Hands-On Genband (Nortel) DMS-10 Switch Advanced Support Course

Course Description

The Genband (formerly Nortel) DMS-10 Switch Support course was developed to help telcos continue to support their extensive DMS-10 networks with less reliance upon external resources.

As with many switching systems, the DMS-10's overall reliability is high enough that techs do not often work with advanced problems, so that when such problems do occur, it can be difficult to know how to proceed.

Overlays are looked at in detail, looking special commands like SWCH, CHG, DNLD, 1BUS, and other recovery or firmware related options. Exercises and examples are provided to show how to upgrade the firmware of all system processors, or just certain ones like the 3T98 CPU. These examples are helpful for understanding how any processor in the system can be reloaded, which may become necessary for individual maintenance issues.

Remotes are also looked at in more detail, where OVLY CNFG is used to understand what types of remotes are equipped and how they are engineered. Cables and links are studied, to help understand how the host Network ultimately provides switching to a distant remote over carrier spans. This requires understanding of various hardware components including the DCM/DSI, SRLKs, HIE, RCC, and with HSO-SSO, the DLC modules.

Additional documents are studied, including environmental, electrical, and grounding, plus Installation Methods which show processes for system cabling, upgrades, and conversions. These procedures may not always be used today, but such documents serve as excellent benchmarks for complex troubles.

Other topics like OVLY LOG, Operational Measurements, and Bug Messages are reviewed, plus there are several examples from real-world troubleshooting, including outages, CPU, and other common-control hardware faults.

The course covers a broad range of knowledge, yet is flexible and can be changed to match the specific needs of a given telco or region, and the types of hardware used locally.

Students Will Learn

- **DMS-10 system module review to ensure no gaps in knowledge**
- **Inter-module cabling and backplanes**
- **Bay, shelf, pack, and cable port locations**
- **Different NET and IFPK options, GTSB, and Di-Loop counts**
- **How to use less common OVLY options**
- **Use and understand all types of NTP documents**
- **Use system logs and Bug messages to troubleshoot**
- **Work with HSO-SSO clusters, looking at alarms for each node**
- **Know the types of RLCM-family remotes, plus SLC & GR-303 connections**
- **Recovery procedures using EPs, and understand 1-Bus mode**

- **Troubleshooting by previous examples**
- **And much more**

Target Audience

Technical staff such as Central Office Technicians, NOC/SCC, certain management personnel, and those seeking cross-training or system interoperability with the DMS-10 switch, and who need to solve complex or chronic problems.

Prerequisites

Students are recommended to have previously completed the DMS-10 Maintenance and Troubleshooting course, or have a good understanding of the DMS-10 switching system and its various overlays and commands, as well as general Central Office concepts.

Course Outline

Module 1 : DMS-10 Switch Summary

- CPU Core
  - MTI, TTY0 & 1
  - IOI devices
  - Bay Options
- Network
  - Classic vs. EN/CNI
  - Interface Packs
  - MLI & DS-30A
  - Bay Options
- IO
  - GPIO
  - MPU, LSHF
- Peripherals
  - Line: PSHF, LCM
  - Trunk: PSHF, DCM, DSI
  - Packet: PGI

Remotes

- RSC, RSC-S
  - RLCM-Family incl. OPM, OPAC, Star Hub
  - RSLE, RSLM, OPSM
  - HIE, RMM, ESA, RCC
  - SCM-10U: DMS-1U
  - SCM-10R: DMS-1R
  - SCM-10S: SLC-96
  - SCM-10A: ESMA & GR-303 RDTs

REM
- Cluster Concept
HSO-SSO
LCC-SSO

Time Division Multiplexing (TDM)
MLI, DS-30A, DS-60, DS-256
Time-Space-Time Philosophy
- Functional Block Diagram (Tier 2)
- 297-3601-150 - Equipment Identification

Module 2 : Cabling and Links
- MTI - TTY0 & 1, Alarm Panel
- SDI, DSDI, TTY2-31
- Ethernet - 3T84
- PCM & Control Signals
PELP vs. Di-Loop
- Network Interface to Peripherals (PSHF, DCI, LCM)
- Links to Remotes
DSX, HIE Shelf
SRLK, DS-1, MLI/DS-30A, DS-30B
3T50 DLC & HSO-SSO
RCC
6X73 LCC
- Alarms
ALPK, ALPT, TALM
- IM 03-4208 - DMS-10 Physical Handbook
- 297-3601-100 - General Description

