

# Qatar Single-Fiber Bidirectional 400G



## Overview

Achieved bidirectional transmission at 400 Gb/s over a single fiber using coherent digital subcarrier multiplexing (DSCM). Employed subcarrier interleaving to effectively mitigate Rayleigh back-scattering. XR optics transceivers are designed to be equipped with a wide range of networking equipment. Arista's 400G platforms allow data centers and high-performance computing environments to address growing needs for higher bandwidth at lower cost and power per gigabit. Using bidirectional wavelength technology over four pairs of multimode fiber, it supports 400GbE links up to 100m on OM4 fiber and can break out to four 100GBASE-BIDI or. The MSA group is dedicated to defining optical data link specifications based on a dual wavelength bidirectional transmission technology on multimode fiber (MMF) that enables a reduction in fiber count relative to other solutions. The 400 Gbps BiDi solution leverages both the widely adopted 40 Gbps.



## Article Content

Mar 07, 2026

Infinite Capacity Engine - Extensible (ICE-X) 400G XR QSFP-DD

of ICE-X 400G XR optics where desired, using a common set of building blocks. Moreover, when compared to conventional point-to-point coherent pluggables, ICE-X pluggable DCOs enhance

Aug 01, 2025

1800 km 16QAM Transmission With a 400G QSFP-DD Coherent

Abstract We demonstrate real-time long-haul transmission with 400G digital subcarrier-multiplexed QSFP-DD coherent pluggable in a live production network, achieving a record post-FEC-error-free

Nov 23, 2025

#ofc2024 #opticalnetworking #bidirectionaltransmission # ...

☐☐ Allegro EU Project Showcases Bi-Directional 400G Demo at OFC 2024! We're excited to share our latest breakthrough: "Single-Fiber Bidirectional Transmission using 400G Coherent Digital ...

Dec 03, 2025

#ofc2024 #opticalnetworking #bidirectionaltransmission # ...

We're excited to share our latest breakthrough: "Single-Fiber Bidirectional Transmission using 400G Coherent Digital Subcarrier Transceivers" by P. Torres-Ferrera and colleagues.

Jan 06, 2026

Allegro EU Project Demonstrates 400G Bi-Directional Transmission

Achieved bidirectional transmission at 400 Gb/s over a single fiber using coherent digital subcarrier multiplexing (DSCM). Employed subcarrier interleaving to effectively mitigate Rayleigh

Jul 11, 2025

Single-Fiber Bidirectional Transmission using 400G Coherent Digital ...

Single-Fiber Bidirectional Transmission using 400G Coherent Digital Subcarrier Transceivers. In Optical Fiber Communications Conference and Exhibition, OFC 2024, San Diego, CA, USA, March 24-28,

Nov 30, 2025

Figure 1 from Single-Fiber Bidirectional Transmission using 400G ...

Fig. 1: Experimental setup, transmission modes, and DSC indexing - "Single-Fiber Bidirectional Transmission using 400G Coherent Digital Subcarrier Transceivers"

Oct 27, 2025

Single Fiber Solutions for 400G Wavelengths

This single fiber solution enables extremely high utilization of a single fiber to transport up to 8 x 400G coherent wavelengths by splitting them into 16 different wavelengths, transmitting in both directions

Oct 31, 2025

Cisco CFP2 400G BiDi Coherent Optics | CloudWifiWorks

Cisco CFP2 400G BiDi Support line rates up to 400 Gbps over a single-fiber bidirectional transmission. Ideal for fiber-constrained environments.

May 27, 2026

400G BiDi MSA Frequently Asked Questions (FAQ)

3. What are the key features of 400G BiDi solutions? Optical bidirectional technology allows each single fiber to carry signals in both directions, thereby improving fiber utilization relative to existing 400G

Jun 03, 2026

FAQ about 400G BIDI MSA

Optical bidirectional technology allows each single fiber to carry signals in both directions, thereby improving fiber utilization relative to existing 400G MMF standards.

Jun 09, 2026

Single-Fiber Bidirectional Transmission using 400G ...

In this paper, which is an invited follow-up of a tutorial given at ECOC 2023, we first present an overview of this evolving scenario and then propose a unified analytical model that is able

Jul 05, 2025

Panduit Cable Ordering Guide For Cisco 400G Optics

400G Single Mode Options for: QDD-400G-DR4-S ... \*Interconnects and trunk cables are available in a variety of lengths, feet or meters; select the part numbers for additional information. ^Interconnects

Apr 23, 2026

## Introduction to 400GBASE-SR4.2 (BiDi) Standard

The 400GBASE-SR4.2 (BiDi) Standard was announced by the 400G Bidirectional (BiDi) MSA (Multisource Agreement) Group in the year 2018. The specification will be named 400G-BD4.2, to

Nov 03, 2025

## Arista QDD-400G-SRBD1 | 400G QSFP-DD BiDi Transceiver, MMF,

Description The Arista QDD-400G-SRBD1 is a 400GBASE-SR4.2 BiDi QSFP-DD optical transceiver designed for high-speed data center connectivity. Using bidirectional wavelength technology over

Aug 30, 2025

## Single-Fiber Bidirectional Transmission using 400G Coherent Digital ...

We experimentally evaluate the Rayleigh Back-Scattering power penalty in a single-fiber single-wavelength bidirectional link using coherent digital subcarrier-based transceivers and verify a

May 17, 2026

## Impact and Mitigation of Reflections in 400G Single-Fiber Bidirectional ...

We perform experimental evaluation and analytical modelling of the sensitivity penalty caused by discrete and distributed reflections in 400G single-fiber bidirectional coherent systems for next

Sep 28, 2025

## Understanding the Latest in 400g Transceiver

A: The 400g QSFP-DD DR4 is a non-roaming short-reach optical transceiver that is intended for a maximum distance of up to 100m operating on

Jul 02, 2025

## Spectrally efficient single carrier 400G optical signal transmission

In this paper, the recent progress on spectrally efficient single carrier (SC) 400G optical signal transmission was summarized. By using quadrature phase shift keying (QPSK), 16 quadrature

Oct 30, 2025

## Arista 400G Transceivers and Cables: Q& A

In the term "400G-SR4.2", the "SR" stands for "Short Reach" (100m), the "4" implies there are 4 fiber pairs used, and the "2" implies there are 2 wave per fiber (using bidirectional technology).

Feb 05, 2026

Infinite Capacity Engine - Extensible (ICE-X) 400G XR QSFP-DD

Flexible deployment in switches, routers, and WDM platforms and on fiber pairs, single fiber, fixed and flexible grid, ROADM network, etc. Dynamic capacity allocation across the network remotely, set

Oct 08, 2025

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Single-Fiber Bidirectional Transmission using 400G Coherent Digital Subcarrier Transceivers Pablo Torres-Ferrera<sup>1,\*</sup>, Jacqueline Sime<sup>2</sup>, Thomas Duthel<sup>2</sup>, Emanuele Virgillito<sup>3</sup>, Vittorio Curri<sup>3</sup>, Roberto

Jul 21, 2025

The Complete Guide to BiDi Transceiver

Thanks to technology miniaturization, Cisco is now able to offer a CFP2 DCO supporting up to 400 Gbps of line rate that can cope with single-fiber

Aug 15, 2025

400G CFP2-DCO Optical Module

Features Support 100G, 200G, 400G programmable DP-DQPSK, DP-16QAM two modulation modes Support 192.15~194.675THz frequency adjustable. Support single fiber bidirectional transmission

## Contact Us

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