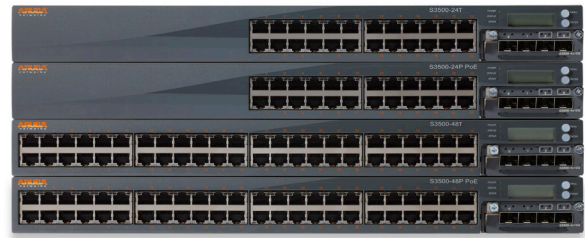# ARUBA S3500 MOBILITY ACCESS SWITCH

The S3500 Mobility Access Switch from Aruba Networks® extends role-based user access, security and operational simplicity to wired networks.

A vital part of Aruba Mobility-Defined Networks™, the S3500 delivers secure, virtualized access services to users, regardless of their location, access method, device or applications.

The S3500 is available in five models, with 24 or 48 10/100/1000BASE-T ports with optional power-over Ethernet (PoE) and 24 1000BASE-XSFP ports.

Each model supports an optional uplink module that includes four Gigabit Ethernet/10 Gigabit Ethernet uplink ports. Power-over-Ethernet (PoE) is available with up to 30 watts per port based on the IEEE 802.3af PoE and 802.3at PoE+ standards.

Mobility Access Switches can be interconnected to form an ArubaStack™. This provides connectivity for up to 384 Gigabit Ethernet devices such as APs, virtual desktops, IP phones, videophones, classroom peripherals, medical devices, point-of-sale devices and security cameras.

Redundant power supplies and modular, hot-swappable components make the S3500 ideal for high-density, high-availability wiring closets.

FLEXIBLE AND SECURE ACCESS DEPLOYMENTS

What makes Aruba Mobility Access Switches unique is their ability to apply role-based policies to wired users and devices. User roles can represent specific users or groups of users with defined names such as employees or guests. They can be defined with VLAN-IDs, QoS policies, VoIP policies or even ACLs.

Dynamic policy enforcement with ClearPass

When deployed with Aruba ClearPass, which provides user and device authentication, user roles may be automatically downloaded and applied to the Mobility Access Switch.

If a user's authorization parameters change – for example, if user access extends outside time-of-day parameters or disabling a firewall violates device health check policies – ClearPass can signal Mobility Access Switches to change the user role associated with the client.

The integration and automation of policy management capabilities significantly reduces IT overhead by eliminating the need to manually configure policies on every Mobility Access Switch.

Wired AP with Mobility Controllers

Mobility Access Switches support a unique per-port Tunneled Node capability that enables policy enforcement by an ICSA-certified stateful firewall resident in Aruba Mobility Controllers. A Tunneled Node port essentially operates as a wired AP, identical to Aruba 802.11ac APs.

Ports in shared locations such as conference rooms and common areas can be configured so that traffic is enforced by the Mobility Controller firewall, while other ports perform local forwarding.

Configured as a wired AP, Mobility Access Switches free network administrators from the need to configure VLANs, ACLs and QoS policies at each switch in the access layer. Policies for users, devices and applications are defined and enforced by Mobility Controllers across wired and wireless networks.
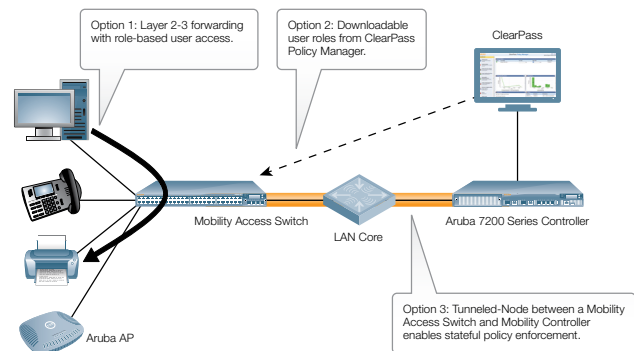

Figure 1. Flexible secure wired access deployments

ARUBASTACK EXTENDS BEYOND THE WIRING CLOSET

With ArubaStack, Mobility Access Switches provide the opportunity to optimize network access design. Up to eight S3500 or S2500 Mobility Access Switches can be interconnected and managed as a single logical device with one IP address and one configuration file.

