1 Overview

This quick start guide describes the equipment and steps used to connect coaxial cables between the Cisco 3x10 RF Switch and the working and protect cable interface line cards (Cisco uBR-MC28C, and Cisco uBR-MC16C, E, or S) in a Cisco uBR10012 Cable Modem Termination System (CMTS).

A single Cisco uBR10012 CMTS supports up to eight Cisco cable interface line cards. Each line card has one or two downstream and six or eight upstream cable interfaces for a total of up to 16 downstream and 64 upstream interfaces in a fully populated chassis.

2 Protection Scheme

The N+1 redundancy protection scheme you select for your system depends on the number of cable interface line cards you have installed in the Cisco uBR10012 CMTS. The 7+1 eight-card redundancy scheme supports redundancy for the cable interface line cards installed in a fully populated Cisco uBR10012 chassis.

One Cisco 3x10 RF Switch is used in this configuration, allowing you to deploy a redundancy scheme where one protecting cable interface line card supports from one to seven working cable interface line cards in the same chassis.

3 RF Cable Assemblies

The following sections describe the coaxial cable, F-connector assemblies, and header blocks required to support N+1 redundancy using the Cisco uBR 3x10 RF Switch, Cisco CMTSs, and the Vecima HD4040 series IF-to-RF upconverter.

Although you may construct and implement your own cabling system according to the specifications outlined here, we recommend using the Cisco N+1 cabling solution designed specifically for this CMTS feature and the Cisco pre-assembled, terminated cables and cable bundles.

- CAB-RFSW-3X10-T (single cable)

- CAB-RFSW-3X10-10T (cable bundle)

Coaxial Cables

The coaxial cable approved for use in the Cisco N+1 cable assembly is Belden YR46940. The cable bundle features 10 individual segments of Belden YR46940-type coaxial cable enclosed in an external sheath. Each segment of coaxial cable is a different color. The single gray and brown RF cables are pre-terminated with F-connectors to accommodate downstream IF signals from the Cisco CMTS to the Vecima HD4040 series IF-to-RF upconverter input. (See Figure 1.)

Figure 1   Cable Bundle and Header Block
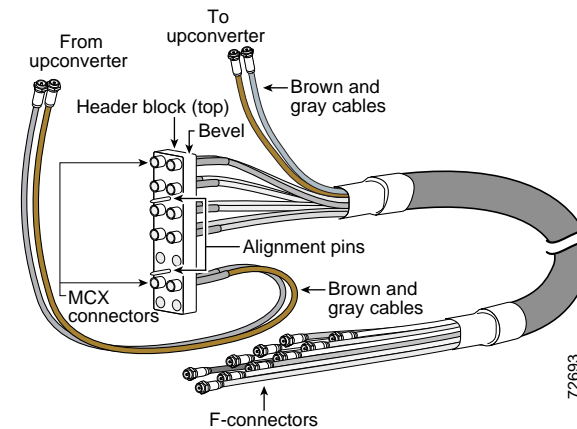
🔍
Tip   Different jacket colors are used for easier identification.

Connectors

The MCX connectors that terminate in the header block at the Cisco RF Switch are a special 75-ohm MCX connector available from White Sands Engineering.

The F-connectors that terminate at the upconverter are Whitesands ASFP connectors (or alternate). The output cabling kit includes 13 F-connectors to use for modification or repair.

Header Blocks

The header block holds the M... terminate the coaxial cables. T... header blocks that mate to th... RF Switch. (See Figure 1.)

The header blocks are slightly... and have offset alignment pin... accidentally installing the hea... down.

An extraction tool is shipped... RF Switch to remove MCX co... header blocks, if necessary.

✏️
Note   Custom cables or cab... as header blocks, crim... connectors are availa... cable fabricators such... Engineering (1-800-J...

For more information... series IF-to-RF upcon... following URL:

http://www.vecimane...

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...ing RF Cables to ...R 3x10 RF Switch

...ted to the CMTS, PROTECT
...portions of the
...Switch using header blocks.

...ght RF connection
...roups of RF cables connect to
...e cards designated as the
...s and to IF-to-RF

...of the two RF connection
...roups of RF cables connect to
...e cards designated as the
...s.

...One of the eight RF
...s—These groups of RF cables
...axial or fiber-optic
...e cable headend or hub.

...etailed view of a header block
...sco uBR 3x10 RF Switch.

...Header Blocks

...eled edge of the header block
...ign the pins on the header
...e two holes in the
...section of the RF switch.

...der block into place, using
...re on both the upper and
...s of the header block.

...de screwdriver to tighten
...installation screws (top and
...e header block) to prevent
...sconnections.

