



IP Telephony

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OVERVIEW

The Avaya P330 Stackable Switching System

The Network That Evolves with Your Enterprise



Building a powerful, end-to-end, integrated network has never been simpler. The Avaya P330 Stackable Switching System delivers a variety of technologies and interfaces on a truly stackable platform. Its modular functionality, high port density, carrier-class reliability, and building-block simplicity allow you to bring in exactly the features and functions you need for your network. The Avaya P330 is another way that Avaya helps your business excel.

Scalable Multi-Application Enabler

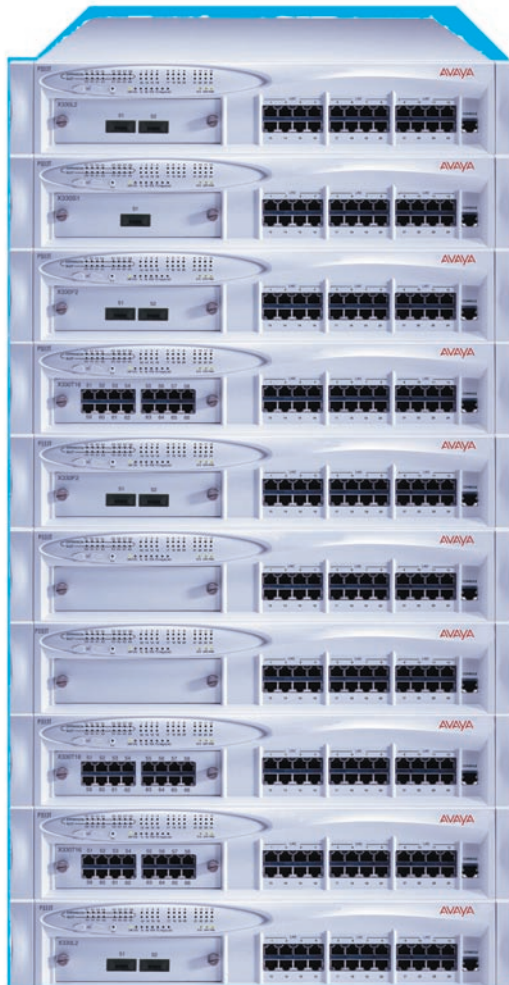
With easy scalability, the Avaya P330 Stackable Switching System is an ideal solution for your growing enterprise. It can be whatever you need it to be: a workgroup switch at the edge of the network, a multilayer switching platform, or a platform for a converged solution with Power over Ethernet and WAN access technologies. The stack grows and adapts with your business as your needs evolve over time.

By supporting a multitude of technologies, the Avaya P330 adds real flexibility to your network. It gives you multilayer 10/100/1000 Ethernet, WAN, OC-3, and OC-12 ATM, Power over Ethernet, and multilayer technologies — all in a single stack.

Leveraging Your Network Investment

One of the key considerations in implementing any new technology is how well you can leverage its value to your business. With the Avaya P330, adding more ports, new technologies, multilayer (Layer 3) capabilities, load-balancing functionality, and converged infrastructure support is as simple as adding a new switch or module to the stack.

The modular features and ease of expansion of the Avaya P330, combined with Avaya Integrated Management, make this powerful stack an integral part of your network infrastructure. Since the Avaya P330 was designed for convergence from the start, you can evolve your network at your pace — gradually transforming it into a fully integrated voice and data network.



- Gigabit Ethernet Port Density
- Gigabit Ethernet Expansion Modules
- WAN Access
- ATM Connectivity
- Multilayer Gigabit Ethernet Copper
- High Port Density
- Load Balancing
- Fiber Fast Ethernet
- Multilayer Gigabit Ethernet Fiber
- Power over Ethernet

Key Features and Benefits

Scalability

A successful business implementation should fit just right. You shouldn't have to invest in a system that's more than you need today — or one that you'll outgrow in the near future. The Avaya P330 family allows you to start small and grow big. True stacking and a wide range of expansion modules provide a versatile, scalable platform for your networking needs.

