

SmartCell™ Gateway 200

Carrier Scale Wireless Controller
and Gateway — 3GPP TTG/PDG

The Industry's Most Scalable and Versatile Small Cell Gateway



Situated at the edge of operators' mobile networks, the SmartCell Gateway 200 represents the first in a new category of scalable and versatile service platforms to eliminate the difficulties operators are experiencing with building and managing large-scale small cell networks and integrating them into their mobile core.

Awarded the "Best Mobile Broadband Technology" by the GSMA, the Ruckus SmartCell Gateway (SCG) is capable of supporting hundreds of thousands of Ruckus or non-Ruckus Wi-Fi access points and hundreds of thousands of clients, as well as providing standards-based 3GPP integration into existing 3G and future 4G/LTE mobile core infrastructures.

The SCG serves both SIM and non SIM-based clients using cellular friendly authentication protocols, such as 802.1X. Combined with policy-based data traffic steering, operators have the option to offload traffic at the Wi-Fi edge or tunnel the data traffic to the service provider's core (PDG/TTG mode). With this approach, operators can transparently accommodate today's mobile devices (UEs) without installing special client software (clientless solution) thereby accelerating the time-to-market and adoption of Wi-Fi based offloading solutions.

The SCG platform features a unique NEBS-3/ETSI-compliant, dynamically scalable clustering model that maintains carrier-class availability and resiliency through active-active clustering by incorporating a distributed and replicated database optimized for real-time data management.

KEY FEATURES / BENEFITS

Massive scalability

Grow your Wi-Fi network with ease through tens of thousands of APs, hundreds of thousands of simultaneous tunneled and non-tunneled subscribers, and tens of Gbps of aggregate traffic

Active/active flat cluster architecture for resiliency

Hot-swappable and redundant hardware level component architecture combined with the SCG's distributed and replicated software intelligence ensure highly available Wi-Fi control, management and Wi-Fi data gateway services.

Unique 802.1x smart tunneling mode

Accommodate today's smart mobile devices with the SCG's unique clientless 802.1x / EAP-based authentication combined with GTP-based (v1 or v2) mobile core integration for seamless service over trusted Wi-Fi networks

Flexible data forwarding options

Offload the data plane at the edge, use PDG mode for breaking out Wi-Fi at the gateway, or use TTG mode with your GGSN/PGW for full mobile core integration

Management of Ruckus Smart Wi-Fi networks

Provision and control Ruckus APs, leveraging the adaptive and collaborative behaviors for maximum network performance in challenging environments, all with minimum manual administration

Support for third-party APs

Integrate user authentication and data traffic originating from non-Ruckus access points at the SCG, creating a single point that enables the application of network level vendor agnostic policy controls

Extensive element management tools

Monitor, inspect, and troubleshoot your network with administration tools developed based on experience deploying in the world's largest Wi-Fi networks

Single platform Wi-Fi integration

Realize all these benefits with the industry's first and only fully integrated single-box platform for managing small cell deployments



Unrivaled Scalability and Versatility

Unlike solutions that were originally designed for smaller-scale private enterprise Wi-Fi networks, the new Ruckus SCG platform has been developed specifically to meet the unique requirements of very large-scale access point management in carrier environments, providing all of the essential network element functions required to support the multiple integration architectures dictated by the realities of network operator infrastructures and mobile device capabilities.

