AZ-10GE Top-of-Rack (ToR) Standalone Switch

Data Sheet
(Preliminary)

Highlights:
- Layer-2 AZ-10GE ToR Switch
- Ultra Low Latency
- Optimized for data center access layer
- Interoperates in all 10GE networks

High Throughput, Low Latency AZ-10GE Data Center Switch

The R3000 delivers highly predictable, load-invariant, low latency switching performance while presenting an innovative manager with flexible deployment options at rule-changing price-performance that significantly reduces overall cost of ownership.

Innovative IT managers use the R3000 in top-of-rack (ToR) configurations to aggregate AZ-10GE, or best-effort 10GE traffic from multiple blade/rack servers and/or storage devices directly. They may also use multiple R3000 units for redundancy, or connect them in tandem, or in fat-tree topologies to expand the Acceleration Zone across multiple racks in the access layer.

Data Center LANs based on Teak's AZ-10GE switching solutions are simpler to manage and consume up to 4x less power. Customers substitute the R3000 for best-effort 10GE switches in all mission critical networks that require delivery of highly predictable and reliable application performance.

R3000 Highlights

- 1-RU data center switch
- 20 line rate, full-duplex AZ-10GE ports (equivalent to 80 ports operating in best-effort native 10GE mode)
- XFP and/or CX4 interfaces
- Ultra low (<250ns) switching latency
- Highly predictable throughput and latency performance

Key Applications

- Aggregate AZ-10GE or 10GE traffic from blade/rack servers and/or storage devices
- Enterprise-class block-level storage connectivity
- High performance compute and database clusters
- High-definition video content acquisition, retrieval, and caching in IPTV and cable applications

Application Acceleration Zone Highlights

- Delivers highly predictable, SLA-driven, throughput and latency performance
- Improves upon comparable best-effort 10GE price-performance by up to 4x
- Maximizes load-invariant, loss-free link utilization up to 100%
- Provides up to 4x (virtual) native 10GE links per physical port
- Reduces number of uplinks in multi-hop network configurations by up to 4x

Virtual Links

Teak's switching solutions consolidate physical links by up to a factor of four by eliminating packet loss, even in bursty environments, thereby making each link more efficient and allowing it to carry more traffic while delivering highly predictable and reliable application service-levels. Consequently, the R3000 can have four times as many 10Gbps virtual links for each external AZ-10GE port.

Dual Mode Operation

The R3000 operates in two modes and switches between them transparently:

AZ-10GE Switching

The R3000 automatically switches to this mode when inside the Acceleration Zone.

Native 10GE Switching

At all other times, the R3000 interoperates with all best-effort 10GE end-points.

Teak Technologies

Specifications: AZ-10GE ToR Standalone Switch

Preliminary

Ordering Information

Order Number	Description
R3000-MEP-S-20P0-10	L2 AZ-10GE ToR Switch (XFP Interfaces)
R3000-MEP-L-20P0-10	AZ-10GE Software License

R3000: AZ-10GE ToR Standalone Switch
(Preliminary)

External Ports

- 20 line rate, full-duplex AZ-10GE pluggable short- and long-range XFP and/or CX4 ports
- RJ-45 1000BASE-T management port for remote access
- RJ-45 console port with RS-232 signaling for local management access

Hardware Construction: Fully ECC protected. High data integrity on all data and control paths

Physical Dimensions: 1RU

Size: 17.5"w x 22"d x 1.75"h

Rack: 19" and 23" rack mountable

Dual Redundant (1+1) Power Supply: 100 – 240 VAC, 50-60Hz, auto sensing

Max. Power Consumption: TBD

Max. Operating Specifications

Temperature: 0ºC to 40ºC
Altitude: 0 to 3,000m
Relative Humidity: 10% to 90% (NC: Non-Condensing)

Max. Non-Operating Specifications

Storage Temperature: -40ºC to 70ºC
Storage Altitude: 0 to 4,500m
Storage Relative Humidity: 10% to 95% at 40ºC (NC)

Layer-2 Best-Effort 10GE Performance

Aggregate Line Rate Switching Bandwidth: 400+ Gbps

Switching Port-to-Port Latency: ~250ns

Buffer Memory: 3MB for bandwidth intensive flows

Jumbo Frame Support: Up to 15KB

MAC Table Addresses: 16K

Link Aggregation: 10 groups (any combination) with advanced hashing and load balancing for even traffic distribution

Resiliency: Link trunk failover with NIC teaming (where supported by NIC), Broadcast storm control

VLANs: 4K configurable tag values

Quality of Service:
8 queues per port, L2 per-port classification (802.1Q/p), DiffServ, Metering (PIR), Remarking, Shaping (CIR) for each class by Deficit Round Robin

AZ-10GE Acceleration Zone Features
Congestion Notification, Priority Pause, CBBM

AZ-10GE Acceleration Zone Performance
- Full Link Utilization
- Low Latency
- Fairness
- SLA-driven Application Performance Guarantees

IEEE Compliance

802.3ae	10 Gigabit Ethernet, 10GBASE-SR
802.3ab	1000BASE-T with auto negotiation
802.3u	100BASE-T with auto negotiation
802.1s	Multiple Spanning Tree Protocol
802.1w	Rapid Spanning Tree Protocol
802.1p	L2 Prioritization
802.1Q	Port Based VLAN Tagging, GVRP
802.1ac	Frame Extension for VLAN Tagging
802.3ad	Link Aggregation with LACP
802.1D	MAC Bridges: Multiple Domains, GARP, GMRP (L2 Multicast)
802.3x	Flow Control
802.1Qau	Congestion Notif. Working Group
RFC 1112	IGMP v1
RFC 2236	IGMP v2- IGMP Snooping, Filtering

Security

RFC 1492	TACACS+
RFC 2865	RADIUS
RFC 4403	LDAP
802.1x	Port Based Network Access Control
	SSH v1/v2, HTTPS
Mgmt./Data	Ports are physically isolated
Image Duality	Dual software images
Out-of-Box	All external Ethernet ports disabled

Management Hierarchy

Network Level:	Network Management System
Platform Level:	Element Management System
	All relevant SNMP MIBs supported
	Detail RMON statistics, error logs
	Network Time Protocol
	Port Mirroring

Management Modalities

Out-of Band:	Advanced Management Module
	RJ-45 local access console port
	RJ-45 remote access 1GE port
In-Band:	AZ-10GE data ports

Secure Management Access with SNMP v1/v3

CLI	Scripting, Command completion, Context sensitive help
Web Browser	telnet, HTTPS, SSH
Software Upgrade	Remote via. Web, telnet, TFTP, FTP
Config. Tracking	User, Time/Date, Data Logging

Safety and EMC Compliance

All relevant Safety and EMC compliance certifications in the US, Europe, and Asia

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