

CAMPUS NETWORKING

QUICK REFERENCE GUIDE

Last update: November 2020

| S-Series | Campus Core: PowerSwitch S4100 Series | | | |
|--|---|--------------------------|--------------------------------|------------------------|
| Overview | Next generation open networking switches for enterprise, mid-market and Tier2 cloud service providers with demanding compute and storage traffic environments | | | |
| Models (all sized 1RU) | S4112F-ON | S4112T-ON | S4128F-ON | S4128T-ON |
| Performance | | | | |
| Switching capacity (full duplex) | 840 Gbps | 840 Gbps | 960 Gbps | 960 Gbps |
| Forwarding Capacity (Mpps) | 625 | 625 | 714 | 714 |
| Buffer size | 12MB | 12MB | 12MB | 12MB |
| Ports | | | | |
| FC8/FC16 | N/A | N/A | N/A | N/A |
| FC8/FC16/FC32 | N/A | N/A | N/A | N/A |
| 1/10GBase-T | N/A | 12 | N/A | 28 |
| 10GbE | 12 | N/A | 36 | 36 |
| 25GbE | 12 | 12 | 8 | 8 |
| 40GbE | 12 (breakout) | 12 (breakout) | 2 | 2 |
| 50GbE | 3 | 3 | 4 | 4 |
| 100GbE | 6 | 6 | 2 | 2 |
| Expansion module slots (Modules support speed indicated) | 3 | 3 | N/A | N/A |
| Power and cooling | | | | |
| Max. power consumption (W) | 180 (max) / 90 (normal) | 200 (max) / 120 (normal) | 260 (max)/160 (normal) | 300 (max)/250 (normal) |
| Power options | Fixed power supply | | AC or DC | AC or DC |
| Redundant power supplies | Redundant fixed fans | | 2 | 2 |
| Airflow | Normal or Reverse | | Normal or Reverse | |
| Features | | | | |
| Stacking | Not supported | | | |
| Operating system | Dell EMC SmartFabric OS10 and select 3rd party OS | | | |
| Industry-standard CLI | Dell EMC SmartFabric OS10 and several 3rd party OS | | | |
| iSCSI optimization storage features | iSCSI optimization and FSB | | | |
| Max L2 VLANs and L3 VLANs | 4K/500 | | 500 L3 VLANs | |
| Max MAC entries | 272K | | 272K | |
| Link aggregation (groups/Members) | 32 links per group, 128 groups | | 32 links per group, 128 groups | |
| Max routes (IPv4/IPv6) | 200K/130K | | 200K/130K | |
| Jumbo frames (Bytes) | 9216 | | 9216 | |
| IPv4 routing | OSPF, BGP | | OSPF, BGP | |
| IPv6 routing | MP-BGP, OSPFv3 | | MP-BGP, OSPFv3 | |
| Multicast routing | PIM-SM, PIM-SSM | | PIM-SM, PIM-SSM | |
| VXLAN | Routing and Bridging | | | |

| S-Series | Campus Core: PowerSwitch S4100 Series | | | |
|--|---|------------------------|-----------------------|--|
| Overview | Next generation open networking switches for enterprise, mid-market and Tier2 cloud service providers with demanding compute and storage traffic environments | | | |
| Models (all sized 1RU) | S4148F-ON | S4148T-ON | S4148FE-ON | S4148U-ON |
| Performance | | | | |
| Switching capacity (full duplex) | 1.76 Tbps | 1.76 Tbps | 1.76 Tbps | 1.76 Tbps |
| Forwarding Capacity (Mpps) | 759 | 759 | 759 | 759 |
| Buffer size | 12MB | 12MB | 12MB | 12MB |
| Ports | | | | |
| FC8/FC16 | N/A | N/A | N/A | unified SFP+/SFP28 |
| FC8/FC16/FC32 | N/A | N/A | N/A | unified QSFP28 |
| 1/10GBase-T | N/A | 48 | N/A | N/A |
| 10GbE | 72 | 72 | 72 | 72 |
| 25GbE | 16 | 16 | 16 | 16 |
| 40GbE | 6 | 6 | 6 | 6 |
| 50GbE | 8 | 8 | 8 | 8 |
| 100GbE | 4 | 4 | 4 | 4 |
| Expansion module slots (Modules support speed indicated) | N/A | N/A | N/A | N/A |
| Power and cooling | | | | |
| Max. power consumption (W) | 370 (max)/200 (normal) | 440 (max)/320 (normal) | 400(max)/240 (normal) | 460 (max)/300 (normal) |
| Power options | AC or DC | AC or DC | AC or DC | AC or DC |
| Redundant power supplies | 2 | 2 | 2 | 2 |
| Airflow | Normal or Reverse | | | |
| Features | | | | |
| Stacking | Not supported | | | |
| Operating system | Dell EMC SmartFabric OS10 and select 3rd party OS | | | |
| Industry-standard CLI | Dell EMC SmartFabric OS10 and select 3rd party OS | | | |
| iSCSI optimization storage features | iSCSI optimization and FSB | | | iSCSI optimization, FSB, NPIV Proxy gateway, F_Port, FCoE/ FC hosts, FC zoning |
| Max L2 VLANs and L3 VLANs | 500 L3 VLANs | | | |
| Max MAC entries | 272K | | | |
| Link aggregation (groups/Members) | 32 links per group, 128 groups | | | |
| Max routes (IPv4/IPv6) | 200K/130K | | | |
| Jumbo frames (Bytes) | 9216 | | | |
| IPv4 routing | OSPF, BGP | | | |
| IPv6 routing | MP-BGP, OSPFv3 | | | |
| Multicast routing | PIM-SM, PIM-SSM | | | |
| VXLAN | Routing and Bridging | | | |