- **Port Capacity**

The Avaya P330 is designed to support up to 640 10/100BASE-T Ethernet ports, 140 100BASE-FX ports or 120 Gigabit Ethernet ports in a single stack.

- **True Stacking**

The Avaya P330 stackable switches offer true stacking capabilities, so you don't need to use valuable ports or connect the switches to one another.

The Avaya Octaplane™ switching fabric uses stacking modules and cables to provide a high-bandwidth connection between the switches in a stack. The modules are inserted in the back of the switches. This makes all the front ports available for network connections, while providing “loopback” functionality for high stack resilience and ease of operation. The whole stack can be managed as a single entity.

- **Expandability**

The modularity of the Avaya P330 enables you to implement a variety of technologies in the stack. In addition, you can easily increase port density by adding an expansion module with a variety of port choices: 2 Gigabit Ethernet ports, 16 10/100BASE-T Ethernet ports and others.

Enabling Multiple Applications

To meet the increasing demands placed on enterprise communications networks — and to enable converged voice and data networks — you need smarter networking hardware and software that can leverage existing bandwidth. The Avaya P330 is designed to meet these stringent requirements to enable new applications.

• **Multilayer Switching**

By simply adding a fully featured Avaya P333R, P333R-LB, or P330-ML series switch to a stack, you can provide your network with powerful and straightforward routing functionality and load-balancing capabilities. Only one multilayer switch is needed to provide Layer 3 switching for an entire Avaya P330 stack. Multiple multilayer units in a stack provide additional routing performance and routing redundancy.

A single multilayer switch adds Layer 3/4 functionality to the entire stack. The multilayer switch allows you to add routing at the edge of the network, offloading the edge-to-core uplinks and backbone routers. The multilayer switches can be configured to operate as a Layer 2 switch or as a Layer 3 switch. The Layer 2 switch is easily upgradable to a Layer 3 switch configuration by use of a key license. In both these modes, the Avaya P330-ML switches provide full Avaya P330 Layer 2 switching capability and features.

• **Load Balancing**

Servers, firewalls, and other network devices can suffer from “session overload” — causing users to experience a slowdown in response. Now, you can implement load balancing when and where you need it to support all your information applications.

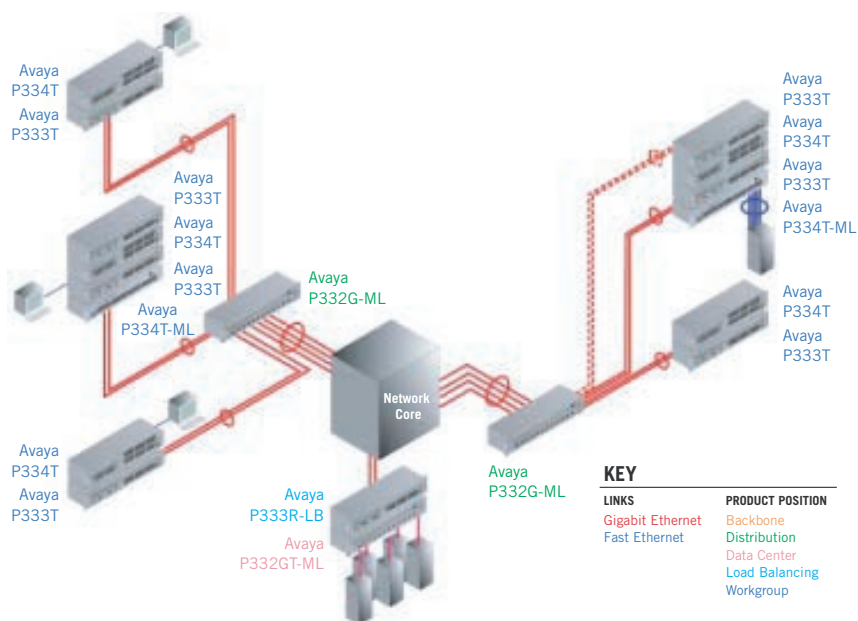
By spreading the load over several devices, the Avaya P333R-LB provides transparent relief to the bottleneck. It provides server load balancing, firewall load balancing, and application redirection (also known as cache redirection).

