

WaveReady™ CWDM Transport Solutions

JDSU WaveReady CWDM solutions provide a simple, flexible, and reliable method to increase capacity in Metro and Access networks to support new broadband services or expand broadband access to new areas.



Key Features

- Provides Simple and Cost Effective Ethernet Transport Solutions
- Easily Increases Capacity in Access Networks
- Simplifies CWDM networks by eliminating the need for power balancing
- Supports Outside Plant deployments

Applications

- Ethernet transport over WDM
- Backhauling of multiple DSLAMs over a single fiber
- Migration of existing networks to CWDM
- Capacity upgrades in access and metro networks
- CWDM Wireless Backhaul Networks

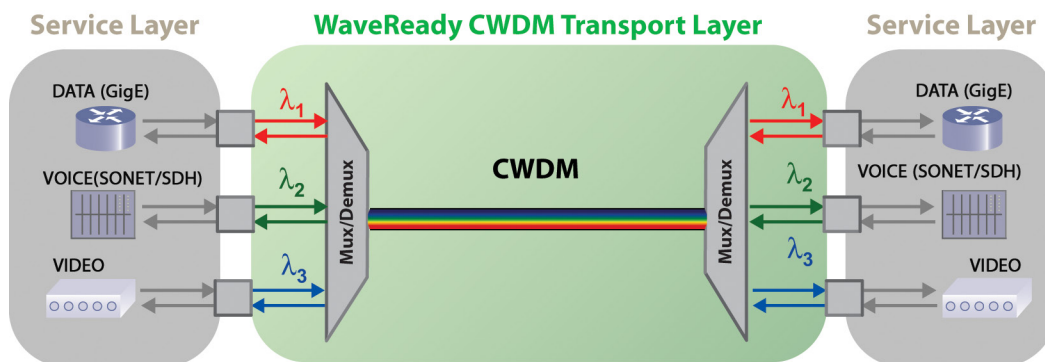
Simplicity of Operation

WaveReady reduces complexity in coarse wavelength division multiplexing (CWDM) optical networks by removing the need for service provisioning and maintaining the service and transport layers at the same level. This greatly reduces the network operating expenses by reducing the number of transport equipment required in metro and access networks.

In addition, the large selection of WaveReady optical multiplexing (mux), de-multiplexing (demux), and optical add/drop mux (OADM) solutions, with industry-leading channel isolation, simplify network deployment by eliminating the need for power balancing. The addition or removal of services is always easy and does not affect other services.

Flexibility

The WaveReady CWDM transport solution is exceptionally flexible, because it supports the transport of services, such as synchronous optical networking and synchronous digital hierarchy (SONET/SDH), Ethernet, Fibre Channel, and more. Our passive multiplexing/demultiplexing solution is offered in multiple form factors and with multiple mounting solutions that can be used in Controlled Environments (CE), Customer Premises (CP) and Outside Plant (OSP) locations.



Reliability

JDSU is the leading supplier of passive optical multiplexers with over 1.5 Million WDM channels shipped, unparalleled reliability, and the industry's highest quality performance. With over 40 billion operating hours, JDSU has a proven reliability and is a true leader in all WDM applications for networks such as Metro and Access, Submarine, and Long and Ultra Long-Haul. JDSU WaveReady is a robust platform with built-in redundancies and intelligent features to guarantee the high-availability of the transport equipment. WaveReady makes use of high-quality JDSU optical components and is a Network Equipment Building System (NEBS) Level 3-certified product. These factors combine to make WaveReady a true carrier-grade optical transport platform.

Broadband Connectivity Applications

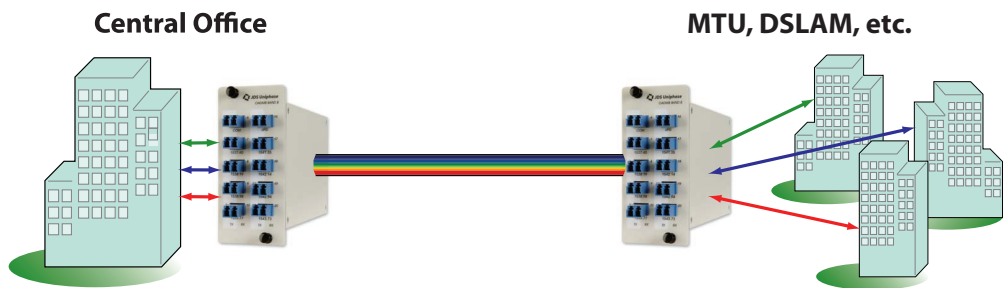
New Broadband Services require Service Providers to supply more bandwidth to customers at an attractive cost point. Today, this is normally achieved by offering Ethernet services over CWDM. When Ethernet switches or routers are equipped with CWDM small form-factor pluggable transceivers (SFPs), service providers can achieve a simple and cost-effective solution by using them together with JDSU CWDM mux/demux equipment.



