

Enabling Services in the RAN

Complete Pre-Integrated Mobile Edge Computing Solution by Juniper Networks and Saguna

Challenge

Today's mobile infrastructures need to be built to scale, deliver high volumes of data and video, and provide fast response times to multiple devices.

Solution

The Juniper Networks-Saguna joint Mobile Edge Computing solution combines Juniper's high-performance routers and switches with Saguna Open-RAN MEC platform to deliver MEC functionality with the underlying system elements required for operation within the demanding RAN environment.

Benefits

- Reduce time-to-market and investment for MEC development and deployment
- Scale your network and reduce latency to enable IoT device connectivity, tactile Internet applications, and more
- Expand your offerings with an SDN-enabled open platform that provides fast and simple introduction of new MEC applications and services
- Adopt a future-proof mobile network architecture for 4G networks and beyond

Two interconnected trends will shape the mobile industry over the next decade: the exponential growth in mobile traffic, and the explosion of connected devices—the Internet of Things (IoT). To support these trends in today's 4G and next-generation 5G networks, mobile infrastructures will need to scale effectively and deliver higher volumes of mobile data, especially video. They will also need to provide fast response times to a multitude of mobile devices and tactile Internet applications.

The Challenge

Mobile Edge Computing (MEC) is a European Telecommunications Standardization Institute (ETSI) standard initiative backed by industry-leading mobile operators. It allows end-user applications to get high bandwidth and ultra-low latency by enabling service providers to deploy services closer to the edge network using a Network Functions Virtualization (NFV)-based cloud computing environment in the mobile Radio Access Network (RAN). This brings cloud computing capabilities much closer to mobile users in comparison to traditional architectures where computational power is centralized at the Core Network or Data Center.

The MEC environment also transforms the RAN into a Service-Aware RAN (SRAN) by providing real-time radio network information such as subscriber location, cell load, etc. This information can be used by applications and services to improve network utilization, optimize content delivery, and differentiate the mobile broadband experience.

The Juniper Networks-Saguna Joint MEC Solution

Juniper Networks and Saguna have joined forces to do a Proof Of Concept (POC) and bring to market a complete, pre-integrated MEC platform. The combined solution delivers MEC functionality with the underlying system elements required for operation within the demanding RAN environment. These include IPsec security, L4-L7 firewall, Network Address Translation (NAT), scalable routing, and high reliability hardware. This approach creates a fully operational MEC platform that can dramatically reduce the time-to-market for MEC deployments and the development of MEC applications.

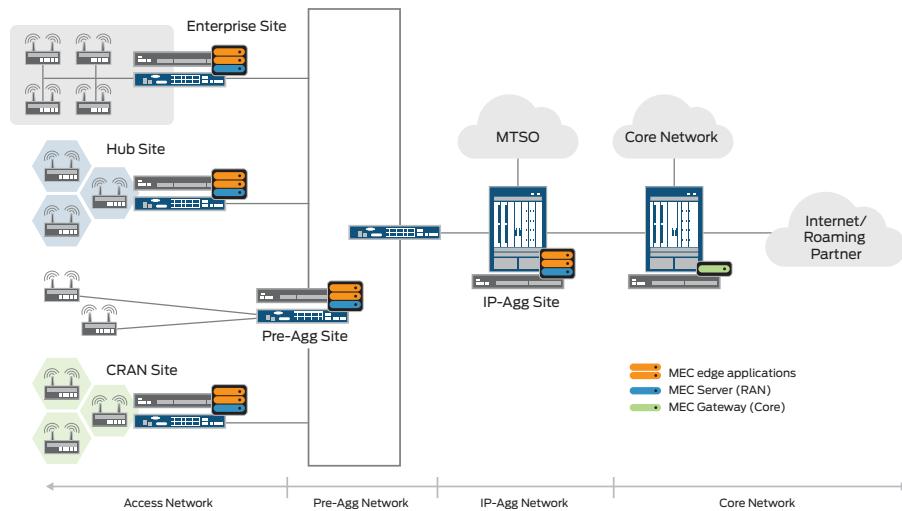


Figure 1. Examples of MEC enablement in a service provider network

Solution Components

Juniper Components

Juniper Networks® ACX Series Universal Access Routers, QFX Series switches, and MX Series 3D Universal Edge Routers can run a hypervisor environment within them. This allows the MEC platform service, API layers, and MEC edge applications to run within the Juniper hardware in a pre-aggregation/IP aggregation environment. The MEC edge applications can also run on an external x86-based device.