• **Multi-Technology Capabilities**

The Avaya P330 Switching System allows you to implement Multilayer 10/100/1000 Mbps Ethernet over copper and fiber, allowing smooth transition to other technologies and networks such as: ATM, Power over Ethernet, and WAN access in the same stack, so you can smoothly migrate to emerging technologies. In addition, you can adapt the stack to your technology needs for an unsurpassed level of flexibility. You can use existing uplinks in the stack to provide backbone connectivity to the switches you add.

• **Quality of Service (QoS)**

One of the most important characteristics of a truly integrated voice-data network is QoS. The Avaya P330 Layer 2 switches fully support the IEEE 802.1p to help ensure Layer 2 queuing and prioritization between different application sources. The Avaya P330 Layer 3 switches are designed to provide both Layer 2 and Layer 3 QoS based on Differentiated Services-based queuing, while



Large Enterprise Application

In a large enterprise deployment, the Avaya P332G-ML switches are used in the aggregation layer and the Avaya P333T, P334T, and P334T-ML switches are used at the network edge. The Avaya P332GT-ML provides copper-based Gigabit to switch high end/performance data centers. As an option, the Avaya P333R-LB provides load-balancing functionality at the data center.

providing a management environment in which policy enforcement rules are configured (forming a Policy Decision Point).

Security

As more users both inside and outside your organization use the network, security becomes an increasingly important issue. The Avaya P330 Switching System provides a wide range of security features that keep your network safe from unauthorized access and attempts to configure switches.

- **Access Control**

Access Control allows you to define which packets have access — based on the source or destination address information in the packet or on other information in Layers 2, 3, and 4. You can define the access permitted for users via the Command Line Interface (CLI) or Avaya Integrated Management.

- **RADIUS**

RADIUS (Remote Authentication Dial-In User Service) provides a mechanism for Authentication, Authorization, Accounting (AAA). This consolidates user account information for multiple switches in a network. RADIUS allows you to store authentication information for users on a central server rather than on a switch-by-switch basis, which minimizes your network security administration overhead.

Value at the Edge

Equipped with modular functionality and port density, carrier level reliability and building-block simplicity, the Avaya P330 sells at a stackable switch price. The simplicity of management, especially when used in conjunction with Avaya Integrated Management, enables you to run the network with minimal IT resources. The reliability of the Avaya P330 means that you have no downtime — an important financial consideration for any enterprise.

Reliable Resilience

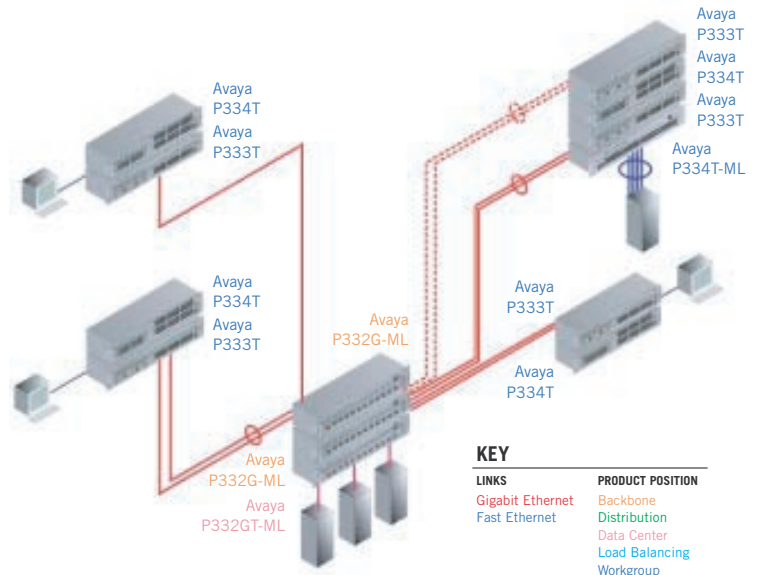
For many businesses, the need for resilience is spreading from the network backbone to the distribution and closet switches. That’s why Avaya has added its Switch Architecture For Extreme Resiliency (SAFER™) technology features to the Avaya P330 stackable switching system, helping to ensure no single point of failure.

