AT-DC2552XS

HIGH PERFORMANCE, LOW LATENCY TOP-OF-RACK DATA CENTER SWITCH

Designed for virtualized data center and cloud environments, the Allied Telesis AT-DC2552XS switch provides high density 10GbE and 40GbE connectivity, making it ideal for today's mini and small data centers, which use up to hundreds of server ports.

2002/95/EC RoHS COMPLIANT

The Allied Telesis AT-DC2552XS is a 48 x 10GbE (SFP+) port high-bandwidth and high-density switch designed for data center applications. It also provides four QSFP+ 40GbE slots for "fat-pipe" high bandwidth uplinks. This switch delivers 1280Gbps of switching fabric with ultra low sub-µsec latency. Airflow has been optimized for front-to-back cooling for data center environments. The unit can also accommodate a 1+1 resilient power supply, along with these specifications, in a very compact 1RU unit chassis.

A smarter data center can be achieved by connecting servers and storage facilities with a high-speed and low latency network fabric that is faster, greener, open, and easy to manage.

Advanced Energy Efficiency
Energy efficient architecture and front-to-back air-flow cooling of the AT-DC2552XS are critical factors in optimizing data center economics—as companies must balance performance with power consumption to meet energy budgets.

High-bandwidth
As bandwidth-intensive applications—such as Web 2.0, virtualization, High-Performance Computing (HPC) and Network Attached Storage (NAS)—continue to proliferate within enterprise data centers, 10 Gigabit Ethernet (10GbE) provides a cost-effective way to increase throughput and seamlessly deliver customer Service Level Agreements.

Future Proofing
10GbE empowers companies to expand application capabilities, reduce time to solve complex financial and scientific applications, and quickly respond to changing customer needs and market conditions.

In combination with the AT-VNC10S Network Interface Cards for servers, it helps clients to reduce the use of I/O adapters, reducing costs and complexity.

High Availability
The AT-DC2552XS has two slots for hot-swappable PSUs (Power Supply Unit) and fans. In addition, SFP+ and QSFP modules can be easily removed and replaced with no interruption to the network. These hot-swappable modules guarantee the continued delivery of essential services.

Cut-through
Cut-through switching sends packets to their destination as soon as the first part is ready. The delay is minimal and the packet reaches its destination in the shortest possible time. With cut-through mode, the AT-DC2552XS forwards packets with a latency of 505 nanoseconds with 40Gb / 800 nanoseconds with 10Gb and is ideal for inter-server communication.

Air Flow
Cooling air flow has become a major design concern in modern data centers. The AT-DC2552XS utilizes front (PSU and fan side) to back (ports side) airflow, which is suitable for rack mounting in data centers.

Eco-friendly
In keeping with our commitment to environmentally friendly products, this switch is designed to reduce power consumption and minimize hazardous waste.

eco friendly

Resilient Ethernet Fabric

Resilient Ethernet Fabric (REF)[1] increases availability using a dedicated bypass link. If one of the links or units fails, the bypass link restores connectivity. By setting up the same LACP trunk group over two AT-DC2552XS units, REF uses link aggregation to increase throughput beyond what a single connection could sustain, while providing link path redundancy.

- » Master-less
- » Layer 2 mesh on spine-leaf model
- » Active-active, multi-path
- » Easy setup

Master-less

» There is no "synchronize" process which the hardware stacking feature usually requires. Instead of setting up "masters" and "members," REF recognizes the other device just as a partner and eliminates the downtime of master fail-over.

Layer 2 Mesh on Spine-Leaf

» One pair of AT-DC2552XS switches with aggregation mode supports up to five pair of AT-DC2552XS with ToR mode, which would connect a maximum of 40 servers per rack.

Active-Active, Multi-Path

» While Spanning Tree Protocol requires active-standby configuration and switchover time for failure, REF supports active-active configuration, preventing any perceptible disruption in the case of a link failure. Even if one of the devices fails, an alternative path is secured and ensures absolute minimal network downtime.

Easy Setup

» REF is configured with QSFP modules between two AT-DC2552XS units, and breakout cables between the ToR and the aggregation switch.

