

# Advantages of RUCKUS ICX switches in a modern network

March 2025

RUCKUS ICX<sup>®</sup> switches redefine network performance and scalability with their cutting-edge design and enterprise-class functionality. Engineered to deliver exceptional connectivity from edge to core, these switches offer unparalleled flexibility in addition to a wide array of stackable options. They also provide robust power over Ethernet (PoE) capabilities that support the latest generation of access points (APs) and PoE devices.

RUCKUS ICX switches are built to meet the demands of modern networks—providing high performance, reliability and advanced features at an affordable price. Built for small businesses and large enterprises alike, RUCKUS ICX switches empower organizations to build resilient, future-proof networks that drive efficiency and innovation.

RUCKUS ICX 7150, 8100 and 8200 series of switches are available in the following two formats:

- **Compact switches.** RUCKUS ICX compact switches feature eight ports that support everything from legacy to modern APs, including Wi-Fi<sup>®</sup> 6 and Wi-Fi 7 standards. They provide up to 90 watts of PoE power per port, with a total power budget of 240 W, and they support Ethernet speeds of 1/2.5/5/10 Gbps.
- **Standard switches.** RUCKUS ICX standard switches are available in 24- and 48-port models, with select variants supporting multi-gigabit Ethernet speeds of 1/2.5/5/10 Gbps. Additionally, certain ICX models feature dual-purpose ports that can be configured for either uplink or stacking, which can support 1, 10, 25, 40 or 100 GbE, depending on the model. These switches are available with or without PoE+ power options, and some models offer silent operation through fanless designs or the ability to disable fans—making them ideal for deployment in noise-sensitive or out-of-the-closet environments.



## How RUCKUS ICX switches enhance modern networks

The following are some key features that make ICX switches stand out as powerful and impactful choices for today's networks:

### 1 Stackable architecture

RUCKUS ICX switches support a flexible, stackable architecture that allows multiple switches to be interconnected and managed as a single entity. This design provides scalability and simplifies network management, making it easy to expand network capacity as needed.

Benefits of stackable architecture:

- **Flexibility:** ICX platforms do not require special-purpose cables for stacking. Stacking is supported over **standard SFP, QSFP or Ethernet ports**—eliminating the need for proprietary cables, thereby reducing costs. In addition, unlike proprietary cable-based stacking that requires switches to be placed in close proximity, ICX switches can be stacked even when deployed in different locations.



- **Efficient PoE power distribution:** When stacked in different locations, RUCKUS ICX switches will still efficiently manage PoE power distribution to APs and endpoints. However, longer Ethernet cable runs can cause voltage drop and power loss, which can affect device performance.
- **Optimized multi-gig Ethernet performance:** Multi-gig Ethernet (2.5/5/10G) requires greater signal integrity, and longer cable runs may introduce increased attenuation and crosstalk, which can potentially impact network performance.
- **Seamless software upgrades:** In-Service Software Upgrade (ISSU) enables software updates without traffic disruption, providing continuous network operations.
- **High availability and failover:** Automatic failover to standby switch offers uninterrupted network performance in case of a master stack controller failure.
- **Hot-swappable design:** ICX switches can be added or removed from a stack without causing downtime, which helps maintain uninterrupted network operations.
- **Superior scalability:** ICX switches can support up to 12 switches per stack, which delivers 50% more ports than the industry standard eight-switch limit imposed by most other manufacturers.

## 2 High availability

Today's enterprise networks handle a growing number of connected devices, continuously transmitting data. With users demanding 100% uptime and constant cloud access, networks must be highly scalable and fault tolerant. RUCKUS Networks offers **Multi-Chassis Trunking (MCT)** to meet these evolving demands.

MCT is an alternate solution to Spanning Tree Protocol (STP), which provides active-active connectivity. In traditional networks when multiple switches are connected, STP is configured to avoid network loops. This protocol is useful but

can also be vulnerable to misconfigurations that can crash the switch and bring down the network. MCT resolves these concerns at the core and distribution level.

- MCT allows users to build a redundant, highly available, load balanced, and highly resilient active-active network at the distribution and core layers.
- All ports in an MCT topology are forwarding, thus providing efficient usage of network bandwidth.
- MCT inherits all the benefits of a link aggregation group (LAG) by allowing multiple physical links to function as a single logical link. As a result, in the event of a link or device failure, traffic disruption time is reduced to sub-seconds.
- Since MCT links are part of a LAG, data is load-shared across all member links. This creates a balanced network and maintains the same level of resiliency, with redundant paths available at all times.

## 3 PoE capabilities

RUCKUS ICX switches offer robust PoE capabilities, supporting PoE+ and Power over HDBaseT (PoH) standards. This allows switches to power a wide range of devices, including wireless APs, IP cameras and other IoT devices directly through the network cable—reducing the need for additional power sources.

