E6000® Converged Edge Router

Downstream CCAP Core Module

PRODUCT OVERVIEW

The E6000® Converged Edge Router (CER) is a next-generation Converged Cable Access Platform (CCAP™) that provides cable operators unprecedented advances in channel density, power efficiency, and cost savings in a redundant, integrated architecture designed from the ground up for high availability. This powerful design allows operators to converge all services (video, high speed data, and voice), enabling additional savings in capital and operational expenditures along with increased operational efficiency. For Distributed Access Architecture (DAA) solutions, CommScope provides both the CCAP Core and Remote PHY (R-PHY) Device (RPD) defined in the CableLabs® Modular Headend Architecture (MHAv2). In this approach, the PHY layer is moved from the E6000 CER into a node or remote shelf, but the MAC processing, provisioning, and monitoring functions are performed by the E6000 CCAP Core.

The Downstream CCAP Core Module (DCCM) has the same MAC processing capacity of the 2nd generation Downstream Cable Access Module (DCAM-2) but without the PHY-layer hardware and related components. The DCCM and DCAM-2 can be used interchangeably to provide downstream MAC processing for the E6000 CCAP Core. The DCCM offers power, weight, and cost savings over the DCAM-2 for Remote PHY applications. Without RF hardware, the DCCM cannot be used for I-CCAP applications. E6000 Release 7.0 and later support “hybrid” operation of Integrated CCAP (I-CCAP) and CCAP Core within the same chassis.

Roadmap for future capabilities is subject to change.

E6000® CER DCCM

The Downstream CCAP Core Module (DCCM) is essentially a DCAM-2 without the RF circuitry. The DCCM is meant only for R-PHY operation for which it provides the same functionality and capacity as the DCAM-2. The DCCM and DCAM-2 are interchangeable for R-PHY operation and can be mixed in the same E6000 chassis. The DCCM supports MAC processing for RPDs with downstream RF bands up to 1.2 GHz. In addition, the DCCM can support multiple 192 MHz OFDM channels per Service Group on capable RPDs. Operators receive significant benefits in terms of operational simplicity, power, and cost savings by deploying DCCM in R-PHY applications. Use of DCCM requires the RSM-2 and either UCAM-2 or UCCM upstream modules.

Roadmap for future capabilities is subject to change.

SUMMARY OF DCCM FEATURES AND CAPABILITIES (PARTIAL LIST)

Downstream MAC Processing for Remote PHY Operation on the E6000 CER Acting as a CCAP Core
No RF Output — R-PHY Operation Only
Full Spectrum Capable (MAC processing for channels up to 1.2GHz)
Interoperable with DCAM-2 in the Same E6000 Chassis
Multiple DOCSIS 3.1 Downstream Channel Support (24 – 192 MHz each) — Dependent on Software Release and RPD Capabilities
DOCSIS 3.0 Downstream (Annex A and Annex B) Support — Channel Density Dependent on Software Release and RPD Capabilities
Video SC-QAM Support for VOD and Broadcast Services — Channel Density Dependent on Software Release and RPD Capabilities
Channel Density Scalability via Licensing or Software Upgrades (No Hardware Changes Required)
E6000 CCAP Core Interoperable for Multi-Core R-PHY Architectures
Deploys with CCAP Core Rear Card (CCRC) – One Required on the Back of the E6000 Chassis for Each DCCM

Managing the E6000® CER is typically done via SNMP and/or CLI. The E6000 CER has multiple options available for IPDR, a useful tool for measuring bandwidth usage. Physical maintenance of the E6000 CER is very simple. Air filters, one in the front and another in the rear of the chassis, should be inspected and/or replaced per recommendations in the E6000 CER User Guide.

Roadmap for future capabilities is subject to change.

SPECIFICATIONS

Remote PHY Capabilities	
Frequency Range (MHz)	108 to 1218 (edge to edge)
Modulation (QAM)	All required by DOCSIS 3.0 and DOCSIS 3.1 (Specific software support varies by release)
Max OFDM Channel Width (MHz)	192 (Multiple channels supported per RPD Service Group)
Max SC-QAMs per Downstream Service Group	128 (Sum total DOCSIS and IEQ)
SC-QAM Data Rate (Mbps) (Max.)	30.34 to 55.62 per channel
Max Number of DS Service Groups per DCCM	27
SC-QAM RF Output Level (dBmV)	Dependent on RPD

Physical	
Power	-48 VDC
Power Consumption (W)	135 (typical at 25 °C)
Operating Temperature: Short Term °F (°C) Long Term °F (°C)	 +23 to +131 (-5 to +55) +41 to +104 (+5 to +40)
Storage Temperature °F (°C)	-40 to +158 (-40 to +70)
Operating Humidity (Min.-Max.)	5 to 85% (Non condensing)
Dimensions (H x W x D) in. (cm)	13.8 x 1.2 x 17. 8 (35.0 x 3.0 x 45.3)
Weight lbs. (kg)	Approx. 5 (2.3)