Flexibility for Growth

Flexible networking is implicit to the highly modular Avaya P330 Switching System. You can add technology simply by adding a module to your existing switch. And you can increase port density in the same simple, cost-effective way: just add an expansion module with Gigabit Ethernet ports or a module with sixteen 10/100BASE-T Ethernet ports.

Small/Medium Enterprise Application

In a Small/Medium Enterprises (SME) application, a single site deploys a full Avaya P330 network— from the SME backbone to the wiring closet. Avaya P333T and P334T switches are used at the edge of the network; one stack is deployed with an Avaya P334T-ML to enable multilayer switching at the wiring closet. Avaya P332G-MLs are used to form the SME distribution (backbone). An Avaya P332GT-ML is used at the data center, where Gigabit-Ethernet connections provide the required bandwidth over existing enterprise copper cable.



Network Management and Monitoring

To keep your network running at its best, you need easy-to-use, real-time management and monitoring tools, such as:

- Avaya SMON Switch Monitoring (which was adopted as an IETF standard) provides you with a clear view of switched traffic. You can drill down from enterprise to port level to obtain the information you need to optimize the network.
- Avaya Integrated Management is a set of integrated, simplified, easy-to-use tools that help reduce the cost of network operation and ownership associated with managing multiservice network infrastructures. Integrated management tools significantly reduce management complexity and staff learning curve for end-to-end Avaya Integrated Management software

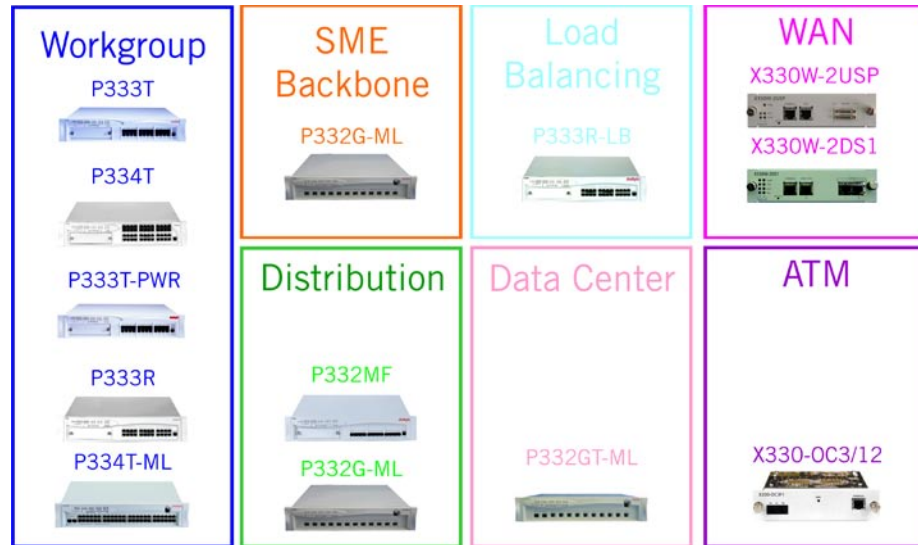
and Avaya infrastructure customers, resulting in significant cost savings.

In addition, Avaya Integrated Management offers network managers the ability to centrally manage widely distributed network components. These include the complete range of Avaya data switches as well as Avaya Media Gateways and Media Servers, Avaya Wireless Access Points, and Avaya VPN components. This offers you the tools to simplify the complexity associated with managing distributed, multi-technology, voice and data delivery systems.

Product Overview

The Avaya P330 Stackable Switching System includes switches for every requirement of the workgroup with Layer 2 and Layer 3 switching, 10/100/1000 Mbps ports and Power over Ethernet.

