SD-WAN *Multiple Uplink Control*

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Introduction

SD-WAN stands for software-defined wide area network, which uses software-defined networking (SDN) to manage and operate WAN connections between enterprise networks, branch offices, data centers, and the cloud. The goal of SD-WAN is to simplify the management and operation of the WAN by decoupling the networking hardware from its control mechanism. Gartner defines SD-WAN as follows:

"SD-WAN solutions provide a replacement for traditional WAN routers and are agnostic to WAN transport technologies. SD-WAN provides dynamic, policy-based, application path selection across multiple WAN connections and supports service chaining for additional services such as WAN optimization and firewalls."

The RG Nets rXg is a robust solution that ticks all the boxes defined by Gartner and delivers a comprehensive SD-WAN experience for network operators.

According to Gartner, there are four essential elements that a successful SD-WAN solution must possess. These include:

FLEXIBLE CONNECTIVITY OPTIONS:

– The solution must be able to support various connection types, such as last-mile fiber, high-speed cellular, and others. This ensures that organizations can pick and choose the best connection type to meet their specific needs.

DYNAMIC PATH SELECTION:

– The solution must have the capability to dynamically select the best path for traffic based on factors such as network conditions, load balancing, and resiliency.

USER-FRIENDLY MANAGEMENT:

– The solution must have a simple and intuitive interface that makes it easy for administrators to configure and manage the SD-WAN network. In some of their documents Gartner specifically mentions zero touch provisioning and bulk updates across multiple sites

INTEGRATION WITH OTHER SERVICES:

– The solution must support VPNs and allow the integration of third-party services, such as WAN optimization, to enhance its functionality.

Flexible Connectivity Options

The rXg is compatible with a broad spectrum of uplink connections. The SD-WAN feature supports a wide range of connectivity options, including direct Internet access (DIA) and private IP connections over nearly any medium imaginable including fiber, copper, metro Ethernet as well as macro and private cellular. This versatility in connectivity options allows operators to choose the best option for their network needs, and the ability to support carrier diversity with or without BGP gives the operator even more control over their network.

When deployed without BGP, the multiple uplinks operate independently, without requiring any configuration changes or cooperation from the upstream carriers. This makes the deployment of the rXg SD-WAN feature quick and easy, as the upstream carriers do not need to be involved in any way. Additionally, the multiple uplink control mechanism is transparent, and in many cases, the upstream carriers are unaware that their link is part of the connection pool. rXg supports multiple uplink control over any number of carriers that are supplying an arbitrary set of uplinks, making it a highly versatile and flexible connectivity solution.

The rXg can also be configured to use Border Gateway Protocol (BGP) with its SD-WAN feature, making it a highly flexible and scalable solution for wide area networking. With BGP integration, the SD-WAN can load a full peering table and dynamically exchange routing information with other BGP routers, allowing it to adjust its routing decisions in real-time based on upstream network conditions. This results in improved network stability, increased routing efficiency, though this does require the cooperation of the uplink providers.

Dynamic Path Selection

The rXg's SD-WAN feature supports dynamic path selection through its combination of link failover, bandwidth aggregation, and application affinity. rXg monitors the health of its WAN uplinks and removes failed links from the active pool, while also supporting the explicit configuration of backup uplinks. The operator can treat multiple WAN uplinks as a single, high bandwidth uplink for cost savings and scalability.

The rXg SD-WAN mechanism can also affine specific outgoing traffic to particular WAN uplinks, enabling operators to maximize their utilization of diverse WAN connections. For example, the operator may choose to affine all VoIP traffic to a high SLA leased line, while sending other bulk data through best effort lines. Link affinity can also be used to reserve certain WAN uplinks for public-facing services.

