Hands-On

Ericsson AXE 10 Switch Maintenance and Troubleshooting

Course Description

This extensive course provides the skills required to perform maintenance and a high-degree of troubleshooting, and will walk the student through a practical understanding of the Ericsson AXE 10 switching system and several module & magazine options. It discusses the use of MML maintenance terminals, including the use of serial port, Windows NT/2003 based AT terminals, and alarm consoles.

The APZ and APT processor systems are described in detail, along with an overall theory of operation for the switch, and how it aligns with the software block system. System output messages such as the System Recovery Log (SYRIP), Alarm List (ALLIP), recovery logs, and other standard AT messages are reviewed with exercises to practice troubleshooting steps. The DynaText electronic document system is also reviewed, including topics such as operations, maintenance, and troubleshooting books. Previous troubles or actual issues being experienced by the student are reviewed, and used as exercises. Topics may include any common modules from in the Subscriber Step (SS) and Trunk/Signal System (TSS), but also the Group Switch, Regional Processors, and the CP front-end. The IOG architecture is also included, with a discussion of how to perform tape and magneto-optical maintenance. Terminal connections are described for critical IO access.

Our non-intrusive exercises equip the student to conduct day to-day maintenance activities, perform troubleshooting procedures, plus understand the cabling and various parts of the backplane, and much more. The course is flexible, allowing the most important content for a particular group of students to be emphasized.

Target Audience

Technical staff such as Central Office Technicians, NOC/SCC, certain management personnel, and those seeking cross-training or system interoperability with the AXE switch.

Prerequisites

A basic understanding of telecommunications and switching principles is helpful due to the accelerated

nature of the course.

Course Outline

Module 1 : Telephony Overview
- T&R, E&M
- Battery
- Analog Signals
- Digital: A/D & D/A Conversion
- PCM, T1, E1, CAS/CCS
- Stored Program Control (SPC)
- Analog & Digital Talk Paths
- AXE Series: 10, 810, 910, GSM

Module 2 : AXE 10 Theory of Operation
- AXE Topology
- Functional Block Diagram
- PLEX, Blocks & Subsystems, DCS
- SSS: GSS Space & TSS Time Components
- Hardware Modules:
 APZ: 212/xx series
 Subsystems (i.e. MAU/UMB, RPH, FMS, CHS, IOG/SPG, RES/IMS CALEA)
 Storage: DS/RS/PS
 APT & Subsystems (SSS, CCS, bus structure, etc.)
 GSS: TSM, SPM, Clock
 Regional Processors (RP) - RPH
 Peripherals: TSS & SSS Interfaces
 LSM Lines & ETC Trunks
 EMTS
 Magazine Types
 SLIC, SLAC, REU, SLCT/SULT
 CCS incl. SS7 Concepts
 RSS Remotes, ETC/STC Connections
 MGW - Packet Handler
 - End-to-End Call
 - Review

Module 3 : I/O & TTY
- Input/Output IOG & Man-Machine
- FIOL/WINFIOL/WIOL Terminal (DOS/Win/UNIX)
- AXEUSE Windows GUI
- TMOS Utility
- Printouts: Auto & Command-Initiated
- SPS: Support Processor
- FMS: HD/FD/OD/MT & Backups SYBFP
- MCS: ALI/AT & Alarm Panel, IOLRC load reg- MML Format
- Command Code: XXYYZ
- Responses: Executed, Ordered/F1, Not Accepted

- Job Buffers (JB)
- Command Examples: MC, EX, IO commands
- Ranges
- Time: CA commands
- Practice Looking-Up Commands
- Status: WO/EX, WO/SB, MBL, HBL, CBL, ABL, etc.
- Examples
- Review

Module 5 : Documentation!
- DynaText Browser
- Modules: A-T Descriptions
- LZT (incl. LZU, LZM Series) Operations Manual
- Operational Instructions (OPI)
- LZY Software

Module 6 : Maintenance
- Listing Troubles
- Directory Numbers & SLICs
- Lines: EXSSI:SNB, ILLUP, ILLUI, ILBLI/ILBLE, etc.
- Locating a Cabinet/Magazine/Card, EXPOP
- Replacing Modules:
  Power-Removal Requirements
  Correct Card Extraction & Insertion
- Testing- ILLTI & SLOCI/SLOMI commands
- Alarm Modules - ALCPU, ALEXP
- Trunk Modules - ETCs
- System Backup - SYBMS, SYBFP
- Automatic Execution - IOCMP
- External Alarms - AL commands
- Traffic: IN, SQ, TR commands
- Examples

Module 7 : Troubleshooting
- NOC/SCC Interaction
- ESD Precautions
- Commands: ALLIP, ALLTC, IMHWR, REPCI, other RE, C7, NT commands
- Alarm Classes: A1, A2, A3, O1, O2 (ALCLP)
- Event Numbers
- Using the SYRIP Recovery Log
- Recoveries:
  Alarm Terminal
  FORLOPP Teardowns, FID
  Small, Large, Reload (SYRSI)
  Large/Ordinary Start vs. Start System vs. Cold Start

Module 8 : Translations Introduction
- SUL, SUS, IUP commands
- Call Trace CTRAI

Delivery Method

Instructor-Led with numerous exercises throughout.

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