Product	Ports	Expansion Slot	Power over Ethernet
Layer 2 Switches			
P333T	24 10/100BASE-T	Yes	No
P334T	48 10/100BASE-T	Yes	No
P333T-PWR	24 10/100BASE-T	Yes	Yes
P332MF	12 100BASE-F	Yes	No
Multilayer Switches			
P333R	24 10/100BASE-T	Yes	No
P334T-ML	48 10/100BASE-T 2 GBIC	No	No
P332G-ML	12 GBIC (SFP)	No	No
P332GT-ML	10 100/1000BASE-T 2 GBIC (SFP)	No	No
P333R-LB	24 10/100BASE-T	Yes	No



Avaya X330WAN

The Avaya X330WAN enables connecting the LANs of branch offices based on Avaya P330 switches to the headquarters office. Each branch office in this solution would use the Internet services supplied via the headquarters ISP, or connect directly to the Internet independently.

Installing an Avaya X330WAN Access Router in a stack including a G700 Media Gateway, provides cost-effective and space-saving IP Telephony and WAN routing for SMEs. The G700 and Avaya P330 can be stacked together to provide a comprehensive converged solution.

The Avaya X330WAN access router enables Small/Medium Enterprises to connect their LAN directly to an ISP using a P330 switch. This solution provides independence and flexibility to the SMEs in the flow of data and other Internet services.

Avaya X330-OC3/12 (SMF or MMF configurations)

Using Avaya X330 ATM Access expansion modules, you can build flexible solutions for the Avaya P330 switching system that are fast, simple, and highly resilient.

The expansion modules allow you to enjoy the benefits of combining ATM at the backbone with the simplicity of Ethernet in the workgroup by deploying LAN emulation (LANE) technology.

You can configure the ATM uplink expansion module to operate at OC-3 today — and upgrade to OC-12 when you need to. It can also be used both for SONET or SDH framing (also configurable). This enables you to deploy a multiservice network with ATM at the core and the power and simplicity of the Avaya P330 at the network edge.

Find Out More

For more information about how Avaya converged infrastructure solutions may be leveraged to help grow revenue and reduce costs, please contact your Avaya Client Executive, Authorized BusinessPartner or visit www.avaya.com and click on IP Telephony.

