

Hands-On

# DMS-10 System Maintenance and Troubleshooting



## Course Description

The DMS-10 System Maintenance & Troubleshooting course provides extensive information on the design, maintenance, and troubleshooting of the Nortel DMS-10 switching system.

The course will provide the skills necessary to perform day-to-day maintenance, plus show how to troubleshoot service-affecting faults along with non-intrusive exercises to equip the students to conduct maintenance activities and perform troubleshooting procedures. Students will also cover various types of documentation, which will help greatly when working with the switch.

This course should also greatly assist personnel when working with next-tier technical support.

## Students Will Learn

- Review of the basics including Tip & Ring, battery, A/D & D/A conversion, and PCM
- The primary bays and modules used in a DMS-10 switching system, including the different types of remotes, plus key system features
- How to use the Command Interpreter, and the two types of commands
- Various types of documentation, Helmsman, NTPs, and installation drawings
- How to find the physical location of a fault
- How to change packs in CE, PE, and LCE bays
- How to query directory numbers, trunk groups, and other database
- Where to find Emergency Procedures documentation such as for 1BUS operation, SwAct, and SYSLOAD
- And more...

## Target Audience

The course is intended for those who are responsible for the maintenance and troubleshooting of Central Office systems, plus NOC personnel and first responders who respond to alarms. No previous switching background is required, although some familiarity with CO equipment will be beneficial. Certain management and provisioning personnel will also benefit, providing a greater understanding of the resources needed for the system, and how to program it.

## Prerequisites

No previous switching background is required, although some familiarity with CO equipment will be beneficial.

## Course Outline

### Module 1 PSTN Overview

- The Public Switched Telephone Network
- Lines T&R, talk battery, AC & DC
- Analog Transmission including analog waveforms
- Digital Transmission data transmission, A/D conversion
- PCM 8 & 10 bit, DS-30A introduction
- Stored Program Control and Time-Space-Time

### Module 2 Introduction to the DMS-10

- System Topology & Theory of Operation
- Bays & Equipment CE, PE, LCE, SE, ME
- Service Equipment terminal servers & TTY, RA
- Helmsman, NTPs (400, 500, 600 series)
- Schematic & Inter-Bay Connection Drawings
- Circuit Packs
- Review of Modules 1 & 2

### Module 3 General Procedures & TTY

- Maintenance & Test Manual - General Procedures (GP)
- TTY Terminals TTY0 & 1
- Command Interpreter LOGI, Resident & Overlay commands
- OVLY Types
- Common Maintenance Commands
- Exercises
- Review/Switch Tour

### Module 4 Maintenance

- Maintenance & Test Manual Maintenance Procedures (MP)
- Maintenance & Test Manual - Routine Procedures (RP)
- Output Message Manual
- DRA Trunk Pack (2T85) Example
- DIP Switch Settings
- Maintenance Examples
- OVLY ALO
- OVLY CKT

- OVLY PED
- Line Packs (LPK) (6X17)
- Peripheral Equipment Packs (PEPK) (6X50, 6X73)
- Ringing (6X30)
- Power (6X53, 3T19)
- OVLY IOD & OVLY UPDT
- DUMP MO
- OVLY TRK
- OVLY DN
- Exercises
- Review/Switch Tour

### **Module 5 Troubleshooting**

- Alarms OVLY ALO
- Looking-up Alarms OMM, Logs
- Diagnostics & Tshoot OVLYs
- OVLY CED
- OVLY DED
- OVLY NED
- OVLY PED
- OVLY SED
- OVLY LED
- Locating Faulty Packs
- Changing a Pack (non-maintenance window)
- Verify the Repair BSY, TEST, RTS
- Exercises
- Review/Switch Tour

### **Module 6 Emergency Procedures**

- Emergency Procedures (EP)
- Cold Start (EP 0006)
- Dead System Recovery (EP 0009)
- Power Down (EP 0010)
- 1BUS Mode & SwAct
- Alarm Panel, TTY0 & 1
- Power & Circuit Breakers
- Review
- Module 7 Provisioning Overview
- Data Modification Order
- Directory Numbers & Line Equipment
- CLASS & CCF Features
- OVLY DN QUE, VERIFY, ADO, DLO, NEW, ACT, QACT
- OVLY TG QUE TG - AMI & B8ZS
- OVLY SHEL - Telnet
- Review

### **Module 8 Summary**

- DMS-10 Block Diagrams
- End-to-End Call Example

- LCE Example LCE 01 4 11 26
- Class Exercise (HAZ line, GPIO, Network examples)
- Course Evaluation

## Notes

This course can be delivered also in a 5 or 8 or 10 day format, depending on the amount of labs desired and specific topics covered.

Note The course is designed to run for 5 full days in a classroom setting, but additional length is added upon request to provide a greater understanding of foundational topics, such as telecom networks, PCM theory, or hexadecimal-binary-decimal conversion. More complex troubleshooting concepts can be pulled into this course including debug logs, inter-bay cabling, and backplane (i.e. to provide a tier-2 level of support). Field trips to actual premises can be used to allow students an opportunity to see and understand where all the parts of the system are found, what they do, and provide a better end-to-end understanding of the switch.

## Delivery Method

Instructor-led with a flexible approach that adjusts content to that which is most relevant to students. It includes various non-intrusive labs, demonstrations, and exercises to help students focus on and retain the material presented.

## Equipment Requirements

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

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