Saguna

To ensure security within the sensitive RAN environment, Juniper Networks vSRX virtual firewall acts as a security gateway for terminating IPsec tunnels from the RAN and an originator to the centralized security gateway. The product also provides firewall/NAT functions for any user traffic that needs to be offloaded locally.

Juniper Networks Contrail SDN controller enables mobile operators to manage the MEC platform and edge applications from a central location. New applications and services can be enabled or disabled on demand, taking advantage of the benefits provided by an SDN overlay network.

Figure 1 highlights the areas where MEC can be deployed within a service provider mobile network and also the placement of the ACX Series, QFX Series, and MX Series hardware platforms.

Figure 2 shows the role of vSRX and Contrail within the MEC architecture.

Saguna Open-RAN MEC Platform

Saguna Open-RAN MEC platform is a fully virtualized software solution. The MEC standard-based platform creates an open ecosystem for third-party MEC applications enabling mobile operators to expand their offerings as new MEC services are brought to market. It also supports user mobility and core functionality, including charging, policy control, and lawful interception to ensure seamless integration into existing mobile network architectures.

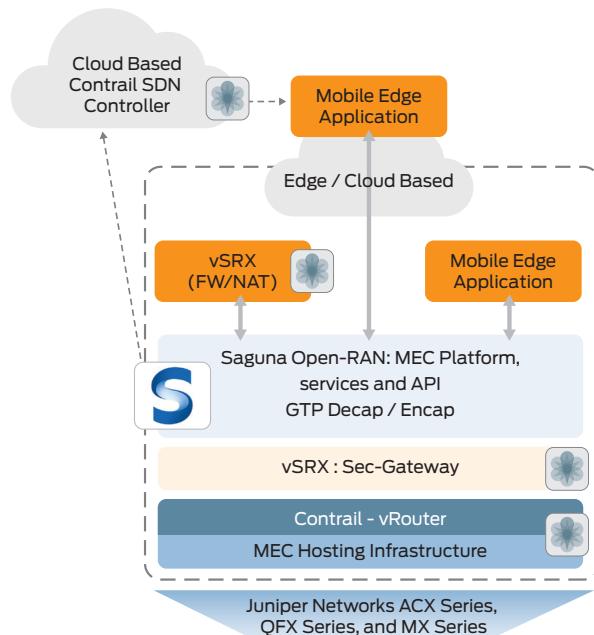


Figure 2. Saguna and Juniper Networks combine to create a robust MEC architecture

Sample Use Cases

Consumer oriented services:

- Content acceleration—Leverage the RAN-based platform to store popular content in proximity to mobile users using caching and CDN MEC applications.

Operator and third-party services:

- Distributed denial of service (DDoS)—Employ cybersecurity as close as possible to the source to maximize network security. As peer-to-peer mobile traffic increases, the MEC server will become a critical junction for mobile network security.
- Tactile IoT—Operate and control delay-sensitive services directly from the RAN to minimize response time.

Network performance and quality of experience (QoE) improvements:

- VoLTE monitoring—Gain real-time visibility into the performance of critical network components (e.g., the radio access, transport network, etc.) to ensure high-quality, low jitter Voice over LTE (VoLTE) call quality.

Summary—Juniper and Saguna Enable Services in the RAN

Juniper Networks and Saguna have joined forces to bring to market a complete, pre-integrated Mobile Edge Computing platform, one that delivers MEC functionality with the underlying system elements required for operation within the demanding RAN environment. This joint solution allows end-user applications to get high bandwidth and ultra-low latency by enabling service providers to deploy services closer to the edge network using an NFV-based cloud computing environment in the mobile RAN. It reduces time-to-market and investment for the development and deployment of your MEC solution. It enables mobile operators to quickly deploy new revenue-generating services for content delivery, Internet of Things (IoT), retail and enterprise applications. It scales your network and reduces latency to enable IoT device connectivity and tactile Internet applications. And, it enables the adoption of a future-proof mobile network architecture for 4G networks and beyond.

Next Steps

To learn more about the Juniper-Saguna joint Mobile Edge Computing solution, please contact your Juniper account representative.

About Saguna

Saguna Networks, a pioneer of Mobile Edge Computing (MEC), makes mobile broadband faster, simpler, and more economical with smart NFV software solutions. Saguna Open-RAN Mobile Edge Computing (MEC) platform creates an open ecosystem and growth engine inside the mobile radio access network (RAN); in close proximity to mobile users. For more information, follow us [@sagunenet](https://www.saguna.net) or visit our website www.saguna.net.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

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