



### Product Overview

The IgniteNet FusionSwitch™ Fiber is a Gigabit Ethernet access switch with 24 Gigabit ports and four 10G uplink ports. The switch is an ideal Gigabit access switch for SMB, enterprise, and campus networks. The FusionSwitch™ Fiber is packed with features that bring high availability, comprehensive security, robust multicast control, and advanced QoS to the network edge, while maintaining simple management. The switch also supports the most advanced IPv6 management, IPv6 security, and IPv6 multicast control in accordance with the growth of IPv6 deployment.

### Key Features and Benefits

#### Performance and Scalability

The IgniteNet FusionSwitch™ Fiber is a high-performance Gigabit Ethernet Layer 2 managed switch with 128 Gbps switching capacity. The switch delivers wire-speed switching performance on all Gigabit ports, taking full advantage of existing high-performance Gigabit CPEs, PCs, 11n/ac Wi-Fi APs etc, significantly improving the responsiveness of applications and file transfer times.

The four built-in 10G SFP+ ports provide uplink flexibility, allowing the insertion of fiber or copper, Gigabit or 10G transceivers, to create up to 10 Gbps high-speed uplinks to servers or service providers, corporate, or campus networks, reducing bottlenecks and increasing the performance of the access network.

#### Continuous Availability

The IEEE 802.1w Rapid Spanning Tree Protocol provides a loop-free network and redundant links to the core network with rapid convergence, to ensure faster recovery from failed links, enhancing overall network stability and reliability.

The IEEE 802.1s Multiple Spanning Tree Protocol runs STP per VLAN base, providing Layer 2 load sharing on redundant links up to 33 instances.

The FusionSwitch™ Fiber supports IEEE 802.3ad Link Aggregation Control Protocol (LACP). It increases bandwidth by automatically aggregating several physical links together as a logical trunk and offers load balancing and fault tolerance for uplink connections.

#### Reliability and Energy Efficiency

The design of the FusionSwitch™ Fiber incorporates high energy efficiency in order to reduce the impact on the environment. The Green Ethernet power-saving features significantly reduce the power consumption.

#### Comprehensive QoS

The FusionSwitch™ Fiber offers advanced QoS for marking, classification, and scheduling, to deliver best-in-class performance for data, voice, and video traffic at wire speed. Eight egress queues per port enable differentiated management of up to eight traffic types through the switch.

Traffic is prioritized according to 802.1p and DSCP to provide optimal performance for real-time applications. Weighted Round Robin (WRR) and strict priority ensure differential prioritization of packet flows and avoid congestion of ingress and egress queues.

Asymmetric bidirectional rate-limiting, per port or per traffic class, preserves network bandwidth and allows maximum control of network resources.

The FusionSwitch™ Fiber supports a single-rate three-color marker scheme based on Committed Information Rate (CIR), Committed Burst (CB), and Excess Burst (EB), as well as a two-rate three-color scheme based on CIR, Peak Information Rate (PIR), (CB), Peak Burst (BP). The switch drops or remarks the priority tags of packets when they exceed the burst size.

#### IPv6 Support

The switch supports a number of IPv6 features, including IPv6 Management, DHCPv6 Snooping with Option 37, and IPv6 Source Guard.

### Key Features and Benefits

#### Enhanced Security

Port security limits the total number of devices from using a switch port and protects against MAC flooding attacks.

IEEE 802.1X port-based or MAC-based access control ensures all users are authorized before being granted access to the network. When a user is authenticated, the VLAN, QoS and security policy are automatically applied to the port where the user is connected, otherwise the port is grouped in a guest VLAN with limited access.

DHCP snooping allows a switch to protect a network from rogue DHCP servers that offer invalid IP addresses.

IP Source Guard prevents people from using IP addresses that were not assigned to them.

Access Control Lists (ACLs) can be used to restrict access to sensitive network resources by denying packets based on source and destination MAC addresses, IP addresses, or TCP/UDP ports. ACLs are hardware supported, so switching performance is not compromised.

Private VLANs (traffic segmentation per port) isolate edge ports to ensure user privacy.

DAI (Dynamic ARP Inspection) is a security feature that validates Address Resolution Protocol (ARP) packets in a network. DAI allows a network administrator to intercept, log, and discard ARP packets with invalid MAC-to-IP address bindings.

Secure Shell (SSH) and Secure Sockets Layer (SSL/HTTPS) encrypt Telnet and web access to the switch, providing secure network management. The FusionSwitch™ Fiber also supports both RADIUS and TACACS+ authentication methods to secure your network.

#### Virtual Private Networks

The FusionSwitch™ Fiber supports Layer 2 VPNs by using Q-in-Q functions, where an 802.1Q tag from a customer VLAN (CE-VLAN ID) is encapsulated in a second 802.1Q tag from a service-provider network (SP-VLAN ID). The switch supports rewriting the VLAN tag of egress traffic when the ingress traffic is tagged.