[1] Requires updating to controlled introduction software version 2.5.3.1. Contact your local Allied Telesis support staff for details.
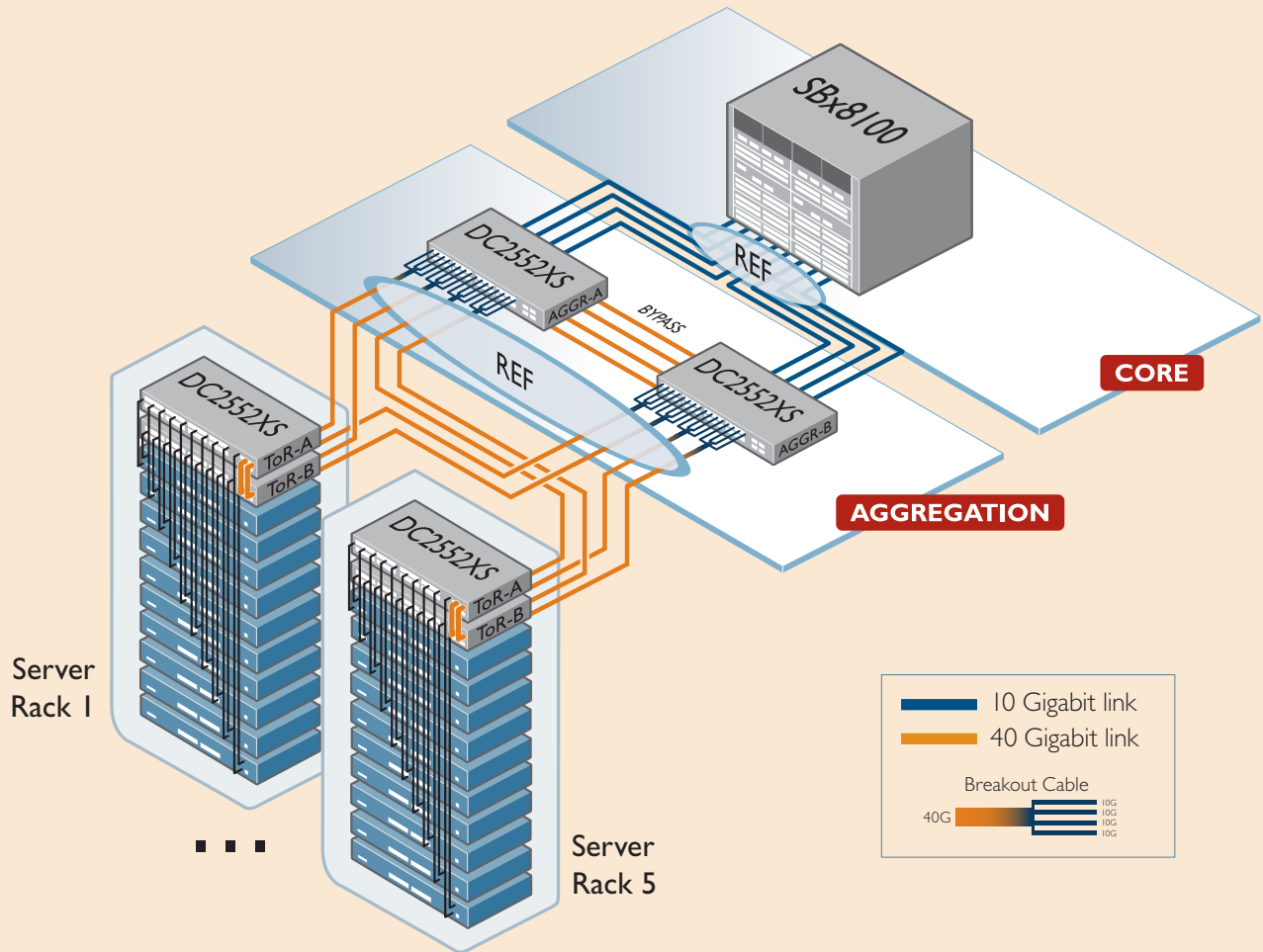
This network configuration enables server and storage to communicate