

## Cisco Smart PHY 300 and 600 Shelves



### Product description

The Cisco Smart PHY models 300 and 600 RPHY (Remote Phy) shelves enables service providers to deploy cBR-8 CCAP services to small-to-medium hubs in a cost effective manner while preparing their networks for future cloud CMTS. The extended operating temperature range enables deployment in outdoor cabinets.

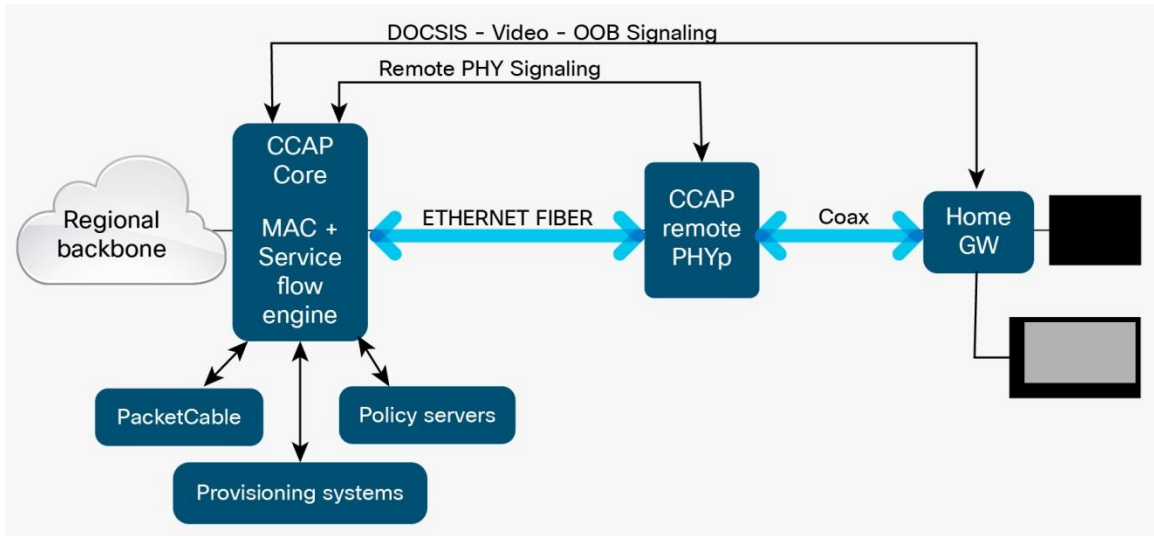
An extension of the Modular Headend Architecture, MHA v2 splits CMTS functions so that CCAP core and physical-layer functions can run separately, in different locations. CCAP core routing can run out of larger hubs (or even cloud CMTS instances in a datacenter), while QAM and OFDM modulation are pushed out to Remote PHY shelves located in hubs near the subscribers.

Remote PHY is the product of cable operators asking the industry to help them overcome the limitations of analog fiber and break through the HFC bottleneck. In its most basic form, Remote PHY unlocks major bandwidth increases in existing access networks. But it also enables “fiber deep” architectures that push digital fiber out much closer to homes. Ultimately, Remote PHY helps cable operators deliver capacity and Gigabit service tiers on par with any pure-fiber competitor, at a fraction of the cost of ripping and replacing the existing HFC plant.

With Cisco Smart PHY shelves, you can deploy fewer sophisticated CCAP routing platforms, connected to many smaller-footprint, less expensive shelves and RPDs. You don't have to run a large number of full-featured I-CMTS platforms at every hub, consuming huge amounts of space and power as you scale, and requiring advanced onsite expertise to deploy and maintain. You can consolidate CCAP core functions in headends or data centers and interconnect hubs with digital fiber.

The Cisco Smart PHY model 300 and 600 shelves have been integrated with the Cisco Smart PHY deployment automation software. Cisco Smart PHY deployment automation software is a micro-service based software tool that enables full automation for provisioning, configuration and maintenance of standards based RPDs, shelves and Cisco RPHY Cores.

