FibeAir® IP-10

Wireless Mobile Backhaul Solution for Risk-Free Migration to IP

FibeAir IP-10 is Ceragon's next generation carrier-grade wireless Ethernet solutions family. Combining IP and TDM networking, FibeAir IP-10 offers risk-free migration with the highest possible capacities at the lowest overall cost - addressing any deployment scenario.

- TDM & Ethernet interfaces
- Modular nodal architecture
- Integrated TDM cross-connect
- Integrated Ethernet switch
- 10-500 Mbps per radio carrier
- 7-56 MHz channel bandwidth
- 6-38 GHz licensed frequency
- Highest spectral efficiency
- Adaptive Coding & Modulation (ACM)
- Native Ethernet and TDM (Native[2])
- Seamless scalability
- MEF-9 & MEF-14 certified

CARRIER ETHERNET

MEF
Certified Compliant

CERAGON

FibeAir® IP-10 Family - for Migration & Beyond

Introducing FibeAir® IP-10

FibeAir IP-10 is Ceragon's next generation carrier-grade wireless Ethernet backhaul product family. Combining advanced TDM and Ethernet networking, FibeAir IP-10 facilitates cost effective, risk-free migration to IP and can be integrated in any TDM, hybrid or pure IP/Ethernet network. This versatile solution supports the entire licensed spectrum – from 6GHz up to 38GHz – and offers a wide capacity range of 10Mbps - 500Mbps along with enhanced Adaptive Coding & Modulation for maximum spectral efficiency in any deployment scenario. With FibeAir IP-10, Ceragon offers risk-free migration with the highest possible capacities at the lowest overall cost.
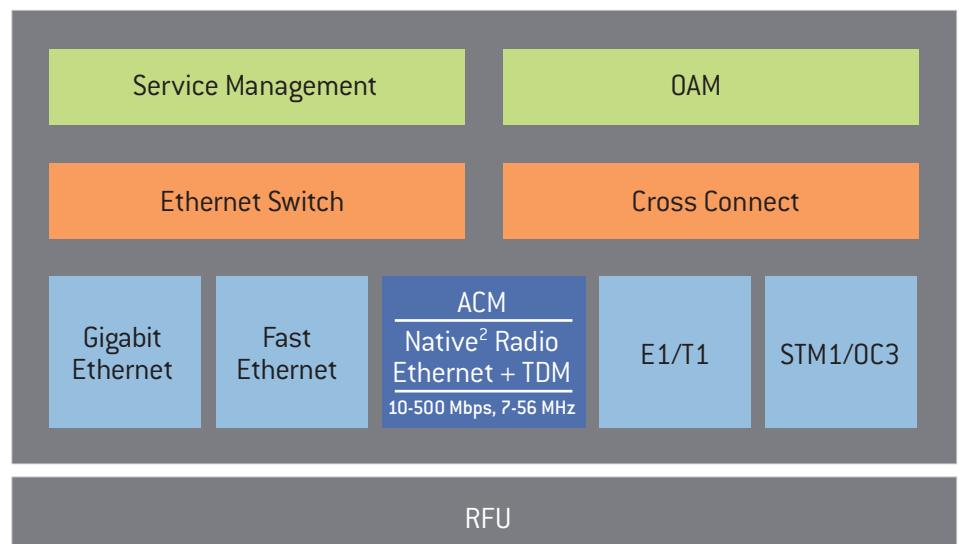
System Overview

FibeAir IP-10 features a powerful, integrated Ethernet switch for advanced networking solutions and an optional TDM cross-connect for nodal site applications. With advanced service management and Operation Administration & Maintenance (OAM) tools, this first-of-its-kind solution simplifies network design, reduces CAPEX and OPEX and improves over-all network availability and reliability to support services with stringent SLA.

FibeAir IP-10 family covers the entire licensed frequency spectrum and offers a wide capacity range, from 10Mbps to 500Mbps over a single radio carrier, using a single RF unit. The solution easily serves the capacity requirements of a single base-station as well as those of traffic-intensive hub sites, and leaves ample headroom for future capacity enhancements. Additional functionality and capacity are enabled via software upgradable licenses while using the same hardware.

FibeAir IP-10 employs the most advanced Adaptive Coding & Modulation (ACM) technique. This unique feature allows the solution to maximize spectrum utilization and capacity over any given bandwidth and changing environmental conditions.

