Cisco Embedded Services 3300 Series

© 2021 Cisco and/or its affiliates. All rights reserved.

Contents

© 2021 Cisco and/or its affiliates. All rights reserved.

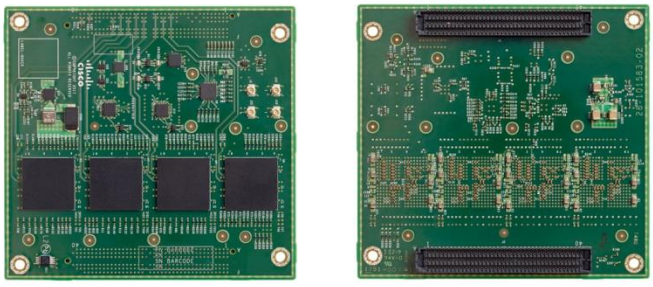
The Cisco® Embedded Services 3300 Series serves as a silver bullet for myriad applications across verticals that need custom switching solutions in terms of form-factor size, weight, and power.

Product overview

Cisco Embedded Services 3300 Series Switches (ESS 3300) revolutionize Cisco's embedded networking portfolio with 1G/10G capabilities. ESS 3300 switches are optimized to meet specialized form-factor, ruggedization, port density, and power needs of many applications requiring customization and complement Cisco's off-the-shelf Industrial Ethernet switching portfolio.

The Small Form Factor (SFF), board configuration options, and optimized power consumption provide Cisco partners and integrators the flexibility to design custom solutions for defense, oil and gas, transportation, mining, and other verticals. The ESS 3300 runs the trusted and feature-rich Cisco IOS® XE Software, allowing Cisco partners and integrators to offer their customers the familiar Cisco IOS CLI and management experience on their ESS 3300-based solutions.

ESS 3300 Mainboard



ESS 3300 Expansion board

The ESS 3300 is designed for embedded applications requiring low power, small size, and ruggedization:

- Consists of main board and optional port expansion board
- Small Form-Factor (SFF) board size (approximately 4" x 4")
- Main board:
  - 2x 10 Gigabit: Small Form-Factor Pluggable Plus (SFP+)
  - 8x 10/100/1000BASE-T Ethernet ports (4 of 8 ports can be combo ports)
  - RS-232 and USB console

© 2021 Cisco and/or its affiliates. All rights reserved.

- Expansion board (optional):
  - 16x 10/100/1000BASE-T Ethernet ports (4 of 16 ports can be combo ports)
- Common +3.3Vdc and +5Vdc power inputs
- Advanced next generation Cisco IOS-XE software
- Low power - 24W(typical) for mainboard + expansion board configuration

Primary features

Feature	Benefit
10G uplinks, 1G downlinks	Enables high-quality video and data communication for next generation of bandwidth-intensive use cases such as tactical data centers, HD video surveillance, self-driving vehicles, and future-proofing
Robust industrial design	PC104 form factor packing Gigabit Ethernet allows integrators to pack higher port density in a compact form factor and build custom solutions that can withstand harsh environments (-40 to 85° C temperature)
Security	Enterprise-grade Cisco IOS-XE switching security features ensure highly secure voice, video, and data communication
Manageability	Facilitates easy deployment and rapid configuration with easy-to-use WEB UI and familiar Cisco CLI
Power over Ethernet	Enables integrators to offer PoE on up to 24 ports with visibility and management from Cisco IOS-XE Software
Layer 2 switching	Enables third-party integrators to offer rich enterprise-grade Layer 2 switching feature set to end customers
Quality of service	Allows customers to prioritize flows and ensure make sure that mission-critical flows are not affected by low-priority traffic

Hardware specifications

Description	Specification
Interfaces	Main board: 2 ports of 1G/10 GE (copper or fiber), 4 ports of 1G combo (which can support 1000Base T/100BaseTX/10Base-T or 1G SFP/100M SFP), 4 ports of 1000BaseT/100Base-TX/10Base-T Expansion board (optional): 4 ports of 1G combo (which can support 1000Base-T/100BaseTX/10Base-T or 1G SFP/100M SFP), 12 ports of 1000BaseT/100Base-TX/10Base-T RS-232 and USB console
Memory	4 GB DDR4 DRAM 4 GB onboard eMMC flash storage
Power supply	3.3Vdc and +5Vdc (+/-3%)

© 2021 Cisco and/or its affiliates. All rights reserved.

