI) trunks were also included in the list of trunks that support Black Box Fraud Prevention.

Black Box Fraud Prevention on SPM ports the following Black Box Fraud Prevention features to SPM:

- The feature enables the DMS-100 and DMS-200 switches to inhibit black box fraud by providing a one-way speech path until the terminating agent returns answer supervision. The backward path is required initially to provide the path for the ringback tone to the call originator. Once answer supervision is received at the DMS switch, the forward path is enabled to allow a two-way conversation.
- The feature implements a timer that takes down the call if answer supervision has not been received within a specified time. The customer can datafill a time-out value on a trunk group basis in table TRKOPTS. The time-out value will be one of one, two, three, four or five minutes. The customer also has the option of disabling the timer portion of the feature by entering a datafill value of 0.
- The feature pegs a newly created TRK operational measurement (OM) and generates a new TRK log to indicate that no answer supervision was received within the specified time.

59010382
Black Box Fraud Prevention on SPM (continued)

- The feature is implemented on the following trunks:
  - digital PBX trunk (PX)
  - two-way IBN trunk (IBNT2)
  - outgoing IBN trunk (IBNTO)
  - two-way local trunk (T2)
  - outgoing local trunk (TO)
  - primary rate interface trunk (PRI)
- If a trunk group has the delay forward transmission (DLYFWDXMT) option datafilled in table TRKOPTS, attempts to datafill a trunk member of that group to an unsupported peripheral will be rejected by table control software. Before the DLYFWDXMT option can be added to a trunk group, all existing trunk members are checked to ensure that they are terminated to supported peripherals. The option is rejected by table control software if existing trunk members are not terminated to supported peripherals.

Hardware requirements

Black Box Fraud Prevention on SPM has no hardware requirements.

Limitations and restrictions

The limitations and restrictions that follow apply to Black Box Fraud Prevention on SPM:

- There is no way to differentiate an incoming operator originated trunk call from a normal incoming trunk call. As a result, the forward paths of all incoming trunk calls are blocked until answer supervision is returned from the far-end trunk.
- This feature does not comply with section 6.1.1 of Feature Specification Document (FSD) BBF3287 or section 3.1.1.4 of FSD 45-15-0000, which states that operator originated calls shall be exempt from this feature, regardless of the option setting for the outgoing trunk group. But this section does not apply to calls connected to a PBX. This design limitation does not violate the Bellcore requirements.
- If the DLYFWDXMT option is active on a trunk group, all members of that trunk group must terminate to a digital trunk controller (DTC) or line trunk controller (LTC) with XMS-based peripheral module (XPM) Plus option.
- This feature only supports DTC and LTC XPM peripherals with XPM Plus option. Analog trunks are not supported.
- This feature supports only line-to-trunk and trunk-to-trunk connections.

59010382
Black Box Fraud Prevention on SPM (end)

- This feature does not support centralized automatic message accounting (CAMA) trunks.
- This feature does not support P2 trunks, which are analog.
- This feature is limited to trunk group types IBNT2, IBNTO, T2, TO, PX, PRA, and PRI on DTC or LTC peripherals with XPM Plus option only. This feature does not support remote cluster controller (RCC) and RCC2 peripherals.
- This feature does not comply with section 3.1.4 of FSD 45-15-0000. The FSD states that the opening and closing of the forward speech paths should be controlled by the reception of on-hook followed by off-hook signals before the final on-hook is received. Currently, the DMS switch scans for an on-hook of a minimum duration and takes down the call. On-hook of less than the minimum duration is ignored.

Interactions

Black Box Fraud Prevention on SPM limits operator assisted calls. This feature prevents call completion unless the answer supervision signal is received.

Datafill

Black Box Fraud Prevention on SPM enables table TRKOPTS to accept the SPM as a valid peripheral when option DLYFWDXMT is datafilled for a trunk.

Service orders

Black Box Fraud Prevention on SPM does not change the Service Order System (SERVORD).

Operational measurements

Black Box Fraud Prevention on SPM does not change OMs.

Logs

Black Box Fraud Prevention on SPM does not change logs.

User interface

Black Box Fraud Prevention on SPM does not change the user interface.

Billing

Black Box Fraud Prevention on SPM does not generate billing records or changes.

59011720
NGLA IDT MTCE documentation

Feature name

NGLA IDT MTCE documentation

Description

The Universal Port (UP) is a multi-service peripheral that provides line access. It also serves as an extension to Nortel Networks' Succession network offering. The UP is built on the Spectrum Peripheral Module (SPM) platform, and combines line access functionality with existing SPM trunk services for legacy time-division multiplex (TDM) systems. The UP includes Asynchronous Transfer Mode (ATM) and Internet Protocol (IP) interfaces as part of the evolving Succession Networks architecture.

This feature provides the initial release of UP. This release includes interfaces for Bellcore GR-303 Integrated Digital Loop Carriers (IDLCs) and generic D4 channle bank line access devices.

ATTENTION

NGLA features are not available in all markets.

Hardware requirements

This feature has no hardware requirements.

Limitations and restrictions

The NGLA/UP feature does not support ISDN BRI.

Interactions

This feature does not interact with other functionalities.

Datafill

A related feature, 59012259 (NGLA Static Data), makes the following data schema changes that this feature requires..

- Table LNINV - The feature adds a new error message, "The specified CARDCAODE is not allowed in an SPM," for card codes RDTISN and RDTMPY on RDTs provisioned on an SPM.
- Table MNNODES - The feature adds two new values in field EXECTAB. These values are "POTS SPMPEX" and KSET SPMKEX."

59011720
NGLA IDT MTCE documentation (continued)

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This features does not change operational measurements (OM). The feature supports existing OMs, including the following.

- SITE2
- CNDXPM
- ESP
- LMD
- XPMLNK
- XPMOVLD or equivalent
- CND
- DTSRPM
- UTR or equivalent

Logs

This feature supports the logs listed below.

IDT-associated logs

The following are logs related to IDTs, including the specific reason text included beside each log name.

- PM128 - PNM overload on p-side node
- PM102 - Fault occurred on TMC/CSC channels
- PM102 - CC restart
- PM114 - Failed to mtc open
- PM114 - RTS failed
- PM114 - No rsponse from PP
- PM114 - Failed to get a route
- PM128 - Fault occurred on the channel
- PM128 - Maintenance connection not established
- PM128 - EOC database not synchronized
- PM128 - RDT alarms present

59011720
NGLA IDT MTCE documentation (continued)

- PM181 - No response received to BSY request
- PM181 - Failure reply received to BSY request
- PM181 - Node status mismatch
- PM181 - Maintenance connection: permenent rejection

RDT-associated logs

The following are logs related to remote data terminals (RDTs).

- ALT107
- RDT300
- RDT301
- RDT302
- RDT303
- RDT304
- RDT305
- RDT306
- RDT601

Carrier-associated logs

The following are logs related to carriers.

- CARR300
- CARR310
- CARR500
- CARR501
- CARR510
- CARR511
- CARR512
- CARR800
- CARR810
- CARR811

User interface

The internal data terminal (IDT) node on the DMS is a logical representation of the RDT. IDT maintenance allows the craftsperson to perform maintenance

operations on an IDT node. Commands that operate on an IDT are provided at the PM level when an IDT is posted.

Commands supported at the MAP level are listed below.

- POST -- post , or show, an IDT on the MAP display
- LISTSET -- lists the IDTs in the posted set
- TRNSL -- display the IDT link and channel information
- TRNSL CHAN -- display the DS-1 links connected to the RDT
- BSY -- Busy the IDT or one of its message paths (EOC1, EOC2, TMC1, or TMC2)
- RTS -- return the IDT or one of its message paths (EOC1, EOC2, TMC1, or TMC2) to service
- OFFL -- place the IDT in the off-line state
- DISP -- display all peripheral modules in a specified state
- NEXT -- step to the next PM in the posted set
- QueryPM -- query the information about the IDT
- RDTalarm -- display counts of active RDT alarms and the associated category and severity.
- PPS (Path Protection Switch) -- provides the ability to activate, enable, inhibit, or query the EOC or TMC paths.
- CONT -- perform a continuity test on the specified path
- LoopBK -- change or query a loopback on a path towards the RDT

Billing

This feature does not generate billing records or changes.

59012158
SPM Patch Flash Refresh and Audit Interworking

Feature name

SPM Patch Flash Refresh and Audit Interworking

Description

Each time a post release software manager (PRSM) user alters the patch content of a common equipment module (CEM) destination in a Spectrum Peripheral Module (SPM), the CEM schedules its flash memory to be updated with a copy of dynamic random access memory (DRAM). This action synchronizes the patch content in DRAM and flash memory. As a result, the correct patch content resides in DRAM after the CEM gets reloaded from flash memory.

While a flash memory update is executing, all SPM maintenance commands are blocked. These blocked commands include PRSM commands such as VALIDATE, APPLY, and REMOVE, as well as actions such as in-service loading. The blocks enables flash memory to be updated with an identical copy of DRAM. It also prevents flash memory from being corrupted.

When an APPLY or REMOVE command completes successfully on a CEM destination, the CEM schedules DRAM to be copied over to flash memory in one hour. This delay provides time for additional patching activity to take place on the CEM destination without leaving DRAM and flash memory out of sync with one another for too long. The delay prevents patching and other maintenance activities from getting blocked.

Traffic load affects the time needed to copy DRAM to flash memory, but the actual copying normally takes between one and five minutes.

When multiple patches are being applied to a CEM, the scheduled flash memory update does not occur until one hour has elapsed with no patching activity.

Hardware requirements

SPM Patch Flash Refresh and Audit Interworking has no new hardware requirements.

59012158
SPM Patch Flash Refresh and Audit Interworking (continued)

Limitations and restrictions

The limitations and restrictions that follow apply to SPM Patch Flash Refresh and Audit Interworking:

- Undo the previous patch action by executing the following steps.
  - — Use the REMOVE command to remove the patch that was just applied.
  - — Use the APPLY command to apply the patch that was just removed.
- Perform a RESETMOD on the CEM destination, which will recopy flash memory into DRAM, before the scheduled DRAM to flash memory update has occurred. Then DBAUDIT the CEM destination to synchronize PRSM's database with the actual content of the CEM destination.

Note: The first choice is recommended because it is simpler, less risky, and more trouble-free.

Interactions

SPM Patch Flash Refresh and Audit Interworking does not interact with other functionalities.

Datafill

SPM Patch Flash Refresh and Audit Interworking does not change data schema tables or office parameters.

Service orders

SPM Patch Flash Refresh and Audit Interworking does not change the Service Order System (SERVORD).

Operational measurements

SPM Patch Flash Refresh and Audit Interworking does not change operational measurements (OM).

Logs

SPM Patch Flash Refresh and Audit Interworking can generate a new log message in the PRSM300 log. When a patching maintenance action (VALIDATE, APPLY, or REMOVE) is attempted on a destination that is in the process of copying its DRAM to flash memory, the following log message generates: Flash update in progress. Please retry in a few minutes.

Delaying a few minutes before retrying the action provides the CEM destination adequate time to complete the flash memory update.

59012158
SPM Patch Flash Refresh and Audit Interworking (end)

User interface

As a result of SPM Patch Flash Refresh and Audit Interworking, the VALIDATE, APPLY, and REMOVE commands may display the following new output

- Flash update in progress. Please retry in a few minutes.

