Data Sheet

SUMMIT 7i

The high-density Summit®7i stackable switch delivers non-blocking wire-speed IP/IPX routing and switching to server farms, aggregated switches and network backbones. Available with 28 100/1000BASE-T or 1000BASE-SX ports plus four GBIC-based 1000BASE-X ports, Summit7i provides 32 ports of non-blocking Gigabit Ethernet with full routing protocol support in a compact 4U package. It also comes with optional redundant power supplies for increased fault tolerance.

Switching Co-location and Switching In server farms and data centers, the Summit7i maximizes server availability and performance by combining server load-balancing with wire-speed switching. Auto-negotiating 100/1000BASE-T ports extend the simplicity of Ethernet's scalable speed from Fast Ethernet to Gigabit Ethernet. The low 7-inch height of the Summit7i also makes it ideal in server farms and data centers where rack space is limited.

Scalable Backbone Bandwidth The high port-density of the Summit7i makes it easy and cost-effective to scale backbone bandwidth and aggregate multiple switches. As a "mid-tier" switching solution, Summit7i can aggregate multiple Summit access switches, while providing high-speed gigabit links to BlackDiamond® chassis switches in the core.

Utilizing link aggregation, Summit7i can trunk multiple Gigabit Ethernet connections into one high-bandwidth pipe. Capable of scaling backbone bandwidth well into the future, the Summit7i can aggregate up to eight Gigabit Ethernet links into one logical link.

Resilient Aggregation Supporting critical redundant link resiliency at layers 2 and 3, the Summit7i is an ideal high performance aggregation switch. At layer two, Extreme Automatic Protection Switching (EAPS) provides sub-second resiliency necessary to support converged services such as Voice over IP. Additional resiliency options at layer 2 include Spanning Tree Protocol (STP), IEEE 802.1w Rapid Spanning Tree (RSTP), Per-VLAN Spanning Tree Plus (PVST+), and Extreme Multiple Instance Spanning Tree (EMISTP) to optimize layer 2 resiliency and availability. The Summit7i also provides the option for full-bandwidth non-blocking layer 3 resiliency using OSPF Equal Cost Multi-Path.

Pre-installed on every Extreme Networks® switch, the ExtremeWare® software suite combines industry standard protocols to ensure interoperability with legacy switches and routers, plus Policy-Based Quality of Service (QoS) for bandwidth management and traffic prioritization in today's networks. Every switch includes Extreme Automatic Protection Switching (EAPS) for layer 2 resiliency which provides very rapid failover necessary to properly support converged services. Optional on Summit7i is a Full Layer 3 ExtremeWare license which provides a complete set of routing protocols that deliver the layer 3 routing and resiliency required for aggregation or core deployment.

Summit7i Feature Set

- Non-stop reliability of critical enterprise applications through EAPS resiliency
- 64 Gbps non-blocking switch fabric bandwidth
- Wire-speed IP/IPX routing at 48 million packets per second
- Wire-speed RIP v1 and v2, OSPF, BGP4, DVMRP and PIM routing, essential for core or aggregation deployment
- 32 Gigabit Ethernet ports: 28 auto-negotiating 100/1000BASE-T or 1000BASE-SX ports, plus four GBIC-based 1000BASE-X ports supporting short to long reach Gigabit optics
- Policy-Based Quality of Service, including bandwidth management and prioritization
- Access policies for network control and security
- Server load balancing and web cache redirection
- Fault tolerant: multiple load-sharing trunks; multiple spanning trees; Extreme Standby Router Protocol; and redundant, load-sharing power supplies
- Extensive management through HTTP, SNMP, RMON, and command line interface
- ESRP provides resiliency at both layer 2 and layer 3
- VRRP for standards-compliant dual homing
- Full OSPF, and OSPF Equal Cost Multi-Path routing
- 4,096 IEEE 802.1Q VLANs
- IEEE 802.1ad compatible link aggregation
- Switch and route jumbo frames

SUMMIT7i PRODUCT SPECIFICATIONS

General

- True QoS via ExtremeWare and Policy-Based Bandwidth control and application prioritization
- Eight queues per port
- Built-in PCMCIA interface
- Auto-negotiating 100/1000BASE-T

- Up to 262,000 Layer 2 addresses
- Up to 262,000 Layer 3 addresses
- 4,096 VLANs

