



# Cisco Remote-PHY Solution Deployment

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## Design Considerations

This section helps you prepare for deploying the Cisco Remote-PHY solution.

### Prerequisites

- Ensure that a digital optical network is deployed between the Cisco Coaxial Media Converter (Cisco CMC) and Cisco CMTS. The supported digital optical networks are EPON, GPON, and Metro Ethernet.
- Ensure that the data path is guaranteed between the Cisco CMTS and the Cisco CMC.
- Reserve sufficient bandwidth for the DOCSIS traffic.
- Network must support IPv4 multicast forwarding.
- Ensure that the maximum latency is as low as possible.
- Based on the input type in the network, deploy or use the appropriate type of Cisco CMC. For RF input, deploy the Cisco CMC with coaxial cable input. For optical input, deploy the Cisco CMC with the FRx.

### Memory Requirements

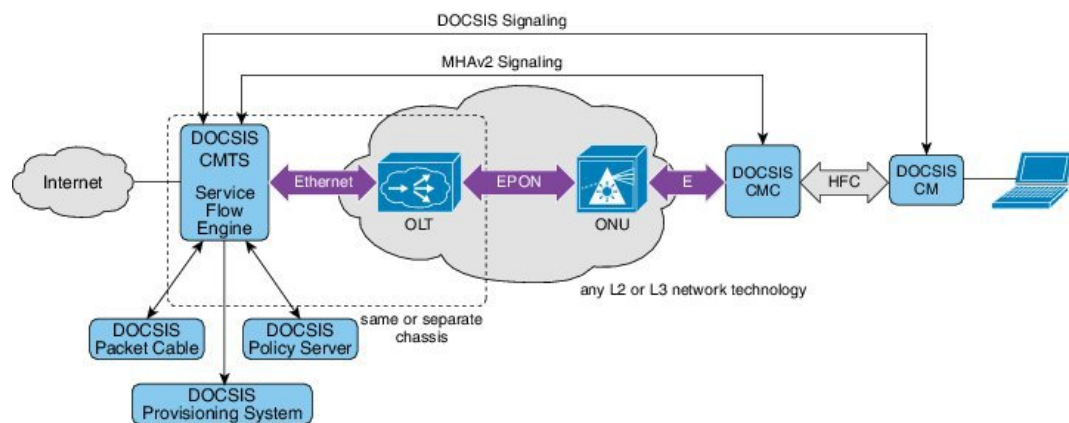
| Component                       | Recommended Memory Requirement |
|---------------------------------|--------------------------------|
| Cisco uBR10012 Router with PRE4 | Flash—128 MB<br>DRAM—2 GB      |
| Cisco uBR10012 Router with PRE5 | Flash—256 MB<br>DRAM—4 GB      |

| Component                     | Recommended Memory Requirement |
|-------------------------------|--------------------------------|
| Cisco Coaxial Media Converter | Flash—96 MB<br>DRAM—256 MB     |

## Network Architecture

The Cisco Remote-PHY solution supports the *Single Controller Sharing* architecture. In this architecture, multiple Cisco CMC equipments share the downstream and upstream channels of a Cisco uBR-MC3GX60V-RPHY line card.

**Figure 1: Single Controller Sharing Architecture**



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## Network Topologies

This section describes some network topologies supported by the Cisco Remote-PHY solution.