Wi-Fi Gateway

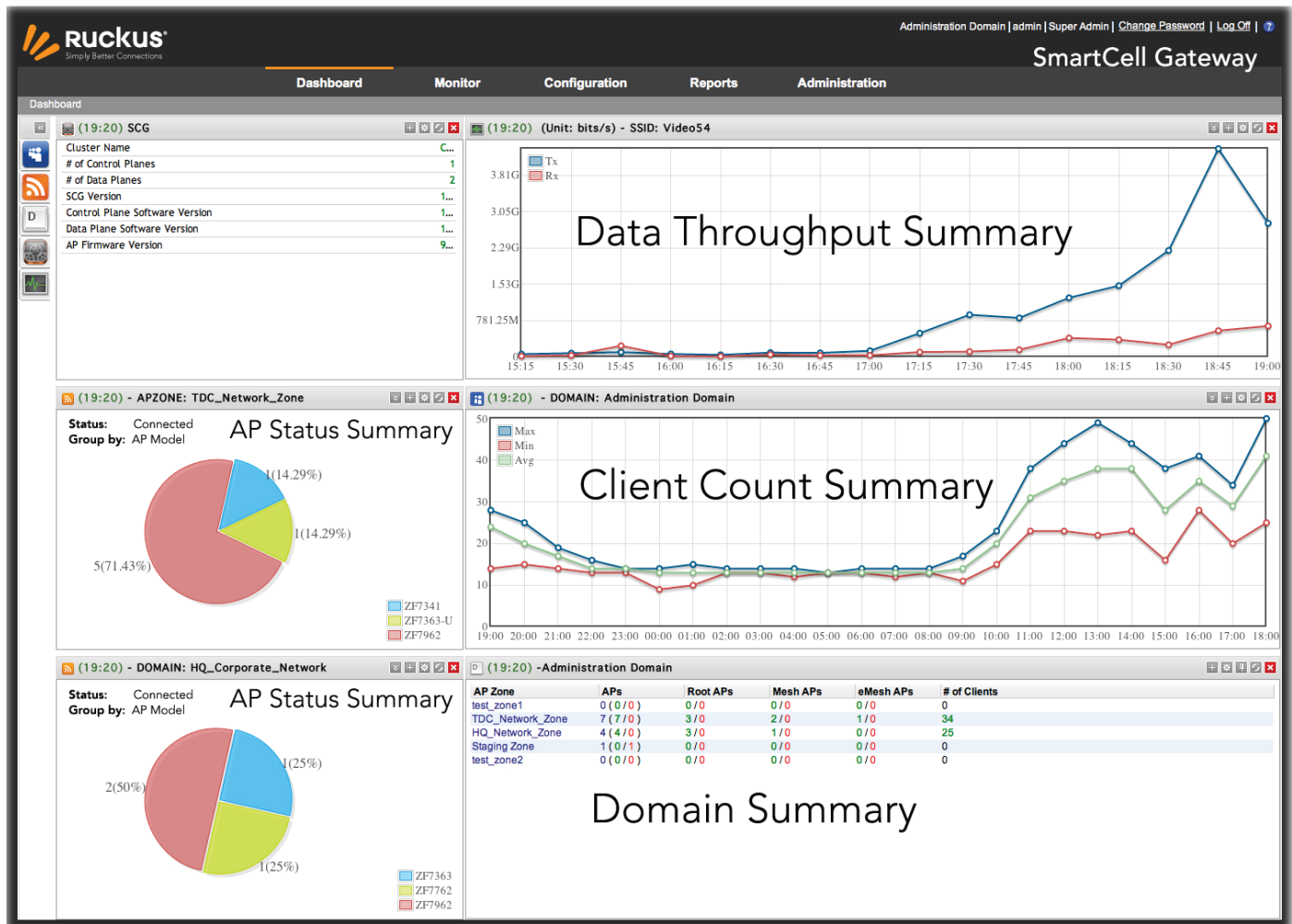
In the Wi-Fi domain, the SCG acts as a very large-scale access point controller and Wi-Fi gateway combined, managing both Ruckus access points and third-party access points. When working with Ruckus access points, the SCG provides feature-rich management — including control over their self-organizing

smart networking behaviors such as RF management, load balancing, adaptive meshing, and backhaul optimization. The SCG allows operators to dynamically configure and manage network and subscriber QoS/policy rules, in addition to authorize, account and bill Wi-Fi users enabling monetization of Wi-Fi services.