  This message generates whenever a patching maintenance action (VALIDATE, APPLY, or REMOVE) is attempted on a destination that is copying its DRAM to flash memory. Delaying a few minutes before retrying the action provides the CEM destination adequate time to complete the flash memory update.

- Flash memory update has been scheduled.

  This message generates whenever an APPLY or REMOVE command completes successfully on a CEM destination. The message indicates that DRAM will be copied over to flash memory. It does not specify when the copy will take place. No user action is required.

Billing

SPM Patch Flash Refresh and Audit Interworking does not generate billing records or changes.

59012232
NGLA RDTINV provisioning

Feature name

NGLA RDTINV provisioning

Description

This feature allows a DMS call-processing-class Spectrum Peripheral Module (SPM) to serve as a host for a remote digital terminal (RDT). The SPM is capable of hosting 32 GR-303 RDTs or 84 D4 integrated channel banks (ICBs). This represents and increase from 8 RDTs and 48 ICBs that are available using non-SPM solutions.

The SPM is capable of hosting RDTs that conform to Bellcore GR-303 generic Timeslot Management Channel (TMC) interface, the Common Signalling Channel (CSC) interface, and Multi-Link ICBs.

Generally, the SPM will have the same capabilities as the SMA and SMA2, including capacities ranging from 96 to 2048 lines.

ATTENTION

NGLA features are not available in all markets.

Hardware requirements

This feature has no hardware requirements.

Limitations and restrictions

The SPM, as an RDT host, supports a maximum of 32 RTDs or 84 ICBs, or any combination that does not exceed the 84 DS1 carrier links available.

Interactions

This feature does not interact with other functionalities.

Datafill

This feature makes changes to tables RDTINV, MNHSCARR, and TRKMEM. For complete datafill information , see the *Data Schema Reference Manual* or *Translations Reference Guide* for your product.

59012232
NGLA RDTINV provisioning (end)

Table RDTINV

This feature introduces the following datafill-related changes to table RDTINV.

- adds the value “SPM” as a possible value to field IDTNAME
- expands the range of the XPMLINK subdfield of field LINKTAB from 0-47 to 0-181. This accommodates the larger range of circuit identifiers possible on an SPM
- adds several new error messages for datafill validation

Table MNHSCARR

Provisioning of SPM carriers in table MNHSCARR reamins unchanged. However this feature introduces one new validation error message for IDT-related datafill.

Table TRKMEM

This feature adds ne new validation error message for IDT-related datafill. As a reminder, do not provision carriers that are asociated with an IDT in table TRKMEM; add them instead to table TRKMEM.

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This feature does not change operational measurements (OM).

Logs

This feature does not change logs.

User interface

This feature does not change the user interface.

Billing

This feature does not generate billing records or changes.

59012246
Port Patcher to Spectrum RMs

Feature name

Port Patcher to Spectrum RMs

Description

The purpose of feature Port Patcher to Spectrum RMs is to port the C++ Patcher to the following Spectrum resource modules (RM):

- digital link controller (DLC)
- asynchronous transfer mode (ATM)
- optical carrier-level 3 (OC-3)
- digital signal processor (DSP)
- voice service processor (VSP)
- synchronous transfer mode (STM-1)

At SP14, patching is a Digital Multiplex System (DMS) only entity. Support for patching on non-DMS products (SMG-4000/5000) is scheduled for SP15.

Hardware requirements

Because of the memory requirements for patching, available random access memory on the RMs is a consideration. Each RM owner is a required approver of Port Patcher to Spectrum RMs feature activity.

Limitations and restrictions

Port Patcher to Spectrum RMs has no limitations or restrictions.

Interactions

The feature Port Patcher to Spectrum common equipment modules (CEM) was developed in SP12. This SP12 feature accomplished most of the work required to port Patcher to other Spectrum Peripheral Module (SPM) peripherals. Thus, much of the work completed for Port Patcher to Spectrum CEMs is applied to Port Patcher to Spectrum RMs.

Datafill

Port Patcher to Spectrum RMs does not change data schema tables or office parameters.

Service orders

Port Patcher to Spectrum RMs does not change the Service Order System (SERVORD).

59012246
Port Patcher to Spectrum RMs (end)

Operational measurements

Port Patcher to Spectrum RMs does not change operational measurements (OM).

Logs

Port Patcher to Spectrum RMs does not change logs.

User interface

Port Patcher to Spectrum RMs does not change the user interface.

Billing

Port Patcher to Spectrum RMs does not generate billing records or changes.

59012680
P-side link MAPCI

Feature name

P-side link MAPCI

Description

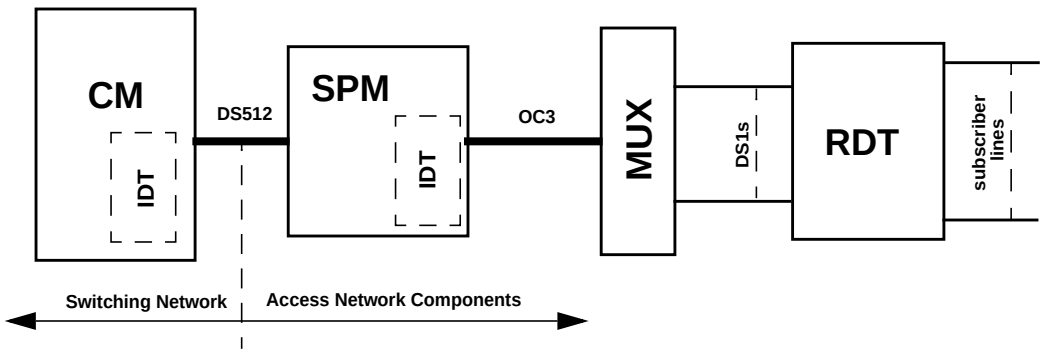
This feature modifies the PSIDE link (carrier) maintenance interface and the SPM MAPCI utility tools. The PSIDE link maintenance interface is used to maintain PSIDE links in a Next Generatation Line Access (NGLA) SPM/Integrated Digital Terminal (IDT) configuration. This is part of the NGLA program.

ATTENTION

NGLA features are not available in all markets.

NGLA provides a transition from the existing SMA-based access network to the new SPM-based access network. This project introduces POTS and EBS line support on the SPM. The new network configuration is shown in Figure 1 below.

Figure 1 SPM-based access network



The IDT node describes the logical collection of resources devoted to provide an interface to one Remote Digital Terminal (RDT). The IDT node on a DMS is a logical representation of the RDT which allows the craftsperson to perform maintenance operations on an RDT node.

Prior to this feature, all SPM carrier types were of class HSCARR. With this feature, the default carrier class is TRUNK for SPM carriers of type VT15 and

59012680
P-side link MAPCI (continued)

DS1P. Once datafill is provided in table RDTINV, the carrier class for VT15 and DS1P carriers changes to REMOTE.

Note: This change affects only SPM-based carriers

Hardware requirements

P-side link MAPCI has no hardware requirements.

Limitations and restrictions

P-side link MAPCI has no limitations or restrictions.

Interactions

P-side link MAPCI does not interact with other functionalities.

Datafill

P-side link MAPCI does not change data schema tables or office parameters, although it does interact with tables MNHSCARR and RDTINV.

Service orders

P-side link MAPCI does not change the Service Order System (SERVORD).

Operational measurements

P-side link MAPCI does not change operational measurements (OM).

Logs

P-side link MAPCI does not change logs.

User interface

P-side link MAPCI makes modifications to the user interface. SPM carriers provisioned against RDT nodes are displayed on the “REMOTE” line of the Carrier level. See Figure 2 for an example.

Figure 2 Carrier level summary heading

```
  CM      MS     IOD     Net      PM     CCS     Lns     Trks    Ext     APPL
  .    01SBPT     .    16PSLk   1 SPM   2 RS   34CC     1Crit    .       .
        *C*            *C*      *C*    *C*     *C*     *C*
 POST        CLASS    ML   OS ALRM  SYSB  MANB UNEQ OFFL  CBSY PBSY  INSV
 0 Quit      REMOTE    0    0    0     0     4    0    0     0    0     0
 2 Post_     HSCARR  303    0   26    20     4    0  338   262    0    76
 3           TRUNK     0    0    0     0     0    0    0     0    0     1
 4
 5 Loop_
 6 Tst_
 7 Bsy_
 8 RTS_
 9 Offl_
10
11 Disp_
12 Next
13
14 Detail_
15 ListAlm_
16
17 Perfmon_
18
 USER1
```

Billing

P-side link MAPCI does not generate billing records or changes.

59013302

Porting IEC SPM ECAN to LEC NA100 SPM

Feature name

Porting IEC SPM ECAN to LEC NA100 SPM

Description

Porting IEC SPM ECAN to LEC NA100 SPM provides code changes that support integrated echo cancellers on the Spectrum Peripheral Module (SPM). SPM echo cancellation (ECAN) was initially deployed on the DMS-250 inter-exchange carrier (IEC) market. The ECAN functionality is ported to the DMS-100 local exchange carrier (LEC) market by making required code changes in the SPM and computing module (CM).

Porting IEC SPM ECAN to LEC NA100 SPM also provides code changes to support SPM on Succession Networks. The SPM is referred to as the MG4000 on Succession Networks.

Hardware requirements

The NTLX66 voice signal processor (VSP) resource module (RM) provides resources for echo cancellation for SPM.

Limitations and restrictions

SPM ECAN is not supported for per-trunk signaling (PTS) and primary rate interface (PRI) trunks in the LEC market. SPM ECAN is supported for the following integrated services digital network (ISDN) user part (ISUP) trunks on the DMS-100:

- ATC
- IBNTI
- IBNTO
- IBNT2
- IT
- TI
- TO
- T2

Although it can be datafilled for earlier releases, ECAN functionality will not function on loads earlier than NA013.

59013302
Porting IEC SPM ECAN to LEC NA100 SPM (continued)

Interactions

The paragraphs that follow describe how Porting IEC SPM ECAN to LEC NA100 SPM interacts with other functionalities.

"SPM Echo Canceller Monitoring Capability" was introduced in SP01. This feature (number AD9617) implemented SPM echo canceller performance monitoring capabilities for SHR06 software layer release cycle. The ECAN monitoring capabilities introduced by feature AD9617 consists of

- a DMS CM CI-level command, SPMECMON
- automatic ECAN-resource performance monitoring
- ECAN performance monitoring (PM) logs

"SPM ECMON Enhancements" was introduced in SP10. This feature (number AX1217) enhanced existing performance monitoring capabilities of SPM ECMON. The monitoring is achieved by the command interpreter (CI) command SPMECMON on the core.

"SPM ECMON Enhancements (SP11/SHR11)" was introduced in SP11. This feature (number AX1400) enhances the performance monitoring capabilities of SPMECMON by adding the following additional functionality:

- option of output (MAP, LOG, or BOTH) for continuous echo canceller performance monitoring based on a specific RM number and resource number (RN) for an SPM
- option of output (MAP, LOG, or BOTH) for continuous echo canceller performance monitoring on a trunk member basis
- a new set of AUTO commands to enable, disable, or query automatic echo canceller performance monitoring
- combined Loss field, ACOM in table SPMECAN, used for the customer to specify the expected minimum value of the combined loss

Datafill

Porting IEC SPM ECAN to LEC NA100 SPM affects table TRKSGRP. The feature prevents datafilling the SPMECIDX option in table TRKSGRP for PRI and PTS trunks in the NA100 market. Therefore, the SPM ECAN functionality is blocked for PRI and PTS trunks in the LEC market.