FibeAir IP-10 Family - for Migration & Beyond

Service Management			OAM	
Ethernet Switch			Cross Connect	
Gigabit Ethernet	Fast Ethernet	**ACM** Native² Radio Ethernet + TDM 10-500 Mbps, 7-56 MHz	E1/T1	STM1/OC3
RFU				

FibeAir IP-10 family system architecture

FibeAir IP-10 Applications

FibeAir IP-10 family offers cost-effective, high-capacity backhaul connectivity for carriers in cellular, WiMAX and fixed markets. The FibeAir IP-10 platforms support multi-service and converged networking requirements for both legacy and the latest data-rich applications and services.

FibeAir IP-10 is fully MEF-9 & MEF-14 certified, assuring support for all types of Ethernet services including EPL, EVPL and E-LAN. This makes the FibeAir IP-10 an ideal platform for operators looking to provide high capacity Carrier Ethernet services and meeting customers demand for coverage and stringent SLA.

Mobile Backhaul

Cellular Networks

FibeAir IP-10 incorporates Ceragon's proven Native[2] concept to support native TDM and native Ethernet hybrid architecture - as well as all-IP and pseudowire architectures - requiring little or no external devices and allowing it to integrate smoothly with any network. The system is suitable for all migration scenarios where carrier-grade Ethernet and legacy TDM services are required simultaneously.

WiMAX Networks

Enabling connectivity between WiMAX base stations and facilitating the expansion and reach of emerging WiMAX networks, FibeAir IP-10 provides a robust and cost-efficient solution with advanced native Ethernet capabilities.

Converged Fixed/Wireless Networks

Ceragon's FibeAir IP-10 delivers integrated high speed data, video and voice traffic in the most optimum and cost-effective manner. Operators can leverage FibeAir IP-10 to build a converged network infrastructure based on high capacity microwave to support multiple types of service.
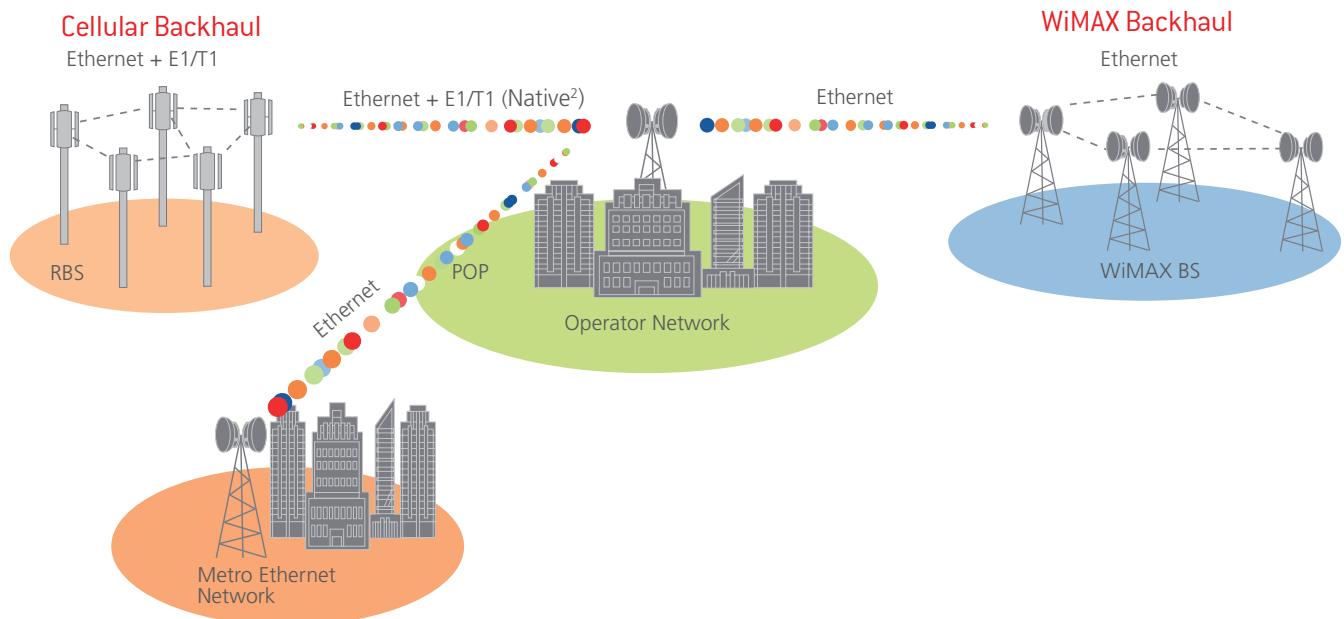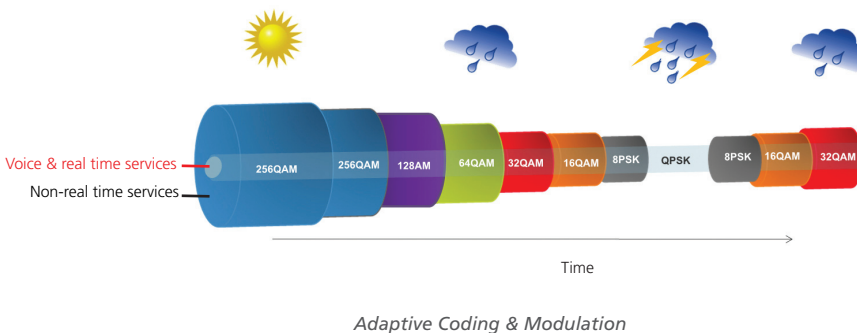