| S-Series | Campus Core: PowerSwitch S5200 Series: 10/25/40/50/100GbE | | | | |
|---|---|---|--|--|--|
| Overview | Build a high-performance, cost-efficient data center leaf/spine fabric with this spine fabric switch | Provide optimum flexibility and cost-effectiveness for demanding compute and storage traffic environments | Double the amount of direct 25GbE ports with a ToR switch that features 96 x 25GbE SFP28 | Low-density 1RU, half-width switch ideal for high-performance HCI connectivity | Low-density 1RU, full-width switch ideal for high-performance HCI connectivity |
| Models (all sized 1RU, S5296F-ON 2RU) | S5232F-ON | S5248F-ON | S5296F-ON | S5212F-ON | S5224F-ON |
| Performance | | | | | |
| Switching capacity (full duplex) (Tbps) | 6.4 | 4.0 | 6.4 | 2.16 | 2.16 |
| Forwarding capacity (Mpps) | 1.5 Bpps | 1.9 Bpps | 1.5 Bpps | 892 | 954 |
| Buffer size | 32MB | 32MB | 32MB | 32MB | 32MB |
| Ports | | | | | |
| 1/10GBase-T | N/A | N/A | N/A | N/A | N/A |
| 1GbE (SFP) | 128 | 80 | 128 | 12 | 24 |
| 10GbE | 128 | 80 | 128 | 12 | 24 |
| 25GbE | 128 | 80 | 128 | 12 | 24 |
| 40GbE | 32 | 8 | 8 | 3 | 4 |
| 50GbE | 64 | 16 | 16 | 6 | 8 |
| 100GbE | 32 | 8 | 8 | 3 | 4 |
| Expansion module slots | N/A | N/A | N/A | N/A | N/A |
| Power and cooling | | | | | |
| Max. power consumption (W) | 635 | 647 | 893 | 304 | 455 |
| Power options | AC or DC | AC or DC | AC or DC | AC or DC | AC or DC |
| Redundant power (hot-swappable) | 2 | 2 | 2 | N/A | 2 |
| Airflow | Normal or Reverse as orderable options, can be reversed in the field | | | | |
| Features | | | | | |
| Operating Systems | Dell EMC SmartFabric OS10, Enterprise SONiC Distribution by Dell Technologies and select 3rd party OS | | | | |
| Industry-standard CLI (Console, Telnet, SSHv1/v2) | Dell EMC Networking and several 3rd party OS | | | | |
| iSCSI optimization | iSCSI optimization and FSB | | | | |
| Max VLANs (Configured) | 4K per port | | | | |
| Max MAC entries | 160K | | | | |
| Link aggregation (Groups/Members) | 16 links per group, 128 groups | | | | |
| Max routes (IPv4/IPv6) | 128K/64K | | | | |
| Jumbo frames | 9216 bytes | | | | |
| IPv4 routing | OSPF, BGP | | | | |
| IPv6 routing | MP-BGP, OSPFv3 | | | | |
| Multicast routing | PIM-SM, PIM-SSM | | | | |
| VXLAN | Routing and Bridging | | | | |

