



PRODUCT BRIEF



MAXIMUM FLEXIBILITY **EXCELLENT** PERFORMANCE & TCO REDUCTION

with Ceragon short-haul split-mount solutions

Whether you are a Tier 1 Communications Service Provider (CSP), an Internet Service Provider (ISP), or a Private Network navigating organizational digital transformation, capacity remains a primary challenge. The rising demand for high capacity communications is intensifying the pressure on network providers to deploy solutions that deliver and sustain high performance. At the same time, businesses are under pressure to cut costs while still providing outstanding service, necessitating cost-effective solutions that have a low total cost of ownership (TCO) and do not sacrifice performance.

Ceragon, a leader in wireless backhaul solutions with one of the market's largest installed base of satisfied customers, understands these challenges. Ceragon utilizes its decades of experience along with its comprehensive catalog of innovative hardware, software, and professional services to help Tier 1, ISP, and Private Networks meet increased capacity needs while reducing TCO.

Split-mount microwave (MW) solutions are the most popular type of MW link on the market and play a pivotal role in advancing modern telecommunications infrastructure. They offer significant maintenance advantages and enhanced troubleshooting capabilities. By separating the radio and indoor units, these solutions significantly facilitate network upgrades and scalability.



MEET CERAGON'S SPLIT-MOUNT SHORT-HAUL FAMILY

Where efficiency meets high capacity

Ceragon proudly presents our split-mount family, featuring the IP-20N/A and IP-50GP (roadmap) for indoors, and the RFU-D, RFU-D-HP, and RFU-SX (roadmap) outdoor radios. These state-of-the-art solutions are designed to effectively tackle every split-mount backhaul challenge. Our Short Haul family offers cutting-edge technology, providing the flexibility to choose between cost-effective 1+0 solutions and robust 16+0 trunk solutions. This enables fiber-like high capacity through multiband, L1 carrier aggregation, and industry-leading features.

These advanced capabilities make our solutions the preferred choice for mobile tier-1 operators, ISPs, and private networks seeking reliable, high-capacity split-mount options. Our platforms deliver unparalleled capacity and support a variety of network topologies, as well as ensuring redundancy with multiple HSB configurations that enhance reliability. With both Ethernet and TDM interfaces, our solutions facilitate network upgrades without disrupting business continuity, ensuring your network operates at peak performance.



The flexibility and scalability to upgrade
from 1+0 to 16+0 in a cost-effective platform



Ceragon indoor units (IDUs) can use any mix of Ceragon RFUs to provide a wide variety of radio features and functionality, tailored to the needs of the operator. RFUs such as single-carrier RFU-SX and multicore RFU-D or RFU-D-HP support wide channels of up to 112 MHz and modulations of up to 4096 QAM. In the node, operators can use standard, high-power, and ultra-high-power radios, as well as multicore or single core radios.

Our split-mount solutions are optimized for multi-carrier and aggregation nodes by means of their high modularity, scalability, and flexibility. The IP-20/IP-50 aggregation solution is based upon rich backhaul services and simplified management that are supported by advanced H-QoS, service OAM, and carrier-grade service resiliency (G.8032, MSTP).