#### Robust Multicast Control

IGMP snooping prevents the flooding of multicast traffic by dynamically configuring switch ports so that multicast traffic is forwarded to only those ports associated with an IP multicast receiver. IGMP increases the performance of networks by reducing multicast traffic flooding.

IGMP groups allow you to create customer packages for IP-TV channels, making switch configuration easy. IGMP Filtering prevents subscribers seeing unsubscribed IP-TV channels. And, IGMP Throttling allows you to set how many IP-TV channels a subscriber can receive simultaneously.

#### Private VLANs and Multicast VLAN Registration

Multicast VLANs are shared in the network, while subscribers remain in separate VLANs. This increases network security and saves bandwidth on core links. Multicast streams do not have to be routed in core L3 switches, which saves CPU power.

Multicast VLAN Registration (MVR) is designed for applications such as Media-on-Demand that send multicast traffic across an Ethernet network.

#### Superior Management

The IgniteNet FusionSwitch™ Fiber can optionally be managed by the IgniteNet Cloud Controller making provisioning, monitoring, and management a breeze.

The command-line interface (CLI), accessed through the console port or Telnet, provides a familiar user interface and command set for users to manage the switch.

An embedded user-friendly web interface helps users to quickly and simply configure switches.

The FusionSwitch™ Fiber supports SNMPv1,2c,3 and four-group RMON. The switch provides a complete private MIB for the configuration of most functions via the SNMP protocol.

Administrators can backup and restore firmware and configuration files via TFTP or FTP. The switch also provides the configuration of auto-provision for ease of use in large deployments.

AAA (Authentication, Authorization and Accounting) via RADIUS, TACACS+, enables centralized control of the switch. You can also authorize access rights per user and account for all actions performed by administrators.



# IgniteNet FusionSwitch™ Fiber

## L2 Gigabit Ethernet Access / Aggregation Switch with 4 10G Uplinks

Specification		
<b>Port</b>	100/1000 SFP Ports	20
	100M RJ-45 Port (outband management)	1
	10/100/1000 Combo Ports	4
	SFP+ 10 Gigabit Uplink Ports	4
	RJ-45 Console Port	1
<b>Performance</b>	Switching Capacity	128 Gbps
	Forwarding Rate	95 Mpps
	Flash Memory	256 MB
	DRAM	512 MB
	MAC Address Table Size	16 K
	Jumbo Frames	9 KB
	Auto-negotiation, Auto-MDI/MDIX	√
<b>Mechanical</b>	Rack Space	19"
	Dimension (W x D x H) mm	440 x 220 x 44
	Weight	2.82 kg (6.22 lb)
<b>Power Supply</b>	AC: 100-240 VAC, 50-60 Hz	√
	DC: 48-60 VDC	√
	Max System Power Consumption (Watts)	37.3 W
<b>Environmental</b>	Operating Temperature	0°C to 50°C (32°F to 122°F)
	Storage Temperature	-40°C to 70°C (-40°F to 158°F)
	Operating Humidity (non-condensing)	10% to 90%
	Storage Humidity (non-condensing)	5% to 95%
	Environmental Regulation compliance: WEEE	√
	Environmental Regulation compliance: RoHS	√
<b>Certification</b>	FCC Class A	√
	CE	√
	Safety Compliance: CB	√
	Safety Compliance: UL	√

### Features

#### L2 FEATURES

- Tri-speed IEEE 802.3ab (10/100/1000BASE-T) copper interfaces
- Auto-negotiation for port speed and duplex mode
- Auto MDI/MDI-X
- Dual-speed (100Mbps and 1Gbps) SFP fiber interface
- Dual-speed (10G and 1000M) fiber interfaces
- SFP+ ports support:
  - IEEE 802.3ae changeable (10GBASE-SR/LR/ZR), and IEEE 802.3z (1000BASE-SX/LX/LHX/ZX) transceivers
  - Digital Diagnostic Monitoring (DDM)
- Flow Control:
  - IEEE 802.3x for full duplex mode
  - Back-Pressure for half duplex mode
- Jumbo frames: 9KB
- Broadcast/Multicast/ Unknown Unicast Storm Control
- Spanning Tree Protocol:
  - IEEE 802.1D Spanning Tree Protocol (STP)
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), 33 instances
  - BPDU Guard
  - BPDU Filtering
  - Root Guard
  - BPDU transparent
  - Loopback detection
- VLANs:
  - Supports 4K VLAN
  - Port-based VLAN
  - IEEE 802.1Q VLAN
  - GVRP
  - VLAN Trunking
  - IEEE 802.1v Protocol-based VLAN
  - IP Subnet-based VLAN
  - MAC-based VLAN
  - Traffic Segmentation
  - Q-in-Q
  - VLAN Translation
- Link Aggregation:
  - Static Trunk
  - IEEE 802.3ad Link Aggregation Control Protocol
  - Trunk groups: 26, up to 8 GE/ 4 10G ports per group
  - Load Balancing: SA+DA, SA, DA, SIP+DIP, SIP, DIP
- MVR (Multicast VLAN Registration)
  - Supports 5 multicast VLANs
- Port mirroring
- Remote port mirror (RSPAN)