| Series | PowerSwitch N3200 Series | | | | | | | | |
|-----------------------------------|---|--|-----------|-----------------------|--------------------------------|------------|--------------------------------|-----------|--------------------------------|
| Overview | Power-efficient and resilient 1GbE and 1/2.5/5/10GbE Multigig range of switching solution with 90W PoE options, for advanced Layer 3 distribution in large enterprise campus and retail networks. | | | | | | | | |
| Models (all sized 1RU) | N3208PX-ON | N3224T-ON | N3224F-ON | N3224P-ON | N3224PX-ON | N3248TE-ON | N3248P-ON | N3248X-ON | N3248PXE-ON |
| Performance | | | | | | | | | |
| Switch capacity (Gbps) | 88 | 528 | | | 1080 | 576 | | 1560 | |
| Forwarding capacity (Mpps) | 122 | 733 | | | 1500 | 800 | | 2167 | |
| Buffer size | 4 MB | 8 MB | | | | | | 32 MB | |
| Ports | | | | | | | | | |
| 1G Base-T | 4 | 24 | | | - | 48 | | - | |
| 5G Base-T Multigig (1/2.5/5G) | 4 | - | | | | | | | |
| 10G Base-T Multigig (1/2.5/5/10G) | - | - | - | - | 24 | - | - | 48 | 48 |
| 10G SFP+ | 2 | 4 | 4 | 4 | - | 4 | 4 | - | - |
| 25G SFP28 | - | - | - | - | 4 | - | - | 4 | 4 |
| 100GbE QSFP28 | - | 2 (Rear side) - Default for stacking | | | | | | | |
| Expansion module slots | - | | | | | | | | |
| Power-over-Ethernet ports | 8x 802.3bt Type-4 (90W) PoE | - | - | 24x 802.3at (30W) PoE | 24x 802.3bt Type-4 (90W) PoE | - | 48x 802.3at (30W) PoE | - | 48x 802.3bt Type-4 (90W) PoE |
| Power and cooling | | | | | | | | | |
| Max power consumption (watts) | 827 | 201 | 224 | 944 | 2740 | 212 | 1677 | 480 | 5344 |
| Power options | AC or DC* | | | | | | | | |
| Internal power supplies | 1 fixed | 2 hot swappable redundant power supplies. 1 PSU included, 2nd PSU optional. | | | | | | | |
| External power supplies/adapters | Optional* (extends PoE budget) | - | - | - | Optional* (extends PoE budget) | - | Optional* (extends PoE budget) | - | Optional* (extends PoE budget) |
| Airflow | I/O to power supply. Fixed fans. | I/O to power supply; Power supply to I/O options available with non-PoE RJ-45 models. Supports field replaceable fans with N+1 redundancy. | | | | | | | |
| VLANs | 4094 | | | | | | | | |
| VLAN support | Voice VLAN, Private Edge, Protocol and MAC-based, GVRP, 802.1x, Auto VLAN | | | | | | | | |
| Layer 2 and 3 | Layer 3 Advanced | | | | | | | | |
| Jumbo frames | 9216 bytes | | | | | | | | |
| IPv4/IPv6 routing | IPv4 and IPv6 functionality including BGP, VRF, BFD, OSPFv2/v3 | | | | | | | | |
| Multicast routing | PIM-SM, PIM-SSM | | | | | | | | |
| Rapid Deployment | Deploy switch configuration files, stacking commands, and firmware updates by simply inserting a USB device. | | | | | | | | |
| Management and security | | | | | | | | | |
| Switch security | AAA authorization, TACACS+ accounting and RADIUS support for comprehensive secure access support. | | | | | | | | |
| SNMP support | SNMPv1/2/3 | | | | | | | | |
| sFlow | Yes | | | | | | | | |
| Management | GUI access via http/https. CLI via console, Telnet or serial connection. | | | | | | | | |

* Roadmap

| Series | 1/1/10GbE (Layer 2/3 Switching): PowerSwitch N3000 Series | | | | |
|--------------------------------|--|------------|------------|-----------------------------------|------------|
| Overview | Power efficient and resilient 1/10GbE switches with advanced Layer 3 distribution and dense PoE+ for small to medium-sized businesses and office wiring closets. | | | | |
| Models (all sized 1RU) | N3024ET-ON | N3048ET-ON | N3024EF-ON | N3024EP-ON | N3048EP-ON |
| Performance | | | | | |
| Switch capacity (Gbps) | 212 | 260 | 212 | 212 | 260 |
| Forwarding capacity (Mpps) | 158 | 193 | 158 | 158 | 193 |
| Buffer size | 4MB | | | | |
| Ports | | | | | |
| 10/100/1000 Base-T | 24 | 48 | - | 24 | 48 |
| 5G Base-T | - | - | - | - | - |
| 1GbE (SFP) | 2 combo | 2 combo | 24 | 2 combo | 2 combo |
| 10GbE | 2 fixed SFP+ and 2 modular (auto-negotiate 1/10Gb) | | | | |
| Expansion module slots | 1 slot with 2 optional modules: 2 port SFP+, 2 port 10GBase-T | | | | |
| Power-over-Ethernet ports | - | | 24 PoE+ | | 48 PoE+ |
| Power and cooling | | | | | |
| Max. power consumption (watts) | 53.5 | 64.8 | 67.1 | 1287 | 2145 |
| AC power supplies | 2 hot swappable power supply bays, 1 PSU included | | | | |
| Redundant power | Optional (internal) | | | Yes, dependent upon configuration | |
| Airflow | I/O panel to PSU | | | | |
| Features | | | | | |
| Stacking | Stacks up to 12 using dedicated ports | | | | |
| VLANs | 4094 | | | | |
| VLAN support | Voice VLAN, Private Edge, Protocol and MAC-based, GVRP | | | | |
| Layer 2 and 3 | Layer 3 Advanced | | | | |
| Jumbo frames | 9216 bytes | | | | |
| IPv4/IPv6 routing | IPv4/IPv6, OSPFv3, VRRP, VRF, BGP, BFD, static routing | | | | |
| Multicast routing | PIM-SM, PIM-SSM | | | | |
| Rapid Deployment | Ready rails, deploy switch configuration files, stacking commands and firmware updates by simply inserting a USB device into the port. | | | | |
| Management and security | | | | | |
| Switch security | Strong passwords, password masking, management access control - privilege levels. RADIUS and TACACS+ support, 802.1x port-based authentication. | | | | |
| SNMP support | SNMPv1/2/3 | | | | |
| sFlow | Yes | | | | |
| Management | GUI access via http/https. CLI via console, Telnet, SSH | | | | |