within two layers, securing the low-latency and high-speed connection. The bypass supports up to 160Gbps for aggregation mode or 80Gbps for ToR mode.
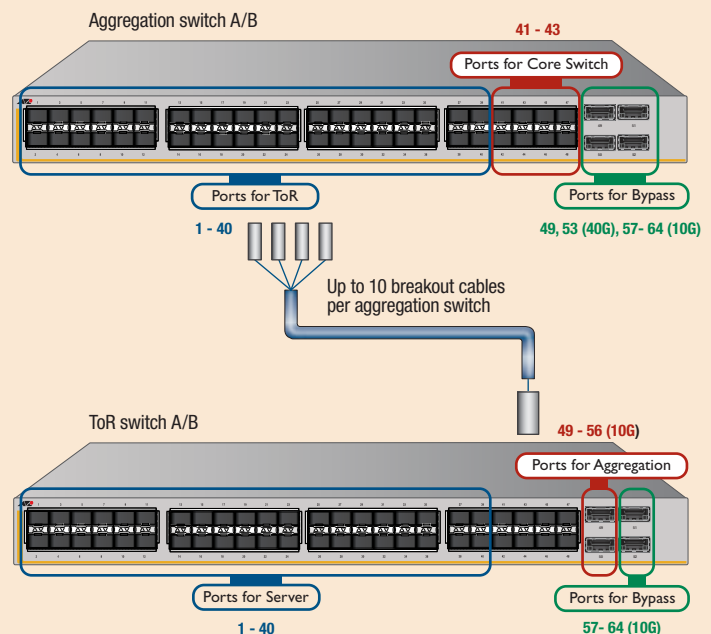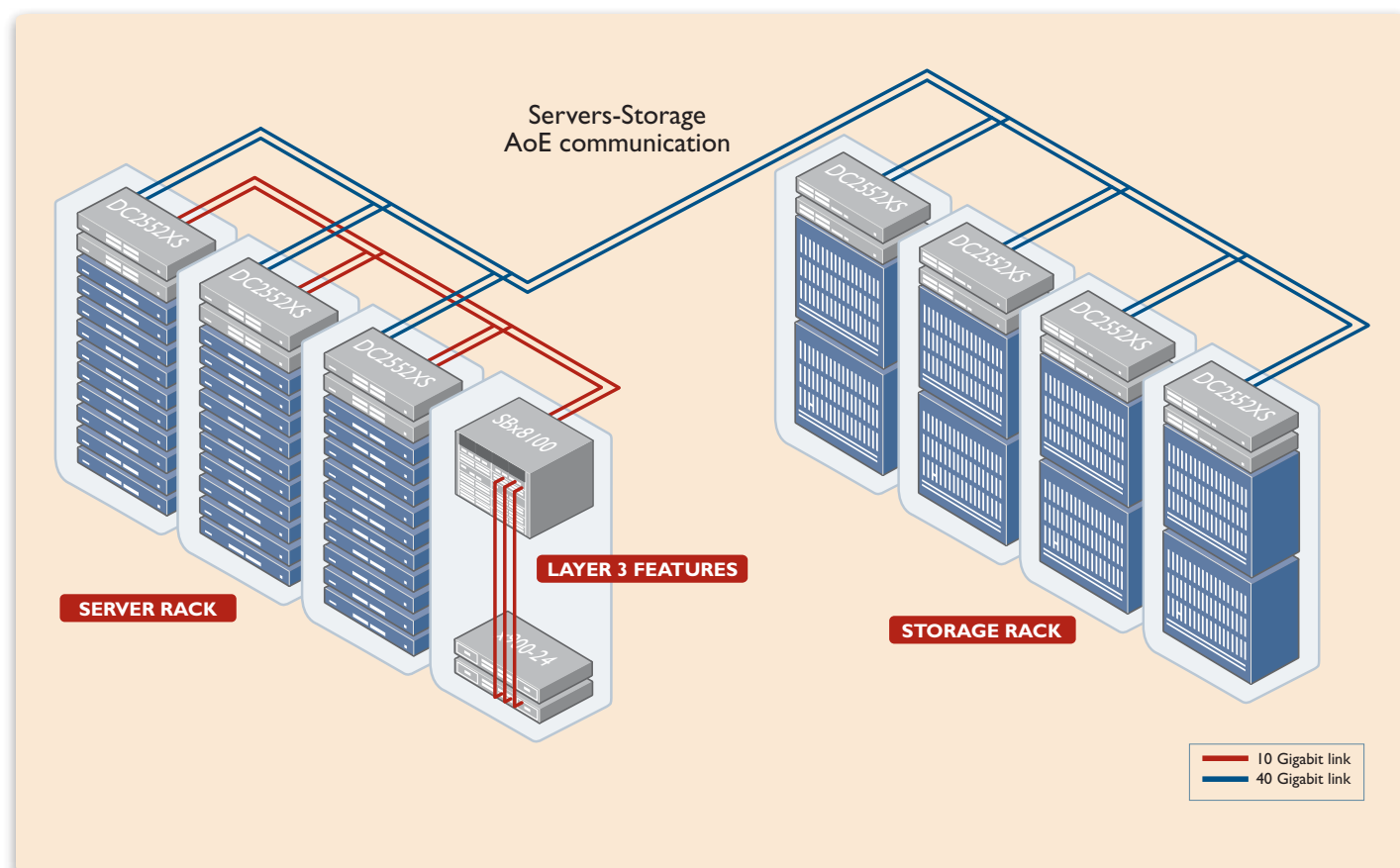
Between Server Racks

