



## Portable Product Sheets – Cat 4500 Supervisors

last updated July 22, 2009

**Table 1.** Catalyst 4x00 High Performance Layer 3 Supervisors

FEATURES	SUP V WS-X4516=	SUP V – 10GE WS-X4516-10GE	SUP 6-E WS-X45-Sup6-E	SUP 6L-E WS-X45-Sup6L-E
Chassis Support	All	All except 4003	All	4503, 4506, 4507R
End-of-Sale	No	No	No	No
Redundant Capable	Yes (4507R, 4510R)	Yes (4507R, 4510R)	Yes (4507R, 4510R)	Yes (4507R)
High Availability	SSO/ ISSU	SSO/ ISSU	SSO/ NSF/ ISSU	SSO/ NSF/ ISSU
CPU	400 MHz MPC	800 MHz MPC	1.3 GHz	1.0 GHz
Layer 2 ASIC Used	K2	K2	K5	K5
Layer 3	Yes (no 4232-L3 Support)	Yes (no 4232-L3 Support)	Yes (no 4232-L3 Support)	Yes (no 4232-L3 Support)
L3 Hardware Protocols	IP	IP	IP	IP
L3 Software Protocols	AT/ IPX	AT/ IPX	No AT/ IPX	No AT/ IPX
802.1ab LLDP & Partial LLDP-MED (for voice support)	Yes	Yes	Yes	Yes
L3 Software Support	IOS	IOS	IOS	IOS
LAN Base Software Support	No	No	No	IOS (LAN bundle only)
Software Required	12.2(18)EW	12.2(25)EW	12.2(40)SG	12.2(52)SG
Uplink Ports	GBIC (2)	2 Xenpak 10GE or 4 SFP (one type active at one time 10GE or GE)	2 X2 10GE or 4 SFP w/ Twin-Gig Converter	2 X2 10GE, 4 GE (Twin-Gig) or 1 10GE & 2 Gig
Active Uplinks w/ Redundant Sups	4 (all ports)	2 10GE (any 2 ports, any Sup) or 4 GE (any 4 ports, any Sup)	4 10GE 2:1 oversubscribed or 8 GE (Twin-Gig)	2 X2 10GE, 4 GE (Twin-Gig) or 1 10GE & 2 Gig
NetFlow Services Card	Yes – Modular	Yes – integrated	NO !	NO !
NetFlow Capacity	64,000 Flows	85,000 Flows	N/A	N/A
4510R Slot 10 Restrictions	2-port GE card or AGM only	Any C4K linecard	NO E-series cards in slots 8, 9 & 10	No 4510R chassis support
Trunking	802.1Q, ISL	802.1Q, ISL	802.1Q	802.1Q
Backplane	96 Gbs	136 Gbs	Up to 320 Gbs (in 4510R)	Up to 280 Gbs (in 4507R)
Forwarding Capacity	72 Mpps (L2, IP, basic L3 includes PIM, RIP, static)	102 Mpps (L2, IP, Basic L3 includes PIM, RIP, static)	250 Mpps (L2, IP, Basic L3 incl PIM, RIP, static, L4 TCP/ UDP)	225 Mpps (L2, IP, Basic L3 incl PIM, RIP, static, L4 TCP/ UDP)

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FEATURES (CONT.)	SUP V WS-X4516=	SUP V – 10GE WS-X4516-10GE	SUP 6-E WS-X45-Sup6-E	SUP 6L-E WS-X45-Sup6L-E
Slot Capacity	6 Mbs	6 Mbs	6 or 24 Mbs (except 4510R slots 8 – 10, 6 Mb only)	6 or 24 Mbs
Multicast Suppression	Yes	Yes	Hardware	Hardware
Broadcast Suppression/ Traffic Storm Control	Hardware	Hardware	Hardware	Hardware
“PFC-Like” TCAM	Yes	Yes	Yes (CenterFlex TCAM4)	Yes (CenterFlex TCAM4)
Q-In-Q	Hardware	Hardware	Pass-Through	Pass-Through
External Flash Slot	Yes	Yes	Yes	Yes
Flash Capacity	64 Mbs/ 128 Mbs	64 Mbs/ 128 Mbs	64 Mbs/ 128 Mbs	64 Mbs/ 128 Mbs
Onboard Flash	64 Mbs	64 Mbs	128 Mbs	128 Mbs
Buffering	16 Mbs	16 Mbs	16 Mbs	17.5 Mbs
DRAM	512 Mbs	512 Mbs	SDRAM 512 Mbs (upgradeable to 1 Gb)	SDRAM 512 Mbs (upgradeable to 1 Gb)
DRAM Slots	1	1	2	2
NVRAM	512 Kbs	512 Kbs	512 Kbs	512 Kbs
Enhanced POE	N/A	N/A	20W PoE Support – WS-X4648-RJ45V-E & WS-X4648-RJ45V+E (+E 30W future)	20W PoE Support – WS-X4648-RJ45V-E & WS-X4648-RJ45V+E (+E 30W future)
Queue's Per Port	4	4	8	8
Ingress Policers	1024	8000	16K total flexible i.e. 2k Ingress, 14k Egress	16K total flexible i.e. 2k Ingress, 14k Egress
Egress Policers	1024	8000		
Management Ports	1 RJ-45 Console 1 10/100 Mbps Ethernet	1 RJ-45 Console 1 10/100 Mbps Ethernet	1 RJ-45 Console 1 10/100/1000 Mbps Ethernet	1 RJ-45 Console 1 10/100/1000 Mbps Ethernet
Maximum # of MAC's	32,000	55,000	55,000	55,000
Operating Temp	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)
StorageTemp	-40 to 167°F (-40 to 75°C)	-40 to 167°F (-40 to 75°C)	-40 to 167°F (-40 to 75°C)	-40 to 167°F (-40 to 75°C)
Relative Humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing

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**Table 2.** Catalyst 4x00 Entry Level Layer 3 Supervisors

FEATURES	SUP 2+ WS-X4013+=	SUP 2+ TS WS-X4013+TS=	SUP 2+ 10GE WS-X4013+10GE=	SUP IV WS-X4515=
Chassis Support	4x06/4503/4507-R	4503	4x06/4503/4507-R	4x06/4503/4507-R
End of Sale	No	No	No	No
Redundant Sup's	Yes (4507-R Only)	No	Yes (4507-R Only)	Yes (4507-R Only)
High Availability	SSO/ ISSU	No	SSO/ ISSU	SSO/ ISSU
CPU	266MHz MPC	266MHz MPC	667MHz	333 MHz MPC
L2 ASIC Used	K2	K2	K2	K2
Layer 3	Included (4232-L3 unsupported)	Included (4232-L3 unsupported)	Included (4232-L3 unsupported)	Included (4232-L3 unsupported)
L3 Hardware Protocols	IP	IP	IP	IP
L3 Software Protocols	IPX, Appletalk, EIGRP Stub	IPX, Appletalk, EIGRP Stub	IPX, Appletalk, EIGRP Stub	IPX, Appletalk
Software Support	IOS Only	IOS Only	IOS Only	IOS Only
Software Required	12.2(25)SG	12.2(25)SG	12.2(25)SG	12.1(12c)EW
Fixed Uplinks	2 GBIC	8 SFP, 12 10/100/1000 802.3af PoE	2 10GE (X2), 4 SFP	2 GBIC
Uplinks Active When Redundant	2 (ports 1/1 & 2/1)	N/A	2 10GE (X2), 4 SFP	2 (ports 1/1 & 2/1)
Netflow Services Card	No	No	No	Yes – Modular
NetFlow Capacity	N/A	N/A	N/A	64,000 Flows
4510R - 10th slot	N/A	N/A	N/A	N/A
Trunking	802.1q & ISL	802.1q & ISL	802.1q & ISL	802.1q & ISL
Backplane	64 Gbps	64 Gbps	108 Gbps	64 Gbps
Forwarding Capacity	48 Mpps (L2, IP, basic L3 ONLY)	48 Mpps (L2, IP, basic L3 ONLY)	81 Mpps (L2, IP, basic L3 ONLY)	48 Mpps (L2, IP, basic L3 includes PIM, RIP, static)
"PFC-Like" TCAM	Yes (Basic)	Yes (Basic)	Yes (Basic)	Yes
Broadcast Suppression	Software	Now Called Storm Control	Hardware	Software
Multicast Suppression	No	Now Called Storm Control	Hardware	No
Q-in-Q	Pass-through	Pass-through	Hardware	Pass-through
External Flash Slot	Yes	Yes	Yes	Yes