* with external power supply

| Series | PowerSwitch N2200 Series | | | | PowerSwitch N1500 Series | | | | N1100 |
|--------------------------------|---|---|--------------------|---|---|-------|-------------------|---------|---------------------------------------|
| Overview | Power-efficient and resilient 1/2.5G Multigig switching solution with 30/60W PoE support, for mid-to-large enterprise access deployments. | | | | | | | | |
| Models (all sized 1RU) | N2224X | N2224PX | N2248X | N2248PX | N1524 | N1548 | N1524P | N1548P | N1108EP-ON |
| Performance | | | | | | | | | |
| Switch capacity (Gbps) | 480 | | 600 | | 128 | 176 | 128 | 176 | 24 |
| Forwarding capacity (Mpps) | 667 | | 833 | | 128 | 164 | 128 | 164 | 18 |
| Buffer size | 4MB | | | | 1.5MB | | | | 1.5MB |
| Ports | | | | | | | | | |
| 10/100/1000 Base-T | 1 Out of Band Management Port | | | | 24 | 48 | 24 | 48 | 8 |
| 1GbE | - | | | | - | | | | 2 |
| 2.5G Base-T | 24 | | 48 | | | | | | - |
| 10GbE | - | - | - | - | 4 SFP+ (auto-negotiate 1/10Gb) | | | | - |
| 25GbE (SFP28) | 4 | | | | | | | | - |
| 40GbE (QSFP+) | 2 | | | | | | | | - |
| Power-over-Ethernet ports | - | 12x30W, 12x60W | - | 24x30W, 24x60W | - | - | 24 PoE+ | 48 PoE+ | 8 |
| Power and cooling | | | | | | | | | |
| Max. power consumption (watts) | 238 | 1318 | 326 | 2486 | 30.2 | 44.6 | 871* | 1704* | 19.51 |
| AC power supplies | 1 | | | | | | | | 1 |
| Redundant power | 550W AC | 1050W internal pluggable and/or external MPS-1S or MPS-3S power shelf | 550W AC | 1600W internal pluggable and/or external MPS-1S or MPS-3S power shelf | External RPS-720 | | External MPS-1000 | | - |
| Airflow | IO/PS, PS to IO | IO to PS | IO to PS, PS to IO | IO to PS | I/O panel to PSU | | | | I/O to power supply; Pass through POE |
| Features | | | | | | | | | |
| Stacking | Stacks up to 12 using 40Gb user ports | | | | Up to 4 using SFP ports | | | | N/A |
| VLANs | 4094 | | | | 512 | | | | |
| VLAN support | Voice VLAN, Private Edge, Protocol and MAC-based, GVRP | | | | Voice VLAN, Private Edge, Protocol-based, Auto VLAN | | | | |
| Layer 2 and 3 | Layer 3 Standard | | | | Layer 2 with static routing | | | | Layer 2 only |
| IPv4/IPv6 routing | IPv4/IPv6, OSPFv2/v3 | | | | IPv4/IPv6 | | | | - |
| Multicast routing | PIM-SM, PIM-SSM | | | | PIM-SM, PIM-SSM | | | | |
| Rapid Deployment | Deploy switch configuration files, stacking commands and firmware updates by simply inserting a USB device into the port | | | | Yes | | | | |
| Management and security | | | | | | | | | |
| Switch security | Strong passwords, password masking, management access control - privilege levels. RADIUS and TACACS+ support, 802.1x port-based authentication. | | | | | | | | |
| SNMP support | SNMPv1/2/3 | | | | SNMPv1/2/3 | | | | |
| sFlow | Yes | | | | v1.3 draft 5 | | | | |
| Management | GUI access via http/https. CLI via console, Telnet, SSH | | | | GUI access via http/https. CLI via console, Telnet, SSH | | | | |

* with external power supply

CAMPUS WIRELESS

Ruckus Wireless Solutions

Dell EMC Ruckus Wireless product portfolio includes access points, wireless controllers, network controllers and software solutions to meet industry-specific needs and to address the most demanding use cases for large, medium and small enterprises and service provider segments. Find the Quick Reference Guide and more at DellTechnologies.com/Networking.