Prototols and Standards

General Routing and Switching
- RFC 1812 Requirements for IP Version 4 Routers
- RFC 1519 CIDR
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1122 Host Requirements
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 894 IP over Ethernet
- RFC 1027 Proxy ARP
- RFC 2338 VRRP
- RFC 3619 Ethernet Automatic Protection Switching (EAPS) and EAPSv2
- IEEE 802.1D - 1998 Spanning Tree Protocol (STP)
- IEEE 802.1w – 2001 Rapid Reconfiguration for STP, RSTP
- IEEE 802.1Q - 1998 Virtual Bridged Local Area Networks
- EMISTP, Extreme Multiple Instances of Spanning Tree Protocol
- PVST+, Per VLAN STP (802.1Q interoperable)
- Extreme Standby Router Protocol (ESRP)
- Static Unicast Routes
- Software Redundant Ports
- IPX RIP/SAP Router specification

VLANs
- IEEE 802.1Q VLAN Tagging
- IEEE 802.3ad Static configuration and dynamic (LACP) for server attached
- IEEE 802.1v: VLAN classification by Protocol and Port
- Port-based VLANs
- MAC-based VLANs
- Protocol-based VLANs
- Multiple STP domains per VLAN
- RFC-3069 VLAN Aggregation for Efficient IP Address Allocation
- Virtual MANs (vMANs)
- VLAN Translation

Quality of Service and Policies
- IEEE 802.1D -1998 (802.1p) Packet Priority
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2475 DiffServ Core and Edge Router Functions
- RED as described in "Random Early Detection Gateways for Congestion Avoidance, Sally Floyd and Van Jacobson"
- RED as recommended in RFC 2309
- Bi-directional Rate Shaping
- Layer 1-4, Layer 7 (user name) Policy-Based Mapping
- Policy-Based Mapping/Overwriting of DiffServ code points, .1p priority
- Network Login/802.1x and DLCS (Dynamic Link Context System, WINS snooping) based integration with EPICenter Policy Manager for dynamic user/device based policies

RIP
- RFC 1058 RIP v1
- RFC 2453 RIP v2

OSPF
- RFC 2328 OSPF v2 (including MD5 authentication)
- RFC 1587 OSPF NSSA Option
- RFC 1765 OSPF Database Overflow
- RFC 2370 OSPF Opaque LSA Option

IS-IS
- RFC 1142 (ISO 10589), IS-IS protocol
- RFC 1195, Use of OSI IS-IS for routing in TCP/IP and dual environments
- RFC 2104, HMAC: Keyed-Hashing for Message Authentication, IS-IS HMAC-MD5 Authentication
- RFC 2763 (Dynamic Host Name Exchange for IS-IS)

BGP4
- RFC 1771 Border Gateway Protocol 4
- RFC 1965 Autonomous System Confederations for BGP
- RFC 2796 BGP Route Reflection (supersedes RFC 1966)
- RFC 1997 BGP Communities Attribute
- RFC 1745 BGP4/IDRP for IP—OSPF Interaction
- RFC 2385 TCP MD5 Authentication for BGPv4
- RFC 2439 BGP Route Flap Damping

IP Multicast
- RFC 2362 PIM-SM
- PIM-DM Draft IETF PIM Dense Mode v2-dm-03
- PIM Snooping
- DVMRP v3 draft IETF DVMRP v3-07
- RFC 1112 IGMP v1
- RFC 2236 IGMP v2
- IGMP Snooping with Configurable Router Registration Forwarding
- IGMP Filters
- Static IGMP Membership
- Static Multicast Routes
- Mtrace, draft-ietf-idmr-traceroute-ipm-07
- Mrinfo

