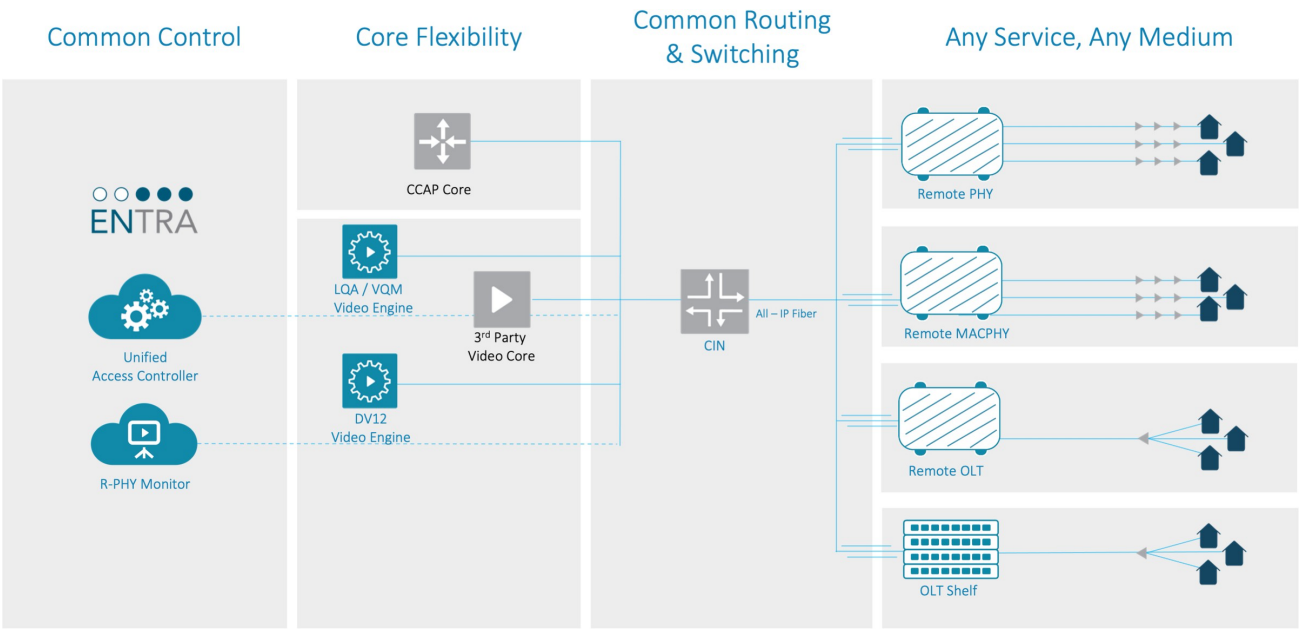
SC-2D3

DOCSIS 3.1 R-MACPHY 2 - 4 PORT NODE

The **Entra** Distributed Access Platform is Vecima's realization of the next generation of cable access products as optical transport moves away from analog RF distribution to all-digital Ethernet. Entra is optimized to support all distributed access architectures and facilitate the delivery of existing video and data services over hybrid fiber coax (HFC) and direct Ethernet connections.



The Entra SC-2D3 R-MACPHY Access Node is an essential element of the Entra converged Distributed Access Architecture for cable networks. In combination with the centralized Entra Access Controller, the SC-2D3 performs functions typically carried out in the Converged Cable Access Platform (CCAP).

The SC-2D3's full spectrum capacity, split options, service group flexibility, and the choice of either 2 or 4 RF ports enable operators to cost effectively add DOCSIS channels, split nodes and deliver required services without adding equipment in congested hubs and headends.

In addition to full spectrum DOCSIS, the Entra SC-2D3 also supports existing video services, making it ideal for high-capacity business and residential services.

Housed in an aluminum alloy die-cast enclosure, the Entra SC-2D3 Access Node is designed to operate in harsh outdoor environments. The node features a hot-swappable modular design for greater serviceability.

