MGW

Cost-effective Toll Quality Fixed Wireless Telephony

Optimized for rural and suburban environments, the MGW delivers carrier-class voice, high-speed VBD (V.92) and ISDN-BRI services. The MGW's modular and scalable configuration, enables incremental growth based on customer demand and a fast return on investment. Operating in a wide range of frequencies (800MHz - 3.8GHz), hundreds of thousands of MGW lines have already been successfully installed in over 60 countries.

Product Highlights

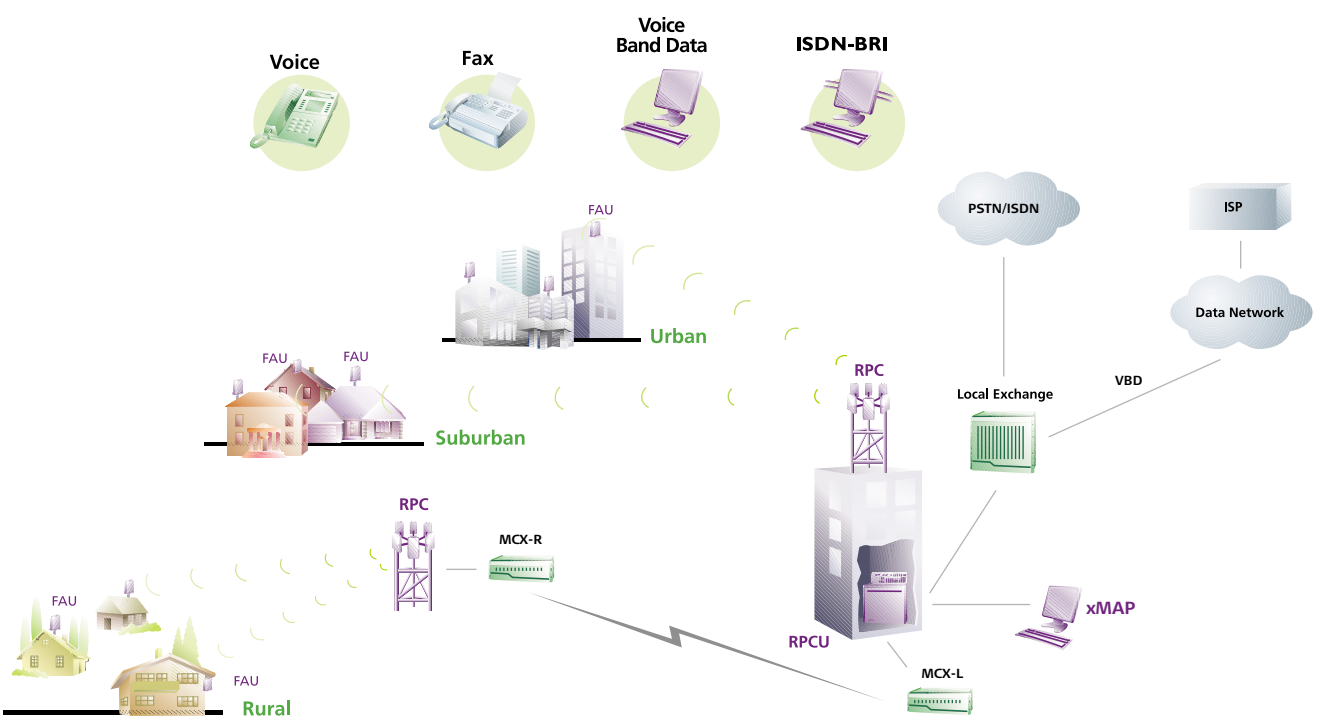
- Scalable and flexible system design allows for fast deployment, cost-efficiency and rapid ROI.
- Supports toll quality voice, ISDN-BRI and high-speed Voice Band Data.
- Optimizes spectrum utilization using field proven FH-CDMA technology and advanced multiplexing techniques.
- Supports a wide range of frequency bands (800MHz - 3.8GHz).
- Designed for rural, suburban and urban environments.
- Long distance radio coverage (Over 25km LOS).
- Supports full transparency to value-added services.
- Interfaces with standard analog & digital network protocols (V5.2, TR-008).
- Provides integrated network planning and management tools.