Description	Specification
Power consumption	Main board: 16W (typical) Expansion board: 8W (typical) Both boards: 24W (typical)
Connectors	Commercially available board-to-board connectors
Dimensions (W x D)	ESS-3300-NCP: 103mm x 96mm ESS-3300-16T-NCP: 91mm x 96mm ESS-3300-CON: 103mm x 96mm ESS-3300-16T-CON: 91mm x 96mm
Weight	ESS-3300-NCP: 81 grams ESS-3300-16T-NCP: 59 grams

Scale specifications

Features	Description
Forwarding rate	Line rate for all ports and all packet sizes
Number of queues	8
MAC addresses	16K
VLAN IDs	256
IGMP groups	1K
Number of STP instances	256
ACL (PACL, VACL)	3K rules shared across ACL and QoS
IPv4 Indirect routes[1]	3000
IPv6 Indirect routes[1]	512
DRAM	4 GB
Flash [User Accessible]	1.5 GB
SD card capacity[2]	4 GB
Jumbo Frames	8996 bytes

[1] Supported with -A SKUs or -E SKUs (with Network Advantage license).

[2] The SD card is optional and is not shipped by default with the switch

© 2021 Cisco and/or its affiliates. All rights reserved.

Software features

Network Essentials License	Description
Layer 2 switching	IEEE 802.1, 802.3 standard, NTP, UDLD, CDP, LLDP, unicast MAC filter, VTPv2, VTPv3, EtherChannel, voice VLAN, PVST+, MSTP, and RSTP
Multicast	IGMPv1, v2, v3 snooping, IGMP filtering, IGMP querier
Management	Web UI, MIB, SmartPort, SNMP, syslog, DHCP server, SPAN session (1), Full Flexible Netflow (FnF), NETCONF, RESTCONF
Security	Port security, 802.1x, Dynamic Host Configuration Protocol (DHCP) snooping, dynamic ARP inspection, IP source guard, guest VLAN. MAC authentication bypass, 802.1x multidomain authentication, storm control - unicast, multicast, broadcast, SCP, SSH, SNMPv3, TACACS+, RADIUS server/client, MAC address notification, BPDU guard, MACsec-128, Central Web Authentication (Redirection), ARP Snooping
Quality of service	Ingress policing, rate limit, egress queuing/shaping, autoQoS
Layer 2 IPv6	IPv6 host support, HTTP over IPv6, SNMP over IPv6
Redundancy Protocols	Resilient Ethernet Protocol (REP)
IOx	Supports IOx application hosting. Find here more details on Cisco IOx. The partner / integrator must implement a SD Flash slot in the finished product to support IOx app hosting.

Network Advantage License	Description
IP routing	OSPF (V2 and V3), RIP (V1 and V2), ISIS (for IPv4 and IPv6), EIGRP (for IPv4 and IPv6), PBR (Policy Based Routing)
Virtualization	VRF-lite
Security	MACsec-256
IP Multicast	PIM sparse mode (PIM-SM), PIM dense mode (PIM-DM) and PIM Sparse dense mode
High Availability	Bidirectional Forwarding Detection (BFD) echo mode, HSRP (IPv4 and IPv6), VRRP (IPv4 and IPv6)

Note: Please refer to the "New Features for Cisco Catalyst IE and ESS Switches" section of each of the software release notes for a more complete list of features. The above tables attempt to provide the most popular features. Referring to the release notes also has the benefit of specifying the minimum required release to support the desired feature.

The main page for release notes is here: https://www.cisco.com/c/en/us/support/ios-nx-os-software/ios-xe-17/products-release-notes-list.html

Please be sure to select the titles that begin with, "Release Notes for Cisco Catalyst IE3x00 Rugged, IE 3400 Heavy Duty, and ESS3300 Series Switches,"

© 2021 Cisco and/or its affiliates. All rights reserved.

Environmental specifications

Specification	Description
Industrial-grade board component temperature	-40 to 85° C (-40 to 185° F) component local ambient temperature specification
Operating temperature	-40 to 85° C (-40 to 185° F) for conduction cooled SKUs as measured at the center top surface of heat spreader plate Temperature range of a completed solution depends on the enclosure thermal design characteristics used by the system integrator.
Storage temperature	-40 to 85° C (-40 to 185° F)
Operating altitude	4.572m (15,000 ft) 12,200m (40,000 ft) at 25C
Nonoperating altitude	12,200m (40,000 ft)
MTBF	ESS-3300 (-CON and -NCP) Ground, fixed, controlled: 1,065,092 (in hours) ESS-3300-16T (-CON and -NCP) Ground, fixed, controlled: 5,924,708(in hours)

© 2021 Cisco and/or its affiliates. All rights reserved.