Service orders

Porting IEC SPM ECAN to LEC NA100 SPM does not change the Service Order System (SERVORD).

59013302
Porting IEC SPM ECAN to LEC NA100 SPM (continued)

Operational measurements

The operational measurements (OM) group ECANRMAN contains measurements of ECAN resource events and resource usage for each SPM. The following table contains a brief description of the registers associated with OM group ECANRMAN. ECANRMAN was developed for the IEC market. No changes are needed to implement ECAN OM functionality in the LEC market.

Register	Description
ECANLOW	ECAN low water mark threshold violations on the node-level ECAN pool
ECANLOST	ECAN resources lost or taken away from CallP
ECANDENY	ECAN requests denied
ECANFAIL	ECAN failures to converge (SOS) events
ECNUTIL	Percentage utilization of ECANs
ECANHI	High water mark for ECAN usage
ATMPTSOV	Total attempts overflow
ATMPTS	Total allocation attempts
USGSECS	Usage seconds

Logs

Porting IEC SPM ECAN to LEC NA100 SPM does not change logs. No SPM or CM changes are required to implement SPM ECAN log functionality in the

59013302
Porting IEC SPM ECAN to LEC NA100 SPM (end)

LEC market. The following logs, developed for the IEC market, are now applicable to the LEC market.

Log	Description
SPM350	SPM350 is a resource management log. A log report is related to SPM resource exhaustion of one specific resource type on an SPM node. A log also generates when an alarm goes to the off state. SPM350 is associated with ECANRMAN registers ECANLOW, ECANUTIL, and ECANHI.
SPM310	SPM310 is an SPMECAN monitoring log. It generates when ECAN performance is detected by automatic monitoring.
SPM660	SPM660 is an SPMECAN monitoring log. It generates as a result of continuous monitoring. SPM660 is controlled from SPMECMON.
SPM661	SPM661 is an SPMECAN monitoring log. It generates when SPMECMON On or OFF commands are accepted or when a continuously monitored SPM node is removed from service.

User interface

Porting IEC SPM ECAN to LEC NA100 SPM does not change the user interface.

Billing

Porting IEC SPM ECAN to LEC NA100 SPM does not generate billing records or changes.

59013504

MTP Internal Routing for NA100 SPM

Feature name

MTP Internal Routing for NA100 SPM

Description

To function within the common channel signaling 7 (CCS7) network, the Digital Multiplex System (DMS) switch must be able to send messaging over CCS7 signaling links. The CCS7 links terminate at the DMS on the link interface unit (LIU7). In order for applications to send messages over the CCS7 network, the DMS switch needs a mechanism to determine which signaling link to use. A software component called the message transport part (MTP) performs this function.

MTP Internal Routing for NA100 SPM implements an MTP router for the Spectrum Peripheral Module (SPM). The primary purpose of the MTP is to route CCS7 messages to the correct CCS7 signaling link for transmission.

There are currently two implementations of the MTP router on the DMS switch, internal and external routing. NA100 switches support both internal routing. External routing was in place for NA100 SPM prior to SP14. MTP Internal Routing for NA100 SPM introduces internal routing to NA100 SPM for the local exchange carrier (LEC) market.

With internal routing, the NA100 SPM has full MTP message routing capabilities. A routeset index and signaling link selector (SLS) can be mapped to a physical CCS7 signaling link terminated on one of the DMS switch's LIU7s. Simply stated, the outgoing ISDN user part (ISUP) messages can be routed to the correct LIU for transmission.

MTP Internal Routing for NA100 SPM provides digital trunk controller (DTC) equivalence in the area of internal MTP message routing. The performance and capacity of MTP internal routing on the SPM is comparable to the DTC for the North American DMS-100 switch.

Hardware requirements

MTP Internal Routing for NA100 SPM has no hardware requirements.

Limitations and restrictions

MTP Internal Routing for NA100 SPM has no limitations or restrictions.

59013504
MTP Internal Routing for NA100 SPM (continued)

Interactions

MTP Internal Routing for NA100 SPM does not interact with other functionalities.

Datafill

MTP Internal Routing for NA100 SPM does not change data schema tables or office parameters.

Service orders

MTP Internal Routing for NA100 SPM does not change the Service Order System (SERVORD).

Operational measurements

MTP Internal Routing for NA100 SPM does not change operational measurements (OM).

Logs

MTP Internal Routing for NA100 SPM does not change logs.

User interface

NA100 switches support both internal and external routing. Currently, external routing is in place for the NA100 SPM LEC market. The C7RTR tool is used to switch between internal routing to external routing, using the QUERY, ACTIVATE, and DEACTIVATE commands.

The following list contains the commands that can be used to activate and deactivate routing in offices that require more than 255 routesets:

- QUERY_EXT_ROUTING, query the state of external routing
- ACTIVATE, activate external routing
- REMOVE_MTP, remove MTP databases from CCS7 DTCs
- DOWNLOAD_MTP, download MTP databases to CCS7 DTCs
- DEACTIVATE, deactivate external routing
- QUERY_EXP_RTESETS, query expanded routesets
- QUERY_MAX_RTESETS, query maximum number of C7RTESET tuples
- QUIT, exit C7RTR
- HELP, display the preceding information

59013504
MTP Internal Routing for NA100 SPM (end)

Billing

MTP Internal Routing for NA100 SPM does not generate billing records or changes.

59013912
OC-3 Line-Timing for DMS SuperNode

Feature name

OC-3 Line-Timing for DMS SuperNode

Description

The OC-3 Line-Timing for DMS SuperNode feature is a variant of the existing message switch (MS) Line Timing mode. Optical carrier-level3 (OC-3) line-timing allows the Spectrum Peripheral Module (SPM) to be the timing source for the MS clock so that the entire Digital Multiplex Switch (DMS), in slave configuration, gets synchronized optical network (SONET) quality MS-based clock synchronization distribution.

The OC-3 Line Timing for DMS SuperNode feature is provisioned by changing the datafill in table SYNCLK. Provisioning requires two SPMs, one as the active reference source and other as the standby reference source. Both SPMs must be equipped with OC-3 resource modules (RM) and set up in INTERNAL sync mode. The SPMs extract synchronization signals from the synchronous transport signal level-3 (STS-3) carrier, present in their OC-3 RM as part of the incoming OC-3 carrier.

The synchronization signals from the active STS-3 on the active SPM (the active link) are provided to the master MS clock. Thus the complete office including all SPMs in INTERNAL mode become synchronized with the active link.

The two reference sources provide a redundant timing source to the switch. At any time, only one of the reference sources is active. Upon system startup, the first datafilled reference source is chosen as the active link, with the second reference source assigned as the standby link. Afterwards, a switch of the active reference source may become necessary to accommodate any failures or faults on the active source. For OC-3 line-timing, synchronization information for each reference source is derived from the STS-3 carrier present on the incoming working OC-3 carrier of the active reference SPM.

A reference switch can result from the following conditions:

- active reference SPM failure
- both OC-3 RMs on the active reference SPM receive a degraded timing signal, which causes the reference SPM to stop sampling
- a reference switch forced by a manual command

When a reference switch occurs, timing information is provided by the standby reference, which is now the active reference source. In nonrevertive reference

59013912
OC-3 Line-Timing for DMS SuperNode (continued)

switching, the active reference continues to be the active source, even after the condition that caused the switch has been cleared. The *Synchronous Optical Network (SONET) Transport Systems: Common Generic Criteria*, GR-253-CORE, requires the switch to be capable of provisioning reference switching as revertive or nonrevertive, with nonrevertive being the default. If a SONET network element (NE) is provisioned as revertive, automatic restoration from standby to active must occur within two seconds of clearing the active reference failure. OC-3 Line-Timing for DMS SuperNode supports only nonrevertive reference switching.

OC-3 Line-Timing for DMS SuperNode does not implement any new triggers for automatic protection switch (APS) from the clock synchronization subsystem. (APS enables an SPM to switch automatically between the working and protected OC-3 RMs, without operator intervention, upon detection of a service affecting condition at the carrier level.)

In the case of SPM-based high speed (HS) carriers (OC-3 and STS-3), a loss of frame results in the generation of a carrier log and an APS. No count of frame slips on a carrier bases is maintained. When OC-3 line-timing is active, the field of slip count displays NA, indicating Not Available. The carrier subsystem log CARR310 is generated upon a loss of frame in the STS-3 carrier.

> ***Note:*** In the case of digital trunk controller (DTC)-based digital signaling-level 1 (DS-1) carriers, a count of the frame slips is maintained and displayed on each carrier. When the DMS is configured in slave configuration with DTC-based DS-1 timing links, any loss of frame, which is regarded as a degradation of signal, results in a switch of reference. (A frame slip occurs when the slip buffer in an NE either overflows or underflows due to differences between the read and write rates of the terminating NE and the incoming digital signal.)

OC-3 Line-Timing for DMS SuperNode does not make any changes to the synchronization status messaging (SSM) functionality. The system will not respond to changes in SSM and will not dynamically select the timing reference based on SSM status. The Do Not Use For Sync message will be output for all OC-3 carriers for this release.

When both timing links become unavailable, the MS enters into holdover mode. A major MS clock alarm occurs and is displayed along the top alarm banner of the MAP (maintenance and administration position) display. The Clock alarm is placed fifth in severity out of the thirty total MS alarms. This alarm condition remains until the MS exits holdover mode or the alarm is

manually suppressed by the MAPCI command CLKALMFREE. The only MS alarm categorized as critical is the MSPair alarm, which is the most severe of all MS alarms. This alarm is raised when both MSs are either manual or system busy. The severity (minor, major, critical) of MS clock alarms cannot be provisioned.

Hardware requirements

OC-3 Line-Timing for DMS SuperNode has no new hardware requirements.

Limitations and restrictions

The limitations and restrictions that follow apply to OC-3 Line-Timing for DMS SuperNode:

- This feature does not support revertive reference switching.
- This feature does not completely support SSM in this release. Only the “Do Not Use For Sync” message is output from the SPM OC-3 under all circumstances.
- For OC-3 line-timing, the carriers providing timing cannot be distinguished from other carriers at the MAPCI Carrier level.
- SPMs support only Locked VT1.5 mode.
- Only MS clock card NT9X53AD is supported by this feature.

The following list contains a description of the restrictions imposed by table control:

- To activate the OC-3 Line-Timing for DMS SuperNode feature, at least two SPMs must be equipped with OC-3 RMs in the DMS office.
- When datafilling two timing sources in table SYNCLK, SPM cannot be combined with other peripherals such as DTC.
- This feature does not provide support for remote oscillator shelf (ROS). As a result, the STRAT2P5 and STRAT2 options in table SYNCLK are not supported with the OC-3 Line-Timing for DMS SuperNode feature.
- Only SPMs datafilled as INTERNAL in table MNNODE can be used to datafill table SYNCLK.
- Table control in table MNNODE is modified to disallow change in CLKREF mode from INTERNAL to LOOP if the particular SPM is datafilled in table SYNCLK as a sync source.
- Circuit Packs chosen as sync source through table SYNCLK cannot be deleted from table MNCKTPAK before removing them from table SYNCLK.