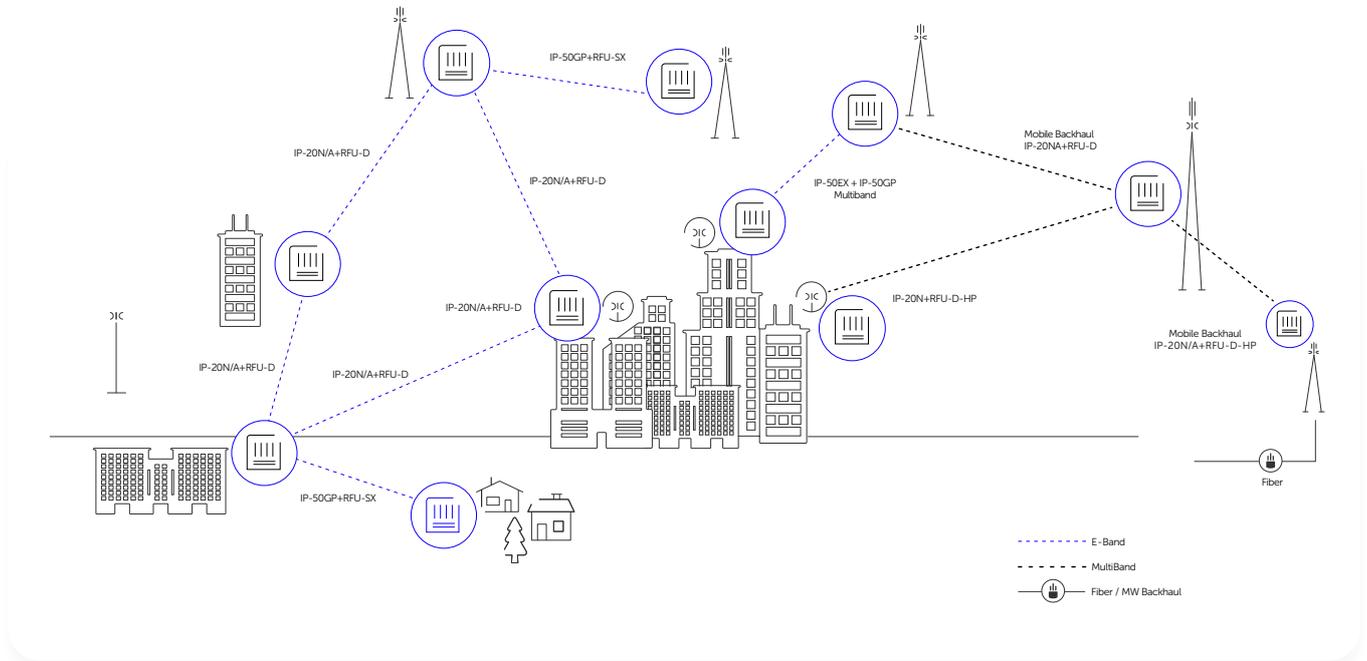
USE CASE DIAGRAMS

Split-mount MW radios support a broad range of use cases, catering to the needs of mobile operators deploying a green field network or expanding their existing network. It also addresses high-capacity requirements of ISP and private networks. For example, these radios can serve as backhaul solutions for CSPs, ISPs, utilities, and public safety agencies.

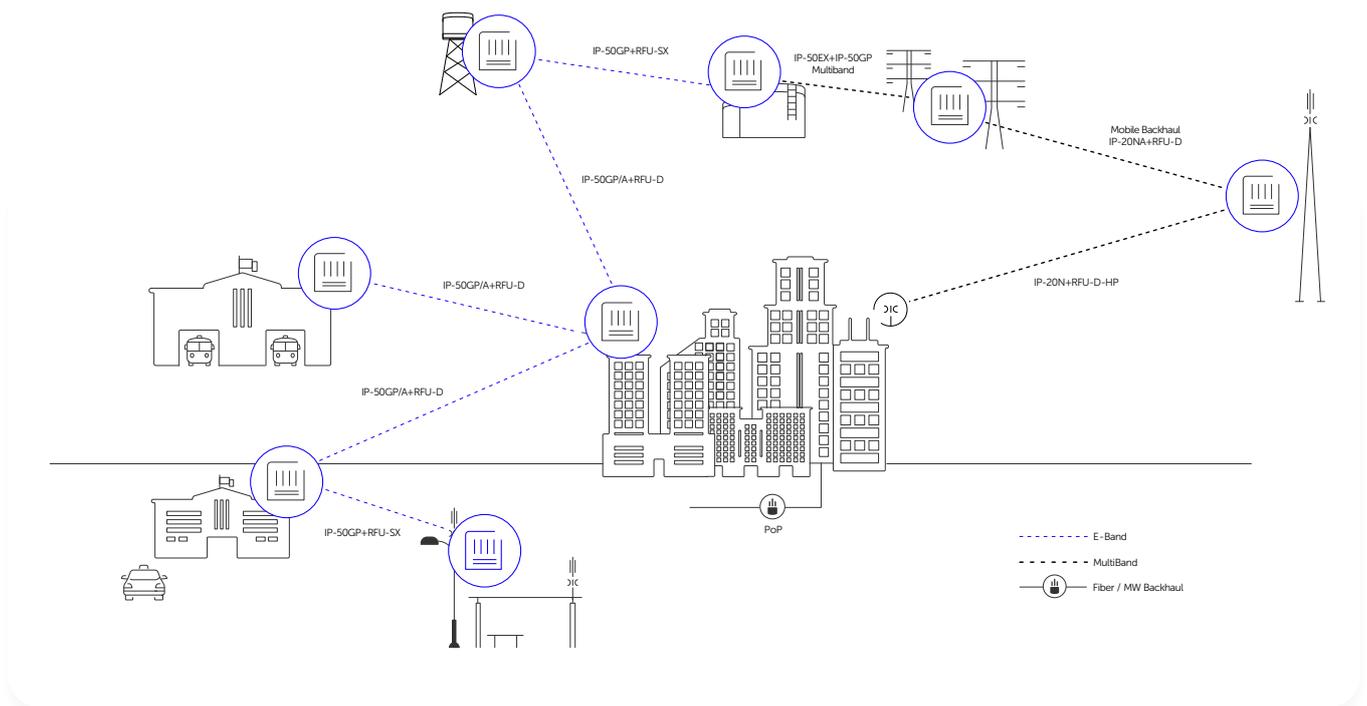
Explore the use case implementations of our split-mount product families through detailed diagrams and product specifications.