Management and standards

SNMP MIB objects	BRIDGE-MIB CISCO-ACCESS-ENVMON-MIB CISCO-AUTH-FRAMEWORK-MIB CISCO-BRIDGE-EXT-MIB CISCO-BULK-FILE-MIB CISCO-CALLHOME-MIB CISCO-CAR-MIB CISCO-CDP-MIB CISCO-CONFIG-COPY-MIB CISCO-CONFIG-MAN-MIB CISCO-DATA-COLLECTION-MIB CISCO-DHCP-SNOOPING-MIB CISCO-ENTITY-VENDORTYPE-OID-MIB CISCO-ENVMON-MIB CISCO-ERR-DISABLE-MIB CISCO-FLASH-MIB CISCO-FTP-CLIENT-MIB CISCO-IF-EXTENSION-MIB CISCO-IGMP-FILTER-MIB CISCO-IMAGE-MIB CISCO-IP-STAT-MIB CISCO-LAG-MIB CISCO-LICENSE-MGMT-MIB CISCO-MAC-AUTH-BYPASS-MIB CISCO-MAC-NOTIFICATION-MIB CISCO-MEMORY-POOL-MIB CISCO-PAE-MIB CISCO-PING-MIB CISCO-PORT-QOS-MIB CISCO-PORT-SECURITY-MIB CISCO-PORT-STORM-CONTROL-MIB CISCO-PRIVATE-VLAN-MIB CISCO-PROCESS-MIB CISCO-PRODUCTS-MIB CISCO-ENTITY-ALARM-MIB CISCO-SNMP-TARGET-EXT-MIB

© 2021 Cisco and/or its affiliates. All rights reserved.

	CISCO-STP-EXTENSIONS-MIB CISCO-SYSLOG-MIB CISCO-UDLDP-MIB CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB CISCO-VLAN-MEMBERSHIP-MIB CISCO-VTP-MIB ENTITY-MIB ETHERLIKE-MIB HC-RMON-MIB IEEE8021-PAE-MIB IEEE8023-LAG-MIB IF-MIB LLDP-EXT-MED-MIB LLDP-MIB NOTIFICATION-LOG-MIB OLD-CISCO-CPU-MIB OLD-CISCO-SYSTEM-MIB RMON-MIB SMON-MIB SNMP-COMMUNITY-MIB SNMP-FRAMEWORK-MIB SNMP-MPD-MIB SNMP-NOTIFICATION-MIB SNMP-PROXY-MIB SNMP-TARGET-MIB SNMP-USM-MIB SNMP-VIEW-BASED-ACM-MIB SNMPV2-MIB 802.1X MIB
IEEE standards	IEEE 802.1D MAC Bridges, STP IEEE 802.1p Layer2 COS prioritization IEEE 802.1q VLAN IEEE 802.1s Multiple Spanning-Trees IEEE 802.1w Rapid Spanning-Tree IEEE 802.1x Port Access Authentication IEEE 802.1AB LLDP IEEE 802.3ad Link Aggregation (LACP) IEEE 802.3ah 100BASE-X SMF/MMF only IEEE 802.3x full duplex on 10BASE-T

© 2021 Cisco and/or its affiliates. All rights reserved.

	IEEE 802.3 10BASE-T specification IEEE 802.3u 100BASE-TX specification IEEE 802.3ab 1000BASE-T specification IEEE 802.3z 1000BASE-X specification IEEE 802.3af - 15.4 W PoE (optional) IEEE 802.3at - 30.0 W PoE+ (optional)
RFC compliance	RFC 768: UDP RFC 783: TFTP RFC 791: IPv4 protocol RFC 792: ICMP RFC 793: TCP RFC 826: ARP RFC 854: Telnet RFC 959: FTP RFC 1157: SNMPv1 RFC 1901,1902-1907 SNMPv2 RFC 2273-2275: SNMPv3 RFC 2571: SNMP Management RFC 1166: IP Addresses RFC 1256: ICMP Router Discovery RFC 1305: NTP RFC 1492: TACACS+ RFC 1493: Bridge MIB Objects RFC 1643: Ethernet Interface MIB RFC 1757: RMON RFC 2068: HTTP RFC 2131, 2132: DHCP RFC 2236: IGMP v2 RFC 3376: IGMP v3 RFC 2474: DiffServ Precedence RFC 3046: DHCP Relay Agent Information Option RFC 3580: 802.1x RADIUS RFC 4250-4252 SSH Protocol RFC 4884 Extended ICMP to Support Multi-Part Messages

© 2021 Cisco and/or its affiliates. All rights reserved.