- During PoE negotiations, the connected device communicates its power class and requirements to the switch using Link Layer Discover Protocol (LLDP) Type-Length-Value (TLV) fields. Based on this information, the switch allocates the appropriate amount of power. RUCKUS ICX switches can support up to eight PoE power classes—delivering compatibility with a wide range of powered devices.
- Our Dynamic PoE technology allows ICX switches to budget the power allocation based on the consumption of the connected power devices, not the class or requested PoE amount.
- RUCKUS ICX switches maximize efficiency by optimizing power usage—delivering precisely the amount of power each device requires and reducing unnecessary energy consumption.
- The Dynamic PoE feature adjusts power allocation in real time as device power needs change (e.g., when devices enter low-power mode or power up a new function such as pan, tilt, zoom [PTZ] on a camera). This makes ICX switches ideal for environments with varying or unpredictable power demands.

- By conserving power and avoiding over-allocation, ICX switches can support more PoE devices from the same power budget. This is particularly beneficial in dense deployment environments such as classrooms, offices and conference rooms that support many powered endpoints.

#### 4 Performance

Designed to support high-bandwidth applications, RUCKUS ICX switches offer multigigabit connectivity options that offer optimal performance for demanding environments where high data rates and low latency are critical.

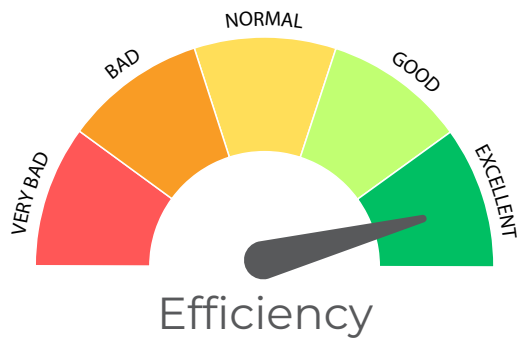
- RUCKUS ICX Z-Series switches are purpose-built to support Wi-Fi 6 and Wi-Fi 7 APs, delivering the performance and power required for next-generation wireless networks.
- These switches support the IEEE 802.3bz standard, providing 2.5 GbE or 2.5/5/10 GbE ports to connect multigigabit APs at significantly increased data speeds.
- The ICX 8200 Series raises the bar with advanced capabilities, including up to 8X 25 GbE ports for uplinks or stacking, PoE++ (802.3bt) support, and VXLAN functionality for network virtualization.

#### 5 Security

RUCKUS ICX switches come equipped with advanced security features, including support for IEEE 802.1X network access control, MACsec encryption with 128-bit or 256-bit support (depending on the model), and advanced threat detection and mitigation capabilities. This helps secure the network environment—protecting against unauthorized access and potential threats. RUCKUS ICX switches also feature a number of other safeguards:

- Support flexible authentication, allowing multiple authentication mechanisms on the same port to enable secure connectivity for different user types and devices based on predefined policies. They support the following authentication methods on switch ports:
    - 802.1X (port-based authentication), which secures network access for enterprise users by requiring credentials before granting access
    - MAC Authentication Bypass (MAB), which enables seamless authentication for IoT devices and other endpoints that don't support 802.1X
    - Web Authentication (Captive Portal), which redirects users to a login portal for authentication before granting network access
    - Multi-factor and role-based authentication, which supports multiple authentication methods on a single port, assigning network access based on user roles and policies.
- This flexible authentication approach helps secure seamless network access for enterprise users, IoT devices and guest users while maintaining strong access control and compliance.
- Equipped with advanced threat detection and mitigation capabilities, which can ward off denial-of-service (DoS) attacks to maintain continuous network operations and protect against malicious activities. Some key protection mechanisms include:
    - Access Control Lists (ACLs), which block malicious traffic by filtering packets based on IP, MAC, VLAN or protocol rules, and prevent unauthorized access as well as restrict traffic flow to critical resources
    - Rate limiting and storm control, which limit broadcast, multicast and unknown unicast traffic—preventing network congestion caused by DoS floods—and protect against ping floods, SYN floods and UDP amplification attacks
    - CPU protection policies (CPP), which protect the switch's control plane from excessive traffic so it remains operational during high-traffic DoS attempts
    - Port security and MAC limiting, which restricts the number of MAC addresses per port to prevent MAC flooding attacks used to overwhelm switch memory
  - Offer secure management interfaces, including SSH, SNMPv3 and HTTPS to keep network management communications encrypted and protected from unauthorized access.
  - Provide a comprehensive set of access layer security features to protect network access points from unauthorized users, attacks and policy violations. These security mechanisms allow only authenticated users and devices to connect while safeguarding against network threats such as:
    - DHCP snooping and IP source guard, which prevent rogue DHCP servers from assigning unauthorized IP addresses to endpoints. IP source guard (IPSG) blocks devices trying to use spoofed or manually configured IP addresses that don't match DHCP records; this prevents attacks like IP address hijacking and source IP spoofing