MDX-08MDC001B
(Passive Module)



MDX-MN0204 (Shelf)



Broadband Connectivity Applications: Sample Bill of Materials

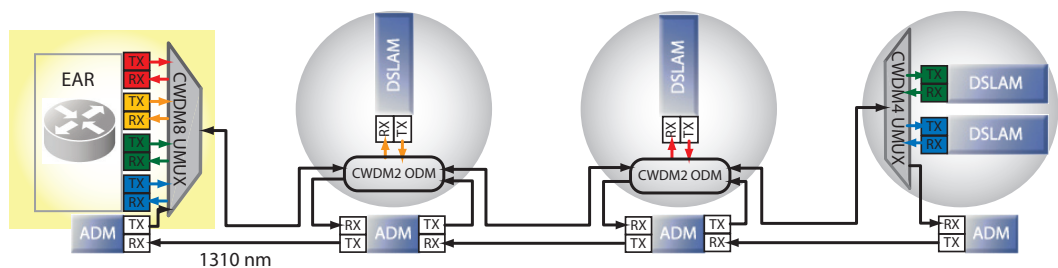
Order Code	Description	Quantity
MDX-MN0204	2-RU JDSU Passive Optics Shelf and 4 LGX-compatible modules	2
MDX-08MDC001B	8-channel Mux/Demux with 1310 nm overlay and monitor port	2
WRT-SFPL3C10SC-0xx ¹	GigE CWDM SFP 120 km	2

1. where xx=47, 49,51,53, 55, 57, 59, or 61

Broadband Deployments Using a CWDM Overlay

When deploying Broadband services, service providers often must cost-effectively overlay the new services over existing networks. Passive CWDM modules equipped with a 1310 bypass are the most cost-effective solution as they allow new CWDM channels to reuse existing fiber carrying 1310 nm traffic.

Up to four full duplex Gigabit Ethernet (GigE) channels can be overlaid on a single fiber or may be used in dual fiber configurations for eight CWDM wavelengths. The passive modules can be installed wherever convenient, as they support OSP operating temperatures and simplifies network deployments as their ultra-high per-channel isolation eliminates the need for power balancing.



Triple-Play Deployments Using CWDM Overlay: Sample Bill of Materials

Order Code	Description	Quantity
MDX-08UXC001A	8-channel CWDM Universal Mux with 1310 nm port, 1471-1611 nm	2
MDX-04UXC001A	4-channel CWDM Universal Mux with 1310 nm port, 1471-1531 nm	4
MDX-02ADCB1BA	2-channel CWDM ODM with 1310 nm port, 1551-1571 nm	4
MDX-02ADCB2BA	2-channel CWDM ODM with 1310 nm port, 1591-1611 nm	4
MDX-MN0204	2-RU JDSU Passive Optics Shelf and 4 LGX-compatible modules	12
WRT-SFPL3C10SC-0xx ¹	GigE CWDM SFP 120 km	8
MDX-MN0204	2RU JDSU Passive Optics Shelf - 4 LGX compatible modules	2

1. where xx=47, 49, 51, 53, 55, 57, 59, or 61



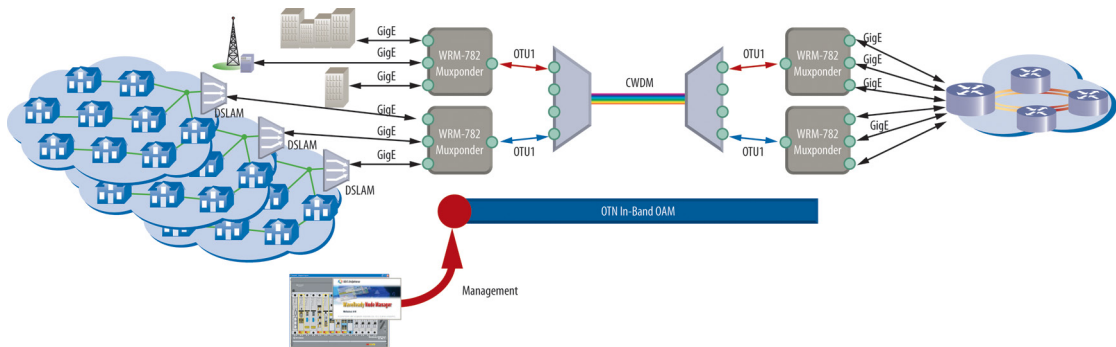
WRM-782DT000B
Ethernet Muxponder



WR3100 Chassis with WRM-782s

Ethernet Backhaul over CWDM

WaveReady offers simple, cost-effective Ethernet aggregation solutions for the Access and Metro networks. The WRM-782 muxponder is a compact, low-power transport module well suited for Metro Ethernet transport, Digital Subscriber Line Access Multiplexer (DSLAM) backhaul or 3G/4G wireless backhaul applications. It provides a low-latency aggregation solution that is completely transparent from an Ethernet perspective. It can multiplex three Ethernet signals into one line interface and provides Layer 2 performance statistics on all ports. It also includes an embedded management channel to facilitate the management of remote equipment.