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FEATURES (cont.)	SUP 2+ WS-X4013+=	SUP 2+ TS WS-X4013+TS=	SUP 2+ 10GE WS-X4013+10GE=	SUP IV WS-X4515=
Flash Card Capacity	64 Mb, 128 Mb	64 Mb, 128 Mb	64 Mb, 128 Mb	64 Mb, 128 Mb
Onboard Flash	32 Mb	32 Mb	64 Mb	64 Mb
Buffering	16 Mb	16 Mb	16 Mb	16 Mb
DRAM	256 Mb	256 Mb	256 Mb	512 Mbs
DRAM Slots	1	1	1	1
NVRAM	512 Kb	512 Kb	512 Kb	512 Kb
Queues Per Port	4	4	4	4
Ingress Policers	512	512	508	1024
Egress Policers	512	512	508	1024
Management Ports	1 RJ-45 Console 1 10/100 Mbps Ethernet	1 RJ-45 Console 1 10/100 Mbps Ethernet	1 RJ-45 Console 1 10/100 Mbps Ethernet	1 RJ-45 Console 1 10/100 Mbps Ethernet
Max # of MAC's	32,000	32,000	32,000	32,000
Operating Temp	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)
Storage Temp	-40 to 167°F (-40 to 75°C)	-40 to 167°F (-40 to 75°C)	-40 to 167°F (-40 to 75°C)	-40 to 167°F (-40 to 75°C)
Relative Humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing

**Table 3.** Catalyst 4x00 Layer 2 Supervisors

FEATURES	SUP 1 WS-X4012=	SUP 2 WS-X4013=	SUP 3 WS-X4014=
Chassis Support	4003	4006/ 4503	4006
End of Sale	Yes (July 26, 2004)	Yes (May 3, 2005)	Yes (July 26, 2004)
Redundant Sup's	No	No	No
CPU	150MHz R5000	150MHz R5000	300MHz MPC8245
L2 ASIC Used	K1	K1	K2
Layer 3	Optional, using 4232-L3, 4604	Optional, using 4232-L3, 4604	Included (4232-L3 unsupported)
Layer 3 Protocols	IP, IPX, AT	IP, IPX, AT	IP (in hardware), IPX, Appletalk, EIGRP Stub
Software Support	CatOS Only	CatOS Only	IOS Only

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FEATURES	SUP 1 WS-X4012=	SUP 2 WS-X4013=	SUP 3 WS-X4014=
Software Required	4.4	5.4	12.1(8a)EW
Fixed Uplinks	None	2 GBIC	2 GBIC
Trunking	802.1q	802.1q	802.1q & ISL
Backplane	12 Gbps	3 x 10 Gbps	64 Gbps
Forwarding Capacity	18 Mpps (L2), 6Mpps (L3/IP, using 4232-L3, 4604)	18 Mpps (L2), 6Mpps (L3/IP, using 4232-L3, 4604)	48 Mpps (L2, IP, basic L3 includes PIM, RIP, static)
"PFC-Like" TCAM	No	No	Yes (Enhanced)
External Flash Slot	No	No	Yes
Flash Card Capacity	N/A	N/A	64 Mb, 128 Mb
Onboard Flash	12 MB	16 MB	64 Mb
Buffering	8 MB	24 MB	16 Mb
DRAM	64 MB	64 MB	256 Mb
DRAM Slots	1	1	1
NVRAM	512 KB	512 KB	512 KB
Queues Per Port	2	2	4
Ingress Policers	0	0	1024
Egress Policers	0	0	1024
Management Ports	1 DB-25 Console, 1 10 Mbps Ethernet	1 DB-25 Console, 1 10/100 Mbps Ethernet	1 RJ-45 Console 1 10/100 Mbps Ethernet
Max # of MAC's	16,000	16,000	32,000
Operating Temp	32 to 104 Deg. F (0 to 40 Deg. C)	32 to 104 Deg. F (0 to 40 Deg. C)	32 to 104 Deg. F (0 to 40 Deg. C)
Storage Temp	-40 to 167 Deg. F (-40 to 75 Deg. C)	-40 to 167 Deg. F (-40 to 75 Deg. C)	-40 to 167 Deg. F (-40 to 75 Deg. C)
Relative Humidity	10% to 90%, noncondensing	10% to 90%, noncondensing	10% to 90%, noncondensing

### Catalyst 4x00 Supervisor 2 Notes

- Backplane performance may be increased (4006 only) in two ways –
  - Issuing the set switchacceleration enable 1 command
  - (Note that this will disable the two onboard Supervisor GE ports)

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- Installing the WS-X4019= blade
- These methods may be combined, as well.

### **4232-L3 Blade**

- Data-plane ACL's (filters) are not configurable on any FE port, subinterface, or port-channel interfaces.
- The GE ports of this blade are the only ISL-capable ports of a Supervisor 1/2 Cat4K.
- Base IP license includes static routes, RIP, PIM, and Appletalk. Enhanced adds EIGRP and OSPF.

### **Jumbo (or Giant) Frames**

- Supervisor 1/2 do not support frames larger than 1536 bytes.
- Supervisor 2+/3/4/5/6-E, 6L-E support jumbo frames (up to 9216 bytes) on non-blocking GE ports.



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