SC-2D3

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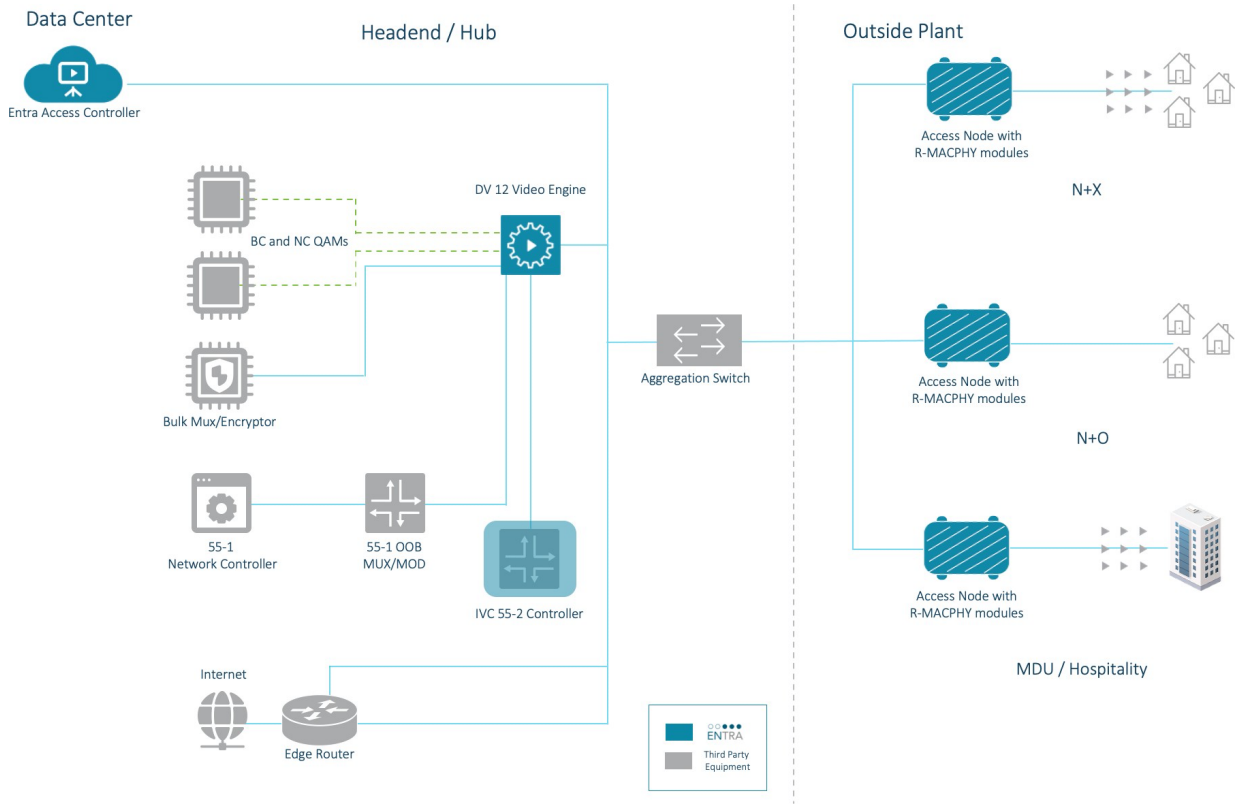
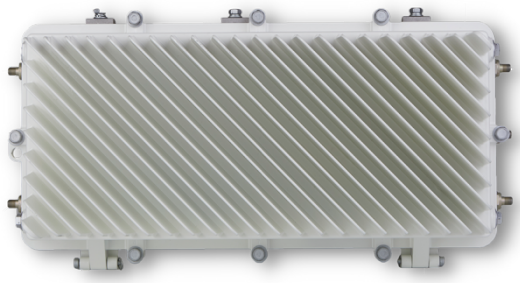


ENTRA SC-2D3

DOCSIS 3.1 R-MACPHY ACCESS NODE



Highlights

- Supports full spectrum DOCSIS 3.0 & 3.1
- Modular RF port configuration options (2- or 4-port) and up to 2-10 GE SFP+ interfaces
- Supports up to 2 downstream and 2 upstream DOCSIS Service Groups per node
- Supports existing video services (broadcast, VoD, SDV, nPVR), Wideband Digital Forward to broadcast RF over IP, up to 4 NDF/NDR/OOB/HMS, Optical Receiver (Video RF Overlay)
- Hot-swappable modular design; field-replaceable components including amplifier modules, power supply unit, and main processor module
- Hardened OSP enclosure, line-powered with strand and pedestal mount options
- Increased fiber capacity and management enable higher service tiers, including gigabit services
- Centrally managed and controlled by the Entra Access Controller as part of the unified cable access solution
- Digital hub-to-node link dramatically improves signal-to-noise ratio (SNR) and carrier-to-noise ratio (CNR)
- Support for video services preserves legacy EQAMs and installed set-top box base
- Remote configuration and management increase operational agility

SC-2D3

DOCSIS 3.1 R-MACPHY 2 - 4 PORT NODE

Technical Specifications

Interfaces

Up to 4 RF ports (75 ohm)
2 ports of 10 GE
Service Groups & Ports: 2 forward x 2 reverse x 2 or 4 RF ports

Supported SFP+ Optical Modules

ER, LR, ZR, Bi-directional
CWDM
DWDM

Physical Dimensions

Height: 10.4 in (265 mm)
Width: 20.8 in (529 mm)
Depth: 11.0 in (280 mm)
Weight: 44 lb (19.5 kg)

Operating Environment

Temperature: -40 °C to 60 °C (-40 °F to 140 °F)
Relative humidity: 5% to 95% non-condensing
Altitude: -196 to 13,123 feet (-60 to 4,000 meters)

