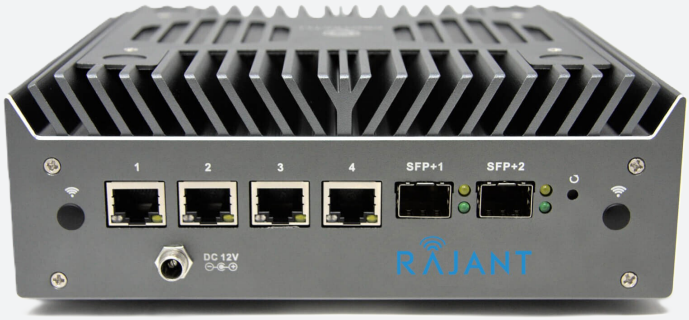
Mesh.Over.Everything with Rajant SLP–1025

Smart-Routing and SD-WAN Capabilities

The Rajant SLP–1025 is a BreadCrumb® node that enables Mesh.Over.Everything through ultra-high throughput connections between your wired network, any existing wireless networks, and any Kinetic Mesh® network. When installed, it assumes responsibility for bridging any connected networks, both wired and wireless. It performs any required encryption or decryption to ensure secure and fast delivery of data, voice, and video traffic. Working in concert with alternate communications via Rajant's Remote Protocol Tunneling (RPT) and BreadCrumb nodes via Rajant's proprietary Automatic Protocol Tunneling (APT) functionality, the SLP–1025 allows network operators to establish multiple Layer 2 connection points between the wired LAN and additional networks to increase capacity while eliminating single points of failure. **Rajant SLP–1025** enables resilient communications for distributed operations, autonomous systems, and mobile sensing networks operating at the Forward Edge.



Key Features

- Mesh.Over.Everything unifies diverse communications systems into a single adaptive network.
- InstaMesh® enables distributed, real-time path selection without centralized control.
- Forward Edge networking moves with the force and supports maneuver at scale.
- Existing systems (i.e., SATCOM, legacy radios, LTE/5G) are connected, not replaced.
- Connectivity persists under mobility, disruption, and attrition.
- Platform communications onboard a vehicle or aircraft can be simplified without sacrificing capability.
- Legacy networks can be upgraded in stages without losing interoperability.
- Network-to-network gateway functionality is delivered without specialized configuration or expert oversight.
- Supports coordination of autonomous systems, distributed sensors, and mobile compute nodes
- Enables resilient communications for contested logistics and human–machine teaming

Mesh Over Everything: Unifying the Forward Edge

Rajant's Mesh.Over.Everything fabric was developed to address this challenge by extending mesh networking principles beyond homogeneous radio networks.

Rather than treating radios, satellites, and transport links as fixed dependencies, Rajant treats entire networks as elements that can be seamlessly integrated into a mesh. Traffic flows dynamically across multiple networks, multiple hops, and multiple technologies, continuously adapting as spectrum conditions shift, assets maneuver, and nodes are added or lost...

At the core of this approach is Rajant Kinetic Mesh®, which forms a unified, peer-to-peer network from disparate communication systems. Vehicles, dismounted soldiers, unmanned platforms, sensors, and command elements become part of a single adaptive mesh, automatically assembled at the Forward Edge, not projected from vulnerable infrastructure in the rear.

Rajant's SLP–1025 Solution Supports Mesh.Over.Everything

Rajant SLP–1025 enables Kinetic Mesh to operate over any existing comms such as 5G/LTE, allowing Rajant nodes to seamlessly mesh across a Layer 3 network, critical for combining with Kinetic Mesh Layer 2 meshing.

This capability enables distributed formations, autonomous platforms, and mobile sensing networks to operate as a unified communications fabric even when infrastructure is unavailable or degraded.

Seamlessly unify Mesh and 5G/LTE/SAT/LOS/other so your network stays connected anywhere—even when devices move beyond cellular coverage limits.

With very high throughput, this reduces the overhead needed to manage the equipment.

Provides network operators with greater flexibility to construct or expand a wireless network that meets a wide range of high-capacity requirements

By eliminating data chokepoints at the boundary between wired and wireless domains, SLP–1025 ensures your mesh operates smoothly—even under surging traffic from video, automation, or system monitoring.

The following specifications outline Rajant SLP–1025 features and capabilities to support Mesh.Over.Everything.