Split-mount mobile operator



Split-mount private network



THE PRODUCTS



RFU-D

Market-leading, modular, multicore radio

RFU-D is a scalable, smart, split-mount radio that redefines split-mount short-haul configurations. Designed to meet the dynamic needs of network operators, the RFU-D integrates dual modems connected to the IDU via a streamlined SFP or RJ-45 interface. This technology allows for seamless scalability; you can start with a cost-effective single core mode and effortlessly expand to multicore, without the need for additional hardware or installation, ensuring your network grows as your demand increases.

The RFU-D also excels in dual-receiver mode to support future expansion, again requiring no extra hardware, demonstrating its unparalleled adaptability. It is engineered to enhance multicore capacity through features like XPIC, enabling operators to maximize spectral efficiency and throughput, while minimizing site footprint.

With the RFU-D, you can optimize traffic capacity and spectral efficiency with flexible channel bandwidths ranging from 7 to 112 MHz and choose from modulations between BPSK and 4096 QAM. Operating in frequency ranges from 6 to 42 GHz, the RFU-D delivers unmatched flexibility to suit diverse network needs.

Thanks to Ceragon's innovative modular technology, the RFU-D simplifies deployment and maintenance. The generic radio unit covers an entire frequency band, while the field-replaceable diplexer unit, affecting sub-band coverage, ensures swift adjustments without replacing the main unit. This translates to reduced deployment times and maintenance costs, empowering operators to maintain robust, efficient networks with ease.



THE PRODUCTS

RADIO

- Frequency range: Operates in the 6–42 GHz frequency range
- More power in a smaller package: Up to 29 dBm for extended distance, enhanced availability, and use of smaller antennas
- Configurable Modulation: BPSK – 4096 QAM
- Configurable Channel Bandwidth:
 - ETSI: 14 MHz–112 MHz
 - ANSI: 20 MHz–80 MHz

SUPPORTED CONFIGURATIONS

- Multicore 2+0 Single/Dual Polarization
 - 2 x Multicore 2+0 SP/DP
 - 2+0 BBC Space Diversity
 - 2 x 2+0 BBC Space Diversity
 - 4+0 BBC Space Diversity
 - 2 x 4+0 BBC Space Diversity
 - 1+1 HSB
 - 1+1 HSB BBS or BBC Space Diversity
 - Multicore 2+2 SP/DP HSB
 - Multicore 2+2 SP/DP HSB with BBS Space Diversity
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THE PRODUCTS



RFU-SX

Single core, state-of-the-art, spectral efficient radio

RFU-SX is the ultimate cost-effective, comprehensive, and complete split-mount short-haul radio. Engineered with state-of-the-art technology, the RFU-SX supports a wide range of capacities, perfectly tailored to enhance your network's performance. Operating within the 6-42 GHz frequency range, it offers unparalleled flexibility and efficiency, allowing operators to choose channel bandwidths from 14 to 112 MHz and modulations from BPSK to 4096 QAM for optimal traffic capacity and spectral efficiency.