**Figure 1.** MHA v2 reference architecture



## Features and benefits

The Cisco RPHY Shelves offer the following features and benefits:

**Table 1.** Features

<b>Smart PHY 600 6x12 RPHY Shelf</b>	6 Service Groups
<b>Smart PHY 300 3x6 RPHY Shelf</b>	3 Service Groups
<b>Downstream/Upstream configurations</b>	1x1 and 1x2 (Downstream x Upstream)
<b>DS Capacity</b>	160 narrowcast QAMS plus Six OFDM 192 MHz Orthogonal Frequency-Division Multiplexing (OFDM) blocks per Service Group
<b>US Capacity</b>	12 US channels per port or 2 OFDMA blocks (96 MHz) per port
<b>Channel Assignment</b>	Single channel QAM frequency placement
<b>Video</b>	Broadcast, VOD and SDV
<b>Video Encryption</b>	PowerKEY, VPME and DVB (future)
<b>CIN connectivity</b>	Dual 10 GBE SFP+ per Service Group Path Redundancy (future) Daisy Chaining (future)
<b>Fans</b>	N+1 modular field replaceable fan modules
<b>Operation &amp; Maintenance</b>	US monitoring Supported by Cisco Smart PHY RPD deployment automation application

**Table 2.** Specifications

Description	Specification
<b>Design to be Compliant with Cablelabs Remote PHY specifications</b>	<ul style="list-style-type: none"> <li>• CM-SP-R-PHY-I07-170524 Remote PHY Specification</li> <li>• CM-SP-R-DEPI-I07-170524 Remote Downstream External PHY Interface Specification</li> <li>• CM-SP-R-UEPI-I07-170524 Remote Upstream External PHY Interface Specification</li> <li>• CM-SP-GCP-I03-170524 Generic Control Plane Specification</li> <li>• CM-SP-R-DTI-I05-170524 Remote DOCSIS Timing Interface Specification</li> <li>• CM-SP-R-OOB-I05-170908 Remote Out-of-Band Specification</li> <li>• CM-SP-R-OSSI-I07-170908 Remote PHY OSS Interface Specification</li> <li>• CM-SP-DRFI-I16-170111</li> </ul>
<b>Power Requirements</b>	
<b>Redundant Power Supply</b>	Supports 1+1
<b>Power Input</b>	Worldwide ranging AC (200-240V; 50-60 Hz; 12A maximum) Worldwide ranging DC (-40 to -72V; 50A nominal, 16A maximum)
<b>Power Consumption: 3x6 Configuration 6x12 Configuration</b>	320 W (max) 530 W (max)
<b>Environmental Specifications</b>	
<b>Operating temperature range</b>	32 to 122°F (0 to 50°C)
<b>Operating humidity range</b>	5 to 95%
<b>Mechanical Specifications</b>	
<b>Dimensions</b>	Height: 1RU (1.75 in/4.45 cm) Width: 17.45 in (44.32 cm) Depth: 23.6 in (59.94 cm)
<b>Weight</b>	12 Kg (6x12 Configuration)
<b>RF Connectors</b>	F connector

## Optical SFP+ options

**Table 3.** Optical SFP+ module options.

SFP-10G-SR=
SFP-10G-LR=
SFP-10G-ER=
SFP-10G-ZR=
SFP-10G-AOC3M=
SFP-10G-LR-S=
DWDM-SFP10G-C=

**Table 4.** DWDM Optical SFP+ module options (extended temperature range).

20 KM SFP+ PIDs 400 ps/nm/km dispersion	40 KM SFP+ PIDs 800 ps/nm/km dispersion	80 KM SFP+ PIDs 1600 ps/nm/km dispersion
RPHY-S10G-20K-200=	RPHY-S10G-40K-200=	RPHY-S10G-80K-200=
RPHY-S10G-20K-210=	RPHY-S10G-40K-210=	RPHY-S10G-80K-210=
RPHY-S10G-20K-220=	RPHY-S10G-40K-220=	RPHY-S10G-80K-220=
RPHY-S10G-20K-230=	RPHY-S10G-40K-230=	RPHY-S10G-80K-230=
RPHY-S10G-20K-240=	RPHY-S10G-40K-240=	RPHY-S10G-80K-240=
RPHY-S10G-20K-250=	RPHY-S10G-40K-250=	RPHY-S10G-80K-250=
RPHY-S10G-20K-260=	RPHY-S10G-40K-260=	RPHY-S10G-80K-260=
RPHY-S10G-20K-270=	RPHY-S10G-40K-270=	RPHY-S10G-80K-270=
RPHY-S10G-20K-280=	RPHY-S10G-40K-280=	RPHY-S10G-80K-280=
RPHY-S10G-20K-290=	RPHY-S10G-40K-290=	RPHY-S10G-80K-290=
RPHY-S10G-20K-300=	RPHY-S10G-40K-300=	RPHY-S10G-80K-300=
RPHY-S10G-20K-310=	RPHY-S10G-40K-310=	RPHY-S10G-80K-310=
RPHY-S10G-20K-320=	RPHY-S10G-40K-320=	RPHY-S10G-80K-320=
RPHY-S10G-20K-330=	RPHY-S10G-40K-330=	RPHY-S10G-80K-330=
RPHY-S10G-20K-340=	RPHY-S10G-40K-340=	RPHY-S10G-80K-340=
RPHY-S10G-20K-350=	RPHY-S10G-40K-350=	RPHY-S10G-80K-350=
RPHY-S10G-20K-360=	RPHY-S10G-40K-360=	RPHY-S10G-80K-360=
RPHY-S10G-20K-370=	RPHY-S10G-40K-370=	RPHY-S10G-80K-370=
RPHY-S10G-20K-380=	RPHY-S10G-40K-380=	RPHY-S10G-80K-380=
RPHY-S10G-20K-390=	RPHY-S10G-40K-390=	RPHY-S10G-80K-390=