Typical FibeAir IP-10 Applications

Adaptive Coding & Modulation (ACM)

FibeAir IP-10 family incorporates a unique Adaptive Coding & Modulation (ACM) algorithm, which ensures an increase in capacity together with a parallel reduction of CAPEX.

Using ACM, the system automatically adjusts itself to prevent communication disruption over the link due to weather-related fading. When extreme weather conditions affect the transmission, the radio system automatically chooses the best of eight supported modulation/coding working points, in accordance with the channel's condition. This helps to overcome fading and other interference, while maximizing spectrum usage and enabling increased capacity over a given channel bandwidth. The modulation switchover is implemented using a Hitless/Errorless algorithm, which ensures that real-time applications will run smoothly and uninterrupted.

Voice & real time services

Non-real time services

256QAM 256QAM 128AM 64QAM 32QAM 16QAM 8PSK QPSK 8PSK 16QAM 32QAM

Time

Adaptive Coding & Modulation

Key Features

- Highest radio capacity and flexibility 10-500 Mbps per radio carrier

- 7-56 MHz channel bandwidth (ETSI & FCC compliant)

- Full capacity over 6-38 GHz licensed frequency bands

- Unique Adaptive Coding & Modulation (ACM): QPSK-256QAM for highest spectrum utilization and maximal radio link availability

- Native[2] and pseudowire support

- Integrated advanced Ethernet switching

- Integrated TDM cross-connect and nodal capabilities

- Advanced Quality of Service (QoS) capabilities

- Intelligent Ethernet header compression mechanism improves effective throughput by up to 45%

- MEF-9 & MEF-14 certified for all service types (EPL, EVPL and E-LAN)

- Longer distances, smaller antennas with Ceragon's advanced high power RF units.

- Easy split-mount or all-indoor installation

Seamless Scalability for Nodal Applications

FibeAir IP-10 family features a unique, modular nodal solution to enable carriers to cost-effectively scale their backhaul networks.

Multiple FibeAir IP-10 indoor units (IDUs) can be combined in a modular way to form highly integrated and fully redundant nodal configurations with an extended number of supported radios, TDM and Ethernet interfaces. Using this approach, any tail site can be seamlessly upgraded to chain or node sites, fully re-using the installed equipment.