Ordering Information			
Product	Material Code	Ports	Media/Connector
Layer 2 Switches			
Avaya P333T	108563123	24 10/100 Mbps ports	RJ-45
Avaya P333T-48V	108644469	1 Expansion Slot 1 Stacking Slot	10/100BASE-T Stacking Module
Avaya P334T	108644451	48 10/100 Mbps ports	RJ-45
Avaya P334T-48V	108731571	1 Expansion Slot 1 Stacking Slot	10/100BASE-T Stacking Module
Avaya P333T-PWR	700200744	24 10/100 Mbps ports 1 Expansion Slot 1 Stacking Slot	RJ-45 10/100BASE-T Stacking Module
Avaya P332MF	108659335	12 fiber 100 Mbps ports	MT-RJ
Avaya P332MF-48V	108779406	1 Expansion Slot 1 Stacking Slot	100BASE-F Stacking Module
Multilayer Switches			
Avaya P333R	108644444	24 10/100 Mbps ports	RJ-45
Avaya P333R-48V	108715244	1 Expansion Slot 1 Stacking Slot	10/100BASE-T Stacking Module
Avaya P334T-ML	700228125	48 10/100 Mbps ports	RJ-45
Avaya P334T-ML-48V	700228133	2 1000 Mbps ports	10/100BASE-T
Avaya P334T-ML Pre-configured	700228141	1 Stacking Slot	SFP GBIC Stacking Module
Avaya P334G-ML-48V Pre-configured	700228158		
Avaya P334T-ML Layer 3 License	700228166		
Avaya P332G-ML	700177405	12 1000 Mbps ports	SFP GBIC (LC)
Avaya P332G-ML-48V	700181175	1 Stacking Slot	Stacking Module
Avaya P332G-ML Pre-configured	700177421		
Avaya P332G-ML-48V Pre-configured	700181183		
Avaya P332G-ML Layer 3 license	700177363		
Avaya P332GT-ML	700177413	12 1000 Mbps ports	RJ-45
Avaya P332GT-ML-48V	700181191	1 Stacking Slot	100/1000BASE-T
Avaya P332GT-ML Pre-configured	700177439		2 SFP GBIC (LC)
Avaya P332GT-ML-48V Pre-configured	700181209		Stacking Module
Avaya P332GT-ML Layer 3 license	700177371		
Avaya P333R-LB	700177389	24 10/100 Mbps ports	RJ-45
Avaya P333R-LB-48V	700177397	1 Expansion Slot 1 Stacking Slot	10/100BASE-T Stacking Module
Backup Power Supplies			
Avaya P330 BUPS	108563339	4 BUPS connectors	BUPS connectors
Avaya P330 BUPS-48V	108731563	4 BUPS connectors	BUPS connectors
Avaya P330-ML BUPS	700177447	4 BUPS connectors	BUPS connectors
Ethernet Expansion Modules			
Avaya X330T16	108562968	16 10/100 Mbps ports	RJ-45, 10/100BASE-T
Avaya X330F2	108562950	2 100 Mbps ports	100BASE-FX (SC)
Avaya X330L1	108562976	1 1000 Mbps port	SMF 1000BASE-LX
Avaya X330L2	108563032	2 1000 Mbps ports	SMF 1000BASE-LX
Avaya X330S1	108562992	1 1000 Mbps port	MMF 1000BASE-SX
Avaya X330S2	108562927	2 1000 Mbps ports	MMF 1000BASE-SX
Avaya X330G2	108659178	2 1000 Mbps ports	GBIC (SC)
Avaya X330GT2	108659152	2 1000 Mbps ports	RJ-45, 1000BASE-T

Ordering Information

Product	Material Code	Ports	Media/Connector
Transceivers			
GBIC LX Transceiver	108659210	1 1000 Mbps port	SMF, 1000BASE-LX
GBIC SX Transceiver	108659228	1 1000 Mbps port	MMF, 1000BASE-SX
GBIC ELX Transceiver	700013147	1 1000 Mbps port	SMF, 1000BASE-ELX
GBIC SFP LX Transceiver	108873258	1 1000 Mbps port	SMF, 1000BASE-LX
GBIC SFP SX Transceiver	108873241	1 1000 Mbps port	MMF, 1000BASE-SX
GBIC SFP ELX Transceiver	700260185	1 1000 Mbps port	SMF, 1000BASE-ELX
GBIC SFP Copper Transceiver	700283872	1 1000 Mbps port	SMF, 1000BASE-TX
ATM Expansion Modules			
Avaya X3300C12F1	108659186	1 x 622/155 Mbps port	MMF, OC-12 or OC-3
Avaya X3300C12S1	108659194	1 x 622/155 Mbps port	SMF, OC-12 or OC-3
WAN Access			
Avaya X330W-2DS1	700214612	2 E1/T1 ports 1 10/100 Mbps port Terminal/PPP for X330W-2USP	RJ-45 10/100BASE-T RS-232
Avaya X330W-2USP	700247570	2 USP Ports 1 10/100 Mbps port Terminal/PPP for X330W-2USP	USP 10/100BASE-T RS-232
Stacking			
Avaya X330STK	108562943		
Avaya X330STK-ML	700177355		
Cables			
Avaya X330LC	108592437		
Avaya X330L-LC	700177330		
Avaya X330SC	108592445		
Avaya X330RC	108563453		
Avaya X330L-RC	700177348		
V.35 cable	700247588	Serial cable DTE V.35 for the X330W-2USP	
X.21 cable	700247596	Serial cable X.21 for the X330W-2USP	
Brackets			
P330/P330-ML mid-mount bracket	108873217		
P330/P330-ML wall-mount bracket	108873225		
P330/P330-ML front-mount/NEBS/shallow rack bracket	108672171		
SMON			
SMON Stack License for one stack	108644410		
SMON Group License for one to 25 stacks	108711946		