59013912
OC-3 Line-Timing for DMS SuperNode (continued)

Interactions

OC-3 Line-Timing for DMS SuperNode does not interact with other functionalities.

Datafill

OC-3 Line-Timing for DMS SuperNode changes the following data schema tables:

- SYNCLK
- MNNODE
- MNCKTPAK

Service orders

OC-3 Line-Timing for DMS SuperNode does not change the Service Order System (SERVORD).

Operational measurements

OC-3 Line-Timing for DMS SuperNode does not change operational measurements (OM).

Logs

OC-3 Line-Timing for DMS SuperNode changes the following logs:

- SYNC202
- SYNC203

User interface

OC-3 Line-Timing for DMS SuperNode changes the user interface by adding or changing commands as follows:

- adds SPM information to the PM type (PM), PM number, and circuit number (CCT) fields in the CLOCK directory
- adds an RM type (RMTyp) field in the CLOCK directory
- adds the ability to display information about the OC-3 RMs in the PM directory
- adds the ability to display information about the state of the common equipment module (CEM) in the PM directory
- adds the ability to display information about the SPM timing carriers in the CARRIER directory

59013912
OC-3 Line-Timing for DMS SuperNode (end)

Billing

OC-3 Line-Timing for DMS SuperNode does not generate billing records or changes.

59014132
8-bit SLS support for routing & SS7 internal routing for IEC

Feature name

8-bit SLS support for routing and SS7 internal routing for IEC

Description

This feature enhances generation of signaling link selection (SLS) from five to eight bits in the SPM for ANSI SS7 networks. This enhancement enables DMS offices equipped with SPM nodes to select 8-bit routing as an alternative to existing 5-bit external routing.

This feature supports both internal and external 8-bit routing. Internal routing refers capabilities within the SPM to perform SS7 message routing functions before it sends information to the Link Peripheral Processor (LPP). With external routing, routing process occurs in the LPP.

This feature also enhances the SPM internal router to 8-bit SLS load balancing for ANSI SS7 networks. This enables offices that are purely SPM-based to have 8-bit internal routing , with no additional memory or performance impact.

Offices that have only SPM nodes or that have a mix of SPM nodes and other trunk peripherals offer the following SS7 message routing options:

- 5-bit external routing
- 5-bit internal routing
- 8-bit external routing
- 8-bit internal routing

Note: Neither 8-bit internal routing nor 8-bit external routing is available in offices with PDTCs.

8-bit load balancing is available only to ANSI SS7 networks. Existing routing functions for ITU-based protocols remains unchanged.

Hardware requirements

This feature requires an SPM and a link peripheral processor (LPP) equipped with LIU7 cards.

59014132
8-bit SLS support for routing & SS7 internal routing for IEC (end)

Limitations and restrictions

The limitations and restrictions that follow apply to this feature.

- 8-bit SLS is available only for ANSI SS7 networks. Existing routing functions for ITU-based protocols remains unchanged.
- Neither 8-bit external routing nor 8-bit internal routing is available in offices equipped with a PDTC.

Interactions

This feature has no impact on ITU-based message formats and protocols.

Datafill

This feature does not change data schema tables or office parameters.

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This feature does not change operational measurements (OM).

Logs

This feature does not change logs.

User interface

This feature does not change the user interface.

Billing

This feature does not generate billing records or changes.

59014137
SPM isolation checks

Feature name

SPM isolation checks

Description

This feature implements a complete SPM CEM isolation check when you manually perform the following enhanced network (ENET) maintenance actions:

- manually busy an ENET plane
- manually busy an ENET shelf
- manually busy one or more ENET cards
- manually busty one or more p-side links

Any of these command, in certain cicumstances, can cause messaging-channel isolation of the peripheral.. Isolation can trigger activity switches between actinve and inactive cards and possible service impact. For example, isolation could occur when a fault already exists on one link and the BSY command inhibits the the remaining link.

When you issue a BSY command for a plane, shelf, card, or link existing software performs checks for possible isolation of the attached peripheral. If isolation could occur, the MAP display shows a warning message that you must acknowledge.

The existing checks were developed primarily for peripherals other than the SPM. This feature provides a second layer of SPM-specific isolation checks during execution of a manual BSY command on shelf, plane, card, or link level. If the existing first round of checks pass, the second layer of SPM-specific tests evaluates the isolation portential for the SPM. If these second-layer tests detect the possibility of isolation, the MAP display shows a second warning that you likewise must acknowledge.

Hardware requirements

This feature addresses both single-shelf and dual-shelf ENET configurations.

59014137
SPM isolation checks (end)

Limitations and restrictions

The limitations and restrictions that follow apply to this feature:

- This feature checks for SPM isolation that results only from a manually-performed BSY commands.
- The software does not detect isolation if you issue the `BSY <plane #> all` command from SYSTEM or MATRIX level, for a dual-shelf ENET configuration, and without SPM messaging channel crossover.

Interactions

This feature does not affect existing automated ENET upgrades by the PANTHER tool.

Datafill

This feature does not change data schema tables or office parameters.

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This feature does not change operational measurements (OM).

Logs

This feature does not create new logs or modify the content of existing logs. However, an affirmative response to any of the warning messages, including the ones generated by this feature, continues to generate existing logs. An example is the ENET 700 (command warning ignored) log.

User interface

This feature introduces no new commands. Additional warnings display if the software detects the potential for SPM isolation.

Billing

This feature does not generate billing records or changes.

59014162
SPM trap logs to the DMS core

Feature name

SPM trap logs to the DMS core

Description

A typical Spectrum Peripheral Module (SPM) consists of two Common Equipment Modules (CEMs) and up to twenty-six Resource Modules (RMs). An SPM has an elaborate system tocapture vital log information about its modules. This system is made of the following components.

- *AER (Application Event Recording)*. All local applications use AER to log useful information about important events like state changes.
- *SWERR (software error)*. This component logs software errors for all applications. Exception xception handlers use SWERR to log traps and other events during runtime. SWERR logs survive restarts (except for initial power-up).
- *Footptints*. Thie component logs important information leading up to system outage situations. Like SWERRs, footprints also survive all restarts (except for initial power-up).
- *MIM fault logs*. Application software uses this component to record any hardware fults found on the module. Faults could typically be detected either autonomously or by diagnostics. MIM fault reports are logged in a non-volatile memory which could survive all restarts including power-ups.

This feature creates a means to transport all local SPM SWERR logs to the core. This includes reported software errors, traps, and MIM faults logs. This feature does not transmit footprints to the core because of their large size. Nor does this feature provide for AER transport because AERs typically provide only debug-level information and would not be useful outside a code development and troubleshooting environment.

Hardware requirements

This feature has no hardware dependencies.

Limitations and restrictions

This feature does not deliver footprints and AERs to the core.

The scope of this feature is currently limited to the CEM.

Interactions

This feature does not interact with other functionalities.

59014162
SPM trap logs to the DMS core (end)

Datafill

This feature does not change data schema tables or office parameters.

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This feature does not change operational measurements (OM).

Logs

This feature does not change the actual logs used to report software exceptions.

User interface

This feature does not change the user interface.

Billing

This feature does not generate billing records or changes.

59014167
CCS7 channelized access for SPM OC-3 TDM

Feature name

CCS7 channelized access for SPM OC-3 TDM

Description

This feature provides channelized access for CCS7 signalling links provisioned on an SPM using OC-3 TDM facilities.

This feature builds upon the existing channelized access capabilities developed for STM-1. This feature ensures that channelized access can co-exist with per-trunk signalling (PTS) trunks on the same SPM.

The channelized access signalling path consists of the following components:

- incoming transmission channel provisioned on the OC-3 carrier
- pathway through the SPM peripheral, across the DMS message switch (MS) and enhanced network (ENET), to the NIU in the link peripheral processor (LPP)
- a dynamically allocated channel between the NIU and the LIU7 on the same shelf.

Included in this feature are capabilities to provision each of the preceding segments.

This feature support both 56k and 64k channels.

This feature has no impact on existing PTS trunks and no impact to current DTC channelized access capabilities.

Hardware requirements

This feature requires the following hardware:

- SPM with an OC-3 interface
- an LIU7 provisioned with the C-bus interface paddleboard (such as NTEX26AA or later) and provisioned for 56 or 64 kbps ABI operation
- an NIU, equipped as part of the link interface module (LIM)

Limitations and restrictions

The limitations and restrictions that follow apply to this feature.

- This feature provides support for NIU-based channelized access only.
- The C7BERT test utility is not supported.

59014167
CCS7 channelized access for SPM OC-3 TDM (end)

- The DS1ZCS field of table MNHSCARR must be “OFF” so that zero code suppression (ZCS) is turned off for the DS1 hosting the signalling links. If enabled, ZCS corrupts 64kbps data transmitted over the link.
- This feature provides support channelized access trunks co-existing with PTS trunks on SPM. This feature does not impact existing XPM functionality.
- The connection path between the LIU7, through the DMS platform, to the OC-3 supports 64kbps links.
- This feature supports the DMS-250 and DMS-500 markets.

Interactions

This feature requires the SPM STM-1 channelized access feature (features 59006639 and 59011970).

Datafill

This feature does not change data schema tables or office parameters.

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This feature does not change operational measurements (OM).

Logs

This feature does not change logs.

User interface

This feature does not change the user interface.

Billing

This feature does not generate billing records or changes.

59014578
RM Patching-CEM/RM Request Router

Feature name

RM Patching-CEM/RM Request Router

Description

RM Patching-CEM/RM Request Router is the phase of the Spectrum Peripheral Module (SPM) patching project that provides the following functionalities:

- extends SPM patching to include resource modules (RM)
- includes functionality and restrictions comparable to common equipment module (CEM) patching
- implements the required SPM functionality for RM patching

RM Patching-CEM/RM Request Router extends the SPM patching functionality to the RMs by providing a transparent request routing mechanism between the CEM and the RMs. The request router allows the patching task, consisting of patch loader and message handler, to invoke patching utilities on the CEM or the RMs as if they were local procedure calls. The patching utilities consist of alarm manager and C++ patcher.

RM Patching-CEM/RM Request Router reuses the bulk of the existing CEM software with minimal changes. The logic needed for all patch operations resides on the CEM, whether the activity is specific to the CEM or an RM. When an action specific to the processor being acted upon is required, for example, invoking the C++ patcher, the request is routed to the appropriate RM and the result returned.

Hardware requirements

RM Patching-CEM/RM Request Router has no new hardware requirements.

Limitations and restrictions

The limitations and restrictions that follow apply to RM Patching-CEM/RM Request Router:

- This phase of the SPM patching project supports patching of one RM at a time. If multiple RMs on the same SPM require the same patch, each RM must be patched as a separate operation. Internally they must be serialized. Externally, they can still be grouped by the PRSM interface.
- This phase of the SPM patching project gives no special consideration to patches that contain code that is resident on digital signal processor (DSP)

59014578
RM Patching-CEM/RM Request Router (end)

islands. If such code is patched, the patched code is not used until the DSP island is reloaded.

