Campus Networking & Aruba Switching
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Agenda Slide

- Introduction
- Campus and branch switches overview
- Campus switching technology differentiators
- Reference designs
# Portfolio branding

## Campus & Branch

**FlexNetwork**  
*Traditional enterprise routing / switching at the campus & branch*

- IMC
- 10500, 7500
- 5500, 5100
- MSR 900, 1/2/3/4K
- HSR 66/6800
- VSR 1000

## Small Business

**Aruba**  
*Mobile-first enterprise networks for campus, branch & remote*

- AirWave, Central
- APs & Beacons
- Controllers, SDN Apps
- 5400R, 38xx, 29xx, 2530, 10500
- ClearPass, Meridian, ALE

**OfficeConnect**  
*Wired & wireless networks for small businesses*

- Web GUI
- 1900, 1800, 1600, 1400 switch series
- Small business APs
- R100 wireless VPN router series
Know Your Technology Adoption Needs

Design for Campus Mobility

- Embrace change
- **INTEGRATED** mobility

Overlay Wireless LAN

- Maintains traditional architecture
- **OVERLAY** separate wireless

Aruba Portfolio

FlexNetwork Portfolio
The Mobile-First Campus

- Assured User Experience
- Optimized for Mobile Apps
- Unified Policy Enforcement

SDN Applications (HP, 3rd party)
- Management
- Policy model
- Access mgmt

Open Enhanced Platform

IP Network
- Core Switching
- Distribution Switching
- Access Switching

SDN Controller

Wireless Controller

Wireless Access

Access mgmt
Campus Aruba Switching Unique Value

Broad Portfolio of Differentiated Hardware:
- Performance, Unique ASIC functionality
- Smart Rate, SDN-enablement

Aruba Software Integration
- AirWave, ClearPass, Activate, Central
- MAS feature Integration

Investment in world-class switch OS

SDN Leadership:
- SDN controller, apps, 3rd party ecosystem
- ClearPass integration
Aruba Switching Portfolio Overview

Functionality

- Fully managed L2 8, 24 or 48 ports
- Choice of FE/GE & PoE models
- Rack mount & compact form factors

2530/G

- Basic L3 static and RIP routing 24 or 48 ports
- 30W PoE+ on PoE models
- Optional 10GbE uplinks

2920

- Fully managed L3 24 or 48 ports
- Low-latency
- Highly resilient Mesh Technology

3800

5400R Modular Series

- 2 Tbps backplane, Full Line Rate
- Up to 288 GbE, 96 10-GbE, 24 40-GbE ports
- Redundant management modules & PoE, PoE+, and non-PoE modules
- MACsec
- Wire-speed Layer 2/3 dual-stack IPv4/IPv6
- HPE Smart Rate Multi-Gigabit ports
- Services modules
- Meshing and routing
- New Bundling options

10500 Series

- 4, 8, and 12-slot chassis
- Scalability (576 GbE and 576 10GbE ports)
- Advanced L2, full L3 features & IPv6/MPLS functionality
- IRF technology (up to 4-chassis)
- Greater than 11Tbps switching capacity
- 40GbE (up to 96 ports)
- 100GbE (up to 24 ports)

Price/performance
Driving Migration From Aruba MAS Portfolio

**Aruba MAS**

- **S3500**
  - L3 stackable, HA, 10GbE uplinks

- **S2500**
  - L3 stackable, 10GbE uplinks

- **S1500**
  - L3, GbE uplinks

**Aruba HPE Switches**

- **Aruba 3810M**
  - Advanced L3 stackable, 10GbE uplinks

- **Aruba 2920**
  - Basic L3 stackable, HA, 10GbE uplinks

- **Aruba 2530**
  - Layer 2, GbE uplinks
## Aruba Integration Switching Software Roadmap

<table>
<thead>
<tr>
<th>Current</th>
<th>Futures</th>
<th>Futures</th>
</tr>
</thead>
</table>
| **Airwave** | • Discover switches  
• Basic switch monitoring | • ZTP (DHCP/no IPSec)  
• Template-based configuration/mgmt  
• Firmware Upgrade | • ZTP (DHCP/IPsec, Activate)  
• Full configuration/mgmt |
| **Activate** | | • Inventory control  
• ZTP (Airwave/Central)  
• Firmware Upgrade via Image Server |
| **ClearPass** | • RADIUS/TACACS+,  
• 802.1x, MAC Auth, Int. Captive Portal  
• Dynamic VLAN / ACL / CoS / Rate-Limit Attrrib.  
• CoA & Disconnect | • Ext. Captive Portal Redirect to ClearPass using "server-initiated" framework  
• CoA Initiated Port Bounce | • User Roles  
• Enhanced Rate-Limiting/Remarking Capabilities (Per ACE) |
| **Other MAS features** | • Rogue AP detection  
• Auto add VLAN  
• Auto Trust QoS*, Set PoE priority  
• User View CLI command | | • Per-Port Tunneled Node*  
• Static IP User Visibility |
| **Central** | | • ZTP  
• Full configuration/mgmt |
Campus/Branch Switches Overview
## Overview