Management and Traffic Analysis
- RFC 2030 SNTP, Simple Network Time Protocol v4
- RFC 1866 HTML – web-based device management and Network Login
- RFC 2068 HTTP server
- RFC 854 Telnet client and server
- RFC 783 TFTP Protocol (revision 2)
- RFC 951, 1542 BootP
- RFC 2131 BOOTP/DHCP relay agent and DHCP server
- RFC 1591 DNS (client operation)
- RFC 1155 Structure of Mgmt Information (SMIv1)
- RFC 1157 SNMPv1
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-Like MIB & TRAPs
- RFC 1573 Evolution of Interface
- RFC 1650 Ethernet-Like MIB (update of RFC 1213 for SNMPv2)
- RFC 1901 – 1908 SNMP Version 2c, SMIv2 and Revised MIB-II
- RFC 2570 – 2575 SNMPv3, user based security, encryption and authentication
- RFC 2576 Coexistence between SNMP Version 1, Version 2 and Version 3
- RFC 2665 Ethernet-Like-MIB
- RFC 1757 RMON 4 groups: Stats, History, Alarms and Events
- RFC 2021 RMON2 (probe configuration)
- RFC 2613 SMON MIB
- RFC 2668 802.3 MAU MIB
- RFC 1643 Ethernet MIB
- RFC 1493 Bridge MIB

- RFC 2737 Entity MIB, Version 2
- RFC 2674 802.1p / 802.1Q MIBs
- RFC 1354 IPv4 Forwarding Table MIB
- RFC 2737 Entity MIB v2
- RFC 2233 Interface MIB
- RFC 1354 IP Forwarding Table MIB
- RFC 1724 RIPv2 MIB
- RFC 1850 OSPFv2 MIB
- RFC 1657 BGPv4 MIB
- RFC 2787 VRRP MIB
- RFC 2925 Ping / Traceroute / NSLOOKUP MIB
- Draft-ietf-bridge-rstpmib-03.txt – Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol
- draft-ietf-bridge-8021x-01.txt (IEEE8021-PAE-MIB)
- IEEE 802.1x – 2001 MIB
- Extreme extensions to 802.1x-MIB
- Secure Shell (SSHv2) clients and servers
- Secure Copy (SCPv2) client and server
- Secure FTP (SFTP) server
- SFlow version 5
- NetFlow version 1 export
- Configuration logging
- Multiple Images, Multiple Configs
- BSD System Logging Protocol (SYSLOG), with Multiple Syslog Servers
- 999 Local Messages (criticals stored across reboots)

ExtremeWare vendor MIBs (includes ACL, MAC FDB, IP FDB, MAC Address Security, Software Redundant Port, NetFlow, DoS-Protect MIB, QoS policy, Cable Diagnostics, VLAN config, vMAN, VLAN Translation and VLAN Aggregation MIBs.
http://www.extremenetworks.com/services/documentation

Security

- Routing protocol MD5 authentication (see above)
- Secure Shell (SSHv2),Secure Copy (SCPv2) and SFTP with encryption/authentication
- SNMPv3 user based security, with encryption/authentication (see above)
- RFC 1492 TACACS+
- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RADIUS Per-command Authentication
- Access Profiles on All Routing Protocols
- Access Profiles on All Management Methods
- Network Login (web-based DHCP / HTTP/ RADIUS mechanism)
- RFC 2246 TLS 1.0 + SSL v2/v3 encryption for web-based Network Login
- IEEE 802.1x – 2001 Port-Based Network Access Control for Network Login
- Multiple supplicants for Network Login (web-based and 802.1x modes)
- MAC Address Security - Lockdown and Limit
- IP Address Security with DHCP Option 82, DHCP Enforce / Duplicate IP Protection via ARP Learning Disable
- Network Address Translation (NAT)
- Layer 2/3/4/7 Access Control Lists (ACLs)

Denial of Service Protection

- RFC 2267 Network Ingress Filtering
- RPF (Unicast Reverse Path Forwarding) Control via ACLs
- Wire-speed ACLs
- Rate Limiting / Shaping by ACLs
- IP Broadcast Forwarding Control
- ICMP and IP-Option Response Control
- Server Load Balancing with Layer 3,4 Protection of Servers
- SYN attack protection
- FDB table resource protection via IPDA Subnet Lookup
- CPU DOS protection with ACL integration: Identifies packet floods to CPU and sets an ACL automatically, configurable
- Traffic ratelimiting to management CPU / Enhanced DoS Protect
- Uni-directional Session Control
- Robust against common Network Attacks

CERT (http://www.cert.org)