■ Two sets of AT-DC2552XS with aggregation mode can be connected with QSFP direct attach cables.

■ The breakout cable can be connected between the four 10Gbs ports on the AT-DC2552XS with aggregation mode, and the QSFP port with ToR mode.

In the Server Rack

■ Two sets of AT-DC2552XS with ToR mode can be bypass connected with QSFP direct attach cables.

■ Two ports of 10Gbp on servers/storage can be connected with the 10Gbps port on AT-DC2552XS (TOR-A) and AT-DC2552XS (TOR-B).

REF Port Usage

Servers-Storage
AoE communication

SERVER RACK

LAYER 3 FEATURES

STORAGE RACK

— 10 Gigabit link
— 40 Gigabit link

Specifications

Port
» Switch port
 SFP+ slot x 48 ports
 QSFP+ slot x 4

» Console port
 RS-232 (USB connector) x 1

» Management port
 10/100/1000T (RJ-45 connector) x 1
 Auto negotiation, MDI-MDI-X

System
» Forwarding rate 952.38Mpps
» Switching capacity 1280Gbps
» 128K MAC addresses
» Cut-through mode
 Latency 40GB:505 ns (64 byte)
 10GB:800 ns (64 byte)
» 2GB RAM
» 128MB flash memory
» 1.3Ghz CPU
» 9MB packet buffer
» Maximum jumbo frames 12Kbytes
» 32 link aggregation group / eight members per group

Wirespeed Switching on all Ethernet ports
» 14,880,000pps for 10Gbps Ethernet
» 59,523,800pps for 40Gbps Ethernet

Environmental Specifications
» Operating temperature 0ºC to 40ºC
» Storage temperature -20ºC to 60ºC
» Operating humidity 10% to 80%
 (non-condensing)
» Storage humidity 5% to 90%
 (non-condensing)

Port Configuration
» Auto-negotiation, duplex, MDI/MDI-X,
 IEEE 802.3x flow control
» Packet storm protection
» Port mirroring
» Broadcast storm control
» Ethernet statistics
» Egress-rate-limit
» LinkTrap

Ethernet Specifications
» IEEE 802.3 10T*
» IEEE 802.3u 100TX*
» IEEE 802.3ab 1000T*
» IEEE 802.3ae 10G-SR, 10G-LR
» IEEE 802.3ba 10G-SR4/XLPPI,40G-CR4
» IEEE 802.1Q Virtual LANs
» IEEE 802.3ad (LACP) Link aggregation
» IEEE 802.3z Gigabit Ethernet[2]
* Only for management port use

Quality of Service (QoS)
» Head-of-line blocking prevention
» Eight egress queues per port
» IEEE 802.1p Class of Service with strict and weighted
 round robin scheduling/strict priority scheduling
» Access Control Lists (ACLs)
» Policy-based QoS[2]

Spanning Tree Protocol
» IEEE 802.1D Spanning Tree Protocol
» IEEE 802.1w Rapid Spanning Tree
» IEEE 802.1s Multiple Spanning Tree

[2] Requires updating to controlled introduction software version 2.5.4.1.
[3] Requires updating to controlled introduction software version 2.5.3.1.
 Contact your local Allied Telesis support staff for details.