Dell EMC Ruckus Wireless Access Points

| Models | Overview |
|-------------------------------|--|
| R750 / R750 Unleashed | Built-in 8 spatial streams (4x4:4 in 5GHz, 4x4:4 in 2.4GHz) 802.11ax (Wi-Fi 6) Indoor Access Point for ultra-dense environments with built-in 2.5GbE port and IoT radios |
| R730 | Built-in 12 spatial streams (8x8:8 in 5GHz, 4x4:4 in 2.4GHz) 802.11ax Indoor Access Point for Ultra-high-density performance with built-in 2.5GbE/5GbE port and IoT radios |
| R720 | 802.11ac Wave-2 (Wi-Fi 5) 4x4:4 spatial stream IoT ready Indoor Wi-Fi Access Point with built-in 2.5GbE port for High - Dense Device Environments |
| R710 | 802.11ac Wave-2 (Wi-Fi 5) 4x4:4 spatial stream IoT ready Indoor Wi-Fi Access Point with built-in 2x1GbE ports for High - Dense Device Environments |
| R650 | Built-in 6 spatial streams (4x4:4 in 5GHz, 2x2:2 in 2.4GHz) 802.11ax Indoor Access Point for high to medium dense environments with built-in 2.5GbE port and IoT radios |
| R610 | 802.11ac Wave-2 (Wi-Fi 5) 3x3:3 spatial stream IoT ready Indoor Wi-Fi Access Point with built-in 2x1GbE ports for Medium - Dense Device Environments |
| R510 / R510 Unleashed | 802.11ac Wave-2 (Wi-Fi 5) 2x2:2 spatial stream IoT ready Indoor Wi-Fi Access Point with built-in 2x1GbE ports for Medium to low Dense Environments |
| R320 / R320 Unleashed | Indoor 802.11ac Wave 2 Wi-Fi Access Point with Multi-Gigabit Backhaul for Ultra-Dense Device Environments |
| Unleashed | 802.11ac Wave-2 (Wi-Fi 5) 2x2:2 spatial stream Indoor Wi-Fi Access Point with built-in 1x1GbE port for Low - Dense Device Environments |
| M510 | 802.11ac Wave-2 (Wi-Fi 5) 2x2:2 spatial stream IoT ready Indoor Wi-Fi Access Point with built-in 2x1GbE ports and LTE Backhaul |
| H510 | Wall-Mounted 802.11ac Wave 2 (Wi-Fi 5) 2x2:2 spatial stream Indoor Access Point and Switch with 5x1GbE ports |
| H320 | Wall-Mounted 802.11ac Wave 2 (Wi-Fi 5) 2x2:2 spatial stream Indoor Access Point and Switch with 1x1GbE and 2xFE ports |
| T750 Omni | Built-in 8 spatial streams (4x4:4 in 5GHz, 4x4:4 in 2.4GHz) 802.11ax Outdoor Access Point for ultra dense environments with built-in 2.5GbE port, GPS, IoT radios; IP-67 rated |
| T710 | 802.11ac Wave-2 4x4:4 SS Outdoor Wi-Fi Access Point with built-in 2x1GbE ports and fiber interface for High - Dense Environments; IP67 rated |
| T610 | 802.11ac Wave-2 4x4:4 spatial stream IoT ready Outdoor Wi-Fi Access Point with built-in 2x1GbE ports for High - Dense Environments; IP67 rated |
| T310 / T310d Unleashed | Entry-level 802.11ac Wave-2 2x2:2 spatial stream Outdoor Wi-Fi Access Point with built-in 1x1GbE port; IP67 rated; Integrated Antennas |
| P300-Pair | 802.11ac Wave-2 2x2:2 SS Outdoor Wi-Fi Access Points pair with built-in 1GbE port designed for point-to-point/multipoint bridge for long range backhaul |
| E510 | Small form-factor 802.11ac Wave-2 2x2:2 spatial stream Outdoor Wi-Fi Access Point with built-in 1x1GbE port; IP67 rated; External Antennas |

Ruckus Controllers

| Models | |
|--------------------------|--|
| ZoneDirector 1200 | Manages up to 150 APs and 4000 Clients per controller |
| SmartZone 100 | Manages up to 1024 APs and 25000 Clients per controller |
| SmartZone 300 | Manages up to 10000 APs and 100000 Clients per controller |
| Virtual SmartZone | Manages 1K-10K APs and 25K-100K Clients per vSZ controller |

Virtual SmartZone - Data Plane (vSZ-D)

Enables forwarding of user data traffic from Ruckus APs on a per WLAN basis through secure tunnels with support for NAT traversal. vSZ-D supports local breakout of traffic as well as packet forwarding to 3rd party wireless gateways with support for L2oGRE and QinQ tunnels. It also supports the services like DHCP, L3 Roaming and Lawful Intercept.

| Key Features | System Requirements |
|---------------------------------|---|
| Hypervisor support | VMware, KVM |
| Dynamic data plane scaling | Supports 1Gbps, 10Gbps or even higher throughput capacities |
| Integration with vSZ controller | 10 vSZ-D instances per vSZ instance 40 vSZ-D instances per vSZ cluster of 4 instances Each vSZ-D runs as an independent VM instance that is managed by the vSZ controller |
| Redundancy | Up to 4 instances in N+1 Active - Active mode |
| Flexible Configuration | Encrypted tunnel aggregation from all types of WLANs (Captive portal, 802.1x, HS2.0), VLANs, DHCP Relay, NAT traversal |
| Services | DHCP Server / NAT, Layer 3 Roaming, Lawful Intercept (CALEA) |
| Northbound Tunnels | L2oGRE, QinQ |
| Hypervisor support | VMWare Esxi 5.5 and later OR KVM (CentOS 7.0 64bit) |
| Processor | Intel Xeon E55xx and above |
| Number of cores | Minimum 3 cores per instance dedicated for data plane processing |
| Memory | Minimum 6 Gb memory per instance |
| HDD | Hard Disk 10 Gb per instance |