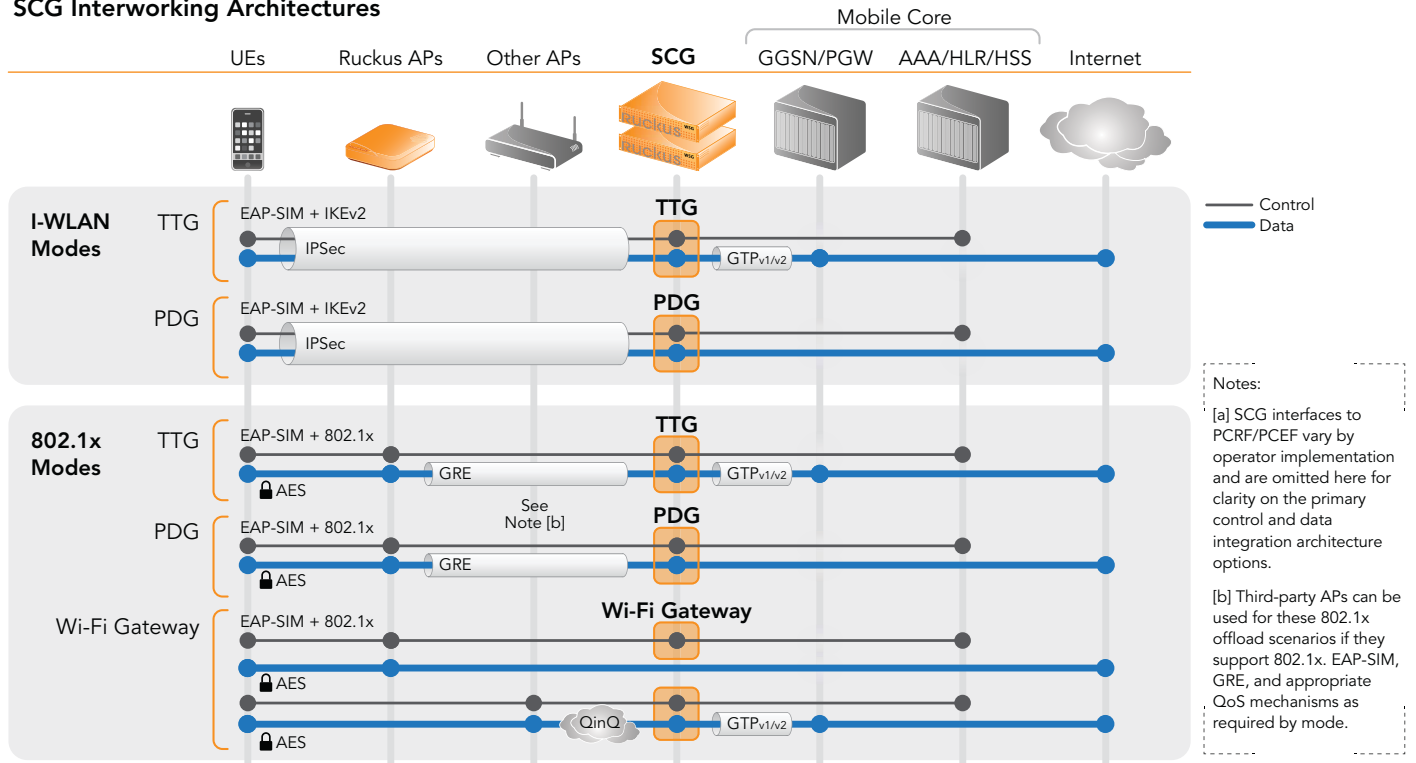
3G Data-Offload Gateway

The SCG provides true 3G data offload functionality working across 3GPP control and data planes. The platform supports a clientless architecture option that does not require any client software. Based on 802.1x, GRE, and GTP, this innovative clientless approach to TTG/PDG functionality provides seamless integration into existing mobile core architectures and is compatible with a much wider selection of today's mobile devices than other Wi-Fi/mobile integration solutions, such as I-WLAN.

Inspired by real-world experience with carriers operating some of the world's largest Wi-Fi networks, the SCG's element management system provides a wealth of detailed controls, statistics, reporting, and troubleshooting tools, along with northbound interface options for integration into carrier network management systems.



SCG Interworking Architectures



The SCG also provides dynamic policy controls to tune Wi-Fi network resource utilization, giving operators the tools to maximize revenue capture while also managing the end user's QoS experience in a consistent manner across both cellular and Wi-Fi access networks.

Unified Authentication

Single-credential authentication, critical to the successful implementation of data offloading solutions, eliminates the complexity of authentication and connection, motivating subscribers' rapid adoption of the carrier's Wi-Fi offer.

The SCG implements 802.1X based EAP methods — EAP-SIM, EAP-AKA, EAP-AKA' and other EAP variants, along with traditional portal-based authentication schemes — such as WISPr 1.0. The multi-protocol authentication support allows operators to deploy a variety of devices — ranging from SIM-based 3GPP cell phones (UEs), to non-SIM devices such as laptops on the next generation of carrier grade Wi-Fi networks.