- CA-2003-04: "SQL Slammer"
- CA-2002-36: "SSHredder"
- CA-2002-03: SNMP vulnerabilities
- CA-98-13: tcp-denial-of-service
- CA-98.01: smurf
- CA-97.28:Teardrop_Land -Teardrop and "LAND " attack
- CA-96.26: ping
- CA-96.21: tcp_syn_flooding
- CA-96.01: UDP_service_denial
- CA-95.01: IP_Spoofing_Attacks_and_Hijacked_Terminal_Connections
- IP Options Attack

Host Attacks

Teardrop	fraggle	Latierra
boink	papasmurf	Winnuke
opentear	synk4	Simping
jolt2	raped	Sping
newtear	winfreeze	Ascend
nestea	ping –f	Stream
syndrop	ping of death	Land
smurf	pepsi5	Octopus

Physical and Environmental

- Dimensions:
  (H) 7.0 in x (W) 17.25 in x (D) 19.0 in
  (H) 17.8 cm x (W) 43.87 cm x (D) 48.31 cm
- Weight:
  single power system 45 lbs (20.25 Kg)
  dual power system 55 lbs (24.75 Kg)
- Operating Temperature: -40° C to 40° C (32° F to 104° F)
- Storage Temperature: -10° C to 70° C (14° F to 158° F)
- Humidity: 10% to 95% non-condensing
- Power: 90-264 VAC, 47-63 Hz, 10 A max.
- Heat Dissipation: 1,298 BTU/hr (380 watts)

Regulatory

Safety

- UL 1950 3rd Edition, Listed
- TUV/GS and GOST to EN60825-1 and EN60950: 1992/A3:1995+ZB/ZC Deviations
- cUL Listed to CSA 22.2#950-95

EMI/EMC

- FCC Part 15 Class A
- ICES-0003 Class A
- VCCI Class 1
- EN55022 Class A
- CISPR 22 Class A
- EN55024

Environmental
- EN60068 to Extreme IEC68 schedule

Reliability
- Summit7i TX 1 PSU: 86,956 hrs calculated MTBF with 1 PSU to Mil HDBK 217F Notice 1, Parts Stress Method
- Summit7i TX 2 PSU: 90,039 hrs calculated MTBF with 1 PSU to Mil HDBK 217F Notice 1, Parts Stress Method
- Summit7i SX 1 PSU: 93,457 hrs calculated MTBF with 1 PSU to Mil HDBK 217F Notice 1, Parts Stress Method
- Summit7i SX 2 PSU: 100,757 hrs calculated MTBF with 1 PSU to Mil HDBK 217F Notice 1, Parts Stress Method

Acoustic
- 58 dB/pW Weighted Sound Power Level to EN27779 and EN29295

Ordering Information

Part Number	Description
11701	Summit7i with 28 fixed 100/1000BASE-T (RJ-45) ports and four unpopulated GBIC-based 1000BASE-X ports (SC), Basic Layer 3 software license, single power supply
11702	Summit7i with 28 fixed 100/1000BASE-T ports and four unpopulated GBIC-based 1000BASE-X ports (SC), Basic Layer 3 software license, dual power supply
11703	Summit7i with 28 fixed 1000BASE-SX (MT-RJ) ports and four unpopulated GBIC-based 1000BASE-X ports (SC), Basic Layer 3 software license, single power supply
11704	Summit7i with 28 fixed 1000BASE-SX (MT-RJ) ports and four unpopulated GBIC-based 1000BASE-X ports (SC), Basic Layer 3 Software License, dual power supply
11708	Summit7i Full Layer 3 upgrade voucher (for upgrade in the field from Basic Layer 3 to Full Layer 3)
10011	1000BASE-SX GBIC-based transceiver, SC connector, for use with multimode fiber with distances up to 550 meters
10013	1000BASE-LX GBIC-based transceiver fro distances up to 10Km; Sc connector, for use with single mode fiber
10017	1000BASE-ZX GBIC-based transceiver, extra long distance single mode fiber, 70Km/21db budget SC connector
10018	UTP GBIC, 1000BASE-T GBIC-based transceiver, RJ-45 connector, 80 meter range over CAT5 copper cable
10019	LX100 GBIC 100 Kilometer range over single mode fiber, SC connector 1000BASE-ZX compatible

3585 Monroe Street Santa Clara, CA 95051-1450
Phone 408.579.2800 Fax 408.579.3000
Email info@extremenetworks.com Web www.extremenetworks.com

Specifications are subject to change without notice. L-DS-SUMMIT7i-410