

Metrobility® R4000

Coarse Wave Division Multiplexing

R4000 with OADM Modules



R4000 with 8-Channel Multiplexer Module
and 4-Channel Multiplexer Module

The Metrobility R4000 Coarse Wave Division Multiplexing (CWDM) solution from Telco Systems® provides a cost-effective “no new fiber upgrade” solution for adding new services and customers to an existing fiber infrastructure.

Multiplexing and optical add/drop capabilities

The Metrobility CWDM solutions allow users to increase the capacity of existing fiber by utilizing widely spaced, separate wavelengths - between 1350nm and 1610nm - within the same fiber pair. These CWDM solutions can support up to 16 different channels utilizing a combination of 8-channel and 4-channel multiplexers. An expansion port on the 4-channel multiplexer allows additional unique wavelengths to be combined on a single fiber pair by “chaining” multiplexers prior to the final network connection.

Optical Add/Drop multiplexers (OADM) provide the ability to “drop and add” or “drop and pass” one or more of the wavelengths from the fiber locally. “Drop and pass” extracts the assigned wavelengths and relays the remaining channels to the next destination creating a point-to-point optical link from the subscriber site to the central locations. “Drop and add” inserts a wavelength onto the link to create a point-to-point link from one site to another.

Passive CWDM

The R4000 platform can support up to two (2) modules, including 4-channel and 8-channel multiplexers, and OADM modules. Multiple modules may be linked through the expansion port to increase wavelength capacity to a total of 16 on a single fiber pair. This modularity enables providers to add wavelengths as needed in as few as four wavelengths at a time.

An Optical Add/Drop Multiplexer module provides the “drop and pass” or “drop and add” capabilities.

The R4000 requires no external power and may be installed in outdoor cabinets.

Active CWDM

The Metrobility line cards which support the ITU CWDM wavelength grid provide a copper conversion to connect directly to a switch at the provider’s edge and the subscribers network. These cards require a Metrobility platform (R5000, R1000, R200 or R400).

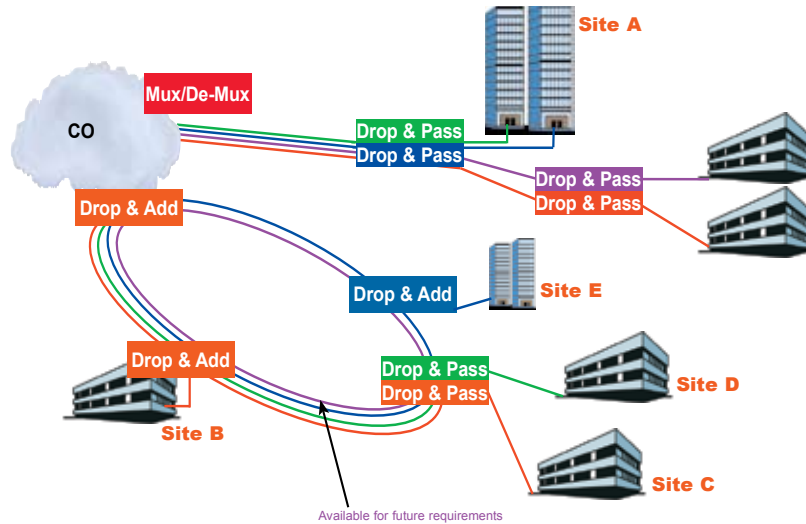
Management

Each active connection can be managed via a Metrobility chassis installed with the R502 management card and NetBeacon® ESP Element Management software.

- Expansion port supports up to 16 discrete wavelengths
- Passive “Drop and Pass” or “Drop and Add” capabilities
- Managed 45Mbps - 2.7Gbps optical links
- Supports ITU G.694.2 CWDM wavelength grid with a spacing of 20nm
- Passive modules require no power
- Single Channel OADM modules and Multiplexer modules have extended temperature range
- NEBS certified
- Line Protection and Restoration

Metrobility® R4000

Active and Passive CWDM



Ring or Point-to-MultiPoint Network

Key Applications

- Point-to-point network extends 16Gbps over singlemode fiber
- Multiple customers supported over singlemode fiber
 - Utilizing Drop-and-Pass
 - Utilizing Drop-and-Add
- Extended temperature modules for outdoor installations
- All fiber ring configuration on multiple wavelengths
- Point-to-multipoint network
- Multiple services over a single fiber pair