Interactions

RM Patching-CEM/RM Request Router is closely tied to feature 59014583, RM Patching-Message Handler Enhancements.

Datafill

RM Patching-CEM/RM Request Router does not change data schema tables or office parameters.

Service orders

RM Patching-CEM/RM Request Router does not change the Service Order System (SERVORD).

Operational measurements

RM Patching-CEM/RM Request Router does not change operational measurements (OM).

Logs

RM Patching-CEM/RM Request Router does not change logs.

User interface

RM Patching-CEM/RM Request Router does not change the user interface.

Billing

RM Patching-CEM/RM Request Router does not generate billing records or changes.

59014583
RM Patching-Message Handler Enhancements

Feature name

RM Patching-Message Handler Enhancements

Description

RM Patching-Message Handler Enhancements is divided into the following parts:

- changes to message decoding and encoding to handle changes to the computing module (CM) to common equipment module (CEM) patch messaging protocol

  RM Patching-Message Handler Enhancements introduces changes to the existing CEM patch message handler to support the new messaging ID.

- patch cache control changes

  Prior to RM Patching-Message Handler Enhancements, the patch file cache was cleared and the patch file downloaded from the CM for any CHECK or VERIFY operation. For an APPLY or REMOVE operation, the cache was reused because it was likely that the cache was fresh from a previous CHECK or VERIFY. Under RM Patching-Message Handler Enhancements, the cache is modified. Multiple resource modules (RM) on the same Spectrum Peripheral Module (SPM) are likely to be patched in succession with the same post release software unit (PRSU). Because they share the same cache on the CEM, it is logical to maintain the cache across CHECK and VERIFY procedures as well as APPLY and REMOVE operations.

- image to flash after patching

  With the introduction of RM patching, the image to flash functionality is brought to the RM. Feature SPM Patch Flash Refresh and Audit Interworking introduced an imager object that is capable of copying an image of dynamic random-access memory (DRAM) into flash memory. RM patching reuses the following components of this imager object:

  — imager task consisting of four states (IDLE, WAITING, WORKING, and RECOVERING) with a logical procession from one state to the next

  — reset flash memory updates

  — schedule flash memory update

- cyclic redundancy check (CRC) value update after patching

  Feature SPM Patch Flash Refresh and Audit Interworking added CEM functionality to update the CRC value for the load in DRAM whenever

59014583
RM Patching-Message Handler Enhancements (continued)

patching alters it. RM Patching-Message Handler Enhancements makes this same functionality available for the RM. The purpose of the functionality is to prevent the in-service random access memory (RAM) program store diagnostic from failing by updating the RM's DRAM-CRC integrity check value.

- alarm management

  The alarm's purpose for SPM is to warn customers that patches have been eliminated due to a reboot/reset operation. RM Patching-Message Handler Enhancements enables the alarm indication for SPM patching to be set for each RM, just as is currently done for the CEM.

Hardware requirements

RM Patching-Message Handler Enhancements has no hardware requirements.

Limitations and restrictions

RM Patching-Message Handler Enhancements has no limitations or restrictions.

Interactions

RM Patching-Message Handler Enhancements is closely tied to feature 59014578, RM Patching-CEM/RM Request Router.

RM Patching-Message Handler Enhancements reuses components of the imager object introduced in feature 59012158, SPM Patch Flash Refresh and Audit Interworking. RM Patching-Message Handler Enhancements also reuses the CRC updating facility added by feature SPM Patch Flash Refresh and Audit Interworking.

Datafill

RM Patching-Message Handler Enhancements does not change data schema tables or office parameters.

Service orders

RM Patching-Message Handler Enhancements does not change the Service Order System (SERVORD).

Operational measurements

RM Patching-Message Handler Enhancements does not change operational measurements (OM).

59014583
RM Patching-Message Handler Enhancements (end)

Logs

RM Patching-Message Handler Enhancements does not change logs.

User interface

RM Patching-Message Handler Enhancements does not change the user interface.

Billing

RM Patching-Message Handler Enhancements does not generate billing records or changes.

59014588
RM Patching - IDM Support

Feature name

RM Patching - IDM Support

Description

Spectrum Peripheral Module (SPM) patching is a large, multiphased, multicomponent project that fully implements a Digital Multiplex System (DMS) style patching solution for SPM peripherals. Functional phases for this project are as follows:

- phase I, common equipment module (CEM) patching
- phase IIa, resource module (RM) patching, computing module (CM) side
- phase IIb, imaging to flash and cyclic redundancy check (CRC) audit interworking
- phase IIc, RM patching, SPM side
- phase IId, RM patching and integrated device maintenance (IDM) support

Proposed future phases of the SPM patching project include Imaging After Patching, Patching After Loading (PAL), Standalone SPM Patching, Prepatched SPM Loads (PPSLs), and Broadcast or Parallel Patching.

RM Patching - IDM Support is responsible for phase IId of the overall SPM patching project: the interworking with the IDM maintenance system. This feature plays two roles.

- define RM patching as a maintenance request understood by the IDM maintenance system
- coordinate RM patching requests with other RM maintenance activities controlled through IDM

RM patching requests are submitted through the PRSM CI, using the same post release software manager (PRSM) commands that are used for all other destination types. The PRSM system interacts with the IDM system to coordinate the patching request with any other maintenance actions on the same RM (for example, ManBsy, LoadMod or RTS requests). Once IDM schedules the request and patching has started, a progress message (for example, /Patching) will be sent to the MAP (maintenance and administration) window to indicate that patching is in progress on the posted device.

Users are able to abort the in-progress patching request through the MAP, by using the ABTK command like they would to abort other maintenance actions. Some patching operations (for example, APPLY and REMOVE) may prohibit

59014588
RM Patching - IDM Support (continued)

aborting during certain critical phases of their execution. During these critical parts of these patching activities, IDM rejects ABTK commands.

Hardware requirements

RM Patching - IDM Support has no hardware requirements.

Limitations and restrictions

RM Patching - IDM Support supports the patching on one RM at a time. If multiple RMs on the same SPM are to receive the same patch, the patching must be done as separate operations. Internally, they must be serialized. Externally, they can still be grouped by the PRSM user interface.

Interactions

RM Patching - IDM Support builds upon existing SPM patching infrastructure, which was provided in the following features:

- 59005655, PRSM SPM Patch File Support and Services
- 59005661, PRSM SPM Rules and Return Codes
- 59005673, PRSM SPM Database Support
- 59005684, SPM Destination Interface and Abort Management
- 59005697, SPM Patching Messaging System
- 59005709, SPM Patching State Machine

RM Patching - IDM Support is developed in parallel with the following related features:

- 59013647. SPM RM Patch Message Handler Support
- 59014583, RM Patching - Message Handler Enhancements
- 59014587, RM Patching - CEM/RM Request Router

Datafill

RM Patching - IDM Support does not change data schema tables or office parameters.

Service orders

RM Patching - IDM Support does not change the Service Order System (SERVORD).

59014588
RM Patching - IDM Support (end)

Operational measurements

RM Patching - IDM Support does not change operational measurements (OM).

Logs

RM Patching - IDM Support does not change logs.

User interface

RM Patching - IDM Support does not change the user interface.

Billing

RM Patching - IDM Support does not generate billing records or changes.

59017193
PRI Orig Name Delivery

Feature name

PRI Orig Name Delivery

Description

This is an originating feature which provides the terminating agent with the calling party's name when the call originates over a PRI trunk. Prior to this feature, CNAM (Calling Name Delivery) only worked for ISUP and ETSI originating/ outgoing trunk calls.

PRI originating CNAM is based upon the status of the presentation indicator contained within the PRI setup message. The delivery or restriction of content is based upon supplied PRI messages.

The calling name is retrieved in one of two ways:

- A centralized data base using TCAP messaging.
- A local table lookup.

Overview of PRI originating Calling Name Delivery Service

PRI originating CNAM is a name delivery feature made up of two major components:

- **Provisioning** utilizes existing parameters and options developed in feature AF7209 which enables PRI Calling Name Delivery.
- **TCAP Handling** provides the launching of the TCAP name query to a centralized name database.

Hardware requirements

The standard hardware required to implement ISDN PRI is required.

Limitations and restrictions

The limitations and restrictions that follow apply to PRI Orig Name Delivery:

SUPPRESS line and DNGRPS option

The SUPPRESS line option sets the calling parties permanent privacy status for number and name. The permanent privacy status of the calling number, as set by SUPPRESS, is considered when determining if I-CNAM applies. The SUPPRESS DNGRPS network option for the calling party will affect the delivery of TCAP calling name. If the option is set to SUPPRESS NAME in DNGRPS then this does not affect TCAP name delivery. If the option is set to SUPPRESS NUMBER in DNGRPS then this will prevent I-CNAM delivery.

Transaction Capabilities Application Part (TCAP)

The I-CNAM feature utilizes the TCAP layer of the SS7 protocol to retrieve the name information from the centralized name database. This feature uses the TCAP interface defined by the RES CNAMD TCAP feature.

- This feature only applies to NI-1 [NTNA], NI-2, 4ESS and 5ESS PRI variants.
- When a TCAP query is launched, an “Out of Area” indication is not included in the SETUP message.
- The FCC has ruled that the calling number presentation indication and calling name presentation indication must be linked. For this reason PRI I-CAN does not reference this office parameter and uses the calling number presentation indication only.

  An End user may not have a private number with a name that is deliverable. In order to adhere to this ruling, the office parameter TCAPNM_BLK_QUERY_PRIV_DNS in table OFCVAR, which links the number and number privacy is no longer checked and the privacy status is always determined for the calling number privacy indicator.
- The “blocking toggle” parameter of the calling number PI is not supported in I-CNAM and is interpreted as a “private” indication. Therefore, a TCAP query is not launched, and The calling name is not presented. A “presentation restricted” indication is sent to the CPE.
- All necessary datafill for providing the Residential and MDC TCAP CNAMD (and BRI I-CNAM) functionality are required.
- Redirecting Name Delivery (RNAM) is not supported by this feature.

Interactions

The paragraphs that follow describe how PRI Orig. Names Delivery interacts with other functionalities.

Advanced Intelligent Network (ain 0.2)

Instead of the originating party DN, the CallingPartyID parameter in the Analyze_Route, Forward_Call or Authorize_Termination message returned from the AIN 0.2 SCP response is used to query the centralized name database. This allow the name associated with the CallingPartyID provided by the AIN 0.2 SCP to be displayed.

In the case when no CallingPartyID is provided in the AIN 0.2 response, the original calling party DN is used for querying the centralized name database.

59017193
PRI Orig Name Delivery (continued)

The AIN 0.2 Display Text parameter is currently only supported for RES, 1FR and 1MR line classes, and therefore has no impact on delivery f I-CNAM to the ISDN PRI terminator.

AIN redirection is not supported.

Auto Dial

If the Auto Dial feature is used to originate the call, the I-CNAM delivery is not affected.

Automatic Line

If the Automatic line feature (predefined directory number) is used to originate the call, the I-CNAM delivery is not affected by Automatic Call Back (ACB)/ Automatic Recall (AR).

There is no interaction between ACV or AR feature and I-CNAME delivery.

