

# META-DX1 Family

## 1.2T Ethernet MAC/PHYs Supporting MACsec and FlexE with Retimer, Gearbox and Crosspoint

### Summary

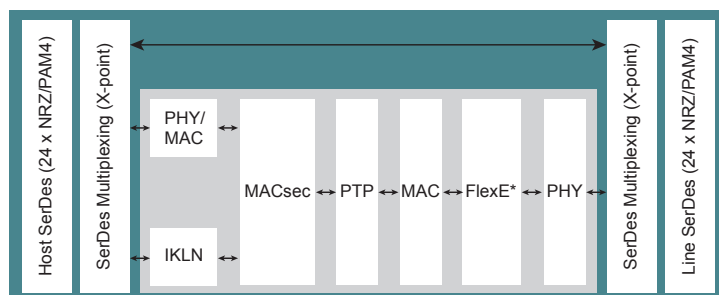
The META-DX1 family devices are multi-purpose Ethernet MACs/PHYs supporting rates from 1 GE to 400 GE. Each family member has 48 high-speed SerDes to enable up to 1.2 Tbps capacity with PAM4 SerDes, 800 Gbps when configured for gearboxing or 2:1 mux applications and 600 Gbps capacity with NRZ SerDes.

These highly flexible devices support retiming (analog and PCS), forward and reverse gearboxing, industry leading timestamping accuracy to enable Class C/D PTP applications, hitless 2:1 multiplexing, crosspoint functionality and flexible I/O to enable connectivity to a variety of optical modules, Digital-to-Analog Converters (DACs), packet processors and Ethernet switches.

The META-DX1 family has members supporting MACsec for encryption and Flexible Ethernet (FlexE) for Data Center Interconnect and Service Provider applications.

- Protecting Ethernet traffic from ever-growing network security threats requires that any data leaving the data center must be encrypted. MACsec encrypts Ethernet traffic at the frame level and was designed to provide standards based end-to-end WAN security.
- FlexE provides a way to optimize the use of network capacity, and enables a layer of flexibility between standards-based Ethernet rates, providing opex and capex benefits. FlexE enables large packet flows with higher efficiency than using Link Aggregation Groups (LAG). FlexE also allows the use of cost-optimized 100G optical modules while supporting new, higher data rates. FlexE on a switch or router can also reduce capex by enabling the transport portion of the network to choose a wavelength that maximizes the bandwidth efficiency.

### META-DX1 Block Diagram



\*Optional

### Applications

- High-density Ethernet line cards
- Data center, service provider and enterprise routers and switches
- Working/protect switches requiring hitless mux
- Ethernet transponders and muxponders
- Encryption appliances
- FlexE line cards

### Highlights

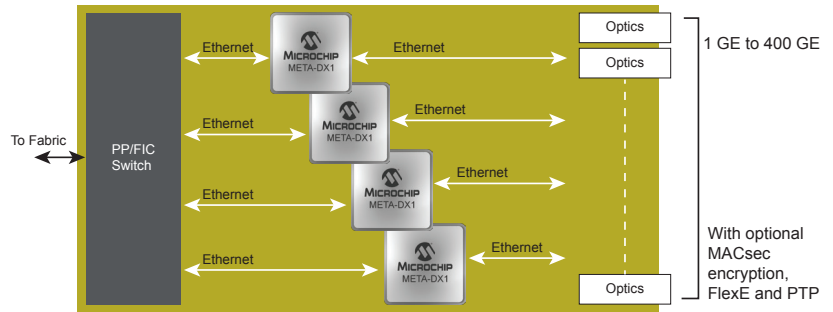
- Up to 1.2 Tbps capacity throughput in a single device
- Ethernet client support from 1 GE to 400 GE
- Flexible Ethernet support
- Line-speed MACsec encryption engines
- 48 integrated 28G NRZ/56G PAM4 SerDes
- Optional Interlaken interface
- Direct connectivity to passive copper cables including support for link training and auto-negotiation
- PTP (IEEE 1588v2) support up to Class C/D
- SyncE support
- Ethernet retiming
- OTN retiming
- 800G forward and reverse gearbox functionality
- Hitless 2:1 mux mode for Working/Protect functionality
- Flexible I/O and crosspoint functionality supports “any-to-any” SerDes connection

## Benefits

- 1.2 Tbps device enables 10 Tbps+ line cards
- Class C/D timestamping enables 5G-ready equipment
- Crosspoint enables flexible connection to multiple types of optics on a single design
- FlexE enables a path to meet DCI requirements of hyperscale cloud service providers
- Enables MACsec to be deployed across existing Ethernet switched networks
- Hardware compatibility and common SDK across family reduces overall investment and reduces time to market
- Software Development Kit (SDK) APIs to reduce development time

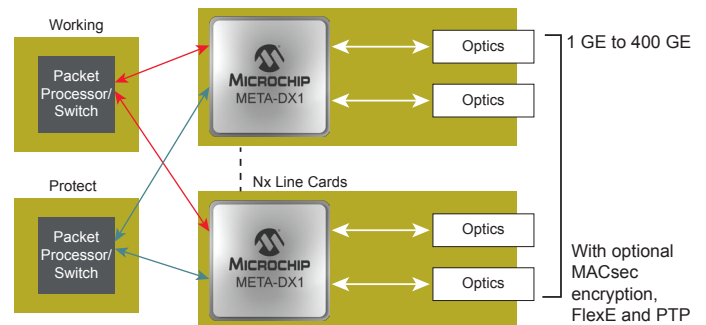
## High-Capacity Router or Switch Line Card

- Option to support MACsec
- Option to support FlexE
- Support for Class C/D timestamping



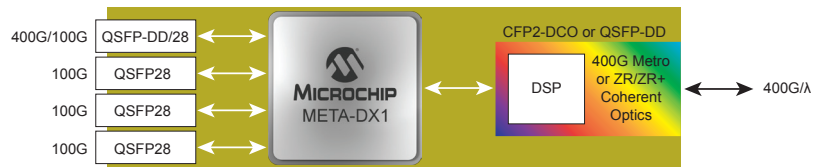
## Working/Protect Switch Using Hitless Mux

- Hitless switching between working and protect cards
- Up to 800G (PAM4) or 400G (NRZ) capacity per device
- SerDes capable of driving across backplane



## Transponder/Muxponder

- Crosspoint and gearbox functionality enable common hardware for QSFP28 and QSFP-DD optics
- Supports OTN rates
- Optional FlexE muxponder adds support for 10/25/40/50 GE clients
- Optional MACsec encryption support for an additional security layer



## META-DX1 Device Family

Part #	Analog Retimer	PCS retimer	Gearbox	Crosspoint	2:1 mux	PTP	Interlaken	MACsec	FlexE	SerDes	Ethernet Rate Support	Max Capacity (PAM4)	Max Capacity (NRZ)
PM6110	✓	✓	✓	✓	✓	✓	✓	✓	✓	48	1 GE to 400 GE	1.2T	600G
PM6108	✓	✓	✓	✓	✓	✓	✓	✓		48	1 GE to 400 GE	1.2T	600G
PM6104	✓	✓	✓	✓	✓	✓				48	1 GE to 400 GE	1.2T	600G

## For More Information

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