Unique 802.1X Smart Tunneling Mode

Enabling Wi-Fi roaming while interworking WLAN with cellular core gives operators as much visibility and control over traffic generated over Wi-Fi networks as over cellular networks. The SCG's unique clientless solution, with the in-band IP assignment from the GGSN/PGW, allows operators to authenticate and tunnel WLAN traffic to either a GGSN or (an LTE) PGW, providing the foundation for session continuity.

Multi-vendor Wi-Fi AP Gateway

The SCG unifies user authentication and data traffic originating from non-Ruckus access points. This enables a single point where applying network level vendor agnostic policy controls can be applied and key user data KPIs can be generated. It also allows operators to uniformly set policies for traffic steering (offloading), such as offloading at the SCG (PDG mode) or tunneling traffic to the GGSN or PGW. It also provides a single point for generating user data session records for statistical analysis and charging.

Hotspot Services

The SCG supports secure large scale hotspot deployments, long URL lists and walled garden deployments, and is able to handle multiple whitelist/blacklist for HTTP traffic. The SCG's ability to transparently handle static & dynamic proxy HTTP messages minimizes the impact on corporate users utilizing hotspot services with proxy settings on their devices. The SCG's per subscriber API interface allows deploying an external portal server for login/splash screen handling. The SCG also supports WISPr 1.0 based authentication.

Operations and Administration (OAM)

Element Management System (EMS)

With the built-in EMS, the SCG supports rapid deployment of separate and expensive dedicated management systems. The built-in EMS provides user-friendly full-fledged FCAPS support and can be easily integrated with existing NOC/NMS

management systems. The integration of management system supports secure API access (RESTful JSON), standards based SNMP MIB access, SNMP traps and CLI based configuration and management, allowing traditional Wi-Fi service providers, cable operators and cellular operators to manage the integrated Wi-Fi networks easily through their existing operation desk.

Statistics, KPIs and Reports

The SCG's built-in EMS provides rich near real-time statistics, ranging from data on on-going operations of APs, SSIDs, Radios, backhaul (Mesh) and the Wi-Fi controller and gateway system (the SCG cluster itself). Reports ranging from hours to years can be generated for a variety of Key Performance Indicators (KPIs) and exported out in multiple formats. For operators seeking richer information, Ruckus also provides the (optional) Wi-Fi Analytics appliance for long-term storage, sophisticated data mining and analysis, and richer complex reporting, allowing operation teams to leverage dedicated external reporting systems to generate complex reports.

Wholesale/MVNO operations

The SCG's fully functional GUI provides concurrent Role-based access control (RBAC) for viewing the Wi-Fi system resources and performance. With the support of partitioning

for access in a secure manner, the SCG allows Wi-Fi service providers to lease Wi-Fi network resources such as WLANs and APs to other service operators such as MVNOs, to enable MVNO admins to administer and monitor only the WLANs and APs over which they have control.