Ruckus Software

| Software | Description |
|-------------------------------------|---|
| SmartCell Insight (SCI) | Big Data Wi-Fi analytics and reporting engine purpose built to help Enterprises make informed business decisions regarding the operation of their Wi-Fi networks |
| Geo Redundancy | Access Point management license for high availability. Supported products (Standby mode only) |
| Split Tunnel | Manage corporate and local traffic by sending only corporate traffic to the controller and ensure that local traffic does not incur the overhead of the round trip to the controller, which decreases traffic on the WAN link and minimizes latency for local application traffic |
| CloudPath | SaaS platform that delivers secure wired and wireless network access for BYOD, guest users and IT-owned devices |
| Virtual SmartZone Data Plane | Offers secured tunneling of user data traffic that encrypts payload traffic, maintains flat network topology, enables mobility across L2 subnets, supports POS data traffic for PCI compliance, and offers differentiated per site policy control and QoS, etc. |
| URL Filtering** | URL filtering feature is used to block access to inappropriate websites. The Web pages available on the internet are classified into different categories, and those identified to be blocked can be configured based on available categories. Administrators can also create policies based on these categories, to allow or deny user access. |

** Available in Q4/CY2020

Comparison: Ruckus Wireless Indoor APs

| Part Number | R750 | R730 | R650 | R720 | R710 | R510 / R510 Unleashed | R320 / R320 Unleashed | R610 |
|--|---|--|--|---|---|---|---|---|
| Category | Indoor | Indoor | Indoor | Indoor | Indoor | Indoor | Indoor | Indoor |
| Description | Very High Performance Wi-Fi 6 4x4:4 Indoor Access Point with 3.5 Gbps HE80/40 Speeds and Embedded IoT | Ultra High Performance Wi-Fi 6 8x8:8 Indoor Access Point with 5.9 Gbps HE80/40 Speeds and Embedded IoT | High Performance Wi-Fi 6 4x4:4 Indoor Access Point with 3 Gbps HE80/40 Speeds and Embedded IoT | Indoor 802.11ac Wave 2 Wi-Fi Access Point with Multi-Gigabit Backhaul for Ultra-Dense Device Environments | Indoor 802.11ac Wave 2 Wi-Fi Access Point for Ultra-Dense Device Environments | Indoor 802.11ac Wave 2 Wi-Fi Access Point for Dense Device Environments | Indoor 802.11ac Wave 2 Wi-Fi Access Point | Indoor 802.11ac Wave 2 Wi-Fi Access Point for Dense Device Environments |
| General Specifications | | | | | | | | |
| Antenna Patterns, per band | 4000+ | 4000+ | 4000+ | 4000+ | 4000+ | 64 | 64 | 512 |
| Antenna Gain | Up to 3 dBi | Up to 2 dBi | Up to 3 dBi | Up to 3 dBi | Up to 3 dBi | Up to 3 dBi | Up to 3 dBi | Up to 3 dBi |
| BeamFlex | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| ChannelFly | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Concurrent Users | 1024 | 1024 | 512 | 512 | 512 | 512 | 256 | 512 |
| Controller Support | SmartZone, ZoneDirector | SmartZone, ZoneDirector | SmartZone, ZoneDirector | SmartZone, ZoneDirector | SmartZone and ZoneDirector | SmartZone, ZoneDirector, Unleashed | SmartZone, ZoneDirector, Unleashed | SmartZone, ZoneDirector |
| Ethernet Ports | 1 x 1GbE and 1 x 2.5GbE | 1x 1/2.5/5 Gb/s 1x 10/100/1000 Mb/s | 1 x 1GbE and 1 x 2.5GbE | 1 x 1GbE and 1 x 2.5GbE | 2 x 1GbE | 2 x 1GbE | 1 x 1GbE | 2 x 1GbE |
| IoT Ready | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes |
| PD-MRC | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes |
| PHY Rate at 2.4 GHz, maximum | 1148 Mb/s | 1148 Mb/s | 574 Mb/s | 600 Mb/s | 600 Mb/s | 300 Mb/s | 300 Mb/s | 450 Mb/s |
| PHY Rate at 5 GHz, maximum | 2400 Mb/s | 2400 Mb/s | 2000 Mb/s | 1733 Mb/s | 1733 Mb/s | 867 Mb/s | 867 Mb/s | 1300 Mb/s |
| Radio Chains:Streams | 4x4:4 SU-MIMO & MU-MIMO | 8x8:8 SU-MIMO & MU-MIMO | 4x4:4 (5 GHz) 2x2:2 (2.4 GHz) | 4x4:4 SU-MIMO & MU-MIMO | 4x4:4 SU-MIMO 4x4:3 MU-MIMO | 2x2:2 | 2x2:2 | 3x3:3 |
| Rx Sensitivity at 5 GHz | -102 dBm | -101 dBm | -98 dBm | -104 dBm | -104 dBm | -103 dBm | -101 dBm | -100 dBm |
| Rx Sensitivity at 2.4 GHz | -102 dBm | -103 dBm | -93 dBm | -104 dBm | -104 dBm | -103 dBm | -101 dBm | -100 dBm |
| SmartMesh | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes |
| USB | USB 2.0 | USB 2.0 | USB 2.0 | USB 2.0 | USB 2.0 | USB 2.0 | | USB 2.0 |
| Wi-Fi Interface Standard | IEEE 802.11a/b/g/n/ac/ax | IEEE 802.11a/b/g/n/ac/ax | IEEE 802.11a/b/g/n/ac/ax | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 |
| Wi-Fi Interface Standard at 2.4 GHz | 802.11ax | 802.11ax | 802.11ax | 802.11n | 802.11n | 802.11n | 802.11n | 802.11n |
| Wi-Fi Interface Standard at 5 GHz | 802.11ax | 802.11ax | 802.11ax | 802.11ac | 802.11ac | 802.11ac | 802.11ac | 802.11ac |
| Environmental Specifications | | | | | | | | |
| Operating Temperature | 0 °C to +50 °C (+32 °F to +122 °F) | 0 °C to +50 °C (+32 °F to +122 °F) | 0 °C to +40 °C (+32 °F to +104 °F) | -10 °C to +50 °C (+25 °F to +122 °F) | -4 °C to +60 °C (-14 °F to +140 °F) | 0 °C to +50 °C (+32 °F to +122 °F) | 0 °C to +40 °C (+32 °F to +104 °F) | 0 °C to +40 °C (+32 °F to +104 °F) |