Hybrid Microwave Backhaul
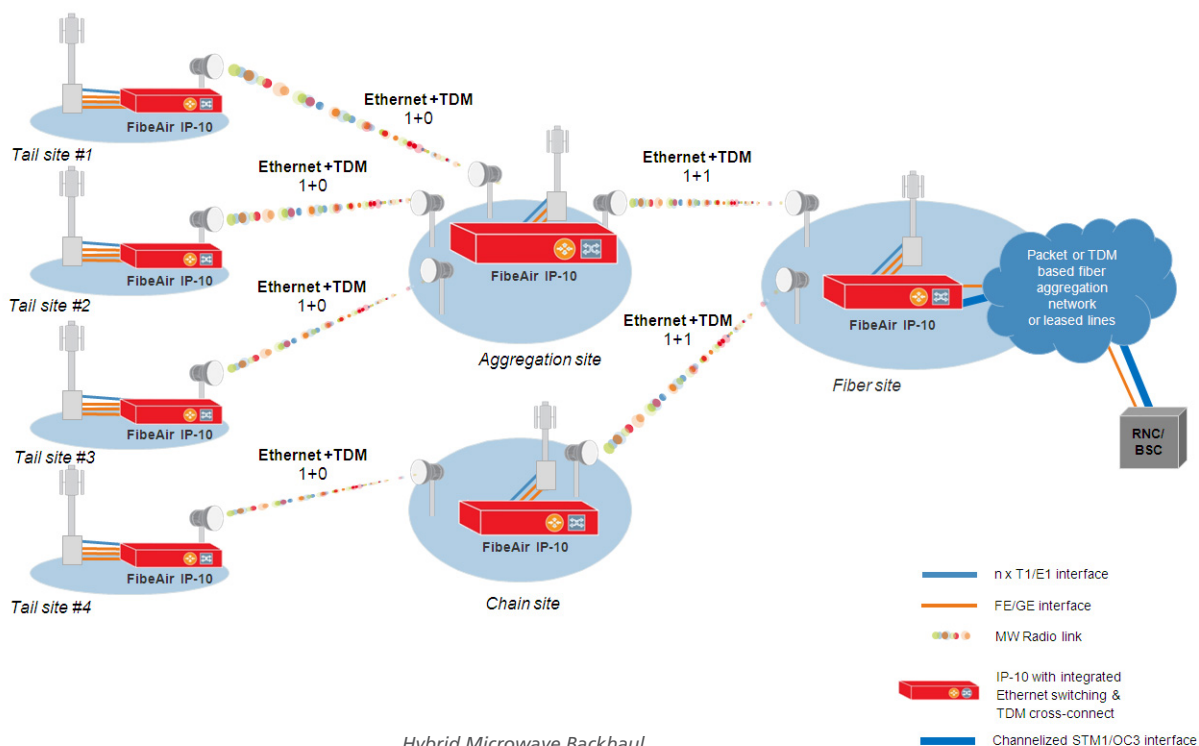
End-to-End Network Management

Ceragon provides state-of-the-art management based on SNMP and HTTP.

Integrated Web Based Element Manager: Each device includes an HTTP based element manager that enables the operator to perform element configuration, RF, Ethernet, and PDH performance monitoring, remote diagnostics, alarm reports, and more.
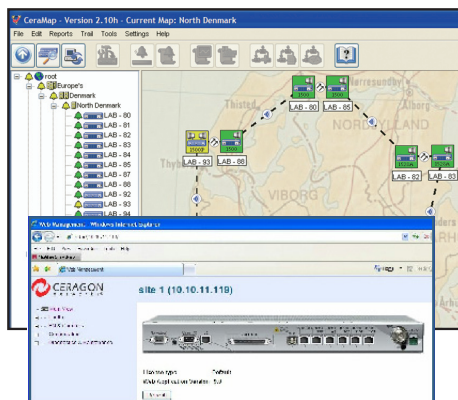
PolyView™ is Ceragon's NMS that includes **CeraMap**™ its friendly and powerful client graphical interface. PolyView can be used to update and monitor network topology status, provide statistical and inventory reports, define end-to-end traffic trails, download software and configure elements in the network. In addition, it can integrate with Northbound NMS platforms, to provide enhanced network management.

The application is written in Java code and enables management functions at both the element and network levels. It runs on Windows 2000/2003/XP/Vista and Sun Solaris.

Ceragon Networks Ltd.

Ceragon Networks Ltd. (NASDAQ and TASE: CRNT) is a leading provider of high capacity wireless backhaul solutions that enable fiber-like connectivity for SONET/SDH networks, next generation IP-based networks and hybrid networks. Ceragon's FibeAir® family of products support all wired and wireless access technologies and address Service Providers'

need to cost-effectively build-out and scale their networks to meet increasing demands for bandwidth and premium services. Ceragon's solutions are deployed by more than 150 service providers of all sizes, as well as in hundreds of private networks, in 85 countries.

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