CCAP – Implementing Cisco Converged Cable Access Platform

Days: 4

Description: cBR-8 is the next generation in Cisco's series of CMTS (Cable Modem Termination System) platforms. Cisco's uBR 10K (Universal Broadband Router) previously offered industry-leading CMTS functionality – the cBR-8 is now Cisco's flagship CMTS offering. The Cisco cBR-8 CCAP (Converged Cable Access Platform) CMTS provides many technology advancements and performance enhancements, while reducing the overall cost per subscriber. These advanced capabilities include: four times the capacity (number of cable modems/subscribers per CMTS) at double the speed of currently available DOCSIS 3.0 solutions (10K). The cBR-8 provides maximum flexibility for the future adoption of innovative network architectures including Remote PHY (RPHY), SDN, and Virtual CMTS (vCMTS). The cBR-8's native support of DOCSIS 3.1 allows cable operators to deliver ultra-broadband services with maximum downstream speeds approaching 10 Gbps per subscriber and 1 Gbps upstream. Note: Cisco 10K supports all versions up to DOCSIS 3.0. cBR-8 supports up to 3.1.

Prerequisites:

Following are the strongly recommended prerequisites for this cable training course:

- NCTI DOCSIS Network Overview

Students should have foundational knowledge and/or experience with:

- DOCSIS principles of operation
- Cisco IOS Command Line Interface (CLI)

Audience:

This course is designed for technical professionals who need to know how to deploy Cisco CMTS and associated equipment. The primary audience for this course includes:

- Cable Operator Network Operation Center personnel
- System Engineer/Integrator/Solutions support personnel
- Channel partners, resellers

Course Objectives:

You will learn the cBR-8 architecture, deployment best practices, security features, and perform key DOCSIS 3.0 and 3.1 configuration tasks during hands-on labs.

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OUTLINE:

DOCSIS PRIMER

- DOCSIS Characteristics
- Available Spectrum
- TDM/TDMA/ATDMA/SCDMA and Channel types

CBR-8 ARCHITECTURE AND HARDWARE OVERVIEW

- Hardware Overview
- Chassis Installation
- System Level Troubleshooting
- Lab – Discovery

SOFTWARE OVERVIEW AND MAC DOMAIN CONFIGURATION

- cBR-8 Differences (versus uBR 10K)
- Software and Configuration
- Lab – Bringing up a MAC Domain
- 1:2 Combining
- Lab – 1 by 2 Combining

BONDING AND BONDING RESILIENCY

- Downstream Resiliency
- Upstream Resiliency
- Lab – Wideband Resiliency
- Battery Backup

SECURITY FEATURES

- Dynamic Shared Secret (DMIC)
- Cable Source Verify
- Cable ARP Filtering
- BPI+ Policy Enforcement
- Privacy Hotlist

DOCSIS LOAD BALANCING

- Basic DOCSIS Load Balancing CLI
- Advanced DOCSIS Load Balancing Configuration
- Verification and Troubleshooting
- Lab – DOCSIS Load Balancing
- Additional Load Balancing Features

CBR-8 FEATURES

- cBR-8 Call Home
- Smart Licensing
- High Availability for Supervisor and Line Card
- cBR-8 Patching – Sub-Package Mode
- cBR-8 CPU Protection
- Punt Path Rate Limiting (PPRL)

DOCSIS 3.1 ARCHITECTURE

- Greenfield Reference Architecture
- Physical Layer Properties
- PHY Link Channel (PLC)
- Modulation Characteristics
- MAC and DOCSIS Upper Layers
- MAC Protocol Operation
- Cable Modem Registration (DOCSIS 3.1)
- DOCSIS 3.1 Configuration
- DOCSIS 3.1 Downstream
- DOCSIS 3.1 Downstream Configuration
- Downstream Verification
- Lab – Configuring DOCSIS 3.1 Downstream
- DOCSIS 3.1 Upstream
- DOCSIS 3.1 Upstream Configuration
- Upstream Verification
- Lab – Configuring DOCSIS 3.1 Upstream

CBR-8 MODEM TROUBLESHOOTING

- Modem Registration flowchart
- Cable modem MAC states
- Modems failing registration or BPI+
- Modems not coming up in wideband mode
- General modem-focused troubleshooting
- Lab – Troubleshooting