Comparison: Ruckus Wireless Indoor APs

| Part Number | H510 | H320 | M510 |
|-------------------------------------|--|---|--|
| Category | Indoor | Indoor | Indoor |
| Description | Wall-Mounted 802.11ac Wave 2 Wi-Fi Indoor Access Point and Switch for Dense Environments | Wall-Mounted 802.11ac Wave 2 Wi-Fi Indoor Access Point and Switch | Mobile Indoor 802.11ac Wave 2 2x2:2 Wi-Fi Indoor Access Point (AP) with LTE Backhaul |
| General Specifications | | | |
| Antenna Patterns, per band | 4 | 4 | 64 |
| Antenna Gain | Up to 1 dBi | Up to 3 dBi | Up to 3 dBi |
| BeamFlex | Yes | Yes | Yes |
| ChannelFly | Yes | Yes | Yes |
| Concurrent Users | 100 | 100 | 512 |
| Controller Support | SmartZone, ZoneDirector | SmartZone, ZoneDirector | SmartZone, ZoneDirector |
| Ethernet Ports | 5 x 1GbE | 1 x 1GbE 2 x 10/100MbE | 2 x 1GbE ports RJ45 |
| IoT Ready | Yes | No | Yes |
| PD-MRC | Yes | Yes | Yes |
| PHY Rate at 2.4 GHz, maximum | 300 Mb/s | 150 Mb/s | 300 Mb/s |
| PHY Rate at 5 GHz, maximum | 867 Mb/s | 867 Mb/s | 867 Mb/s |
| Radio Chains:Streams | 2x2:2 | 2x2:2 MU-MIMO 1x1:1 SU-MIMO | 2x2:2 SU-MIMO 2x2:2 MU-MIMO |
| Rx Sensitivity at 5 GHz | -96 dBm | -96 dBm | -95 dBm |
| Rx Sensitivity at 2.4 GHz | -99 dBm | -99 dBm | -101 dBm |
| SmartMesh | Yes | No | Yes |
| USB | USB 2.0 | | USB 2.0 |
| Wi-Fi Interface Standard | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 |
| Wi-Fi Interface Standard at 2.4 GHz | 802.11n | 802.11n | 802.11n |
| Wi-Fi Interface Standard at 5 GHz | 802.11ac | 802.11ac | 802.11ac |
| Environmental Specifications | | | |
| Operating Temperature | 0 °C to +40 °C (+32 °F to +104 °F) | 0 °C to +40 °C (+32 °F to +104 °F) | -40 °C to +65 °C (-40 °F to +149 °F) |