Call Forward Universal (CFU), Call Forward Busy (CFB), Call Forward Fixed (CFF), Call Forwarding Don't Answer (CFD)

If the called party has any kind of call forwarding feature, the DMS 100 is not aware of this and delivers the retrieved TCAP name over the PRI trunk. It is the responsibility of the terminating equipment (CPE) to handle I-CNAM delivery is this scenario.

Call Hold, ISDN Hold

If the TCAP name is delivered to the called party and the called party subsequently uses Call Hold or ISDN Hold, it is the responsibility of the Terminating equipment (CPE) to handle I-CNAM delivery in this scenario.

Calling Number Delivery (CND)

If the calling party subscribed to CND then both I-CNAM and calling number are displayed.

Calling Number Delivery Blocking (CNDB)

If the calling party subscribes to and activates CNDB, the both I-CNAM and calling number delivery to the called party are blocked.

Calling Name Delivery (CNAMD)

The CNAMD feature does not affect I-CNAME delivery.

59017193
PRI Orig Name Delivery (end)

Calling Identity Delivery and Suppression (CIDS)

Using features CNND and CNNB and originator may explicitly deliver or block both their name and number. If an originating party has activated CNNB, I-CNAM is not delivered.

Last Number Redial (LNR)

The LNR feature has no affect on I-CNAM delivery.

Ring Again (RAG)

The RAG feature has no affect on I-CNAM delivery.

Network Ring Again (NRAG)

THE NRAG feature has no affect on I-CNAM.

Speed Call

The speed call feature has no affect on I-CNAM delivery

Datafill

PRI Orig Name Delivery does not change data schema tables or office parameters.

Service orders

PRI Orig Name Delivery does not change the Service Order System (SERVORD).

Operational measurements

PRI Orig Name Delivery does not change operational measurements (OM).

Logs

PRI Orig Name Delivery does not change logs.

User interface

PRI Orig Name Delivery does not change the user interface.

Billing

PRI Orig Name Delivery does not generate billing records or changes.

59018431
DS-1 Provisioning for NA100

Feature name

DS-1 Provisioning for NA100

Description

Each Spectrum Peripheral Module (SPM) node manages up to 84 DS-1 carriers, and each carrier transports up to 24 trunks. Thus each SPM allows up to 2016 trunks (24*84). Prior to this feature, no capability exists to restrict SPM carrier provisioning, so customers must buy SPM trunk capabilities in SPM-sized batches (i.e. 2016). This may exceed the needs of certain customers. This feature makes it possible to purchase a right-to-use license for a customized portion of the 2016 trunks-per-SPM capacity currently available.

Earlier features provided a password-protected command to set or query an office wide variable. The value of this variable represents the maximum number of SPM DS1P carriers provisionable in table MNHSCARR. Nortel introduced this method in NA013 and also patched it back in releases NA011 and NA012.

Feature 59018431, “DS-1 Provisioning for NA100,” introduces the following improved methods and capabilities:

- Provides the capability for customers to purchase the right to provision fewer carriers than the full capacity of the SPM.
- Introduces two new office paramters in table OFCOPT to control provisioning limits. The SPM_MAX_MSGTRK_CARRIER office parameter controls the provisioned SPM carriers with assigned ISUP and PTS trunks. SPM_MAX_PRITRK_CARRIER tuple controls the provisioned SPM carriers with assigned PRI trunks. This method, based on office parameters, replaces the password-protected command previously in effect.
- Provides the ability to query the current number of PTS/ISUP and PRI trunks assigned to SPM carriers. The total number provisioned can not exceed the total of the two values set by office parameters SPM_MAX_MSGTRK_CARRIER and SPM_MAX_PRITRK_CARRIER.
- The DMS switch displays a warning message is when the number of provisioned carriers reaches to 75% of the limit of either office parmeter or the total of the two office parameters
- The DMS switch displays an error message when the number of provisioned carriers reaches to the maximum limit of either office parmeter or the total of the two office parameters.

59018431
DS-1 Provisioning for NA100 (continued)

Hardware requirements

The DS-1 Provisioning for NA100 feature has no hardware requirements.

Limitations and restrictions

When performing an ONP, first determine the current number of carriers. Verify that number is less the limit set by two office parameters. If not, the ONP will fail.

Interactions

The DS-1 Provisioning for NA100 feature does not interact with other functionalities.

Datafill

This feature introduces two office parameters in table OFCOPT.

- SPM_MAX_MSGTRK_CARRIER
- SPM_MAX_PRITRK_CARRIER

For additional information, see the *Office Parameters Reference Manual* for your product.

This feature also adds datafill validation error and warning messages to table MNHSCARR and table TRKMEM. These errors and warnings relate to the maximum PRI and ISUP/PTS trunk provisioning limits established by the office parameters. For additional information, see the *Data Schema Reference Manual* or *Translation Guide* for your product.

Service orders

The DS-1 Provisioning for NA100 feature does not change the Service Order System (SERVORD).

Operational measurements

The DS-1 Provisioning for NA100 feature does not change operational measurements (OM).

Logs

The DS-1 Provisioning for NA100 feature does not change logs.

59018431
DS-1 Provisioning for NA100 (end)

User interface

The CARRUTIL command provides convenient means to query the current provisioning limits and number of assigned trunks. At the command interface (CI) prompt, type

```
CARRUTIL
```

At the resulting prompt, enter one of the followng subcommands:

- To query ISUP and PTS trunks, type

  ```
  ds1plimit query SPM_MAX_MSGTRK_CARRIER
  ```

  The command then displays the number of ISUP/PTS trunks currently assigned, followed by the maximum provisioning limit.

- To query PRI trunks, type

  ```
  ds1plimit query SPM_MAX_PRITRK_CARRIER
  ```

  The command then displays the number of PRI trunks currently assigned, followed by the maximum provisioning limit.

Billing

The DS-1 Provisioning for NA100 feature does not generate billing records or make changes to the billing system.

59018487
ReachThrough Surveillance for NA100 SPM

Feature name

ReachThrough Surveillance for NA100 SPM

Description

The ReachThrough Surveillance for NA100 SPM feature allows telco transport monitoring and maintenance centers to query the individual and the whole carrier of the SPM for monitored performance parameters on the OC-3 resource module. It provides transport network access to the SPM through SuperNode Data Manager(SDM). Using TL1 messages, a customer Network Element is able to retrieve carrier information from the SPM.

TL1 is a set of generic messages exchanged between network elements and operation and monitoring systems. The TL1 message set supports network surveillance, provisioning, and line/loop testing. As a standard protocol, TL1 also allows inter-operation with different vendors' equipment through a common language, which eliminates the need for vendor-specific interfaces.

This feature supports the following TL1 messages:

- RTRV-PM-OC3 (optical section)
- RTRV-PM-STS1 (path layer)
- RTRV-PM-STS3 (line layer)
- RTRV-PM-VT15
- RTRV-PM-DS3
- RTRV-PM-DS1

The ReachThrough Surveillance for NA100 SPM feature does **not** support the following TL1 messages:

- RTRV-PM-ALL
- RTRV-TCA
- RTRV-TH-OC3
- RTRV-TH-STS1
- RTRV-TH-STS3

59018487
ReachThrough Surveillance for NA100 SPM (continued)

The OC-3 resource module on the SPM supports these performance parameters:

OC-3 optical section	STS3 line	STS1 path	DS3 path		VT1.5 path	DS1 path	
			M23	C-bit		SF	ESF
LBC	CV-L	CV-P	CVP-P		CV-V	CV-P	CV-P
OPT	ES-L	ES-P	ESP-P		ES-V	ES-P	ES-P
OPR	SES-L	SES-P	SESP-P		SES-V	SES-P	SES-P
CV-S	UAS-L	UAS-P	UASP-P		UAS-V	UAS-P	UAS-P
ES-S	PSC	CV-P				CSS-P	CSS-P
SES-S		ES-P				AISS-P	AISS-P
SEFS-S		SES-P					
		UAS-PFE					

Hardware requirements

To support this design, the following requirements are necessary:

- Client's monitoring system must be capable of sending and receiving TL1 messages to and from the SDM using TCP/IP
- The SDM must be able to communicate to both the client's network and the DMS switch using the appropriate messaging format.

Limitations and restrictions

RTRV-PM-ALL will not be supported in this feature because this would require serious CPU usage in the CEM and RM. Only per carrier queries will be supported.

Interactions

The ReachThrough Surveillance for NA100 SPM feature does not interact with other functionalities.

Datafill

The ReachThrough Surveillance for NA100 SPM feature does not change data schema tables or office parameters.

59018487
ReachThrough Surveillance for NA100 SPM (end)

Service orders

The ReachThrough Surveillance for NA100 SPM feature does not change the Service Order System (SERVORD).

Operational measurements

The ReachThrough Surveillance for NA100 SPM feature does not change operational measurements (OM).

Logs

The ReachThrough Surveillance for NA100 SPM feature does not change logs. However, it does utilize existing logs on the SDM.

User interface

The ReachThrough Surveillance for NA100 SPM feature does not change the user interface.

Billing

The ReachThrough Surveillance for NA100 SPM feature does not generate billing records or make changes to the billing system.

59021056
SPM Carm Carrier Banner Alarm Enhancement

Feature name

SPM Carm Carrier Banner Alarm Enhancement

Description

Prior to this feature, the MAP display Trks alarm banner did not differentiate between alarms from SPM carriers and from DTC-based carriers. The display shows the first SPM or DTC carrier alarm at the Trks banner with a 'C' but gives no additional indication if more SPM or DTC carrier alarms occur. Therefore, to stay informed of new SPM carrier alarm events, users must keep the Trks banner clean or constantly monitor carrier logs or the carrier MAP status.

This feature provides a unique indication at the Trks banner for SONET carriers while continuing to maintain the current indications for XPMs. In order to preserve the legacy DMS indications for XPM carriers, the enhancements maintain the current indications and meaning for non high-speed carriers. This feature makes no changes to the alarm severity row.

The new format is defined as follows : 999xyz

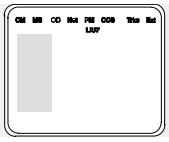
- 999 - This three numeric field remains unchanged and indicates the number of trunk group alarms present.
- x - This one character field indicates the highest trunk group alarm on the switch. Although the position has changed, the same character representation is being used as was used when a carrier alarm existed and is explained here:
  - — ’.’ - no trunk group alarms
  - — ’B’ - highest trunk group alarm is Busy
  - — ’E’ - highest trunk group alarm is External busy
  - — ’S’ - highest trunk group alarm is System busy
  - — ’G’ - highest trunk group alarm is Minor
  - — ’M’ - highest trunk group alarm is Major
  - — ’C’ - highest trunk group alarm is Critical

59021056
SPM Carm Carrier Banner Alarm Enhancement (continued)

- y - This one character field indicates low speed carrier alarms. Again, the character notation has not changed, but the position has changed.
  - — '.' - no low speed carrier alarms
  - — 'C' - Carrier alarm(s) are present
- z - This one character field indicates high speed SONET carrier alarms.
  - — '.' - no high speed SONET carrier alarm
  - — 'P' - SIMPLEX alarm(s) exist on high speed SONET carrier(s)
  - — 'A' - ATM high speed SONET carrier(s) are out of service
  - — 'H' - pairs (active and standby) high speed SONET carriers are out of service.