Module 3 : Commands
- Resident (RES) Commands? LIST TRB, CSEL, MON, ACC, OVLY, etc.
- Detailed OVLY Options
Overlay Selection: PE vs. CE equipment
CKT
CPK
PED
DED
NED
DN
ODQ
TLT
LIT
ALO
IOD
CED
LED
SED
BERT
CNFG
LOG
Various examples - translating a cable, finding engineered parameters, etc.
- NTP 297-3601-311 DMO
- NTP 297-3601-506 MDI

- Exercises

Module 4 : Documentation

- Helmsman v4.x
  CD-ROM Install & Browser-Based
  Helmsman Alternatives
- NTP & Procedure Look-up
  297-3601-000 - Index to NTPs

Nortel Technical Publications (NTP) - 297 Series

297-3601-002 - NTP Description and Use
297-3601-100 - General Description
297-3601-150 - Equipment Identification
297-3601-300 - Input/Output System
297-3601-311 - Data Modification Manual
297-3601-316 - DIP Switch Settings
297-3601-450 - Provisioning
297-3601-456 - Operational Measurements
297-3601-500 - General Maintenance Information
297-3601-506 - Maintenance Diagnostic Input
297-3601-511 - Maintenance and Test
297-3601-902 - Pocket Guide
297-3601-903 - Output Message Manual
Procedure Concept: EP, GP, RP, MP, TP

- HW Baseline Report

Job Site Documentation

J - Equipment Assembly
IS - Interconnect Schematic
SD - Schematic Diagram
IM - Installation Method

- Demonstration & Examples
  Classic-EN/CNI Switch Box procedure example

Module 5 : Support

- Temperature and Environment
  297-3601-180 - System Performance Specifications
- Electrical Capabilities
  297-3601-184 - Circuit Interface for Lines, Trunks, Test Trunks
- Power & Grounding
  297-3601-187 - Grounding System
- Locating Equipment
  OVLY CNFG - SITE, SSO, SHD "REx"
  OVLY IOD - DLC
  OVLY NED - Network type, PELP types
  OVLY CED - CPU Core, 1BUS, SWCH, QUE HEX
  OVLY SED - CCS7, LAN
  OVLY DED - CE peripherals, Network, Remotes
  OVLY PED - PSHF peripherals
  Bay labeling
  "Translate" P & C
- Line Test:
  PMS system components
  External systems: 4TEL, Test Desk/DMM

- Logs
  OVLY LOG
  QUE, SRCH
  LINE, TTY, ALM, TEXT
- Bug Messages
  $QM & OMM
- Operational Measurements
  EADAS format
  Measurement Types
  PRNT OPM
- Examples:
  Replacing Line 6X05 Drawer
  RMM Fault
- Exercises & Practice

Module 6 : RTOS & Software

- GRS-3601-60220 - Generic Release Summary
- System Software Versions
  Using Upgrade Docs as references
  OVLY UPDT - QPL
  OVLY CNFG - UPGD options
- Processor Versions
  STAT LCMC ALL
  VERS IFPK ALL
  VERS LAN ALL
  VERS IOI
  etc.
- RTOS CPU Upgrade
  IM 65-4969 Upgrade Example
  TP 3147 Reload Example
    - Generic Upgrade Process
  DNLD
  SWCH
  CHG

Module 7 : Troubleshooting

- Emergency Procedures
  Preparedness & Proofing
  EP 0006 Power-Up (Cold-Start) Procedure
  EP 0009 Dead System Recovery Procedure
  EP 0012 Manual System Software Reload Procedure
- Troubleshooting Procedures
  TP 6023 & TP 7103 & - RLCM Outage Example
  297-8351-550 - RLCM Maintenance Manual
  TP 4072 - Network Interface Pack fault
- Student Examples

Delivery Method

Instructor-Led with numerous exercises throughout

Equipment Requirements

(This apply's to our hands-on courses only)

BTS provides equipment for a very successful Hands-On course, but encourages students to bring their own equipment to the course such as laptops, documentation, etc. This provides students with the opportunity to incorporate their own gear and resources into the labs, gaining valuable experience with their specific equipment.

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

5 Days