Comparison: Ruckus Wireless Outdoor APs

| Part Number | T750 Omni | T710 | T610 | E510 | T310 / Unleashed T310d | P300 |
|-------------------------------------|---|--|---|---|---|--|
| Category | Outdoor | Outdoor | Outdoor | Outdoor | Outdoor | Outdoor |
| Description | High-end Wi-Fi 6 (802.11ax) dual concurrent AP with MU-MIMO and BeamFlex+ | High-end 802.11ac Wave 2 dual concurrent AP with BeamFlex+ | Mid-range 802.11ac Wave 2 dual concurrent AP with BeamFlex+ | Embedded 802.11ac Outdoor Wave 2 WiFi AP with External BeamFlex+ Antennas | Entry-level 802.11ac Wave 2 outdoor AP series with integrated BeamFlex+ | Outdoor 2x2:2 5GHz 802.11ac point-to-point/multipoint bridge for long range backhaul |
| General Specifications | | | | | | |
| Antenna Patterns, per band | 4000+ | 4000+ | 4000+ | 64 | 64 | NA |
| Antenna Gain | Up to 3 dBi | Up to 3 dBi for Omni | Up to 3 dBi for Omni | Up to 3 dBi | Up to 3 dBi for Omni | Up to 14 dBi |
| BeamFlex | Yes | Yes | Yes | Yes | Yes | No |
| ChannelFly | Yes | Yes | Yes | Yes | Yes | No |
| Concurrent Users | 1024 | 512 | 512 | 512 | 512 | NA |
| Controller Support | SmartZone, ZoneDirector | SmartZone, ZoneDirector | SmartZone, ZoneDirector | SmartZone, ZoneDirector | SmartZone, ZD, Unleashed for T310d | WebUI/CLI |
| Ethernet Ports | 1 x 1 GbE, 1 x 2.5 GbE | 2 x 1GbE | 2 x 1GbE | 1 x 1GbE | 1 x 1GbE | 1 x 1GbE |
| Fiber Interface | Yes | Yes | No | No | No | No |
| IoT Ready | Yes | No | Yes | Yes | Yes | No |
| PD-MRC | Yes | Yes | Yes | Yes | Yes | No |
| Max PHY Rate at 2.4G | 1148 Mb/s | 600 Mb/s | 600 Mb/s | 300 Mb/s | 300 Mb/s | NA |
| Max PHY Rate at 5 G | 2400 Mb/s | 1733 Mb/s | 1733 Mb/s | 867 Mb/s | 867 Mb/s | 867 Mb/s |
| Radio Chains:Streams | 4x4:4 | 4x4:4 | 4x4:4 | 2x2:2 | 2x2:2 | 2x2:2 |
| Rx Sensitivity at 5 GHz | -103 dBm | -104 dBm | -104 dBm | -101 dBm | -101 dBm | -96 dBm |
| Rx Sensitivity at 2.4G | -103 dBm | -104 dBm | -104 dBm | -101 dBm | -101 dBm | NA |
| SmartMesh | Yes | Yes | Yes | Yes | Yes | No |
| USB | USB 2.0 | | USB 2.0 | USB 2.0 | USB 2.0 | NA |
| Wi-Fi Standard | IEEE 802/11a/b/g/n/ac/ax | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/b/g/n/ac Wave 2 | IEEE 802.11a/n/ac |
| Wi-Fi Standard at 2.4G | 802.11ax | 802.11n | 802.11n | 802.11n | 802.11n | NA |
| Wi-Fi Standard at 5G | 802.11ax | 802.11ac | 802.11ac | 802.11ac | 802.11ac | 802.11ac |
| Environmental Specifications | | | | | | |
| Operating Temperature | -40 °C to +65 °C (-40 °F to +149 °F) | -40 °C to +65 °C (-40 °F to +149 °F) | -40 °C to +65 °C (-40 °F to +149 °F) | -40 °C to +70 °C (-40 °F to +158 °F) | -40 °C to +65 °C (-40 °F to +149 °F) -20 °C to +65 °C for T310c | -40 °C to +65 °C (-40 °F to +149 °F) |
| Ingress Protection | IP67 | | | | | |

Comparison: Ruckus Wireless Controllers

| Feature | SmartZone 100 | SmartZone 300 | Virtual SmartZone-E | Virtual SmartZone-H | ZoneDirector 1200 | Unleashed |
|--|-------------------------------|--|--|--|--|--|
| Number of APs supported | Up to 1,024 / 3,000 cluster | Up to 10,000 / 30,000 cluster | 1,024 / 3K with cluster | 10K / 30K with cluster | Up to 150 | Up to 128 |
| Clients | Up to 25,000 / 60,000 cluster | Up to 100,000 / 450,000 per cluster | 25K / 60K per cluster | 100K / 300K per cluster | Up to 4,000 | Up to 2,048 |
| Ethernet ports | 1GE Model: 4 GbE ports | 6 x 1GbE ports, 4 x 10GbE ports | 1 vNIC | 1 or 3 vNIC | 2 Ethernet ports, auto MDX, autosensing 1GbE | Refer to selected AP data sheet |
| Authentication support | 802.1X, MAC address | 802.1x, Local database, Active Directory, RADIUS, LDAP | 802.1x, Local database, Active Directory, RADIUS, LDAP | 802.1x, Local database, Active Directory, RADIUS, LDAP | 802.1X, Local database, Active Directory, RADIUS, LDAP | 802.1X, Local database, Active Directory, RADIUS, LDAP |
| Guest networking/captive portal | Yes | Yes | Yes | Yes | Yes | Yes |
| DHCP server | External or Assigned | External or Assigned | External or vSZ-D assigned | External or vSZ-D assigned | Yes | Yes |
| AP discovery and control | L2 / L3 | L2 / L3 | L2 / L3 | L2 / L3 | L2 / L3 | L2 |
| SSID/WLAN support | 2,048 / 2,048 cluster | 6,144 per SZ-300 | 2,048 | 6,144 | 256 | 16 |
| Management Interface | Web GUI, CLI | Web GUI, CLI | Web GUI, SCI | Web GUI, SCI | Web GUI | Web GUI, CLI |
| Management protocol(s) | SNMP v3, RESTful JSON | SNMP v3, RESTful JSON | SNMP v3 | SNMP v3 | SNMP v3 | SNMP v3 |
| VLAN support | Dynamic VLANs | Dynamic VLANs | Dynamic VLANs | Dynamic VLANs | Dynamic VLANs | Yes |
| Data Plane | Tunneling or local breakout | Tunneling or local breakout | Tunneling or local breakout | Tunneling or local breakout | Tunneling or local breakout | Local breakout |
| Power supply | DC or AC | DC or AC | NA | NA | DC or AC | PoE |
| Fans | Redundant | Six redundant, field swappable fans in three sets | NA | NA | NA | NA |

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