The following figure illustrates the new alarm display with Trks alarms:

Sample alarm banner with Trks alarms

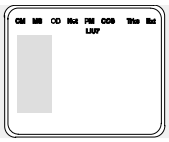


```
CM      MS      IOD     Net     PM      CCS     Lns     Trks    Ext     APPL
CM Flt  SYSB    AMA B   14CDPR  1 Spm   .       .       169BCP  1Crit   .
M       M       *C*     *C*     *C*                     *C*     *C*
```

This new format will be easily read left to right. 169 trunk group alarms exist with the highest trunk group alarm being manual busy (B). At least one non-HSCARR type carrier alarm exists, which is indicated by the C. The P indicates that at least one SIMPLEX alarm exists.

The following figure illustrates the new alarm display with no Trks alarms.

Sample alarm banner with no Trks alarms



```
CM      MS      IOD     Net     PM      CCS     Lns     Trks    Ext     APPL
CM Flt  SYSB    AMA B   14CDPR  1 Spm   .       .       ...     1Crit   .
M       M       *C*     *C*     *C*                             *C*
```

Note that there are now three dots under the Trks banner when there are no alarms, as opposed to one.

Hardware requirements

This feature has no hardware requirements.

59021056
SPM Carm Carrier Banner Alarm Enhancement (end)

Limitations and restrictions

This feature has no limitations or restrictions.

Interactions

This feature does not interact with other functionalities.

Datafill

This feature does not change data schema tables or office parameters.

Service orders

This feature does not change the Service Order System (SERVORD).

Operational measurements

This feature does not change operational measurements (OM).

Logs

This feature does not change logs.

User interface

There are no new or changed commands. However, this feature enhances the symbolic representation of alarms in the MAP alarm banner display.

Billing

This feature does not generate billing records or changes.

6 Feature descriptions for SPM15

This document contains the feature descriptions for the SPM15 release of the Spectrum Peripheral Module (SPM). Feature information is intended to help prepare for insertion of a new software load, or to understand elements of the software. Operating company personnel involved in planning and engineering or in maintenance activites will find this information useful.

These feature descriptions provide information about SPM features. Each feature description contains the following sections:

- Functionality name
- Description
- Hardware requirements
- Limitations and restrictions
- Interactions
- Datafill
- Service orders
- Operational measurements
- Logs
- User interface
- Billing

59014140
Memory Management SWACT Controls

Feature name

Memory Management SWACT Controls

Description

This feature is one of two features designed to improve the SWACT controls of the SPM.

This feature creates an RMM to keep track of memory consumption and the number of traps that occur. The RMM will request a SWACT when the memory or trap thresholds have been reached.

For additional information, see the additional section of this publication for the following related feature:

- 59014147 Exceptions Handling SWACT Controller

Trap

The Rmm is notified of every 50 traps that occur, or if five traps occur in five seconds. If the trap count reaches 500, or five traps occur in five seconds the Rmm will send a major degradation to the Swact Controller, causing a swact. If a Swact does not occur, the Rmm will continue to send major degradation reports every 50 traps. If the trap count reaches 700, a critical degradation report is generated and a forced Swact is invoked Then a critical fault report is sent to the RMM Manager, bringing the unit SYSB.

Memory

At 95 percent memory usage the RMM will signal the Swact Controller to Swact if the other CEM is inservice.

Combined Conditions

The following are two conditions where trap and memory together cause a Swact:

- If the memory or trap count is equal of greater than non-critical values, the RMM will signal the Swact Controller to Swact if the other CEM is inservice.
- If the memory or trap count is equal or greater than critical values, a forced Swact is invoked.

After a Swact occurs, a restart is needed to clean up the memory. When the RMM signals the Swact controller to Swact, the previously active side goes SYSB. Then INM will test the RMM and tries to bring the unit back in service.

59014140
Memory Management SWACT Controls (end)

The RMM well be set to fail the INM test case. When the INM continues to get failure responses from the RMM, a restart is invoked.

Hardware requirements

Memory Management SWACT Controls has no hardware requirements.

Limitations and restrictions

Memory Management SWACT Controls has no limitations or restrictions.

Interactions

Memory Management SWACT Controls.

Datafill

Memory Management SWACT Controls does not change data schema tables or office parameters.

Service orders

Memory Management SWACT Controls does not change the Service Order System (SERVORD).

Operational measurements

Memory Management SWACT Controls does not change operational measurements (OM).

Logs

Memory Management SWACT Controls does not change logs.

User interface

Memory Management SWACT Controls does not change the user interface.

Billing

Memory Management SWACT Controls does not generate billing records or changes.

59014147
Exceptions Handling SWACT Controller

Feature name

Exceptions Handling SWACT Controller

Description

This feature is one of two features designed to improve the SWACT controls of the SPM.

This feature creates an RMM to keep track of memory consumption and the number of traps that occur. The RMM will request a SWACT when the memory or trap thresholds have been reached.

For additional information, see the additional section of this publication for the following related feature:

- 59014140 Memory Management SWACT Controls

Hardware requirements

Exceptions Handling SWACT Controller has no hardware requirements.

Limitations and restrictions

Exceptions Handling SWACT Controller has no limitations or restrictions.

Interactions

Exceptions Handling SWACT Controller .

Datafill

Exceptions Handling SWACT Controller does not change data schema tables or office parameters.

Service orders

Exceptions Handling SWACT Controller does not change the Service Order System (SERVORD).

Operational measurements

Exceptions Handling SWACT Controller does not change operational measurements (OMs).

Logs

Exceptions Handling SWACT Controller does not change logs.

59014147
Exceptions Handling SWACT Controller (end)

User interface

Exceptions Handling SWACT Controller does not change the user interface.

Billing

Exceptions Handling SWACT Controller does not generate billing records or changes.

59014406
PX Trunk Support On SPM

Feature name

PX Trunk Support On SPM

Description

This feature creates term type ABSPX and exec lineup PXSPMX to support PX FX trunks. This enhancement allows users in the DMS-500 office to provision both PX FX and DAL trunks on the same SPM.

Prior to this feature, you needed to use at least two SPMs to handle local office PX FX trunks and long distance DAL trunks. The activation of this feature will allow you, with the appropriate datafill changes, to use termtype ABSPX to reference the PX FX trunk type and the original AB250 term type to reference the DAL trunk type on the same SPM.

In order to make this feature transparent to customers who do not require the functionality, the feature is controlled by office parameter DAL_AND_PX_ON_SAME_SPM. For more information and activation of DAL_AND_PX_ON_SAME_SPM see your *Office Parameter Reference Manua*l.

Hardware requirements

PX Trunk Support On SPM is only functional in the DMS-500 office with SPMs attached.

Limitations and restrictions

The limitations and restrictions that follow apply to PX Trunk Support On SPM:

- This is a DMS-500 specific feature.
- Datafill changes must be made to table MNNODE.
- To activate this feature an upgrade procedure must be followed to prevent loss of service.

Interactions

PX Trunk Support On SPM does not interact with other functionalities.

Datafill

To control the activation of this feature office parameter DAL_PXF_ON_SAME_SPM has been added to table OFCENG.

59014406
PX Trunk Support On SPM (end)

DAL_PXFX_ON_SAME_SPM has a default value of ‘N’. For the feature functionality to be turned ON:

- DAL_PXFX_ON_SAME_SPM must be set to ‘Y’ and an upgrade procedure must be followed. The upgrade procedure can be found in the activation section of the Office Parameter.
- Table MNNODE must be datafilled with the new termtype introduced by this feature with corresponding exec lineup for PX FX trunks.

Service orders

PX Trunk Support On SPM does not change the Service Order System (SERVORD).

Operational measurements

PX Trunk Support On SPM does not change operational measurements (OM).

Logs

PX Trunk Support On SPM does not change logs.

User interface

PX Trunk Support On SPM does not change the user interface.

Billing

PX Trunk Support On SPM does not generate billing records or changes.

59018675
Support of AT&T PRI variant for DMS-500

Feature name

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500

Description

This Feature provides support of the 4ESS and 5ESS PRI variants on the SPM for the DMS-500 market. Because the development of the 4ESS and 5ESS PRI variants has already been covered on the SPM for the DMS-250, this feature concentrates on the support of 4ESS and 5ESS PRI variants o the SPM for DMS-100.

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 allows the NT switch to set its variant correctly in order to interface with either and AT&T 4ESS or AT&T 5ESS switch. The protocol variant information is extracted from field, VARISSUE, in table LTDEF. This field has two sub fields: VARIANT and ISSUE. Field, VARIANT, is datafilled as U449PRI when connecting to an AT&T 4ESS switch and datafilled as U459PRI when connecting to an AT&T 5ESS switch. Issue is always datafilled as V1.

Hardware requirements

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 has no hardware requirements.

Limitations and restrictions

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 has no limitations or restrictions.

Interactions

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 does not interact with other functionalities.

Datafill

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 does not change data schema tables or office parameters.

Service orders

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 does not change the Service Order System (SERVORD).

59018675
Support of AT&T PRI variant for DMS-500 (end)

Operational measurements

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 does not change operational measurements (OM).

Logs

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 does not change logs.

User interface

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 does not change the user interface.

Billing

Support of AT&T PRI Variant 4ESS and 5ESS for DMS500 does not generate billing records or changes.

59018984
OSServices support for CEM (LX82BA)

Feature name

OSServices support for CEM (LX82BA)

Description

OSServices support for CEM (LX82BA) provides OSServices for the CEM (LX82BA). OSServices initializes processor specific hardware as required through the BSP. In the case of the LX82BA it provides support of the PPC 750 processor chip, clock bus speed, and the ethernet chip.

Hardware requirements

OSServices support for CEM (LX82BA) requires the CEM (LX82BA).

Limitations and restrictions

OSServices support for CEM (LX82BA) has no limitations or restrictions.

Interactions

OSServices support for CEM (LX82BA) does not interact with other functionalities.

Datafill

OSServices support for CEM (LX82BA) does not change data schema tables or office parameters.

Service orders

OSServices support for CEM (LX82BA)does not change the Service Order System (SERVORD).

Operational measurements

OSServices support for CEM (LX82BA) does not change operational measurements (OM).

Logs

OSServices support for CEM (LX82BA) does not change logs.

User interface

OSServices support for CEM (LX82BA) does not change the user interface.

59018984
OSServices support for CEM (LX82BA) (end)

Billing

OSServices support for CEM (LX82BA) does not generate billing records or changes.

59019804
CEM-750 Core-OAM&P Support

Feature name

CEM-750 Core-OAM&P Support

Description

This feature address all the core OAM&P related requirements related to CEM hardware LX82BA. This includes registering the PEC code NTLX82BA and ensuring that Logs, CIs and Map display the same.

Hardware requirements

CEM-750 Core-OAM&P Support requires the new Common Equipmetn Module NTLX82BA.

Limitations and restrictions

CEM-750 Core-OAM&P Support has no limitations or restrictions.

Interactions

CEM-750 Core-OAM&P Support does not interact with other functionalities.

Datafill

CEM-750 Core-OAM&P Support adds NTLX82BA as a valid CEM PEC code in table MNCKTPAK.

CEM-750 Core-OAM&P Support does not change office parameters.

Service orders

CEM-750 Core-OAM&P Support does not change the Service Order System (SERVORD).