SLP–1025 Key Features

- **2x 10GbE** and **4x 2.5GbE Ports** to handle large data transfer and high throughput
- **Powerful** CPU devoted to Kinetic Mesh encapsulation routing and decapsulation
- **Seamless** integration and compatibility with BreadCrumb models, and alternate communication devices
- **Fast** and reliable ingress and egress for data, voice, and video
- **Support** for several strong cryptographic options used for data and MAC address encryption, as well as per-hop, per-packet authentication (list of options in Network & Security section)
- **InstaMesh**® networking software, enabling the network to quickly adapt to rapidly-deployed and quickly – or constantly – moving network elements
- **Self-configuring** operation for fast and easy deployments
- **Compatible** with Rajant's BC|Commander network management software and BC|Enterprise monitoring tool
- **Reduced SWaP** for vehicle integration
- **Designed** for mounted and enclosed use

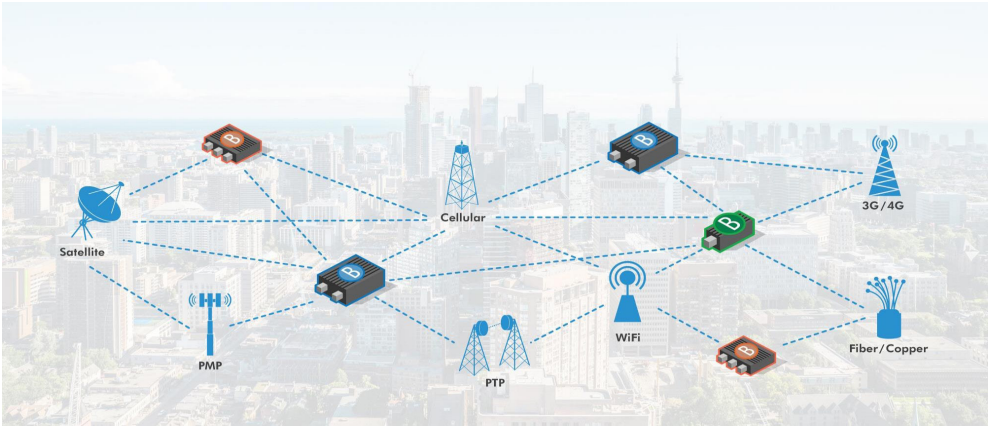
Utilizing the Rajant SLP–1025 to Your Advantage

Whether you are deploying a new network or expanding the capabilities of your existing network, SLP–1025 nodes can greatly increase throughput and eliminate potential ingress/egress bottlenecks.

In many scenarios, secure comms can tax connections between wired and wireless networks as the number of sources and viewers increases. Rajant's SLP–1025 nodes can significantly accelerate the flow of this data across the LAN/mesh boundary, providing network operators with greater flexibility to construct or expand a wireless network that meets a wide range of high-capacity requirements and integrates with your existing wired infrastructure.

The SLP–1025 is a versatile product that can easily be utilized in military, rail, ports, mining, construction, airports, oil and gas, utilities, solar, wind, and warehousing environments.

With very high throughput, the SLP–1025 reduces the overhead needed to manage equipment while providing network operators greater flexibility to construct or expand a wireless network that meets a wide range of high-capacity requirements.



Model	Part Number	Description
SLP–1025	23-100268-001	SLP–1025 appliance for high performance APT routing between wired LAN and BreadCrumb networks. Offers four 2.5 GbE and two 10 GbE Ethernet interfaces.

Network & Security	
Network Functionality	Smart-routing, SD-WAN, and SDN capabilities; VLAN and QoS support; Bridge; Gateway; DHCP; NAT and Port Forwarding; Automatic Protocol Tunneling (APT) ; Remote Protocol Tunneling (RPT); and Auto-PACE capable
Security	• Multiple cryptographic options, including NSA Suite B algorithms (implementation not certified); for information on models with full Suite B certification, contact Rajant or your authorized Rajant partner • Separately configurable data and MAC address encryption via AES256-GCM, AES192-GCM, AES128-GCM, AES256-CTR, AES192-CTR, AES128-CTR, XSalsa20, XSalsa20/12, and XSalsa20/8 • Configurable per-hop, per-packet authentication between BreadCrumbs via AES256-GMAC, AES192-GMAC, AES128-GMAC, HMAC-SHA512, HMAC-SHA384, HMAC-SHA256, HMAC-SHA224, HMAC-SHA1, and Poly-1305-AES

Power	
Input Voltage and Current	12VDC @ 10A 120W
Power Supply	120W Power Supply with barrel connector, US/CA Power Cable (Other regional power cables available)
Power Consumption	Idle: 12W, Max: 100W

Input/Output	
Ethernet	2x 10GbE SFP+ with copper adapters, 4x 2.5 GbE Copper
USB	Rear: 3x USB 2.0 Type-A, 1x USB 3.2 Gen 2 Type-A, 1x USB 3.2 Gen 2 Type-C
Push Button	Rear: Power Button Front: Reset Button, Momentary Switch, Front recessed
Power	12V DC threaded barrel connector for the 120W external power supply. Positive rail is the tip, negative is sleeve.
LEDs	Rear 1x Power and 1x HDD activity, Front 6x Ethernet port Link and Activity.