## Ordering information

PID	Description
<b>RPHYSHELF_3X6</b>	Smart PHY 300 Shelf 3x6 Configured PID
<b>RPHYSHELF_6X12</b>	Smart PHY 600 Shelf 6x12 Configured PID
<b>RPHYSHLF_DC(=)</b>	Smart PHY Shelf DC Supply
<b>RPHYSHLF_AC(=)</b>	Smart PHY Shelf AC Supply
<b>RPHY_CAB_DS_3x6(=)</b>	Smart PHY 300 Shelf DS to RF Plant Quad-Shield RF Cable
<b>RPHY_CAB_US_3x6(=)</b>	Smart PHY 300 Shelf US to RF Plant Quad-Shield RF Cable
<b>RPHY_CAB_DS_6x12(=)</b>	Smart PHY 600 Shelf DS to RF Plant Quad-Shield RF Cable
<b>RPHY_CAB_US_6x12(=)</b>	Smart PHY 600 Shelf US to RF Plant Quad-Shield RF Cable
<b>RPHYSHLF_FAN(=)</b>	Smart PHY Shelf Fan Qty=1
<b>RPHYSHLF_ACC_KIT(=)</b>	Smart PHY Shelf Accessory Kit
<b>RPHYSHLF_3X6AC=</b>	Smart PHY 300 Shelf pre-Configured System, 3 1x2 RPD, 2AC Supplies
<b>RPHYSHLF_3X6DC=</b>	Smart PHY 300 Shelf pre-Configured System, 3 1x2 RPD, 2DC Supplies
<b>RPHYSHLF_6X12AC=</b>	Smart PHY 600 Shelf pre-Configured System, 6 1x2 RPD, 2AC Supplies
<b>RPHYSHLF_6X12DC=</b>	Smart PHY 600 Shelf pre-Configured System, 6 1x2 RPD, 2DC Supplies
<b>CAB-AC-ARG(=)</b>	Power Cord - Argentina, 10A,250V,2500mm, -40C to +85C
<b>CAB-AC-AUS(=)</b>	Power Cord - Australia, 10A,250V,2500mm, -40C to +85C
<b>CAB-AC-BRA(=)</b>	Power Cord - Brazil, 10A,250V,2500mm, -40C to +85C

PID	Description
CAB-AC-CHI(=)	Power Cord - China, 10A,250V,2500mm, -40C to +85C
CAB-AC-EUR(=)	Power Cord - Europe, 10A,250V,2500mm, -40C to +85C
CAB-AC-IND(=)	Power Cord - India, 10A,250V,2500mm, -40C to +85C
CAB-AC-ISR(=)	Power Cord - Israel, 10A,250V,2500mm, -40C to +85C
CAB-AC-ITL(=)	Power Cord - Italy, 10A,250V,2500mm, -40C to +85C
CAB-AC-KOR(=)	Power Cord - Korea, 10A,250V,2500mm, -40C to +85C
CAB-AC-SUI(=)	Power Cord - Swiss, 10A,250V,2500mm, -40C to +85C
CAB-AC-TAI(=)	Power Cord - Taiwan, 10A,250V,2500mm, -40C to +85C
CAB-AC-UK(=)	Power Cord - UK, 10A,250V,2500mm, -40C to +85C
CAB-AC-US(=)	Power Cord - US, 10A,250V,2500mm, -40C to +85C

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