Course Outline

Implementing Cisco's Converged Cable Access Platform (cBR-8)

Course Summary

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.

Topics

- DOCSIS Primer
- cBR-8 Architecture and Hardware Overview
- Software Overview and MAC Domain Configuration
- Bonding and Bonding Resiliency
- Security Features
- DOCSIS Load Balancing
- cBR-8 Features
- DOCSIS 3.1 Architecture
- DOCSIS 3.1 Configuration
- cBR-8 Modem Troubleshooting
- Remote PHY Overview

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, and Channel partners, resellers.

Prerequisites

Students should have foundational knowledge and/or experience with –DOCSIS principles of operation, and Cisco IOS Command Line Interface (CLI).

Duration

Four days

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I. DOCSIS Primer
- A. DOCSIS Characteristics
- B. Available Spectrum
- C. TDM/TDMA/ATDMA/SCDMA and Channel types
- D. cBR-8 Architecture and Hardware Overview

II. Hardware Overview
- A. Chassis Installation
- B. System Level Troubleshooting
- C. Lab – Discovery
- D. Software Overview and MAC Domain Configuration

III. cBR-8 Differences (versus uBR 10K)
- A. Software and Configuration
- B. Lab – Bringing up a MAC Domain
- C. 1:2 Combining
- D. Lab – 1 by 2 Combining
- E. Bonding and Bonding Resiliency

IV. Downstream Resiliency
- A. Upstream Resiliency
- B. Lab – Wideband Resiliency
- C. Battery Backup
- D. Security Features

V. Dynamic Shared Secret (DMIC)
- A. Cable Source Verify
- B. Cable ARP Filtering
- C. BPI+ Policy Enforcement
- D. Privacy Hotlist
- E. DOCSIS Load Balancing

VI. Basic DOCSIS Load Balancing CLI
- A. Advanced DOCSIS Load Balancing Configuration
- B. Verification and Troubleshooting
- C. Lab – DOCSIS Load Balancing
- D. Additional Load Balancing Features
- E. cBR-8 Features

VII. cBR-8 Call Home
- A. Smart Licensing
- B. High Availability for Supervisor and Line Card
- C. cBR-8 Patching – Sub-Package Mode
- D. cBR-8 CPU Protection
- E. Punt Path Rate Limiting (PPRL)
- F. DOCSIS 3.1 Architecture

VIII. Greenfield Reference Architecture
- A. Physical Layer Properties
- B. PHY Link Channel (PLC)
- C. Modulation Characteristics
- D. MAC and DOCSIS Upper Layers
- E. MAC Protocol Operation
- F. Cable Modem Registration (DOCSIS 3.1)

IX. DOCSIS 3.1 Configuration
- A. DOCSIS 3.1 Downstream
- B. DOCSIS 3.1 Downstream Configuration
- C. Downstream Verification
- D. Lab – Configuring DOCSIS 3.1 Downstream
- E. DOCSIS 3.1 Upstream
- F. DOCSIS 3.1 Upstream Configuration
- G. Upstream Verification
- H. Lab – Configuring DOCSIS 3.1 Upstream
- I. cBR-8 Modem Troubleshooting

X. Modem Registration flowchart
- A. Cable modem MAC states
- B. Modems failing registration or BPI+
- C. Modems not coming up in wideband mode
- D. General modem-focused troubleshooting
- E. Lab – Troubleshooting
- F. Remote PHY Overview

XI. The Evolution of PHY
- A. Remote PHY Architecture
- B. Basic Configuration
- C. Deployment Options
- D. Lab – Configuring Remote PHY