System Description

The MultiGain Wireless (MGW) is a field proven point-to-multipoint Fixed Wireless Access (FWA) solution. The MGW enables the fast and cost effective implementation of high quality communication services for both incumbent and Competitive Local Exchange Carriers (ILEC/CLEC) worldwide.
In urban, suburban and rural environments, the MGW dependably supports a variety of services including toll quality voice, high-speed Voice Band Data (VBD) and ISDN-BRI.

The modular and flexible architecture of the MGW guarantees extremely fast deployment, regardless of the topography. The systems scalability enables low initial investment, with further capital outlay matching network growth and subscriber demand. Combining advanced Frequency Hopping CDMA technology with an innovative blend of space and time diversity techniques, the MGW delivers the highest level of spectrum utilization and exceptional communication immunity against environmental interference. Furthermore, the MGW Coverage eXtender (MCX) offers excellent utilization of E1 transmission media.

The MGW meets regulatory and operational requirements with a wide range of frequency bands (800MHz to 3.8GHz) and supports standard analog and digital interfaces (V5.2 or TR-008). The MGW system is supported by both FWA network planning tools and comprehensive management and control tools, providing a complete package to answer any operator's needs.



RPCU - Radio Port Control Unit


RPCU

The RPCU serves as the MGW Base Station Controller and is designed to provide the interface between the MGW system and the Local Exchange. It also acts as the interface and control of the Radio Units (RPCs) connected to it. Up to 18 RPCs can be connected to the same RPCU. The RPCU is connected to the LE via E1 (ITU-T G.703) links carrying different protocols (V 5.2 Standard Interface ETSI ETS 300 347; TR-008 via an external Digital Interface Unit; 2 wire loop start via an external Analogue Interface Unit). A fully equipped RPCU handles up to 1024 PSTN lines. If a specific site is required to support more than 1024 PSTN lines, additional RPCUs can be daisy chained and used to provide management and control from a single point.

RPC - Radio Port Coupler


RPC

Simple to install, small and waterproof, the RPC provides the radio port of the Base Station. The unit consists of the radio and the control circuits integrated in the same outdoor box with the antenna. Regular standard telephone lines connect the RPCs to the Base Station Controller (RPCU). Up to 80 RPCs can be installed in the same site, providing coverage to 60° or 120° sectors. Superior traffic efficiency can be achieved by co-locating several RPCs in the same sector and by sharing their air link resources.

FAU - Fixed Access Unit


FAU

Easily mounted, small and lightweight Subscriber Unit, completes the radio link with the RPCs. The FAU is designed for outdoor installation and consists of the radio and telephone interface circuits, integrated into the same box with a built-in antenna. The FAU supports 1, 2 or 4 PSTN lines, Fax, Modem, Payphone and ISDN-BRI services.

PCU - Power Supply and Charger Unit


PCU

Small, modern case and indoor wall mounted unit, provides the power to the FAU and contains an internal back-up battery used in the event of a mains power failure. The unit connects the building's internal wiring for PSTN lines.