By combining link failover, bandwidth aggregation, and application affinity, the rXg's SD-WAN feature provides a powerful and flexible solution for dynamic path selection in WAN connectivity.
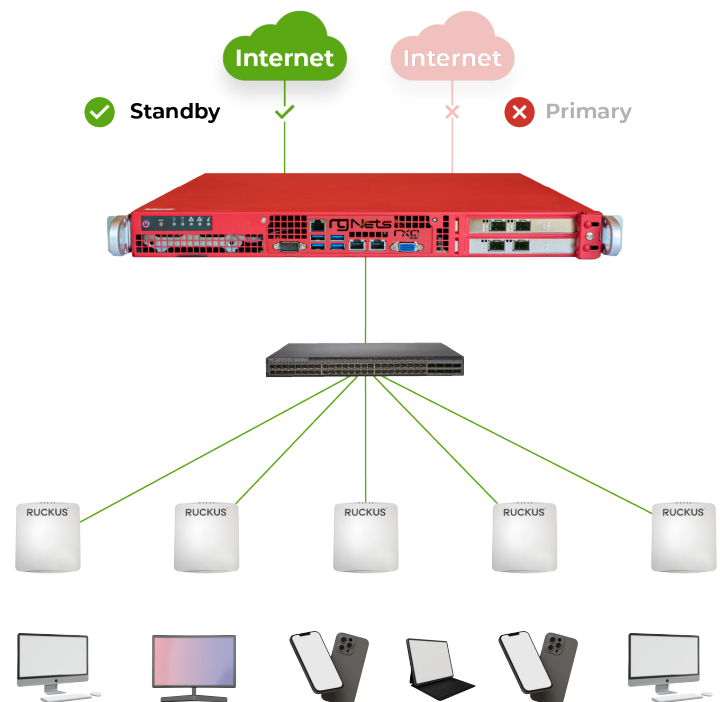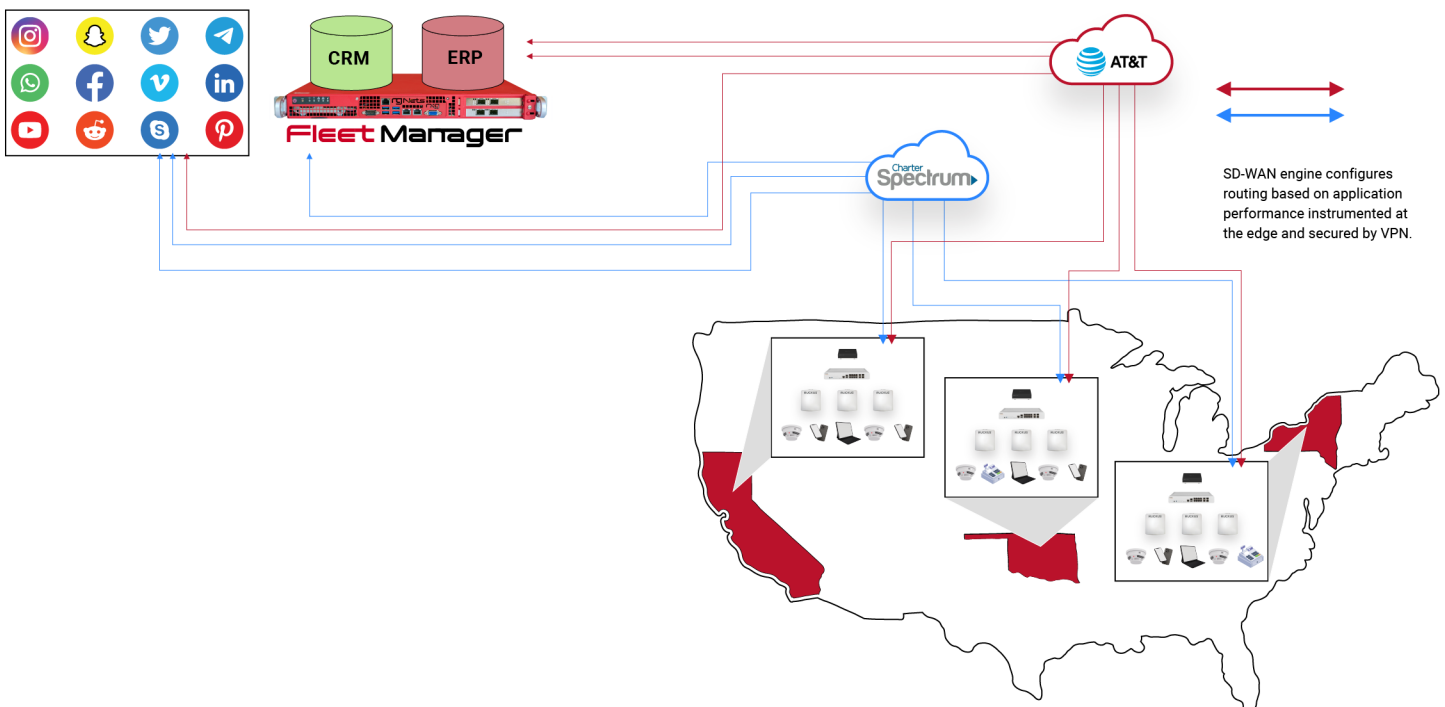
User-Friendly Management

