



# Cisco Embedded Services 3300 Series

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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.

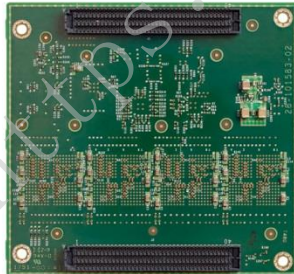
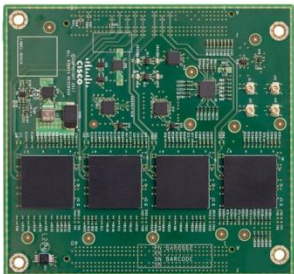
## Product overview

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

- 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
<b>10G uplinks, 1G downlinks</b>	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
<b>Robust industrial design</b>	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)
<b>Security</b>	Enterprise-grade Cisco IOS-XE switching security features ensure highly secure voice, video, and data communication
<b>Manageability</b>	Facilitates easy deployment and rapid configuration with easy-to-use WEB UI and familiar Cisco CLI
<b>Power over Ethernet</b>	Enables integrators to offer PoE on up to 24 ports with visibility and management from Cisco IOS-XE Software
<b>Layer 2 switching</b>	Enables third-party integrators to offer rich enterprise-grade Layer 2 switching feature set to end customers
<b>Quality of service</b>	Allows customers to prioritize flows and ensure make sure that mission-critical flows are not affected by low-priority traffic

## Hardware specifications

Description	Specification
<b>Interfaces</b>	<p>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</p> <p>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</p> <p>RS-232 and USB console</p>
<b>Memory</b>	<p>4 GB DDR4 DRAM</p> <p>4 GB onboard eMMC flash storage</p>
<b>Power supply</b>	3.3Vdc and +5Vdc (+/-3%)

Description	Specification
<b>Power consumption</b>	Main board: 16W (typical) Expansion board: 8W (typical) Both boards: 24W (typical)
<b>Connectors</b>	Commercially available board-to-board connectors
<b>Dimensions (W x D)</b>	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
<b>Weight</b>	ESS-3300-NCP: 81 grams ESS-3300-16T-NCP: 59 grams

## Scale specifications

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

<sup>1</sup> Supported with -A SKUs or -E SKUs (with Network Advantage license).

<sup>2</sup> The SD card is optional and is not shipped by default with the switch

## 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,”

## Environmental specifications

Specification	Description
<b>Industrial-grade board component temperature</b>	-40 to 85°C (-40 to 185°F) component local ambient temperature specification
<b>Operating temperature</b>	-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.
<b>Storage temperature</b>	-40 to 85°C (-40 to 185°F)
<b>Operating altitude</b>	4.572m (15,000 ft) 12,200m (40,000 ft) at 25C
<b>Nonoperating altitude</b>	12,200m (40,000 ft)
<b>MTBF</b>	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)

## Management and standards

<b>SNMP MIB objects</b>	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
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	<p>CISCO-STP-EXTENSIONS-MIB  CISCO-SYSLOG-MIB  CISCO-UDLD-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</p>
<b>IEEE standards</b>	<p>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</p>

	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)
<b>RFC compliance</b>	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

## Supported Optics

Optics	Description
<b>SFP transceivers</b>	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

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. <a href="https://tmqmatrix.cisco.com/">https://tmqmatrix.cisco.com/</a>

## Regulatory compliance

Network Essentials	Description
<b>Emissions</b>	EN 55022/ CISPR 22, EN 55032/ CISPR 32 FCC, ICES-003
<b>Immunity</b>	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
<b>UL recognition</b>	UL 60950-1

## Ordering information

The ESS 3300 is available in the following configurations:

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

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.

<https://www.jhj.cn>

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