AT-DC2552XS | High Performance, Low Latency Top-of-Rack Data Center Switch

Management
» Enviromental monitoring
» DHCP client
» RFC 1350 TFTP client
» NTP
» Zmodem
» HTTP
» TFTP
» RFC 1157 SNMPv1
» RFC 1901 SNMPv2c
» RFC 2571-5 SNMPv3
» RFC 1757 RMON group 1, 3, 9
» Syslog client support
» Event log
» Telnet
» SSHv2

MIB Support
» RFC 1643 Ethernet-like MIB
» Allied Telesis private MIB
» RFC 1757 RMON MIB
» RFC 1493 Bridge MIB
» RFC 1573/2863 Interfaces group MIB
» RFC 1213 MIB-II
» RFC 1215 TRAP MIB
» RFC 3635 Ethernet MIB

VLAN
» 4094 VLANs
» MAC based VLANs – 1K
» Port-based VLANs
» IEEE 802.1Q tag-based VLANs
» Double tag VLAN (Q-in-Q)[4]

Link Aggregation
» Static trunking
» IEEE 802.3ad LACP
» IP option
» Dynamic LACP
» Port trunking

IP Multicasting
» RFC 1112 IGMPv1 snooping
» RFC 2236 IGMPv2 snooping
» RFC 3376 IGMPv3 snooping
» Multicast groups - 255

Security
» Hardware packet filtering
» Layer 2/3/4 Access Control Lists (ACLs)
» 512 ACL profiles
» 256 rules per ACL profile
» ACLs based on:
 - ICMP
 - IP
 - MAC address
 - IP protocol
 - TCP
 - UDP
» DoS attack protection
 - Smurf
 - SYN flood
 - Teardrop
 - Land
 - IP option
 - Ping attack

Compliance Standards
» IEEE 802.3ae, 10G SFP+ - SFP+ fiber, SFP+ direct attach
» IEEE 802.3ba - QSFP+

Safety and Electromagnetic Emissions Certifications
» EMI: FCC class A, CISPR class A, EN55022 class A
» C-TICK, VCCI Class A, CE
» Immunity: EN50024, EN601000-3-3, EN601000-3-2
» Safety: UL 60950-1 (cUlus), EN60950-1 (TUV)

Physical Specifications
Compliant with European RoHS standards

Package Specifications
» AT-DC2552XX switch with two PSU bay covers and two FAN unit bay covers
» Management cable (RS-232 to USB)
» Rubber feet and 19 in rack-mountable hardware kit accessories
» Install guide and CLI users guide available at alliedtelesis.com/support

Physical Specifications

Dimensions (W x D x H)	44.1 cm x 46 cm x 4.4 cm 17.4 in x 18.1 in x 1.7 in
Weight	8.3 kg /18.3 lb (chassis only) 11.3 kg/24.9 lb (chassis with two fans and two PSUs)

Power Characteristics
» Voltage: 100-240V AC (10% auto-ranging)
» Frequency: 50/60 Hz
» Maximum current: 14A @ 100V
» Heat dissipation: 900 BTU/hr

Power Consumption
» 250W (max 280W)

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[4] Requires updating to controlled introduction software version 2.5.3.1. Contact your local Allied Telesis support staff for details.

Ordering Information

AT-DC2552XS
48-port SFP+ slot
    4-port QSFP slot
    1-port console port
    1-port management port
    2 slots for PSUs
    2 slots for fans

AT-PWR06-xx
Hot-swappable AC power supply

AT-FAN06
Hot-swappable fan
    (Two fans are needed to operate. Reverse cooling
    airflow — port side to PSU/fan side —
    is not supported)

Where xx =
    10 for US power cord
    30 for UK power cord
    40 for Australian power cord
    50 for European power cord

QSFP+ and Cable

AT-QSFP1CU
QSFP+copper cable 1 m

AT-QSFP3CU
QSFP+ copper cable 3 m

AT-QSFPSR
QSFP+ module

Optical Cables

AT-MTP12-1
MTP cable for AT-QSFPSR, 1 m

AT-MTP12-5
MTP cable for AT-QSFPSR, 5 m

Breakout Cables[5]

AT-QSFP-4SFP10G-3CU
QSFP to 4 x SFP+ breakout direct attach cable (3 m)

AT-QSFP-4SFP10G-5CU
QSFP to 4 x SFP+ breakout direct attach cable (5 m)

SFP+ Modules

AT-SP10SR
10G-SR

AT-SP10LR
10G-LR

AT-SP10TW1
10G SFP+ direct attach cable (1 m)

AT-SP10TW3
10G SFP+ direct attach cable (3 m)

AT-SP10TW7
10G SFP+ direct attach cable (7 m)

SFP Modules[6]

AT-SPLX10
1000LX

AT-SPSX
1000SX

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[5] Requires updating to controlled introduction software version 2.5.3.1.
   Contact your local Allied Telesis support staff for details.
[6] Requires updating to controlled introduction software version 2.5.4.1.
   Contact your local Allied Telesis support staff for details.

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the **solution** : the **network**