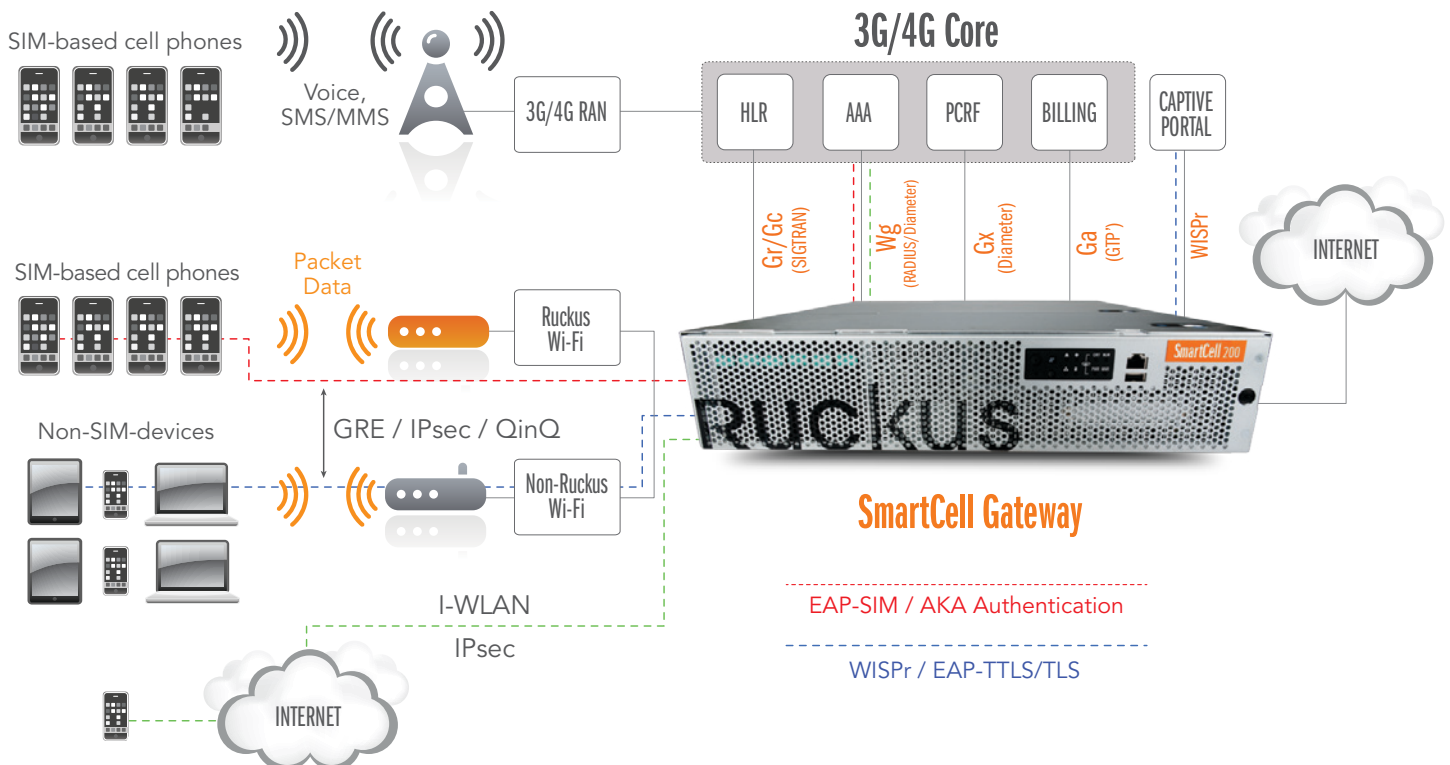
Charging

The SCG provides billing functionalities for operators to monetize their Wi-Fi network capabilities via basic RADIUS based accounting and generation of session CDRs, which can be transferred to an external Charging Gateway Function (CGF) via the Ga interface. The Charging Data Functionality (CDF) is also implemented in the SCG.

Future Evolution

The SCG has been designed for future technology evolution without requiring costly hardware upgrades; instead, the SCG supports non-disruptive functionality via software upgrades. This software-based upgradable design allows an operator to deploy an SCG as a pure-play Wi-Fi controller today and upgrade the existing SCG for e-PDG functionality at a later point in time, in-line with the operator's timeline for LTE network roll-out and LTE/Wi-Fi interworking plans.

The Ruckus SmartCell Gateway 200 provide flexible deployment options, authentication methods and standards-based edge integration to mobile operators' core network infrastructure.



Specifications

PHYSICAL CHARACTERISTICS

POWER	<ul style="list-style-type: none"> Dual (redundant) AC or DC hot-swappable power supplies DC input requirements <ul style="list-style-type: none"> Voltage: -48 to -60VDC Current: 13A AC input requirements (auto-range) <ul style="list-style-type: none"> 50/60Hz 100 to 127VAC/maximum current 6A 200 to 240VAC/maximum current 3A
PHYSICAL SIZE	<ul style="list-style-type: none"> 2RU rack mountable 8.76 cm (H), 43.53 cm (W), 50.8 cm (D)
WEIGHT	<ul style="list-style-type: none"> 40 lbs. (18.14 kilograms)
CONNECTIONS	<ul style="list-style-type: none"> Control: Six 10/100/1000 Mbps RJ-45 ports Data: two 10 GigE data ports Serial ports, RJ-45 (one front, one back)
LED DISPLAY	<ul style="list-style-type: none"> Supported (see user guide)
FANS	<ul style="list-style-type: none"> Six redundant, field-swappable fan sets
ENVIRONMENTAL CONDITIONS	<ul style="list-style-type: none"> Operating Temperature: 41°F (5°C) – 104°F (40°C) Operating Humidity: Up to 95% Non-condensing at 73°F (23°C) – 104°F (40°C)