Each S3500 supports an optional four-port Gigabit Ethernet/ 10 Gigabit Ethernet uplink module to enable stacking.

With ArubaStack, 1000BASE-X/10GBASE-X ports are used for the stack interconnects. Each S3500 uplink module comes with a 50-cm direct-attach copper cable used to create an ArubaStack in the wiring closet.

Extending the ArubaStack to other Mobility Access Switches across closets or buildings can be achieved using both fiber and copper interfaces (see Figure 2).

Interconnecting multiple wiring closets into a single ArubaStack reduces uplinks and expensive routed ports in the LAN core, simplifies LAN topologies, and reduces capital and operating costs compared to legacy wiring closet designs.

Multiple Mobility Access Switches or ArubaStacks can be interconnected to the S3500-24F (see Figure 3). The S3500-24F provides a compact, economical and power-efficient solution for aggregating Gigabit Ethernet uplinks from building wiring closets. It includes 24 1000BASE-X SFP ports and accommodates four additional Gigabit Ethernet/10 Gigabit Ethernet uplinks. As a member of an ArubaStack, the S3500-24F enables the resilient connection of Mobility Access Switches across multiple aggregation devices.

Figure 3. S3500-24F fiber aggregation

FREE IT STAFF FROM TEDIOUS NETWORK CONFIGURATION

Mobility Access Switches support several features that reduce the cost, complexity and time to perform configurations and upgrades.
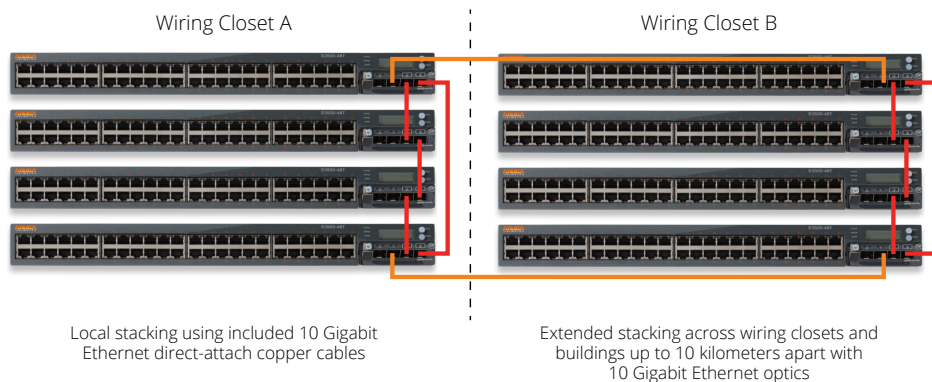
Utilizing port-profiles ensures that ports are configured correctly the first time and simplifies configuration compliance with additional port configuration changes.

When used with Aruba Instant™ APs, Mobility Access Switches automatically learn VLANs configured in the Instant cluster.

Mobility Access Switches additionally modify the port PoE priority as a business-critical resource, reserving power for APs in the event of loss of budgeted PoE power. They can also shut down a port classified as a rogue AP by an Aruba Instant AP.

The automation with Aruba Instant, and integration with ClearPass and Mobility Controllers, eliminates traditional IT overhead that comes from manually configuring parameters and policies on every legacy switch in the access network.

Mobility Access Switches can also utilize the Aruba Activate™ zero-touch provisioning service, which enables customers to efficiently deploy and maintain Aruba devices across a distributed enterprise.

Wiring Closet A | Wiring Closet B

Local stacking using included 10 Gigabit Ethernet direct-attach copper cables | Extended stacking across wiring closets and buildings up to 10 kilometers apart with 10 Gigabit Ethernet optics

Note: ArubaStack members may be any combination of S2500 or S3500 models

Figure 2. ArubaStack options

Customers that subscribe to Aruba Central cloud-based network management can also leverage Aruba Activate to categorize and set specific provisioning parameters that enable Aruba devices to automatically obtain their configurations. The benefits of the combined Aruba Central and Aruba Activate integration include:

- Asset tracking and device categorization within the customer organization.
- Reduced time-to-deploy across a large number of locations.
- Automated software-update notifications and simplified upgrades.