<table>
<thead>
<tr>
<th>Product line / brand</th>
<th>Aruba</th>
<th>FlexNetwork</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HP ASIC + PVOS&gt;ArubaOS-Switch</td>
<td>Merchant Silicon + Comware OS</td>
</tr>
<tr>
<td>Data center</td>
<td></td>
<td>12900 / 7900 5930 / 5700</td>
</tr>
<tr>
<td>Large campus core</td>
<td></td>
<td>10500</td>
</tr>
<tr>
<td>Large campus aggregation</td>
<td></td>
<td>10500</td>
</tr>
<tr>
<td>Small to medium campus core / aggregation</td>
<td></td>
<td>5400R zl2</td>
</tr>
<tr>
<td>Modular branch</td>
<td></td>
<td>7500</td>
</tr>
<tr>
<td>Modular client access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full L3 client access (ie. OSPF)</td>
<td></td>
<td>3800</td>
</tr>
<tr>
<td>L2/L3 lite client access</td>
<td></td>
<td>2920</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5500</td>
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<tr>
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<td>5130</td>
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</tbody>
</table>
Aruba 5400R zl2 Switch Series

Modular

Device aggregation: Distributed Trunking / Up to 2 units
- Future: VSF

Gen6 ASIC (on v3 modules)

ProVision OS

PoE+ up to 288 ports

SmartRate

MACsec

OSPF + BGP

SDN: Fully Flexible OpenFlow
Aruba 5400R v3 zl2 Modules

24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module

24-port 10/100/1000BASE-T MACsec v3 zl2 Module

24-port 1GbE SFP MACsec v3 zl2 Module

12-port 10/100/1000BASE-T PoE+ / 12-port 1GbE SFP MACsec v3 zl2 Module

20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module

20-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module

20-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module

20-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module

8-port 1G/10GbE SFP+ MACsec v3 zl2 Module

8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module

2-port 40GbE QSFP+ v3 zl2 Module

2-port 40GbE QSFP+ v3 zl2 Module
Aruba 5400R v3 zl2 - SmartRate modules

- 20-port 10/100/1000BASE-T PoE+
- 4-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module
- 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module
Aruba 3800

Leadership

- License Free, full featured L3 out of the box.
- Switch series able to Optimize Lync calls in an end to end HP Network using Network Optimizer
- Switch Series protects enterprises from end clients propagating virus and internet attacks using Network Protector
- Switch Series allows detailed visibility into networks using Network Visualizer
- Switch Series will be supported by Aruba ClearPass, Airwave, and Cloud provisioning
- Limited Lifetime Warranty
- Meshed stacking for more redundancy

What’s Coming?

- 3810 Switch Series modular 1U chassis with 24 or 48 fixed ports offering full layer 3 with and without POE+ and dual modular power supplies
- Optional 2 and 4 port Smart Rate modules allowing any switch in the series to offer 1, 2.5, 5 and 10 GB/s links for 802.11ac Access points
- Front plane *IRF Stacking and backplane Stacking supported
- 2 and 4 Ports SFP+ and 1 or 2 Ports QSFP+ modules available
- 16 to 24 port SFP+ and Smart Rate aggregators
- *Front Plane or Backplane Stacking of up to 10 Switches
- License-free software with Layer 3 features, further lowering TCO
Aruba 2920 Switch Series

Backplane stacking - up to 4 units
Gen5 Integrated ASIC
ProVision OS
PoE+
L3 Lite
SDN
HPE FlexNetwork 10500 Switch Series

Modular – 4, 8 or 12 slot chassis

Device aggregation: Frontplane stacking - IRF / up to 4 units

Device virtualization: MDC / up to 1 context per line card / total 8+1

Merchant silicon

Comware v7 OS / new MPUs and line cards

NO PoE+

Full L3: OSPF, ISIS, BGP

MPLS/L3VPN/L2VPN/VPLS

MACsec (on specific ports of specific line cards)

L2 VXLAN VTEP (on specific line cards)
Campus/Branch Switching Technologies
Combining redundancy and simplicity

Simplifying network design, deployment, management and maintenance
- Two (or more) chassis behaving as one from the point of view of neighbor nodes (server, routers, WLAN controllers, etc.)

IRF - Intelligent Resilient Framework
- Available today
- FlexNetwork switches: 10500, 7500, 5500 HI and 5130 EI

VSF – Virtual Switch Framework
- Available Q1-2/CY 2016
- Aruba switches: 5400R with v3 modules
SDN Solution

Real time network control

HPE SDN applications available today

Open application development model

3rd party SDN applications available today

- SDN Network Protector
- SDN Network Optimizer (for Lync)
- SDN Network Visualizer
Zero-touch branch deployment

Activate

DHCP

Central

Airwave

Provision

Branch controller

Instant-APs

2920 Switch Series

3800 Switch Series

Today

Register

Configure

Near future
Mobile-first Designs
Mobile-first campus building block
Small mobile-first campus
Large mobile-first campus

Aruba 7200 Mobility Controllers
Master role
Airwave IMC
ClearPass SDN Controller and APPs

HPE 10500 Switches (EC line cards)
Aruba 5400R Switches
Aruba 7200 Mobility Controllers
Aruba 2920 Switch stacks
Aruba 802.11ac APs
THANK YOU
## ProVision/Aruba & FlexNetwork Access Switches

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Warranty</td>
<td>Original Owner Lifetime</td>
</tr>
<tr>
<td>Replacements</td>
<td>NBD Shipment</td>
</tr>
<tr>
<td>Software Updates</td>
<td>All Generally Available Releases</td>
</tr>
</tbody>
</table>
| Phone Support (Best Effort, Product Conformance) | 24 x 7 for 90 Days  
                                      | 8x5 for Lifetime                           |
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HOW TOMORROW MOVES