SUPPORTED CONFIGURATIONS

MANAGED APs	<ul style="list-style-type: none"> Up to 10,000 per SCG
CONCURRENT MOBILES (UEs) / STATIONS	<ul style="list-style-type: none"> Up to 100,000 tunneled concurrent sessions per SCG
WLANS	<ul style="list-style-type: none"> 6,144 per SCG
CONTROLLER EXPANSION	<ul style="list-style-type: none"> Up to 4 controllers in 4/4 active mode, supporting non-disruptive capacity expansion. Future releases will validate larger clusters.
CONTROLLER REDUNDANCY	<ul style="list-style-type: none"> Distributed data preserving with 3:1 redundancy

KEY FUNCTIONALITY

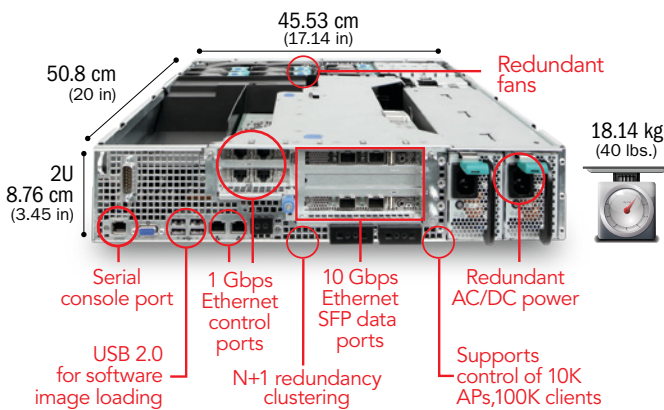
DATA OFFLOAD	<ul style="list-style-type: none"> Clientless 802.1x solution Ruckus-TTG and PDG gateway based tunneling and offload Wi-Fi edge network data offload (local breakout)
AUTHENTICATION PROTOCOLS	<ul style="list-style-type: none"> Open, 802.1x/EAP, PSK, WISPr, WPA, WPA2-AES, WPA-TKIP, WEP Fast EAP-SIM re-authentication EAP-SIM, EAP-AKA, EAP-AKA' over WLAN for 802.1x Wi-Fi Locations with the SCG AAA-Proxy functionality enabled
AAA SERVICE	<ul style="list-style-type: none"> Incorporates on-board EAP-server enabling SIGTRAN based authentication with external HLR/HSS RADIUS (AAA) PROXY
WISPr SUPPORT	<ul style="list-style-type: none"> WISPr 1.0 authentication
ELEMENT MANAGEMENT	<ul style="list-style-type: none"> Secure multi-operator login (RBAC) Large scale (bulk) AP management tools Configuration audit trails Alarm and event notification (SNMP V2 / V3) Extensive statistics and reporting Integrated on-board remote accessible EMS RESTful APIs (JSON) CLI

Product Ordering Information

MODEL	DESCRIPTION
SmartCell Gateway 200 Carrier Scale Wireless Controller	
901-S20J-XX10/00	SmartCell Gateway 200 available in AC or DC redundant power supplies option. Each unit comes with two (2) 10 Gbps dedicated data processing units and up to six (6) 1 GigE ports providing redundant control, signaling and out-of-band network interface capability.
Ruckus Access Point Management Licenses	
909-0100-SG00	SCG License supporting 100 Ruckus APs
909-0500-SG00	SCG License supporting 500 Ruckus APs
909-001K-SG00	SCG License supporting 1,000 Ruckus APs
909-010K-SG00	SCG License supporting 10,000 Ruckus APs
Ruckus TTG/PDG Bundled Licenses	
909-001K-SG0A	License for 1K data tunnels to 3GPP GGSN/PGW
909-010K-SG0A	License for 10K data tunnels to 3GPP GGSN/PGW
909-050K-SG0A	License for 50K data tunnels to 3GPP GGSN/PGW
909-100K-SG0A	License for 100K data tunnels to 3GPP GGSN/PGW
909-500K-SG0A	License for 500K data tunnels to 3GPP GGSN/PGW
909-001M-SG0A	License for 1M data tunnels to 3GPP GGSN/PGW

PLEASE NOTE: When ordering, you must specify the destination region by indicating -US, -IL, or -WW instead of XX.

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