

Metropolitan Area Network Grade OTN Router PAM4 Selection Guide



AI Overview

Selecting a PAM4-based OTN router for MANs requires evaluating modulation schemes, data rates, optical interfaces, FEC capabilities, and network compatibility with DWDM and OTN standards.

PAM4 Modulation Overview

Pulse-Amplitude Modulation 4-Level (PAM4) encodes two bits per symbol using four voltage levels, effectively doubling the data rate compared to NRZ (PAM2) at the same symbol rate . For MAN applications, PAM4 enables high-speed transmission such as 112G, 224G, or 400G Ethernet, while maintaining lower symbol rates and reduced power consumption . Key considerations include intersymbol interference (ISI), which can increase bit error rates, and the need for advanced equalization and FEC to maintain signal integrity .

Data Rate and Interface Selection

- 112G PAM4: Suitable for short to medium MAN links (up to 2 km over single-mode fiber) using 4x112G lanes with CDAUI-16 electrical interfaces .
- 224G PAM4: Achieved by doubling 112G lanes, providing higher bandwidth for dense urban networks or high-capacity aggregation points .
- OTN Interfaces: Choose routers supporting OTU1e, OTU2e, OTU3, and OTU4 encapsulation to match client Ethernet speeds (10G, 40G, 100G) and ensure compatibility with DWDM networks

Article Content

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What Is MAN? Metropolitan Area Network Explained

Discover what a Metropolitan Area Network (MAN) is, how it bridges LAN and WAN, and its core technologies and

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PAM4 for 400G Optical Interfaces and Beyond (Part 1)

This blog walks you through the basics of PAM4 modulation for current and next-generation

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AN 835: PAM4 Signaling Fundamentals

This Pulse-Amplitude Modulation 4-Level (PAM4) application note explains PAM4 theory and operation while introducing the Intel®

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Selecting a WAN Technology (1.2) > WAN Concepts | Cisco Press

The technology enables businesses to inexpensively connect numerous sites in a metropolitan area, to each other,

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Investigation of a 4x112Gbps PAM4 Configuration for the 2km SMF PMD

This presentation will provide information on a 4x112Gbps PAM4 (400GBASE-FR4) approach and investigation results to support the

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IEEE 802.3cd Explained: 50G, 100G & 200G Ethernet with PAM4

Learn what IEEE 802.3cd defines for 50G, 100G and 200G Ethernet. Explore PAM4 technology, key PMDs,

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50G PAM4 Ethernet Specification Overview

50G PAM4 Technical White Paper fMajor Contribution Companies f01 Technical Background 1.1 PAM4 Overview PAM4 is a branch

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Ethernet AN-LT

Implementation of auto negotiation at PAM4 based data rates is ongoing in the Ethernet industry, and Xena Networks is also in the

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Understanding PAM4 Modulation: A Beginner Guide

PAM4 is a type of PAM (Pulse Amplitude Modulation) technology. It has been widely used in high-speed signal

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Metro Ethernet

Metro Ethernet A metropolitan-area Ethernet system A metropolitan-area Ethernet, Ethernet MAN, carrier Ethernet or metro

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Configuration Guide for Cisco NCS 4000 Series

The OCH Mutual Circuit Diversity feature is an interoperability feature between a NCS 4000 series router and a NCS

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How metro networks emerged and what the future has

A metro network, or Metropolitan Area Network (MAN), is a network that provides connectivity within an

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Optical Transport Network (OTN) Wrapper feature provides robust transport services that leverage many of the benefits such as

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Understanding PAM4 Signaling: A Beginner Guide

What is PAM4? PAM4 is a subset of the more widely used pulse amplitude modulation (PAM) technology, which is an

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50G PAM4 Technical White Paper

Current mainstream interfaces of fixed-line metropolitan area networks (MANs) are 10GE/40GE interfaces. With the rapid

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Marvell Ara PAM4 Optical DSP

Ara features eight 200Gbps/channel PAM4 host electrical interfaces, and an octal 200Gbps/lane PAM4 optical interface with

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AN 835: PAM4 Signaling Fundamentals

It describes NRZ and PAM4 fundamentals, standards using PAM4 coding schemes, and CEI-56G Interconnect reaches and

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The Definitive Guide to Optical Transport Networks (OTN)

He is currently an Associate Fellow at Microchip Technology, where he has contributed to patents and architectural designs related

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Selection Guide for 400G Transimpedance Amplifiers for Metropolitan Area Networks
Denmark vehicle-mounted fiber optic anti

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PAM-4 PCB best practices

Guidelines, calculations, and simulation will help lead to PAM-4 PCB success.

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QSFP28 PAM4 DWDM: A Solution for Extending 100G/400G Signals

Explore QSFP28 PAM4 DWDM transceivers for high-speed 100G/400G networks. Learn how PAM4 modulation and

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Cisco ASR 900 Router Series Configuration Guide, Cisco IOS XE 17

OTN is defined in ITU G.709 and allows network operators to converge networks through seamless transport of the numerous types

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OTN Complete Reference Part 1

OTN networks are deployed in various topologies depending on geographic scope, capacity requirements, protection needs, and

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OTN (G.709) Reference Guide

In today's telecom/datacom environment, network operators are forced to integrate their networks in order to reduce operational

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Optical Transport Networks & Technologies Standardization Work

ITU-T Recommendation G.709 (Interfaces for the optical transport network) with its amendment defines that an

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50G PAM4 Technical White Paper

The silicon photonics technology and higher-order modulation arise to promote optoelectronic technology development. PAM4 is a

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