...over-tighten. We recommend
...tighten the screws to 5 to 7
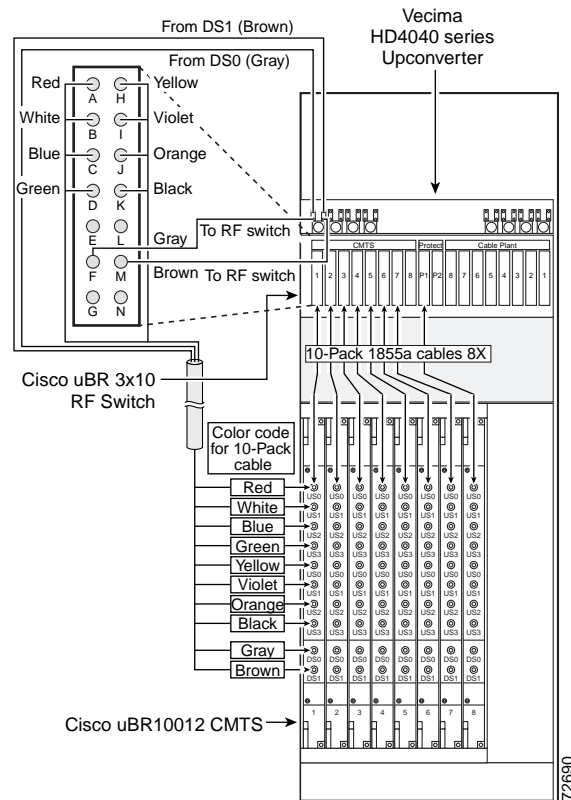...nds (0.5649 to 0.7909 Nm).

Mapping the RF Cables

Use the following guidelines to map cables between
the Cisco uBR 3x10 RF Switch and the CMTS:

- The header block ports labeled A through E
  and H through L connect to the upstream
  interfaces on the line card.

- The header block ports labeled F, G, and M are
  for the downstream connections. Therefore,
  Cisco uBR-MC28C line card ports, DS0 and
  DS1, can be attached to any two of the three
  available downstream ports.

- The cable interface port labeled N is not used
  in this configuration.

This mapping scenario is applicable for both
working and protect cable interface line cards
when employing N+1 redundancy.

*Figure 2   Mapping the Cisco uBR-MC28C Cable
Interface Line Cards*

Connecting the RF Cables to the Header Blocks

Step 1 Push the MCX connectors into the holes in
the header blocks as they have been
mapped. See Figure 2.

Step 2 Gently wiggle each connector to make sure
that the connection is secure.

The distinction between which cable interface line
card serves as the protect line card and which line
cards serve as the working line cards is decided by
which cable group (line card) is plugged into the
CMTS or the PROTECT group on the RF switch,
and by the configuration you specify using the
information in the "N+1 Redundancy for the Cisco
CMTS" chapter of the *Cisco Cable Modem
Termination System Feature Guide*.

Connecting to the Line Cards

Tip Connect each header block and line card
group, one group at a time.

Step 1 After installing the cable management
bracket (optional), Run the cables from
the RF switch down to the line cards.

Step 2 Connect the individual RF connectors to
the cable interfaces on the cable interface
line card.

Caution Ensure that all the RF cables in a
bundle attach to interfaces on the
same line card installed in the CMTS.

Step 3 Tighten the F-connectors to a value
between 10 (recommended) and
15 (maximum) inch-pounds (1.1298 and
1.7339 Nm).

Output Cabling

Output cable headers are wir...
sequence of the input headers...
cabling kit (Cisco part numbe...
CAB-RFSW-3X10-10T) is ava...
See the Cable Plant wiring sec...

Figure 3   Wiring the Outp...
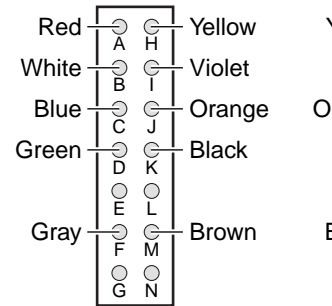
CMTS and Protect wiring

5 Part Numbers

Description	Part...
Cisco (10-cable bundle)	CA...
Cisco (single cable)	CA...
White Sands Engineering, Inc.	
Belden[1] (cable bundle)	YR...
Belden (single cable)	YR...
Header block	MC...
Extractor tool	REM...
MCX connector	MC...
"F" connector	ASF...
MCX, "F" crimp tool	AC...
MCX connector strip tool: Dual-shielded cables	PN-...
Dual-shielded F connector strip tool	CPT...

1. 75–ohm precision miniature vi...