Physical	
Dimensions	7.5 x 7 x 3 in (191 x 178 x 76 mm)
Weight	Unit: 2.3 kg (5lb) Shipping Weight: 2.6 kg (5lbs 13oz)
Temperature	Ambient (operating): -10 °C to +50 °C (-14 °F to 122 °F)
Operating Humidity	0 – 95% relative, non-condensing

Physical (Cont.)	
Enclosure	Aluminum, Gray, finned heat sync, indoor use only
Certification	UL (Power Supply), FCC Part 15 Class B, CE, RoHS
Warranty	90 days
Includes	Power supply and US power cord Mounting Hardware
Chassis Mounting	VESA bracket with hardware
COO	Made in China, Assembled in US/Canada/Germany, NDAA compliant

Applications

Autonomous and Distributed Operations

Modern formations increasingly rely on **autonomous platforms, distributed sensors, and mobile compute nodes** operating across dynamic and contested terrain. Rajant's Mesh.Over.Everything architecture provides the resilient network fabric that enables these systems to communicate, coordinate, and adapt without reliance on fixed infrastructure.

Unmanned aerial systems, ground robots, autonomous vehicles, and mobile sensing platforms become part of a continuously adapting mesh. As assets maneuver, deploy, or experience disruption, InstaMesh® dynamically selects the best available paths, maintaining connectivity across the formation.

This enables distributed operations where autonomous systems and human operators remain connected even as the operational environment degrades.

Contested Logistics and Mobile Sustainment

Future logistics operations will rely on autonomous resupply vehicles, robotic distribution platforms, and dispersed sustainment networks operating across contested environments.

Rajant's Mesh.Over.Everything fabric enables reliable communications between mobile assets, logistics nodes, and command elements without requiring static infrastructure or preconfigured routes.

Convoys, autonomous transport vehicles, and unmanned resupply platforms remain connected as formations maneuver, automatically adapting to network disruptions, terrain masking, or asset loss. This allows sustainment operations to continue even in environments where traditional communications architectures fail.

Human–Machine Teaming

Military operations increasingly integrate **manned and unmanned systems operating collaboratively across land and air domains**.

Rajant Kinetic Mesh® enables reliable communications between human operators, unmanned ground systems, aerial platforms, and sensor networks. Each node contributes to extending the network, pushing connectivity outward as forces maneuver and deploy.

This architecture enables distributed control, real-time data sharing, and resilient coordination between human operators and autonomous systems operating at the Forward Edge.

Coalition and Multi-Domain Operations

Modern military operations frequently require communications across coalition partners, multiple security domains, and heterogeneous networks.

Rajant's Mesh.Over.Everything capability enables traffic to traverse approved paths across disparate communications systems including radios, SATCOM, LTE/5G, and IP-based networks. Existing transports become part of the mesh, enabling multi-hop routing, dynamic path selection, and transparent resiliency across heterogeneous systems.

As mission conditions change and forces maneuver, the network dynamically reconfigures itself while maintaining segmented architectures required for mission partner operations.

This ensures communications persist across coalition formations without sacrificing resilience, interoperability, or operational flexibility.

Forward Edge Network Fabric

SLP–1025 does not replace radios, satellites, or existing networks **- it connects them**.

Rajant's Mesh.Over.Everything architecture enables data to move intelligently across all available transports, dynamically adapting as spectrum conditions change, assets maneuver, or network elements are lost.

The result is a resilient communications fabric that moves with the force, enabling mission command, autonomous systems coordination, and distributed sensing at the Forward Edge.

InstaMesh®: Distributed Intelligence at Machine Speed

What differentiates Rajant's Mesh.Over.Everything approach is not simply connectivity; it is how the network makes decisions.

Rajant's patented InstaMesh® protocol enables every BreadCrumb® node to participate in distributed, real-time path selection. Each node continuously evaluates link quality, latency, throughput, congestion, and availability, selecting the optimal path for every packet at that moment.

There is no centralized controller... No static routing plan... No single point of failure... And no manual intervention required.

As links degrade over time, the spectrum becomes contested, assets maneuver, or nodes are lost, traffic is rerouted automatically, allowing the network to adapt at machine speed while operators focus on the mission.

This intelligence at the network layer enables:

- Reduced latency and packet loss
- Graceful degradation under jamming or attrition of any network element
- Sustained mobility across formations
- Persistent situational awareness across domains

In a JADC2 context, this means data continues to flow to the right place at the right time, even as the environment degrades or the mission changes. This distributed decision-making capability is particularly valuable for formations employing autonomous platforms and distributed sensors that must remain connected without reliance on centralized control.

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