Storage Environment

Temperature: -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity: 5% to 95% non-condensing
Altitude: -196 to 13,123 feet (-60 to 4,000 meters)

Power Requirement

Consumption: 123 W nominal with 2 coax ports active, 148 W nominal with 4 coax ports active, 157 W maximum
Input frequency: 50 Hz/60 Hz
Input voltage: 38 V to 90 VAC coax line power (quasi-squarewave)

Mounting Options

Aerial, pedestal
Wall, pole, rack mount with accessory bracket
Vertical or horizontal cooking

Regulatory, Industry, and Standards Compliance

ACMA Supplier Number

N594 (ACN, ABN, or ARBN 97000005363), C-Tick Mark

EMC (Immunity/Emissions)

EN 55024
EN 55032
EN 55035
EN 61000-3-2
EN 61000-3-3
FCC PART 15 SUBPART B
ICES-003
(AS/NZS/VCCI) CISPR 32

Safety

IEC/EN 60950-1
ANSI/UL 60950-1
CAN/CSA C22.2 No. 60950-1-07
IEC/EN 62368-1
ANSI/UL 62368-1
CAN/CSA C22.2 No. 62368-1

Outdoor Use

IEC 60950-22
CSA C22.2 No. 94.1
CSA C22.2 No. 94.2
IEC 60529

Corrosion Resistance

GR-2873-CORE
ASTM B117

IP Rating

IP68

Surge

ANSI/SCTE 81
ITU-T K.45
IEEE C62.41

Environmental

IEC/EN 63000
Hazardous Substances: RoHS Directive 2011/65/EC
Waste Electrical and Electronic Equipment: WEEE Directive 2012/95/EC
Regulation (EC) No 1907/2006

Industry Standards

CableLabs CM-SP-DRFI Downstream RF Interface Specification
CableLabs CM-SP-FMA-MMI Flexible MAC Architecture MAC Manager Interface Specification
CableLabs CM-SP-FMA-PAI Flexible MAC Architecture PacketCable Aggregator Interface Specification
CableLabs CM-SP-FMA-OSSI Flexible MAC Architecture OSS Interface Specification
CableLabs CM-SP-R-PHY Remote PHY Specification
CableLabs CM-SP-R-DEPI Remote Downstream External PHY Interface Specification
CableLabs CM-SP-R-UEPI Remote Upstream External PHY Interface Specification
CableLabs CM-SP-R-DTI Remote DOCSIS Timing Interface Specification
CableLabs CM-SP-R-OOB Remote Out-of-Band Specification
CableLabs CM-SP-R-OSSI Remote PHY OSS Interface Specification
SFF-8432 SFP+ Module and Cage
SFF-8431 Enhanced Small Form Factor Pluggable Module SFP
SFF-8472 Management Interface for SFP+

Quality

ISO 9001
TL 9000
ISO 14001
OHSAS 18001
ESD 20.20

SC-2D3

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Technical Specifications

Reliability
Designed for five 9s of availability (99.999%)
Predicted MTBF > 327,866 hrs
Demonstrated MTBF > 750,000 hrs

RF Specifications

RF Ports
Up to 4 RF ports
Operational bandwidth: 5 MHz to 1,218 MHz

Splits
5 – 42 MHz/54 – 1218 MHz
5 – 65 MHz/85 – 1218 MHz
5 – 85 MHz/102 – 1218 MHz
5 – 204 MHz/258 – 1218 MHz

Downstream
Service Groups: Up to 2
Channels: Up to 158 QAM J.83 Annex A/B/C; up to 2 OFDM per Service Group
Channel bandwidths: Up to 192 MHz OFDM

Output
Total Composite Power: Up to 71 dBmV
RF Output Level: 61 dBmV @ (virtual)
Up to 24 dB pluggable tilt (s/w readable ID)

Out of Band Capabilities
Up to 4 channels of OOB, SCTE 55-1, SCTE 55-2, SCTE 25-1 HMS
Up to 160 CW pilot tones
Up to 2 leakage detection tags per Service Group
Viavi PathTrak support

Wideband Digital Forward
Up to 43-6 MHz/32-8 MHz channels of broadcast band transport over IP.
Typical broadcast modulations 8VSB, PAL, FM, NTSC
CNR: 50 dB typical

RF Impedence
75 ohm

Upstream
Service Groups: Up to 2
Channels: Up to 12 QAM; up to 2 OFDMA per Service Group

Input
Input Levels: 27 dBmV to 7 dBmV

Diagnostics
Test Ports: -20 dB
Low RF level alarm per port
RF amplifier on/off controls per port
RF input on/off controls per port
Voltage and temperature monitoring

Optical Receiver Specifications

Optical Input
1260 – 1560 nm
2 to -6 dBm AGC Dynamic Range
SC-APC

RF Output
50 to 800 MHz

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p: 1.306.955.7075
e: sales@vecima.com
w: www.vecima.com