ARCHITECTED FOR HIGH AVAILABILITY

The S3500 includes a number of features that make it ideal to deploy in networks that require maximum availability.

- Redundant power supplies: Dual internal hot-swappable power supplies to sustain uninterrupted network operations.
- Fan tray: Field-replaceable fan tray with multiple fans, providing variable-fan speed to maintain system cooling and field- replaceable for rapid time to repair.
- Distributed link aggregation: Link aggregation groups (LAG) with physical ports may be shared across members of an ArubaStack. This distribution of a LAG across the ArubaStack allows load-sharing and redundant connections across multiple devices, providing an additional level of reliability and maximum availability.
- PoE priority: ArubaOS PoE priority classifies attached PoE devices with a priority level, ensuring no loss of power for business-critical devices like APs, security cameras and red phones.
- Hot Standby Link (HSL): ArubaOS HSL provides a simplified link failover mechanism without configuring and running the spanning-tree protocol. A port or group of ports may be configured as redundant for another port or group of ports.
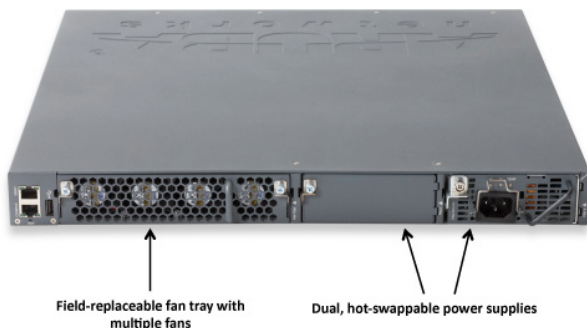

Field-replaceable fan tray with multiple fans

Dual, hot-swappable power supplies

Figure 4. S3500 High Availability Features

PHYSICAL INTERFACES

- S3500-24T: 24x10/100/1000BASE-T RJ-45 and uplink module slot
- S3500-24P: 24x10/100/1000BASE-T PoE RJ-45 and uplink module slot
- S3500-48T: 48x10/100/1000BASE-T RJ-45 and uplink module slot
- S3500-48P: 48x10/100/1000BASE-T PoE RJ-45 and uplink module slot
- S3500-24F: 24x1000BASE-x SFP and uplink module slot
- Common interface feature support (all models)
  - Diagnostic LEDs (link/admin/duplex/PoE/speed/fault)
  - Auto-negotiation and auto-MDI/MDIX support
  - Time domain reflectometry on 10/100/1000BASE-T models only
- PoE feature support (P and PF models)
  - IEEE 802.3af: PoE (15.4 watts)
  - IEEE 802.3at: PoE+ (30 watts)
  - Pre-standard/Legacy PoE
  - Aruba efficient PoE (priority, guard-band and time range)
- LCD management display
- RJ-45 console port (RS-232)
- Out-of-band 10/100/1000BASE-T management port
- USB interface for software/configuration files

UPLINK INTERFACES

- Fixed 4x1000BASE-X/10GBASE-X SFP/SFP+ (SFP/SFP+ purchased separately)
- Supported SFP/SFP+ transceivers
  - 10GBASE-LR 1310-nm SFP+ (LC) for up to 10 kilometers over SMF
  - 10GBASE-SR 850-nm SFP+ (LC) for up to 300 meters over MMF (OM3)
  - 10GBASE-LRM 1310-nm SFP+ (LC) for up to 220 meters over MMF (OM2)
  - 1000BASE-LX 1310-nm SFP (LC) up to 10 kilometers over SMF
  - 1000BASE-SX 850-nm SFP (LC) up to 550 meters over MMF (OM2)
  - 1000BASE-T SFP (RJ-45) up to 100 meters (CAT5)
  - Direct-attach cable – Twinax (50 cm, 1 m, 3 m or 7 m lengths)