Supported Optics

Optics	Description
SFP transceivers	GLC-FE-100FX-RGD 2km/MMF2 GLC-FE-100FX 2km/MMF GLC-FE-100LX-RGD 10km/MMF GLC-FE-100EX 40km/SMF3 GLC-FE-100LX 10km/SMF GLC-FE-100BX-D 10km/SMF GLC-FE-100BX-U 10km/SMF GLC-FE-100ZX 80km/SMF GLC-SX-MM-RGD 220-550m/MMF GLC-SX-MM 220-550m/MMF GLC-SX-MMD DOM supported GLC-LH-SM 550m/MMF, 10km/SMF GLC-LH-SMD 550m/MMF, 10km/SMF DOM GLC-LX-SM-RGD 550m/MMF, 10km/SMF GLC-ZX-SM-RGD 70-100km/SMF GLC-EX-SMD DOM supported GLC-BX-D 10km/SMF GLC-BX-U 10km/SMF GLC-TE GLC-T-RGD SFP-10G-SR-X SFP-10G-LR-X SFP-10G-SR SFP-10G-LR SFP-10G-ER SFP-10G-BXD-I SFP-10G-BXU-I SFP-10G-BX40D-I SFP-10G-BX40U-I SFP-H10G-CU1M New for IOS-XE 17.5.1: SFP-10G-LR-S SFP-10G-LRM CWDM-SFP-1610

© 2021 Cisco and/or its affiliates. All rights reserved.

Optics	Description
	CWDM-SFP-1530 CWDM-SFP-1490 CWDM-SFP10G-1470 DWDM-SFP-3033 DWDM-SFP10G-3033 For more information, please visit the Cisco Optics-to-Device Compatibility Matrix. https://tmgmatrix.cisco.com/

Regulatory compliance

Network Essentials	Description
Emissions	EN 55022/ CISPR 22, EN 55032/ CISPR 32 FCC, ICES-003
Immunity	EN 55024/CISPR 24, EN 55035/ CISPR 35 EN 61000-4-2 Electrostatic Discharge EN 61000-4-3 Radiated Immunity EN 61000-4-4 Electrical Fast Transient/Bursts EN 61000-4-5 Surge EN 61000-4-6 Conducted Immunity EN 61000-4-8 Magnetic Field Immunity EN 61000-4-16 Immunity to Conducted, Common mode disturbances EN 61000-4-18 Damped Oscillatory Wave Immunity
UL recognition	UL 60950-1

Ordering information

The ESS 3300 is available in the following configurations:

PID	Product description
ESS-3300-NCP-E	ESS 3300 mainboard, no cooling plate, Network Essentials software
ESS-3300-CON-E	ESS 3300 mainboard, with cooling plate, Network Essentials software
ESS-3300-24T-NCP-E	ESS 3300 mainboard + Expansion board, no cooling plate, Network Essentials software
ESS-3300-24T-CON-E	ESS 3300 mainboard + Expansion board, with cooling plate, Network Essentials software
ESS-3300-NCP-A	ESS 3300 mainboard, no cooling plate, Network Advantage software

© 2021 Cisco and/or its affiliates. All rights reserved.

PID	Product description
ESS-3300-CON-A	ESS 3300 mainboard, with cooling plate, Network Advantage software
ESS-3300-24T-NCP-A	ESS 3300 mainboard + Expansion board, no cooling plate, Network Advantage software
ESS-3300-24T-CON-A	ESS 3300 mainboard + Expansion board, with cooling plate, Network Advantage software
ESS3300-NW-A=	Cisco Network Advantage license for ESS3300 Series Spare

Warranty information

ESS3300 has a 1-year Limited Hardware Warranty.

Further warranty information for the ESS 3300 switch is available at https://www.ciscoservicefinder.com/warrantyfinder.aspx.

Cisco and Partner Services

At Cisco, we're committed to minimizing our customers' TCO, and we offer a wide range of services programs to accelerate customer success. Our innovative programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco Services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. Some of the primary benefits our customers can get from Cisco Services include:

- Mitigating risks by enabling proactive or expedited problem resolution
- Lowering TCO by taking advantage of Cisco expertise and knowledge
- Minimizing network downtime
- Supplementing your existing support staff so they can focus on additional productive activities

For more information about Cisco Services, refer to Cisco Technical Support Services or Cisco Advanced Services at https://www.cisco.com/web/services/.

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. Learn more.

For more information

For more information about the Cisco Embedded 3300 Series Switches, visit https://www.cisco.com/go/ess3300 or contact your local account representative.

© 2021 Cisco and/or its affiliates. All rights reserved.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **https://www.cisco.com/go/offices**.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: https://www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Printed in USA C78-740801-04 12/21

© 2021 Cisco and/or its affiliates. All rights reserved.