- Dynamic ARP inspection (DAI), which averts man-in-the-middle (MITM) attacks and ARP spoofing, where attackers send fake ARP messages to intercept or disrupt network traffic. DAI inspects every ARP packet using the DHCP Snooping binding table, blocking those with mismatched MAC-IP pairing to prevent attackers from impersonating legitimate devices or gateways
- Deliver enterprise-grade functionality at a competitive price; they deliver excellent return on investment (ROI) by combining advanced features, high performance and scalability without the premium costs often associated with traditional enterprise networking solutions
- Integrate seamlessly with RUCKUS management and control platforms such as cloud-based RUCKUS One®, controller-based SmartZone™ and RUCKUS Unleashed™; these solutions provide centralized management, monitoring and troubleshooting capabilities—streamlining network operations and delivering unified control across wired and wireless infrastructure



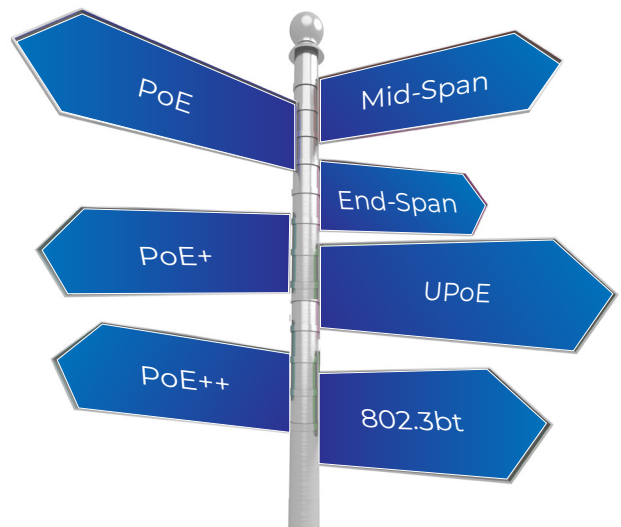
- Consume up to 40% less power compared to similar products; this energy efficiency design reduces operating expenses (OpEx) and total cost of ownership (TCO) while also contributing to environmental sustainability through:
  - Optimized power supplies that offer appropriate power that's not greater than necessary for a given configuration
  - Power reduction features that allow users to manage and reduce power consumption based on their specific needs and network configuration

## Switches for Wi-Fi 7 deployment

The evolution of wireless networking has reached a pivotal milestone with the introduction of Wi-Fi 7, which promises unprecedented speeds, efficiency and reliability. However, to fully harness these advancements, integrating robust switching solutions is essential. RUCKUS ICX switches play a critical role in optimizing Wi-Fi 7 deployments by offering seamless data transmission, reducing congestion, providing optimal power delivery and enhancing overall network performance.

RUCKUS ICX switches are designed to complement and maximize Wi-Fi 7 network through:

- **High-speed connectivity:** ICX switches offer multiple multigigabit ports to support APs with multigigabit capacities so that wired infrastructure can support the Wi-Fi 7 increased data rates.
- **Scalability:** The advanced stacking capabilities allow for seamless expansion of network capacity, which is crucial for accommodating the growing number of devices in Wi-Fi 7 environments.
- **Advanced features:** Equipped with Layer 3 routing, virtualization and Quality of Service (QoS) functionalities, ICX switches optimize traffic flow, segment networks effectively, and prioritize critical applications, which enhance overall network performance.
- **PoE and PoH support:** High PoE budgets are supported through PoE+ and PoE++ standards. ICX switches can deliver up to 95 W per port, which offers seamless power and data transmission for high-power AV equipment, digital signage and interact displays over standard Ethernet cables—thus, simplifying deployments.



## Overcoming Wi-Fi 7 implementation challenges

Deploying Wi-Fi 7 switching solutions involves being prepared to address possible network considerations:

- **Avoiding bottlenecks:** Network architecture must be designed to support higher data rates and increase device densities.
- **Promoting compatibility:** Switches must work with existing network components and allow for future upgrades.
- **Providing security:** As network complexity increases, robust security measures will need to be implemented to guard against potential cyber-threats.

By proactively addressing these challenges, organizations can deploy Wi-Fi 7 networks that are both efficient and secure—providing enhanced user experiences and supporting advanced applications.

## Selecting the right Wi-Fi 7 switches

RUCKUS ICX 8200 and 7550 switches are the ideal choice for Wi-Fi deployments due to their multigigabit support, high PoE++ power output and scalable architecture. They can efficiently power next-gen Wi-Fi 7 APs as well as high-resolution surveillance cameras and other power-intensive IoT devices. Their high-bandwidth 2.5G/5G/10G ports deliver seamless data transmission and eliminate bottlenecks in high-density environments. Plus, their features such as hot-swappable power supplies, stacking capabilities and advanced security are what make them future-proof, resilient, and easy to deploy and manage in today's enterprise networks.



## About RUCKUS Networks

RUCKUS Networks builds and delivers purpose-driven networks that perform in the demanding environments of the industries we serve. Together with our network of trusted go-to-market partners, we empower our customers to deliver exceptional experiences to the guests, students, residents, citizens and employees who count on them.

[www.ruckusnetworks.com](http://www.ruckusnetworks.com)

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CO-120126-EN (05/25)

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