SPECIFICATIONS

Installation Environment (System Level)	
Management Interfaces	100/1000 Mbps Ethernet (RJ-45) plus Console (serial port, RJ45)
RF Connector Access	None
NSI Connector Access	RSM-2 ports via front of chassis, RPIC-2Q ports via rear

Management Access (System Level)
In-band Management with Access Control Lists via any NSI port
Out-of-Band Management via dedicated Ethernet port on RPIC-2Q
Console (serial) port on RPIC-2Q

ORDERING CODES (PARTIAL LIST)

Part Number	Description	Part Number	Description
1000536	GEN-2 Duplex Chassis Kit - Two RSM-2s, No CAMs	1000325	Router System Module 2 Kit - 1 RSM-2 and RPIC-2Q
1000963	CCRC - CCAP Core Rear Card (for DCCM and UCCM, active or spare)	1001136	SYSTEM-PRINCIPAL-CORE LICENSE
1000961	DCCM - DS CCAP Core Module (only for RPHY applications; must purchase one of the Initial DS D3.0 MAC License Bundles with this item)	1000962	UCCM - US CCAP Core Module (only for RPHY applications; must purchase one of the Initial Upstream D3.0 MAC License Bundles with this item)
1000720	E6000; 256 Initial DS D3.0 Annex A MAC License Bundle for DCAM-2 - For MAC Channels 1-256 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))	1000737	E6000; 48 Initial Upstream D3.0 MAC License Bundle for UCAM-2 - For MAC Channels 1-48 (requires UCAM-2 HW purchase (PN 1000445) or UCCM HW purchase (PN 1000962))
1000721	E6000; 384 Initial DS D3.0 Annex A MAC License Bundle for DCAM-2 - For MAC Channels 1-384 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))	1001047	E6000; 64 Initial Upstream D3.0 MAC License Bundle for UCAM-2 - For MAC Channels 1-64 (requires UCAM-2 HW purchase (PN 1000445) or UCCM HW purchase (PN 1000962))
1001279	E6000; 448 Initial DS D3.0 Annex A MAC License Bundle for DCAM-2 - For MAC Channels 1-448 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))	1000738	E6000; 72 Initial Upstream D3.0 MAC License Bundle for UCAM-2 - For MAC Channels 1-72 (requires UCAM-2 HW purchase (PN 1000445) or UCCM HW purchase (PN 1000962))
1000722	E6000; 512 Initial DS D3.0 Annex A MAC License Bundle for DCAM-2 - For MAC Channels 1-512 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))	1000739	E6000; 96 Initial Upstream D3.0 MAC License Bundle for UCAM-2 - For MAC Channels 1-96 (requires UCAM-2 HW purchase (PN 1000445) or UCCM HW purchase (PN 1000962))
1000730	E6000; 256 Initial DS D3.0 Annex B MAC License Bundle for DCAM-2 - For MAC Channels 1-256 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))	1000740	E6000; 144 Initial Upstream D3.0 MAC License Bundle for UCAM-2 - For MAC Channels 1-144 (requires UCAM-2 HW purchase (PN 1000445) or UCCM HW purchase (PN 1000962))
1000731	E6000; 384 Initial DS D3.0 Annex B MAC License Bundle for DCAM-2 - For MAC Channels 1-384 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))	1000741	E6000; 192 Initial Upstream D3.0 MAC License Bundle for UCAM-2 - For MAC Channels 1-192 (requires UCAM-2 HW purchase (PN 1000445) or UCCM HW purchase (PN 1000962))
1001272	E6000; 448 Initial DS D3.0 Annex B MAC License Bundle for DCAM-2 - For MAC Channels 1-448 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))	1000742	E6000; 216 Initial Upstream D3.0 MAC License Bundle for UCAM-2 - For MAC Channels 1-216 (requires UCAM-2 HW purchase (PN 1000445) or UCCM HW purchase (PN 1000962))
1000732	E6000; 512 Initial DS D3.0 Annex B MAC License Bundle for DCAM-2 - For MAC Channels 1-512 (requires DCAM-2 HW purchase (PN 1000506) or DCCM HW purchase (PN 1000961))		
1000715	E6000 D3.0 Downstream Annex A MAC Processing License (per 8 MHz D3.0 DS channel)	1000736	E6000 D3.0 Upstream MAC Processing License (per D3.0 US channel)
1000716	E6000 D3.0 Downstream Annex B MAC Processing License (per 6 MHz D3.0 DS channel)		
1000743	E6000 D3.1 Downstream MAC Processing License (per 1 MHz channel)	1000744	E6000 D3.1 Upstream MAC Processing License (per 1 MHz channel)

Full Price List available from CommScope

CUSTOMER CARE

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
- International: +1-678-473-5656