Operational measurements

CEM-750 Core-OAM&P Support does not change operational measurements (OM).

Logs

CEM-750 Core-OAM&P Support does not change logs.

User interface

CEM-750 Core-OAM&P Support does not change the user interface.

59019804
CEM-750 Core-OAM&P Support (end)

Billing

CEM-750 Core-OAM&P Support does not generate billing records or changes.

59020409
Spectrum OOS RM Mate Loading

Feature name

Spectrum OOS RM Mate Loading

Description

Spectrum OOS RM Mate Loading introduces new RM loading functionality. It provides a method to load a target OOS RM from the FLASH of a source InSv RM. Spectrum OOS RM Mate Loading works independently from the mechanism of an external download significantly decreasing loading times and increasing reliability.

Spectrum OOS RM Mate Loading allows a target RM to obtain a copy of a load taken from the FLASH memory of an InSv source RM by-passing the DMS disk file system and messaging to and from the core.

Spectrum OOS RM Mate Loading frees up the load server from OOS loading a number of RMs.

Hardware requirements

Spectrum OOS RM Mate Loading requires the new Common Equipment Module NTLX82BA.

Limitations and restrictions

Spectrum OOS RM Mate Loading has no limitations or restrictions.

Interactions

Spectrum OOS RM Mate Loading does not interact with other functionalities.

Datafill

Spectrum OOS RM Mate Loading does not change data schema tables or office parameters.

Service orders

Spectrum OOS RM Mate Loading does not change the Service Order System (SERVORD).

Operational measurements

Spectrum OOS RM Mate Loading does not change operational measurements (OM).

59020409
Spectrum OOS RM Mate Loading (end)

Logs

Spectrum OOS RM Mate Loading does not change logs.

User interface

Spectrum OOS RM Mate Loading does not change the user interface.

Billing

Spectrum OOS RM Mate Loading does not generate billing records or changes.

59025428
Support 100/250 PRI Trunks on Same SPM

Feature name

Support of 100/250 PRI trunks on same SPM for DMS-500.

Description

This feature creates term type PRAB500 to support PRI 250 trunks. This enhancement allow users in the DMS-500 to provision both PRI 100 and PRI 250 trunks on the same SPM.

Prior to this feature, you needed to use at least two SPMs to handle local office PRI 100 and long distance PRI 250 trunks. The activation of this feature will allow you, with the appropriate datafill changes, to use termtype PRAB500 to reference the PRI 250 trunk type and the original PRAB termtype to reference the PRI 100 term type on the same SPM.

Provisioning of both 100/250 PRI trunks on the same SPM is controlled by office parameter “LOCAL_LD_SPRI_ON_SAME_SPM” found in table OFCENG. In order to activate support for both PRI 100 and 250 tunks on the same SPM, LOCAL_LD_SPRI_ON_SAME_SPM must be set to ‘Y’ and the following termtype and exec lineup combination be datafeilled in tabel MNNODE:

- (PRAB SPMEX) for PRI 100 trunks
- (PRAB500 SPM250) for PRI 250 trunks

For more about LOCAL_LD_SPRI_ON_SAME_SPM see your *Office Parameter Reference Manual*.

Hardware requirements

Support of 100/250 PRI trunks on same SPM for DMS-500 is only functional in the DMS-500 office with SPMs attached.

Limitations and restrictions

The limitations and restrictions that follow apply to Support of 100/250 PRI trunks on same SPM for DMS-500:

- This is a DMS-500 specific feature
- Datafill changes must be made to table MNNODE.
- To prevent loss of service an upgrade procedure must be follow before activation.

59025428
Support 100/250 PRI Trunks on Same SPM (end)

Interactions

This is a DMS-500 specific feature does not interact with other functionalities.

Datafill

To control the activation of this feature office parameter LOCAL_LD_SPRI_ON_SAME_SPM has been added to table OFCENG.

LOCAL_LD_SPRI_ON_SAME_SPM has a default value of ‘N’. For the feature’s functionality to be turned ON:

- LOCAL_LD_SPRI_ON_SAME_SPM must be set to ‘Y’ and an upgrade procedure must be followed. The upgrade procedure can be found in the activation section of the Office Parameter.
- Table MNNODE must be datafilled with the new termtype created by this feature with corresponding exec lineup for PRI 250 trunks.

Service orders

This is a DMS-500 specific feature does not change the Service Order System (SERVORD).

Operational measurements

This is a DMS-500 specific feature does not change operational measurements (OM).

Logs

This is a DMS-500 specific feature does not change logs.

User interface

This is a DMS-500 specific feature does not change the user interface.

Billing

This is a DMS-500 specific feature does not generate billing records or changes.

59025452
AB Bit Freeze for ISUP on SPM

Feature name

AB bit freeze for Integrated Services Digital Network User Part (ISUP) trunks on the Spectrum Peripheral Module (SPM)

Description

Prior to SP15, DMS customers using ISUP trunks on an SPM based peripheral are unable to connect to a Lucent 1AESS switch that monitors the AB or ABCD bits.

The problem occurs because ISP trunking does not use the bearer channel to transmit signaling information. The bit positions in the channels previously used to carry signaling information (ABCD bits) now contain only pure voice or data. This causes problems for the Lucent 1AESS because it can not handle changes in the AB or CD bits.

AB Bit Freeze for ISUP on SPM provides a software solution on the DMS and SPM that causes the SPM to freeze the AB(CD) bits on every ISUP trunk to a specific value (all ones). This allows calls to proceed normally to and from the Lucent 1AESS.

Note: Since 1 bit is lost to AB(CD) bit freeze there is a drop in channel bandwidth from 64Kbps to 56Kbps.

Hardware requirements

AB Bit Freeze for ISUP on SPM has no hardware requirements.

Limitations and restrictions

The limitations and restrictions that follow apply to AB Bit Freeze for ISUP on SPM:

- Provides AB(CD) Bit Freeze capability for trunks provisioned on the OC-3 RM only.
- In releases prior to 14, all ISUP trunks currently provisioned on the SPM-based peripheral that interconnect to the Lucent 1AESS switch must be deleted prior to applying a patch.
- If the Lucent 1AESS switch changes to allow AB(CD) bit fluctuation then all ISUP trunks currently provisioned on the SPM-based peripheral that interconnect to the Lucent 1AESS switch must be deleted prior to changing the fields ABCNTL and ADJNODE in TRKSGRP.
- Changing fields ABCNTL and ADJNODE in TRKSGRP is not sufficient to enable or disable the AB(CD) bit freeze function alone. The trunks must

59025452
AB Bit Freeze for ISUP on SPM (end)

be deleted prior to any changes made to the above two fields. Once the fields are changed, the trunks can then be added again to table C7TRKMEM.

Interactions

AB Bit Freeze for ISUP on SPM does not interact with other functionalities.

Datafill

AB Bit Freeze for ISUP on SPM does not change data schema tables or office parameters.

Service orders

AB Bit Freeze for ISUP on SPM does not change the Service Order System (SERVORD).

Operational measurements

AB Bit Freeze for ISUP on SPM does not change operational measurements (OM).

Logs

AB Bit Freeze for ISUP on SPM does not change logs.

User interface

AB Bit Freeze for ISUP on SPM does not change the user interface.

Billing

AB Bit Freeze for ISUP on SPM does not generate billing records or changes.

59026742
Enhance MMI Warnings

Feature name

Enhance MMI Warnings

Description

This feature enhances the MMI Warnings on the SPM MAP at the CEM level.

The MMI warning appear if there is a Datasync mismatch between the two CEMs of the SPM when you attempt to run a Swact command or attempt a BSYFORCE command on the active CEM.

Hardware requirements

Enhance MMI Warnings has no hardware requirements.

Limitations and restrictions

The limitations and restrictions that follow apply to Enhance MMI Warnings:

- The MMI warning regarding the Datasync mismatch is just a warning, you can continue with the execution of the command.
- The MMI warning is displayed only of r the BSYFORCE option on the active CEM.
- If MTS messages are lost, mismatch of DATASYNC status will be noticed between CM and SPM.

Interactions

Enhance MMI Warnings does not interact with other functionalities.

Datafill

Enhance MMI Warnings does not change data schema tables or office parameters.

Service orders

Enhance MMI Warnings does not change the Service Order System (SERVORD).

Operational measurements

Enhance MMI Warnings does not change operational measurements (OM).

Logs

Enhance MMI Warnings does not change logs.

59026742
Enhance MMI Warnings (end)

User interface

Enhance MMI Warnings modifies the Bsy and Prot commands in the SPMCEMDIR..

Billing

Enhance MMI Warnings does not generate billing records or changes.

59027128
SPM DS-1 Assignment SOC Control

Feature name

SPM DS-1 Assignment SOC Control

Description

Each Spectrum Peripheral Module (SPM) node manages up to 84 DS-1 carriers, and each carrier transports up to 24 trunks. Thus each SPM allows up to 2016 trunks (24*84). This feature allows you to buy a customized portion of the 2016 tunks available on the SPM using SOC functionality.

Earlier features provided a password-protected command to set or query an office wide variable. The value of this variable represents the maximum number of SPM DS1P carriers you are able to provision in table MNHSCARR. Nortel introduced this method in NA013 and also patched it back in releases NA011 and NA012. In NA014 two tuples were added in table OFCOPT to control the number of carriers assigned to SPMs in a single office though the use of office parameters.

Feature 59027128, “SPM DS-1 Assignment SOC Control”, introduces the following improved methods and capabilities.

- Provides SOC functionality to replace office parameters SPM_MAX_MSGTRK_CARRIER and SPM_MAX_PRITRK_CARRIER. SOC SPMS0016 replaces SPMS_MSGTRK_CARRIER and SOC SPMS0017 replaces SPMS_MSGTRK_CARRIER.
- Provides two hard usage options that assign a limit to the number of resources the options controls.
- Restricts the number of provisioned DS IP carriers assigned with either ISUP/PTS or PRI trunks to a limit set though the SOC CI Level.
- The DMS switch displays a warning message when the value of carriers provisioned reaches to 75% of the limit of either options.
- The DMS switch displays and error message when the maximum limit has been reached.

Hardware requirements

SPM DS-1 Assignment SOC Control has no hardware requirements.

Limitations and restrictions

After querying the number of carriers provisioned, make sure the number is less than the usage limit set in the SOC options.

59027128
SPM DS-1 Assignment SOC Control (end)

Interactions

SPM DS-1 Assignment SOC Control does not interact with other functionalities.

Datafill

SPM DS-1 Assignment SOC Control uses table MNHSCARR.

Refer to the *Data Schema Reference Manual* for more specific information about this table and its datafill requirements.

Office Parameters SPM_MAX_MSGTRK_CARRIER and SPM_MAX_PRITRK_CARRIER in table OFCOPT were deleted.

Service orders

SPM DS-1 Assignment SOC Control does not change the Service Order System (SERVORD).

Operational measurements

SPM DS-1 Assignment SOC Control does not change operational measurements (OM).

Logs

SPM DS-1 Assignment SOC Control does not change logs.

User interface

SPM DS-1 Assignment SOC Control does not change the user interface.

Billing

SPM DS-1 Assignment SOC Control does not generate billing records or changes.

Digital Switching Systems

DMS-Spectrum Peripheral Module

Feature Description Reference Manual

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