Ordering Information

R4000 Chassis Options	
Part Number	Description
R4000-02*	19", 1U Rack Mount Platform for CWDM multiplexer and OADM modules
RM-1000	Extension for 23" rack
4000-CA	Fiber Cable kit - (4) SM LC to SC (1m)
Multiplexer Modules (SC connectors with expansion port and extended temperature range)	
R416-B4-ABE*	8-Channel CWDM 1470nm to 1610nm mux/de-mux module
R416-B4-CDE*	8-Channel CWDM 1310nm to 1450nm mux/de-mux module
R416-A4-AE*	4-Channel CWDM 1550nm to 1610nm mux/de-mux module
R416-A4-BE*	4-Channel CWDM 1470nm to 1530nm mux/de-mux module
R416-A4-CE*	4-Channel CWDM 1390nm to 1450nm mux/de-mux module
R416-A4-DE*	4-Channel CWDM 1310nm to 1370nm mux/de-mux module
Single Channel OADM Modules (SC connectors with extended temperature range)	
R426-D4-31E to -61E*	1470nm to 1610nm drop and pass modules
R436-J4-31E to -61E*	1470nm to 1610nm drop and add modules
Metrobility Active Electrical-to-Optical Options	
Platform	
R5000-17HS*	17-slot platform with two bays for optional AC/DC power supplies
R1000 platforms	2-slot platform with one or two AC or DC power supplies (one slot for R502-M management card)
R400-2HS-1A	2-slot platform with single external AC power supply (one slot for R502-M management card)
R200-AC or R200-DC	1-slot platform with single internal AC or DC power supplies
CWDM Managed Line Card Options	
R821-1S	10/100BASE-T RJ-45 to 100BASE-X LC SFP (requires 1 pluggable optic**)
R821-1S-03	10/100BASE-T RJ-45 to 100BASE-X LC SFP with 1 Mbps incremental rate limiting (requires 1 pluggable optic**)
R851-1S	10/100/1000TX to 10/100BASE-X LC SFP (requires 1 pluggable optic**)
R851-SS	1000BASE-X LC SFP to 1000BASE-X LC SFP (requires 2 pluggable optics**)
R861-1S	10/100/1000BASE-T RJ-45 to 100/1000BASE-X LC SFP (requires 1 pluggable optic**)
R861-SS	100/1000BASE-X LC SFP to 100/1000BASE-X LC SFP (requires 2 pluggable optics**)
R231-47 to -61***	100M TX RJ-45 to 100M FX
R153-1S	1000BASE-T RJ-45 to 1000BASE-X LC SFP (requires 1 pluggable optic**)
R153-SS	1000BASE-X LC SFP to 1000BASE-X LC SFP (requires 2 pluggable optics**)
R752-11	1000Base-T to Dual 1000BASE-T (requires 1 pluggable optic**)
R752-1S	1000Base-T to Dual 1000BASE-X (requires 2 pluggable optics**)
R752-SS	1000Base-X to Dual 1000BASE-X (requires 3 pluggable optics**)
RA21-47 to -61	Standalone unit with CWDM wavelength-specific fixed optics (1470nm to 1610nm)

*NEBS certified

**see R4000 user manual for list of recommended CWDM pluggable optics

***U.S. Patent No. 6,741,566 B1

Specifications

Interfaces

CWDM Module Fiber Optic Interfaces

- Connector: SC
- Cable Type: 9/125 μm singlemode
- Insertion Loss: 1.0 dBm (OADM)
2.0 dBm (4-channel Mux/Demux)
2.5 dBm (8-channel Mux/Demux)

General

Environmental

- Operating Temperature: -40°C to 80°C
- Operating Humidity: 5% - 95% non-condensing
- Storage Temperature: -30°C to 70°C

Physical Specifications

- Physical Case: Fully-enclosed metal construction
- Dimensions:
 - Chassis: 1.7"H x 17.0"W x 10.0"L
4.4cmH x 43.2cmW x 25.4cmL
 - CWDM Module: 9.812" L x 7.375" W x 1.61" H
24.92 cm x 18.73 cm x 4.1 cm
- Weight:
 - Chassis: 2.85 lb (1.29 kg)
 - CWDM Module: 1.75 lb (0.79 kg)
 - Blank Panel: 0.26 lb (0.11 kg)

Safety and EMC Compliance

- Regulatory Compliance: ITU G.694.2; NEBS
- Safety and EMC: FCC, UL, CE, C-UL



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