COURSE DESCRIPTION
CISCO CBR-8 CCAP (CONVERGED CABLE ACCESS PLATFORM) CMTS
COURSE SUMMARY

TARGET 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 SUMMARY
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 cBR8 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. A single cBR-8 CMTS is capable of simultaneously delivering 500 HDTV channels, video-on-demand (VoD), and ultra-broadband services to 20,000 or more homes.

Note: Cisco 10K supports all versions up to DOCSIS 3.0. cBR-8 supports up to 3.1.

COURSE PREREQUISITES
Following are the strongly recommended prerequisites for this cable training course. Students should have foundational knowledge and/or experience with:
- DOCSIS principles of operation
- Cisco IOS Command Line Interface

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

OUTCOMES & COMPETENCY DEVELOPMENT
After completing this course, the student should be able to:
- Describe RF Networking Concepts when applied to the MSO environment
- Explain and observe DOCSIS modem registration
- Identify the pre-DOCSIS 3.0 technology and deployment foundation underpinning current DOCSIS 3.0 downstream channel bonding
- Describe the component parts of the DOCSIS 3.0 specification set and explain primary aspects in block-diagram form
- Explain modular and integrated CMTS concepts and how they relate to DOCSIS 3.0
- Relate downstream channel bonding terms and acronyms to Cisco uBR10012 downstream channel bonding hardware and software releases
- Identify Cisco uBR10012 hardware combinations using 20v20 and 3G60 required for downstream channel bonding
- Configure, verify Cisco uBR10012 for downstream channel bonding operations in an H-CMTS configuration
- Configure, verify Cisco uBR10012 for downstream channel bonding operations in an M-CMTS configuration using RFGW10, DS384 and 3G60 hardware
- Configure necessary third-party DOCSIS 3.0 components such as the Symmetricon DTI server and gain knowledge necessary to recognize the role of any third-party components in a customer's M-CMTS design
- Use new Cisco uBR10012 features and featurettes for best system performance in mixed DOCSIS 1.x/2.0 and DOCSIS 3.0 downstream channel-bonded environments
- Use lessons learned from earlier worldwide downstream channel bonding deployments
COUSE CONTENTS

CBR-8 ARCHITECTURE AND HARDWARE OVERVIEW
- Hardware Overview
- Chassis Installation

SOFTWARE OVERVIEW AND MAC DOMAIN CONFIGURATION
- Software and Configuration
- Lab – Bringing up a MAC Domain
- Combining
- cBR-8 Differences (versus uBR 10K)

CBR-8 MODEM TROUBLESHOOTING
- Modem not showing up on CMTS
- Modems not completing Ranging
- Modems failing to obtain IP connectivity
- Modems failing registration or BPI+
- Modems not coming up in bonding mode
- General modem focused troubleshooting

CBR-8 LIFE OF A PACKET
- Downstream Path
  - Chassis Level Health State
  - Service Flow Configuration
  - Queuing Configuration
  - Drops in CPP
  - L3 Connectivity to CM/CPE
  - Downstream QoS
- Upstream Path
  - Upstream MACPHY (UMP) Specifications
  - Upstream MACPHY Components
  - Upstream PHY Layer Configuration
  - Upstream Channel Operation
  - Upstream Jib Troubleshooting

BONDING AND BONDING RESILIENCY
- Downstream Resiliency
- Upstream Resiliency
- Bonding Lab
- Battery Backup

CBR-8 CPU PROTECTION
- (D)DoS Attacks
- Punt Path Rate Limiting (PPRL)
- Troubleshooting SNMP Issues
Our training programmes are delivered worldwide as part of the training and development plans of many operators, vendors, and service providers. The programmes cover a wide range of competency development requirements.

To ensure we meet the training needs of the industry as effectively as possible, we operate three schools:

**School of Telecoms Management**
Business training tailored to the telecoms industry, ranging from the intensive 5-day Telecoms Mini MBA to specialist leadership and marketing training.

**School of Advanced Communication Technologies**
Covering a multitude of technologies, these courses range from overviews and on-going support to in-depth engineering training.

**Distance Learning**
Our comprehensive suite of Distance Learning programmes provide an excellent opportunity to expand knowledge and build confidence.

### PACE Enabled Training

Our programmes are PACE Enabled – a training method that optimises both training value and student engagement. It delivers highly efficient competency development that is focused squarely on practical application in the work place. It is simple in concept and comprises four key elements;

- **Preparation** – Pre-course preparation in order to “hit the ground running”
- **Application** – Applied Learning that focuses on practical application in order to maximise both training value
- **Consolidation** – Post-course continuing competency development, access to resources and on-going support
- **Experience** – An outstanding end-to-end training experience designed to develop competences as effectively as possible

### Our Trainers

We only use trainers and programme directors that satisfy the following three criteria:

- Experts in their field
- High level of Industry Experience
- Expert facilitators and training professionals.

All our trainers have undergone a rigorous election process and are subject to continuous monitoring and evaluation. Each trainer is accredited for specific courses or topic areas. Whether engineers or business experts, all our trainers are required to continue their own development within their specialist areas, and to broaden their Industry view of trends, best practice and technology.

This is achieved by our on-going work with many tier 1 operators and vendors, and by full exposure to Ovum research and KNect 365 TMT worldwide events.

### University Accreditation

Some of our programmes have been accredited by the University of Derby Corporate; a UK-based university highly acclaimed in the area of employer engagement. They are at the forefront of the drive to integrate highly focused industry-led training with the academic rigor and quality control of university-based education. Our comprehensive Advanced Telecoms Management Series have been accredited Post-Graduate Level, with our extensive suite of Distance Learning at Undergraduate Level.

We would be happy to discuss extending accreditation to tailored ATMS or programmes based on our Distance Learning modules. Although accreditation is specific to these programmes, the work we do with the University of Derby enable us to develop and apply best practice across our portfolio.

### CUSTOMISED IN-HOUSE TRAINING

Telecoms Academy has worked with countless companies to deliver customised training programmes. We take time to understand your requirements, you’ll work with our specialist training team to ensure that we deliver your perfect training programme for your business.

A customised training programme from Telecoms Academy ensures you get a course that precisely matches your organisation’s needs, presented by a first-rate training organisation, with access to all the latest industry research and analysis.

**Why choose in-house training from Telecoms Academy?**

- Content can be customised to focus on the issues you want – work with us to develop the training course to match the exact needs
- Unique industry research – from Ovum’s team of industry leading analysts
- Expert trainers – our team of versatile trainers have the knowledge and experience to deliver a highly effective learning experience
- The most efficient way to train your staff – at the time and location to minimise disruption
- Flexible delivery options – with a range of instructor led, distance learning and virtual classroom formats available you can build a blended solution to maximise training effectiveness over the long term
- Pre and post course assessment – can be included in programmes to measure competencies and check on the required progress.

Contact us to discuss how we can build your perfect programme.