Specifications

Standards Supported

The Avaya P330 complies with:

- IEEE 802.3x Flow Control on all ports
- IEEE 802.1p Priority Tagging compatible on all ports
- IEEE 802.1Q VLAN Tagging on all ports
- IEEE 802.1D Spanning Tree protocol
- IEEE 802.1w Rapid Spanning Tree protocol
- IEEE 802.1x Port-based network access control
- IEEE 802.3af Power over Ethernet (P333T-PWR only)
- IEEE 802.3z Gigabit Ethernet ports
- IETF MIB-II, Bridge MIB, RMON, SMON
- Routing: RIP 1, RIP 2, OSPF, ARP, ICMP and DHCP/BOOTP Relay

Physical Characteristics

Size (h, w, d): 2U (3.5"/88 mm) x 482.6 mm (19") x 450 mm (17.7")

Weight:

- | | | | |
|--------------|------------------|--------------|------------------|
| • P333T: | 7.5 kg (16.5 lb) | • P332G-ML: | 8.0 kg (17.6 lb) |
| • P334T: | 7.5 kg (16.5 lb) | • P332GT-ML: | 7.8 kg (17.2 lb) |
| • P332MF: | 7.5 kg (16.5 lb) | • P334T-ML: | 7.1 kg (16.5 lb) |
| • P333T-PWR: | 8.5 kg (18.7 lb) | • P333R: | 7.5 kg (16.5 lb) |
| | | • P333R-LB: | 7.5 kg (16.5 lb) |

Environmental Conditions

Operating Temperature: -5 to 50° C (23 to 122° F)

Humidity: 5% to 95% non-condensing

Power Rating

Power entry (AC): 100-240 VAC, 50/60 Hz

- | | |
|--------------|------|
| • P333T: | 2A |
| • P334T: | 2A |
| • P332MF: | 2A |
| • P333T-PWR: | 5.3A |
| • P332G-ML: | 2.0A |
| • P332GT-ML: | 2.2A |
| • P334T-ML: | 2.2A |
| • P333R: | 2A |
| • P333R-LB: | 2A |

Power entry (DC): -36 to -72 VAC, 2A, 5.1A (not applicable to P333T-PWR)

P333T-PWR DC power entry: 44 to 57 VDC for PoE only

Power consumption:

- | | |
|--------------|-----------|
| • P333T: | 150W max |
| • P334T: | 150W max |
| • P332MF: | 150W max |
| • P333T-PWR: | 375W max. |
| • P332G-ML: | 150W max |
| • P332GT-ML: | 150W max |
| • P334T-ML: | 150W max |
| • P333R: | 150W max |
| • P333R-LB: | 150W max |

Agency Approval

EMC Emission:

- U.S. - FCC Part 15, Subpart B, Class A
- Europe - EN55022 Class A and EN61000-3-2
- Japan - VCCI-A

Immunity: Approved according to EN55024 and EN61000-3-3

Safety:

- UL for U.S. approved according to UL1950 Std.
- C-UL (UL for Canada) approved according to C22.2 No.950 Std.
- CE for Europe approved according to EN 60950 Std.

NEBS Level 3

AC product: With optional brackets

DC product: Certified

About Avaya

Avaya enables businesses to achieve superior results by designing, building and managing their communications infrastructure and solutions. For over one million businesses worldwide, including more than 90 percent of the FORTUNE 500®, Avaya's embedded solutions help businesses enhance value, improve productivity and create competitive advantage by allowing people to be more productive and create more intelligent processes that satisfy customers.

For businesses large and small, Avaya is a world leader in secure, reliable IP telephony systems, communications applications and full life-cycle services. Driving the convergence of embedded voice and data communications with business applications, Avaya is distinguished by its combination of comprehensive, world-class products and services. Avaya helps customers across the globe leverage existing and new networks to achieve superior business results.

AVAYA

COMMUNICATIONS
AT THE HEART OF BUSINESS

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