PERFORMANCE

- S3500-24P/24T/24F: 128 Gbps/95 Mpps
- S3500-48P/48T: 176 Gbps/131 Mpps

POWER OPTIONS

- Dual internal, load-sharing hot-swappable redundant power supplies
- Autosensing 100-240 VAC, 350 watts (24T, 48T and 24F)
- Autosensing 100-240 VAC, 600 watts (24P and 48P)
- PoE budget:
  - 600-watt single power supply: 400 watts
  - 600-watt redundant power supply: 400 watts
  - 600-watt load-sharing power supply: 660 watts
  - 1,050-watt single power supply: 850 watts
  - 1,050-watt redundant power supply: 850 watts
  - 1,050-watt load-sharing power supply: up to 1,440 watts

LAYER 2 FEATURES AND SCALING

- MAC addresses per system: 12,000
- Jumbo frames: 9,216 bytes
- Number of VLANS: 4,094
- Port- and MAC-based VLAN
- IEEE 802.1AB: Link-layer discovery protocol (LLDP)
  - Device discovery and advertisement
  - Voice VLAN support using LLDP-MED
- Cisco discovery protocol (CDP)
  - Device discovery
  - Voice VLAN support
- IEEE 802.1Q: VLAN tagging
- GARP VLAN Registration Protocol (GVRP)
- IEEE 802.1D: Spanning tree protocol (STP)
- IEEE 802.1w: Rapid reconfiguration of spanning tree protocol (RSTP)
- IEEE 802.1s: Multiple spanning trees protocol (MSTP)
  - Maximum number of supported instances: 64
- Rapid per-VLAN spanning tree plus (PVST+)
- Spanning tree protocol features:
  - Portfast
  - Root guard
  - Loop guard
  - BPDU guard
- Aruba loop protect
- Link aggregation groups
  - Static
  - IEEE 802.3ad: Link-aggregation control protocol (LACP)
  - Number of link aggregation groups: 64
  - Number of ports per aggregation group: 8
- Aruba Hot Standby Link (HSL)

- IEEE 802.3ah: Ethernet operations, administration and maintenance (OAM)
- Layer 2 Generic Routing Encapsulation (GRE)
- Aruba AirGroup

LAYER 3 FEATURES AND SCALING

- Unicast routes: 8000
- Routed VLAN Interface (RVI)
- Loopback interface
- Multinetting
- Static routing
- Open shortest path first (OSPF) v2
- Equal cost multi-path
- Route filtering
- DHCP server/client
- DHCP relay (including Option 82)
- Network time protocol (NTP)
- Network address translation
- IP directed broadcast

SECURITY

- 802.1X
- MAC authentication
- Captive portal
- RADIUS (device management, 802.1X, accounting)
- RADIUS fail open
- TACACS+ (device management, accounting)
- LDAP (802.1X)
- Digital certificates
- Internal user database
- Aruba ClearPass Policy Manager downloadable roles
- Aruba Tunneled Node
- Access control lists (ACLs)
- Storm control
- IPv6 router-advertisement (RA) guard
- DHCP guard
- MAC limiting
- Site-to-site IPSEC VPN

MULTICAST FEATURES AND SCALING

- Multicast routes: 2,000
- PIM sparse mode (PIM-SM)
- IGMP v1/v2
- IGMP snooping
- Multicast listener discovery (MLD) v1

QUALITY OF SERVICE

- 802.1p
- DSCP
- IP precedence
- QoS trust (802.1p/DSCP/auto)
- QoS classification by ACL (L3/L4), user and interface
- Policer classification by ACL (L3/L4), user and interface
- Egress strict priority queuing
- Eight hardware queues per port

MANAGEMENT AND MONITORING

- Command line interface (serial, telnet, SSHv2)
- Graphical user interface (HTTP/HTTPs)
- Aruba Central cloud-based network management
- AirWave network management
- DHCP auto-configuration
- SNMP v1, v2c, v3
- IPv6 management
- Port mirroring (single destination)
- Remote monitoring (RMON)