Ethernet Aggregation over CWDM

Sample Bill of Material for 6 GigE of Capacity over 2 CWDM Channels

Order Code	Description	Quantity
COM-200ET003Y-4.5	Shelf Controller for the WaveReady 3000 shelves	2
DMS-3100DC004	WaveReady 3000 Shelf, 1 RU, holds 2 WaveReady modules, DC powered	4
WRM-782DT000B	3-port GigE Muxponder into OTU1	4
WRT-SFPI3C42SC-0xx	CWDM SFP Transceiver, 40 km	4
WRT-SFPM20SC0850	850 nm SFP Transceiver	12
MDX-08MDC001B	8-channel Mux/Demux with 1310 nm overlay and monitor port	2
MDX-MN0204	2 RU JDSU Passive Optics Shelf—4 LGX-compatible modules	2
MDX-04UXW001B	Band Combiner C and L-Band (C1, C2, L1, L2)	2



WRT-SFPL3C10SB
GigE CWDM SFP

CWDM Wireless Backhaul Application



MDFT0xADC Bxx0 Series of CWDM OADM Trays

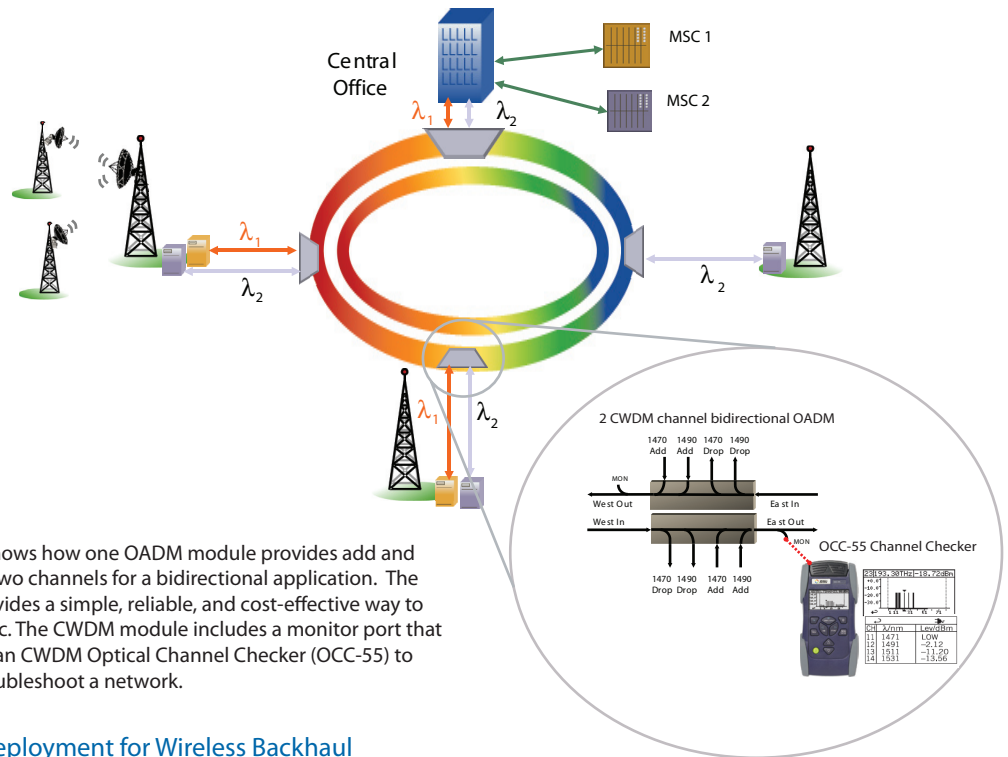


OSP Enclosure with an MDFT series splice tray which is compatible with the Tyco splice FOSC-A and FOSC-B.

With the arrival of 3G services, bandwidth requirements are increasing rapidly to accommodate the growth of data traffic. Most Wireless operators will require fiber connectivity to towers to upgrade their networks to 3G or LTE services.

Wireless Backhaul Providers can provide fiber connectivity at a very competitive price by using CWDM technology to interconnect cellular sites back to the Mobile Switching Centers (MSC). JDSU offers Outside Plant Hardened CWDM modules compatible Tyco Electronics FOSC series and Pre-formed Line Products Coyote enclosures. Hardened CWDM modules require no power, cooling or heating and can be installed in outside plant cabinets or splice enclosures. With a single Outside Plant CWDM infrastructure, wavelength connectivity can be delivered to multiple operators very cost effectively.

Wireless Backhaul Application



This detail diagram shows how one OADM module provides add and drop capabilities for two channels for a bidirectional application. The CWDM approach provides a simple, reliable, and cost-effective way to transport access traffic. The CWDM module includes a monitor port that can be connected to an CWDM Optical Channel Checker (OCC-55) to monitor power or troubleshoot a network.

CWDM Deployment for Wireless Backhaul

Sample Bill of Material

Order Code	Description	Quantity
MDX-08MDC001B	8-channel Mux/Demux with 1310 nm overlay and monitor port	2
MDX-MN0204	2RU JDSU Passive Optics Shelf - 4 LGX compatible modules	1
MDF-01ADC B470	1-Channel CWDM OADM splice pack (1471 nm)	1
MDFT02ADC B470	2-Channel CWDM OADM splice pack (1471 nm, 1491 nm)	2
BN 2277/40	OCC-55 CWDM Channel Checker	1



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