#### L2 FEATURES (CONTINUED)

- IGMP Snooping:
  - IGMP v1/v2/v3 snooping
  - IGMP Proxy reporting
  - IGMP Filtering
  - IGMP Throttling
  - IGMP Immediate Leave
  - IGMP Querier
  - IGMP Authentication

#### QoS FEATURES

- Priority Queues: 8 hardware queues per port
- Traffic classification:
  - IEEE 802.1p CoS
  - IP Precedence
  - DSCP
  - MAC Access control list (Source/Destination MAC, Ether type, / VLAN ID)
  - IP Standard access control list (Source IP)
  - IP extended access control list (Source/Destination IP, Protocol, TCP/UDP port number)
- Traffic Scheduling:
  - Strict Priority
  - Weighted Round Robin
  - Strict + WRR traffic scheduling
- Single/ Two rate Three color marker
- Ingress policy map
- Egress policy map
- Rate Limiting (Ingress and Egress, per port base):
  - GE: 64Kbps ~ 1,000Mbps
  - 10G: 64Kbps ~ 10,000Mbps
- Auto Traffic Control

#### MANAGEMENT

- Switch Management:
  - CLI via console port or Telnet
  - WEB management
  - SNMP v1, v2c, v3
- Firmware & Configuration:
  - Firmware upgrade via TFTP/HTTP/FTP server
  - Multiple configuration files
  - Configuration file upload/download via TFTP/HTTP/FTP server
- RMON (groups 1, 2, 3 and 9)
- BOOTP, DHCP client for IP address assignment
- DHCP dynamic provision option 66, 67 and 82
- SNTP
- Event/Error Log
- Syslog
- SMTP
- Supports LLDP (802.1ab)
- IP clustering
- DHCP Option 82
- DHCP Option 82 Relay

### Features

#### SECURITY

- Port security
- IEEE 802.1X port based and MAC based authentication
- Dynamic VLAN Assignment, Auto QoS
- MAC authentication
- Web authentication
- Voice VLAN
- Guest VLAN
- L2/L3/L4 Access Control List:
  - MAC Access control list (Source/Destination MAC, Ether type, /VLAN ID )
  - IP standard access control list (Source IP)
  - IP extended access control list (Source/Destination IP, Protocol, TCP/UDP port number)
- IPv6 ACL
- DHCP Snooping
- IP Source Guard
- Dynamic ARP Inspection
- Denial of Service
- Login Security
- RADIUS authentication
- RADIUS accounting
- TACACS + authorization
- TACACS + accounting
- Management Interface Access Filtering (SNMP, WEB, Telnet)
- SSH (v1.5/v2.0) for security Telnet
- SSL for HTTPS
- SNMPv3

#### IPV6 FEATURES

- IPv4/IPv6 Dual Protocol stack
- IPv6 Address Types Stack: Unicast
- IPv6 Neighbor Discovery
  - Duplicate address
  - Address resolution
  - Unreachable neighbor detection
- Manual configuration
- Remote IPv6 ping
- IPv6 Telnet support
- IPv6 DNS Resolver
- HTTP over IPv6
- SNMP over IPv6
- SSH over IPv6
- IPv6 Syslog support
- IPv6 SNMP support
- IPv6 TFTP support
- RA Guard
- IPv6 ND Snooping
- MLD Snooping v1/v2
- IPv6 source guard
- DHCPv6 snooping
- DHCPv6 option 37

#### GREEN ETHERNET

- IEEE 802.3az Energy-Efficient Ethernet (EEE)

#### SAFETY

- UL (CSA 22.2. NO 60950-1 & UL60950-1)
- CB (IEC60950-1)

#### ELECTROMAGNETIC COMPATIBILITY

- CE Mark
- FCC Class A
- CISPR Class A
- BSMI

#### ENVIRONMENTAL SPECIFICATIONS

- Temperature:
  - Operating: 0° C to 50° C (32° F to 122° F)
  - Storage: -40° C to 70° C (-40° F to 158° F)
- Humidity:
  - Operating: 5% to 95% (non-condensing)
  - Storage: 10% to 90% (Non-condensing)

#### POWER SUPPLY

- Power input:
  - 100-240 VAC, 50/60 Hz, 4.6-2.1 A

#### WARRANTY

- 2 Years warranty

\*future release