PHYSICAL SPECIFICATIONS

- Dimensions:
  - H x W x D: 1.75" x 17.5" x 17.5"
    (4.4 cm x 44.5 cm x 44.5 cm)
  - Depth with 1,050-watt power supply: 19.5" (495.3 mm)
- Weight:
  - S3500-24T (single 350-watt power supply): 15.4 lbs (7 kg)
  - S3500-24P (single 600-watt power supply): 16.8 lbs (7.6 kg)
  - S3500-24F (single 350-watt power supply): 15.4 lbs (7 kg)
  - S3500-48T (single 350-watt power supply): 15.9 lbs (7.2 kg)
  - S3500-48P (single 600-watt power supply): 17.5 lbs (8 kg)
  - S3500-48PF (single 1,050-watt power supply): 18.8 lbs (8.5 kg)

ENVIRONMENTAL

- Operating temperature: 32°F to 122°F (0°C to 50°C)
- Storage temperature: -40°F to 158°F (-40°C to 70°C)
- Operating humidity: 5% to 95% non-condensing
- Operating altitude: 10,000 feet (3,048 meters)
- Acoustic noise:
  - 42 dB with AC power supply
  - 55 dB with dual AC power supply

WARRANTY AND SUPPORT

- Limited lifetime warranty (all models) includes:
  - Return-to-factory hardware replacement with following business day shipment of failed product
  - 24x7 access to Aruba's Technical Assistance Center (TAC) for 90 days after the purchase date
  - Warranty coverage as long as the original purchaser owns the product
  - Power supply and fans are covered for five years from initial purchase
- ArubaCare Support provides additional product support options directly through Aruba or via an authorized Aruba Reseller. Click here for more details.

SAFETY CERTIFICATIONS

- UL-UL60950-1 (second edition)
- C-UL to CAN/CSA 22.2 No.60950-1 (second edition)
- TUV/GS to EN 60950-1, Amendment A1-A4, A11
- CB-IEC60950-1, all country deviations

ELECTROMAGNETIC COMPATIBILITY CERTIFICATIONS

- FCC 47CFR Part 15, Class A
- EN 55022 Class A
- ICES-003 Class A
- VCCI Class A
- AS/NZS CISPR 22 Class A
- CISPR 22 Class A
- EN 55024

ENVIRONMENTAL CERTIFICATIONS

- Reduction of Hazardous Substances 5 (RoHS-5)