The RFU-SX not only optimizes performance, it also significantly reduces operational costs. Its innovative design allows operators to maintain a lean inventory—one generic radio unit can suffice for any sub-band within a frequency band, minimizing the need for multiple spare units. This streamlining means that for a site encompassing multiple channel ranges, a single spare radio unit is versatile enough to cover all contingencies.

Moreover, with passive diplexer units that rarely need replacement, the RFU-SX simplifies maintenance and reduces the burden of stocking spare parts. This leads to more efficient network management, less maintenance hassle, and substantial cost savings.



THE PRODUCTS

RADIO

- Frequency range: Operates in the 6–42 GHz frequency range
- More power in a smaller package: Up to 29 dBm for extended distance, enhanced availability, and use of smaller antennas
- Configurable Modulation: BPSK–4096 QAM
- Configurable Channel Bandwidth:
 - ETSI: 14 MHz–112 MHz
 - ANSI: 20 MHz–80 MHz

SUPPORTED CONFIGURATIONS

- 1+0 Single Polarization
 - 2+0 Single/Dual Polarization
 - 1+1 HSB/DP HSB
 - 1+1 HSB /DP HSB with BBS or BBC Space Diversity
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THE PRODUCTS



IP-20N/A

Scalable, smart, and stable indoor

When looking for the perfect indoor unit, the IP-20N/A is the flexible, future-proof, feature-rich wireless backhaul solution you need. Designed for operators who demand efficiency and scalability, these systems deliver a compact footprint and the adaptability to scale as your needs grow. With chassis options that suit one or two rack units and versatile slots for Ethernet, TDM, and radio cards, the IP-20N and IP-20A redefine what's possible in multi-carrier and nodal deployments.

These products empower operators to enhance their operational efficiency and deliver superior customer experiences. Supporting the latest services, standards, and networking protocols, they ensure your network is future-proof and ready for emerging demands. You can lower your total cost of ownership with their ability to support revenue-generating services and simplify management, which in turn reduces operational expenses and boosts service availability.

The IP-20N and IP-20A are packed with advanced features tailored for Carrier Ethernet Transport and Private Networks, such as a state-of-the-art ethernet services engine, innovative header de-duplication, and frame cut-through capabilities. These offer a groundbreaking solution for aggregating TDM and packet backhaul services, tailored for next-generation wireless networks that deliver packet-based services with precision. You will be able to maintain service performance with strict SLAs and manage data explosion efficiently, even under congested wireless link scenarios.



THE PRODUCTS

ADVANTAGES

- Flexible, lightweight form factor: Reduces installation and warehousing costs
- IDU Interface: RIC-D
- Scalable and easy installation

NETWORKING

- Networking capacity: 64 Gbps
- Layer-1 carrier bonding: Up to 16+0 with multi directions (Up to 30G per group)
- Layer-2 switching
- Integrated Carrier Ethernet switching capabilities
- MEF Carrier Ethernet 2.0 compliant
- Carrier-grade service resiliency (G.8032, MSTP)
- SyncE and 1588 synchronization
- ITU-T Y.1731 Fault and Performance Management (MEF 35)

INTERFACES

- 6 x 1/10G, & 2 1/2.5G electrical
- Optional TDM & Ethernet add-on cards

SECURITY

- AES-256 radio encryption
 - Secure protocols and management interfaces (HTTPS, TLS, SSH, SNMPv3)
 - Secure architecture and software design
 - Advanced authentication and identification management
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THE PRODUCTS



IP-50GP

The slim, state-of-the-art indoor unit

Introducing the IP-50GP, Ceragon's cost effective, cutting-edge, compact IDU, a versatile solution designed to elevate your network's performance at low cost. This indoor unit is engineered for any backhaul site, seamlessly integrating into both wired and wireless environments. Whether you're setting up a split-mount solution for Private Networks or ISPs, the IP-50GP stands out with its compact, 1RU, form factor, making it both lightweight and environmentally friendly. Its robust capabilities include edge/tail first and second aggregation, serving as a reliable standalone router that supports dynamic networking needs.