The rXg SD-WAN software is a highly user-friendly and intuitive solution for network configuration and management. It has been designed to cater to operators with limited technical knowledge, allowing them to quickly set up and manage their networks with ease. The software comes with a simple and intuitive GUI, which allows operators to configure link aggregation and failover with just a few clicks. This makes it extremely easy for operators to ensure maximum uptime and network performance.

One of the significant strengths of rXg is its integration of visualization capabilities with the user-friendly GUI. The software provides a clear and concise view of the network situation, allowing the operator to quickly identify any potential issues and take action to resolve them. In complex network environments, it can be challenging to understand the overall network status. Still, with rXg, operators can quickly see which links are up and running, as well as any potential bottlenecks or performance issues, all within a single, easy-to-use interface. This feature saves a significant amount of time and effort for operators, allowing them to focus on other critical tasks.

rXg also includes the ability to deploy SD-WAN at multiple locations via templates, which saves time and ensures accuracy. Organizations can easily roll out their network configurations to multiple sites without manually configuring each individual location, saving time and resources. The use of templates also helps to ensure consistency across the network, reducing the risk of configuration errors and improving overall network performance. This feature makes rXg an excellent choice for businesses with multiple locations or those looking to expand their network rapidly.

Overall, the rXg SD-WAN software is an excellent solution for businesses of all sizes. Its user-friendly GUI, visualization capabilities, and template deployment make it easy to configure and manage networks with minimal technical knowledge. This makes it an ideal choice for organizations that want to ensure maximum network uptime, performance, and consistency.

SD-WAN engine configures routing based on application performance instrumented at the edge and secured by VPN.

Service Chaining

The rXg SD-WAN feature provides a wide range of service chaining capabilities, which enables operators to connect both internal and external services in a specific sequence. This feature is designed to provide businesses with maximum flexibility and customization options for their network infrastructure. The rXg SD-WAN includes several internal services such as web caching, content filtering, and an application-aware firewall that can be used in conjunction with external services to create a customized network solution tailored to specific business requirements.

Service chaining with the rXg SD-WAN can be done via API, providing operators with the flexibility to integrate any external services regardless of vendor or technology used. This level of choice and flexibility allows organizations to create a solution tailored to their specific needs, which can adapt to changes over time. With the ability to integrate any external services, organizations can take full advantage of the rXg SD-WAN's capabilities, resulting in a comprehensive solution that meets their unique requirements.

By using service chaining with the rXg SD-WAN, organizations can simplify their network infrastructure, reduce costs, and improve network performance and security. With the integration of both internal and external services, businesses can have a unified network infrastructure that is optimized for performance and security. This ensures that data is transmitted quickly and securely across the network, providing an efficient and reliable network infrastructure for their operations.

The combination of internal and external services through service chaining allows organizations to take full advantage of the rXg SD-WAN's capabilities, resulting in a comprehensive solution that meets their unique requirements. The rXg SD-WAN provides businesses with the peace of mind that their network is optimized for performance and security, providing a secure and efficient network infrastructure for their operations.

With the ability to integrate any external services, businesses can create a customized network infrastructure that can adapt to changes over time, ensuring maximum flexibility and scalability for their operations. Overall, the rXg SD-WAN with service chaining capabilities is an excellent choice for businesses looking for a comprehensive and flexible network solution that meets their specific requirements.

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