### Topology 1—Metro Ethernet Topology

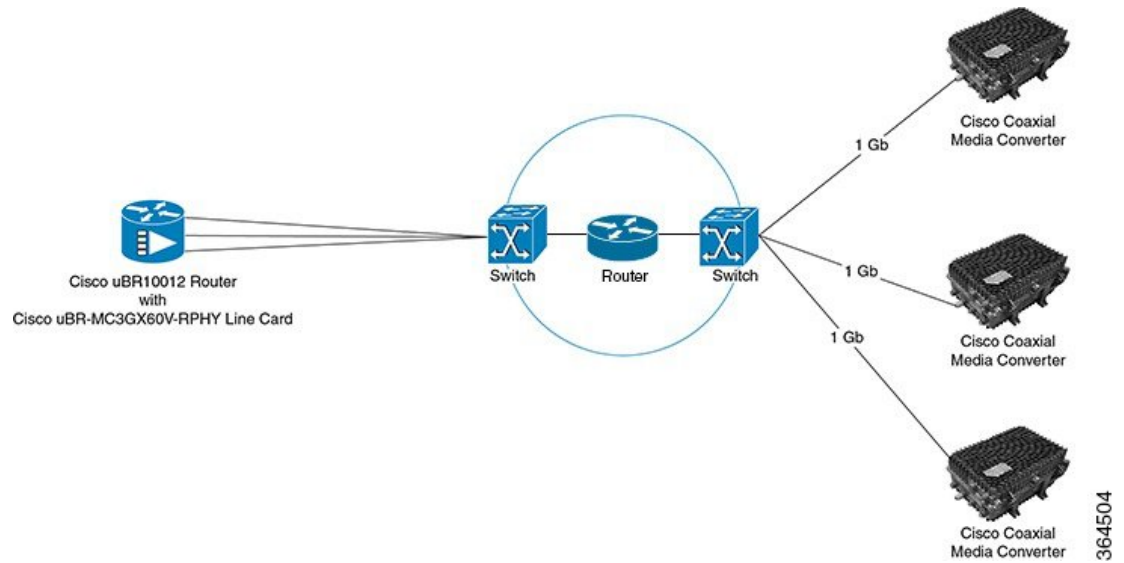
#### Network Elements:

- One Cisco uBR10012 Router
- Hundreds of Cisco CMC devices
- Maximum of eight Cisco uBR-MC3GX60V-RPHY line cards
- Multiple switches

#### Capacity:

Maximum of 24 Gb on the downstream and 14 Gb on the upstream for one Cisco uBR10012 Router.

**Figure 2: Metro Ethernet Topology**



### Topology 2—Switch and PON Topology

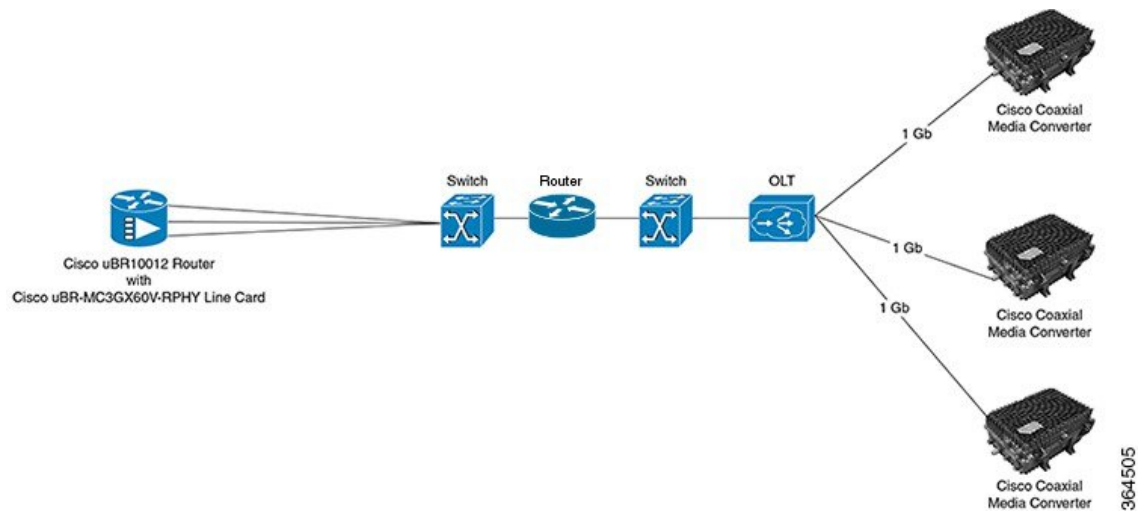
#### Network Elements:

- One Cisco uBR10012 Router
- Hundreds of Cisco CMC devices with internal ONU
- Maximum of eight Cisco uBR-MC3GX60V-RPHY line cards
- Multiple PON OLTs
- Multiple switches

#### Capacity:

Maximum of 24 Gb on the downstream and 14 Gb on the upstream for one Cisco uBR10012 Router.