The integration of the CeraOS Layer 2 switch ensures seamless data flow and connectivity, while the L1 aggregation, multiband, and deep buffer capabilities enhance data handling and performance. With radio configurations supporting up to 8+0 with two directions, the IP-50GP is compatible with the RFU-SX, RFU-D, RFU-D-HP, and all-outdoor configurations, ensuring maximal flexibility and adaptability. This innovative solution not only meets the demands of modern network infrastructures but also sets the stage for future expansions, providing a reliable and efficient networking experience.



THE PRODUCTS

APPLICATIONS

- Cell site gateway for any type of BH site (wired/wireless)
- Split-mount solution for Private Networks and ISPs
- Compact (1RU), light weight, and environment-friendly switch
- Edge/tail first and second aggregation
- Standalone router

NETWORKING

- Networking capacity: 198 Gbps
- Layer-1 carrier bonding: Up to 8+0 with two directions.
- Layer-2 switching
- Integrated Carrier Ethernet switching capabilities
- MEF Carrier Ethernet 2.0 compliant
- Carrier-grade service resiliency (G.8032, MSTP)
- SyncE and 1588 synchronization
- ITU-T Y.1731 Fault and Performance Management (MEF 35)

INTERFACES

- 2x 1/10/25GbE ports (SFP28)
- 6x 1/10GbE ports (SFP+)
- 4x BBI ports, two dual use 1/10GbE user ports (SFP+)
- Auxiliary interfaces
- Single or dual feed DC input

SECURITY

- AES-256 radio encryption
 - Secure protocols and management interfaces (HTTPS, TLS, SSH, SNMPv3)
 - Secure architecture and software design
 - Advanced authentication and identification management
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SUMMARY

The Ceragon split-mount family introduces cutting-edge technological innovations, including slim and flexible indoor units and compatible, multicore, cost effective radios. Together they deliver scalable and smart performance, providing the best combination and value. These advanced solutions are meticulously designed to overcome daily TCO challenges by delivering easy upgrades, optimized performance, and high capacity.

Embrace these solutions to maintain a competitive edge in the era of digital modernization.

FOUR MAIN VALUES

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| <p>+ TOP-OF-MARKET FEATURE SUPPORT L1 Aggregation, 25GB port, etc.</p> | <p>+ REMOTE UPGRADE-IN-A CLICK</p> |
| <p>+ COST EFFECTIVE</p> | <p>+ SCALABLE FROM 1+0 UP TO 2 X 8+0</p> |

ABOUT CERAGON NETWORKS

Ceragon Networks Ltd. (NASDAQ: CRNT) is the global innovator and leading solutions provider of end-to-end wireless connectivity, specializing in transport, access, and AI-powered managed & professional services. Through our commitment to excellence, we empower customers to elevate operational efficiency and enrich the quality of experience for their end users.

Our customers include service providers, utilities, public safety organizations, government agencies, energy companies, and more, who rely on our wireless expertise and cutting-edge solutions for 5G & 4G broadband wireless connectivity, mission-critical services, and an array of applications that harness our ultra-high reliability and speed. Ceragon solutions are deployed by more than 600 service providers, as well as more than 1,600 private network owners, in more than 130 countries.

Through our innovative, end-to-end solutions, covering hardware, software, and managed & professional services, we enable our customers to embrace the future of wireless technology with confidence, shaping the next generation of connectivity and service delivery. Ceragon delivers extremely reliable, fast to deploy, high-capacity wireless solutions for a wide range of communication network use cases, optimized to lower TCO through minimal use of spectrum, power, real estate, and labor resources - driving simple, quick, and cost-effective network modernization and positioning Ceragon as a leading solutions provider for the "connectivity everywhere" era.

For more information please visit: www.ceragon.com