ORDERING INFORMATION

Part Number	Description
Switch Models	
S3500-24P	S3500-24P Mobility Access Switch with 24 10/100/1000BASE-T IEEE 802.3af PoE/802.3at PoE+ ports and optional uplink module slot (uplink module ordered separately). Includes 600-watt AC power supply. For deployments worldwide (check regulatory status).
S3500-24T	S3500-24T Mobility Access Switch with 24 10/100/1000BASE-T ports and optional uplink module slot (uplink module ordered separately). Includes 350-watt AC power supply.
S3500-48P	S3500-48P Mobility Access Switch with 48 10/100/1000BASE-T IEEE 802.3af PoE/802.3at PoE+ ports and optional uplink module slot (uplink module ordered separately). Includes 600-watt AC power supply. For deployments worldwide (check regulatory status).
S3500-48PF	S3500-48P Mobility Access Switch with 48 10/100/1000BASE-T IEEE 802.3af PoE/802.3at PoE+ ports and optional uplink module slot (uplink module ordered separately). Includes 1,050-watt AC power supply. For deployments worldwide (check regulatory status).
S3500-48T	S3500-48T Mobility Access Switch with 48 10/100/1000BASE-T ports and optional uplink module slot (uplink module ordered separately). Includes 350-watt AC power supply.
S3500-24F	S3500-24F Mobility Access Switch with 24 Gigabit Ethernet SFP ports (optics ordered separately) and optional uplink module slot (uplink module ordered separately). Includes 350-watt AC power supply.
Optional Uplink Modules and Power Supplies	
S3500-4x10G	S3500 Uplink Module with 4 Gigabit Ethernet/10 Gigabit Ethernet SFP/SFP+ (pluggable transceivers ordered separately) for use with S3500-24T, -24P, -48T, -48P, -48PF and -24F. Provides uplinks and ArubaStack interconnects. Includes one 50 cm direct- attach cable (DAC) for ArubaStack.
PSU-350-AC	350W AC Power Supply. May be used as a redundant power supply or field-replaceable spare for 7200 Series, S3500-24T, S3500-48T and S3500-24F.
PSU-600-AC	600W AC Power Supply. May be used as a redundant power supply or field-replaceable spare for S3500-24P, -48P.
PSU-1050-AC	1050W AC Power Supply. May be used as a redundant power supply or field-replaceable spare for S3500-24P, -48P, -48PF.
Pluggable Transceivers	
SFP-10GE-LRM	10GBASE-LRM SFP+; 1,310 nm pluggable 10 Gigabit Ethernet optic; LC connector; up to 220 meters over multimode fiber (Type OM2)
SFP-10GE-SR	10GBASE-SR SFP+; 850 nm pluggable 10 Gigabit Ethernet optic; LC connector; up to 300 meters over multimode fiber (Type OM3)
SFP-10GE-LR	10GBASE-LR SFP+; 1,310 nm pluggable 10 Gigabit Ethernet optic; LC connector; up to 10,000 meters over single-mode fiber
DAC-SFP-10GE-50CM	50cm length, 10GbE SFP+ direct attach cable (DAC); copper Twinax connectors on both ends for ArubaStack or interconnect between devices. For use with 7200, S2500 and S3500 10GbE ports only.
DAC-SFP-10GE-1M	1m length, 10GbE SFP+ direct attach cable (DAC); copper Twinax connectors on both ends for ArubaStack or interconnect between devices. For use with 7200, S2500 and S3500 10GbE ports only.
DAC-SFP-10GE-3M	3m length, 10GbE SFP+ direct attach cable (DAC); copper Twinax connectors on both ends for ArubaStack or interconnect between devices. For use with 7200, S2500 and S3500 10GbE ports only.
DAC-SFP-10GE-5M	5m length, 10GbE SFP+ direct attach cable (DAC); copper Twinax connectors on both ends for ArubaStack or interconnect between devices. For use with 7200, S2500 and S3500 10GbE ports only.
DAC-SFP-10GE-7M	7m length, 10GbE SFP+ direct attach cable (DAC); copper Twinax connectors on both ends for ArubaStack or interconnect between devices. For use with 7200, S2500 and S3500 10GbE ports only.
SFP-SX	1000BASE-SX SFP; 850-nm pluggable Gigabit Ethernet optic; LC connector; up to 300 meters over multimode fiber (Type OM2)
SFP-LX	1000BASE-LX SFP; 1,310-nm pluggable Gigabit Ethernet optic; LC connector; up to 10,000 meters over single-mode fiber
SFP-TX	1000BASE-T SFP; copper Gigabit Ethernet pluggable; RJ-45 connector; up to 100 meters over Category-5, 5e, 6 and 6a un-shielded twisted-pair cable

ORDERING INFORMATION

Part Number	Description
Spares and Accessories	
SPR-FAN-14	S3500 Spare Fan Tray. Field-replaceable for S3500-24P, -48P, -24T, -48T and -24F.
SPR-RK-MNT	7200 Series or S3500 Spare Rack-Mount Kit. Used to front-mount or mid-mount the 7200 Series or S3500 to a 19" rack. May also be used to front-mount (only) the S1500-24/48 or S2500 to 19" rack.
SPR-4RK-MNT	S3500 Four-Post 19" Rack-Mount Kit. Used for mounting the S3500 in cabinets.
SPR-WL-MNT	7200 Series or S3500 Wall Mount Kit.
PSU-PWBLNK	7200 Series and S3500 Power Supply Blank Faceplate Spare. Cover for unused power supply bay.
SPR-ULBLNK	S3500 Uplink Module Faceplate Spare. Cover for unused uplink module slot.