

avodaq ADVANCED TRAINING			
Classroom Training	5 Days		

INTRODUCTION

This ILT course focuses on how to troubleshoot the Cisco PGW solution with the PGW operating in Call Control mode. Attendees should have a good understanding of the technologies stated in the prerequisites. The attendees will spend their time in theory/lab sessions learning various Cisco and generic commands and tools e.g. Show and Debug on IOS devices, PGW/HSI mml and Solaris CLI commands, Call Tracing on the PGW and HSI, Flow Analysis with Wireshark-, Cisco PTC-MT-, MDL-, Solaris Snoop protocol analyser and retrieving logs and alarms in order to troubleshoot.

The course will concentrate on the following call elements: PGW, HSI, AS5350 Universal Gateway with Integrated SLT, ITP, SER, IOS Voice Gateway, CCM and various endpoints. The course will replicate the following call scenarios for investigation: TDM (SS7, ISDN) to TDM, TDM (SS7, ISDN) to VoIP (H.323, SIP, EISUP), VoIP to VoIP.

This course provides the knowledge and skills required to troubleshoot PGW/HSI systems and IP network deployments, addressing both design/planning practices and hands-on experience troubleshooting. There will very little if any in the way of Technology theory. Attendees should be encouraged to use their own PC/laptop resource including packet analyser to capture configurations and packet traces.

OBJECTIVES

Given the prerequisites, upon completion of this course the delegate will be able to:

- Understand all PGW solution deployments
- Develop generic troubleshooting approach
- Use all PGW deployment troubleshooting tool
- Troubleshoot PGW and HSI Solaris platform
- Troubleshoot IP Connectivity, Backhaul sessions and SIGTRAN
- Troubleshoot SS7 in PGW deployments
- Troubleshoot EISUP in PGW deployments
- Troubleshoot ISDN in PGW deployments
- Troubleshoot MGCP in PGW deployments
- Troubleshoot Fax over IP in PGW deployments
- Troubleshoot H.323 in PGW deployments
- Troubleshoot SIP in PGW deployments
- Troubleshoot PGW dial plans

IMPORTANCE

The course is a prerequisite for network administrators and technicians involved in designing, integrating and troubleshooting complex PGW network environments.

TARGET AUDIENCE

The course provides advanced training for senior level network professionals. Target audience for this course are upcoming PGW experts.

PREREQUISITES KNOWLEDGE

- Qualification to Cisco Certified Network Associate (CCNA) level
- Attendance on PGW 2200 Call Control Course: PGWC
- Voice and VoIP Architectures
- Basic Solaris administration skills
- SS7 and Q.931 Call flow and Operation
- H.323 and SIP Call flow and Operation
- MGCP and Signaling Backhauling as IPFAS, BSMVO and SIGTRAN

COURSE OUTLINE

- Lesson 1: PGW Solution Overview
 - PGW Deployment Scenarios
 - PGW Solution Components
 - Keepalives
 - Sources of Trouble
- Lesson 2: Troubleshooting Overview
 - Generic Troubleshooting Execution
 - PGW Deployment Based Execution
 - PGW Deployment Troubleshooting Tools
 - PGW Deployment Troubleshooting Docs
 - Common Problems
 - General PGW Troubleshooting Tips
- Lesson 3: PGW/HSI Platform Troubleshooting
 - PGW Redundancy
 - PGW Failover
 - Alarms and Logfiles
 - PGW/HSI Platform Housekeeping
 - Lab 3-1
- Lesson 4: IP Connectivity Troubleshooting
 - Protocols Review
 - IP Redundancy Concepts
 - Signaling Backhaul
 - IP Troubleshooting Areas
 - Example Scenarios
 - Lab 4-1
- Lesson 5: SS7 Troubleshooting
 - SS7 Architecture and Protocol Review
 - Troubleshoot PGW
 - Troubleshoot separate/integrated SLT Signaling
 - Troubleshoot ITP
 - Examples
 - Output Analyses
 - Lab 5-1, Lab 5-2
- Lesson 6: EISUP Troubleshooting
 - EISUP Architecture and Protocol review
 - Troubleshoot PGW – PGW EISUP
 - Troubleshoot PGW – HSI EISUP
 - Output Analyses
 - Lab 6-1
- Lesson 7: ISDN Troubleshooting
 - Architecture and Protocol Review
 - IOS ISDN Troubleshooting
 - PGW ISDN Troubleshooting
 - Example
 - Output Analysis
 - Lab 7-1
- Lesson 8: MGCP Troubleshooting
 - MGCP Architecture and Protocol Review
 - MGCP Parameters
 - MGCP Return and Reason Codes
 - PGW MGCP Troubleshooting
 - IOS MGCP Troubleshooting
 - MGCP Analysis with Wireshark
 - Example
 - Output Analysis
 - Lab 8-1, Lab 8-2
- Lesson 9: Fax over IP Troubleshooting
 - Fax over IP Methods
 - Fax over IP Troubleshooting Areas
 - Fax over IP Troubleshooting
- Lesson 10: H.323 Troubleshooting
 - H.323 Architecture and Protocol Review
 - HSI Data and H.323 Parameters
 - HSI H.323 Troubleshooting
 - Gatekeeper Troubleshooting
 - H.323 Analysis with Wireshark
 - Example
 - Output Analysis
 - Lab 10-1
- Lesson 11: SIP Troubleshooting
 - SIP Architecture and Protocol Review
 - PGW SIP Troubleshooting
 - IOS SIP Troubleshooting
 - Example
 - Output Analysis
 - Lab 11-1, Lab 11-2
- Lesson 12: Dial Plan Troubleshooting
 - Routing Concepts
 - Intermediate, early and end Result
 - Longest Match vs. no Longest Match
 - Call Verification
 - Output Analysis
 - Lab 12-1, Lab 12-2