**Figure 3: Switch and PON Topology**



### Topology 3—Pure PON Topology

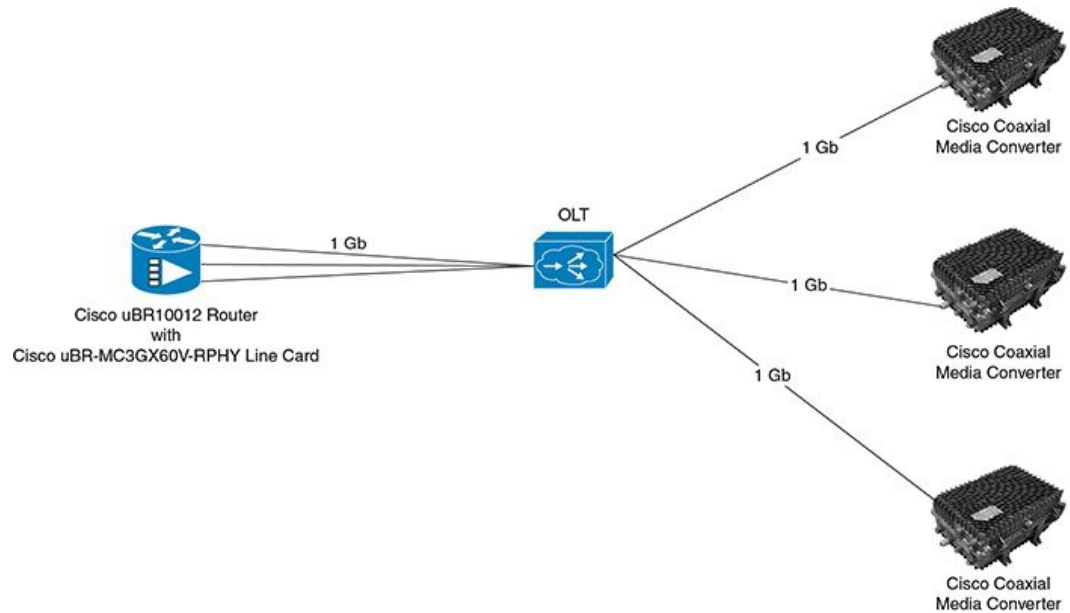
#### Network Elements:

- One Cisco uBR10012 Router
- Hundreds of Cisco CMC devices with internal ONU
- Maximum of eight Cisco uBR-MC3GX60V-RPHY line cards
- Multiple PON OLTs

#### Capacity:

Maximum of 24 Gb on the downstream and 14 Gb on the upstream for one Cisco uBR10012 Router.

**Figure 4: Pure PON Topology**



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## Network Cables

**Table 1: Cable Types Supported for the Cisco Remote-PHY Solution**

| Originating Device                                                          | Target Device | Cable Type      | Connector Type           |
|-----------------------------------------------------------------------------|---------------|-----------------|--------------------------|
| CMTS (Gigabit Ethernet SFP module on the Cisco uBR-MC3GX60V-RPHY line card) | Switch or OLT | Ethernet cables | RJ-45 connector          |
|                                                                             |               | Copper cables   | RJ-45 connector          |
|                                                                             |               | Optical fiber   | LC Fiber-Optic connector |
| OLT                                                                         | ONU           | Optical fiber   | SC Fiber-Optic connector |
|                                                                             | External ONU  | Optical fiber   | SC Fiber-Optic connector |
| Switch                                                                      | Cisco CMC     | Optical fiber   | LC Fiber-Optic connector |
| ONU                                                                         | Cisco CMC     | Optical fiber   | SC Fiber-Optic connector |
| External ONU                                                                | Cisco CMC     | Copper cables   | RJ-45 connector          |