MCX - MGW Coverage eXtender


MCX

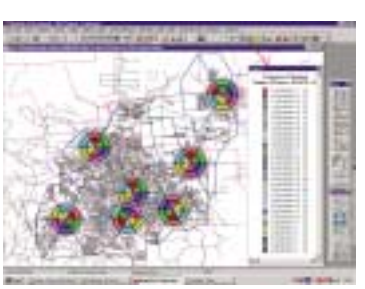
Used to extend the geographical coverage of the MGW networks. Up to 6 remote RPCs can be operated through one E1 link (ITU-T G.703) provided by regular transmission media (Microwave links, Fiber Optic, Coax, etc) and connected to a pair of MCXs (Local - located close to the RPCU and Remote - located far away from the RPCU). A fully equipped pair of MCXs handles several hundreds of PSTN lines.

xMAP - The MGW Network Management System

Consists of a scalable architecture supporting multi-user and multi network elements managed locally or remotely over IP Networks. Complying with TMN requirements, the xMAP provides Fault, Configuration, Traffic and Performance Management as well as Security Management. The xMAP graphically displays the MGW components and their corresponding operational status, according to the standard predefined color classifications and severity.

Network Planning Tool

Provides propagation modeling, traffic analysis, interference analysis, frequency planning and system sizing.
Together with extensive deployment experience, the planning tool generates optimized network plans that minimize infrastructure costs.



Specifications

Voice services	
POTS	
Voice toll quality	ADPCM 32 Kbps (ITU-T Rec G 726)
	PCM 64 Kbps (ITU-T Rec. G. 711 A-Law)
Extended voice services	CLASS Services (including CLI)
Signalling characteristics	DTMF dialing: transparent
	Pulse dialing
Tax signal	16 KHz
	12 KHz (optional)
	Polarity reversal (optional)
Ring signal	25 Hz
	20 Hz (optional)
Data Services	
Fax	Group 3
Modem	V. 92 (56 Kbps) over PCM
ISDN-BRI	2B + D
Network Interface	
Interface protocol	Analogue: 2 wire loop start
	Digital: V 5.2 (ETSI - ETS 300 347)
	Digital: T1-TR-008
Physical interface	RPCU: 2.048 Mbps trunks according to ITU-T G.703
	AIU 120: 2 wire analogue (POTS) lines
Radio Interface	
Operating bands	800 MHz
	1.5 GHz
	1.9 GHz
	2.4 GHz (full Tx power)
	2.4 GHz (ISM band according to ETSI ETS 300 328)
	3.4 to 3.8 GHz (according to ETSI EN 301 253)
	(other bands are available upon commercial agreement)
Channel spacing	1 MHz
Radio technology	Spread Spectrum Frequency Hopping CDMA (SS FH-CDMA)
	Duplex method - TDD
	Access method - downlink TDM; uplink TDMA
	Space and time diversity mechanisms implemented
	Radio range - over 25 km (LOS)
System Components	
Radio base station equipment	RPCU - Radio Port Control Unit
	RPC - Radio Port Coupler
	AIU 120 - Analogue Interface Unit
	DIU-T1 - Digital Interface Unit
	GSS - Global Synchronization System
Coverage extending equipment	MCX - Local Unit
	MCX - Remote Unit
Subscriber equipment	FAU 1, 2, 4 POTS lines Fixed Acces Unit
	FAU xP - 1, 2, 4 Payphone lines
	FAU xD - 1,2 POTS & Efficient Voice Band Data Fixed Acces Unit
	FAU 1i - ISDN-BRI Fixed Access Unit
	PCU - Power Supply and Charger Unit
Environmental Conditions	
Outdoor units (FAU, RPC)	Temperature: -40°C to +60°C
	Relative humidity: 10% to 95%
	Rain: rain proof (according to IEC 68-2-18)
Indoor units	Temperature: -5°C to +45°C
(RPCU, AIU 120, PCU, MCX-L, GSS)	Relative humidity: 5% to 85%
MCX-R	Temperature: -30°C to +55°C
	Relative humidity: 5% to 95%
Power Requirements	
FAU	Powered from the PCU connected to the AC mains supply with 8-hour rechargeable backup battery 110/220 VAC, 50/60Hz, 12VA maximum.
RPC	+ 60 Vdc, + 80 Vdc or + 90 Vdc remotely fed from the RPCU
	Typically, + 90 Vdc on 0.5 mm pairs diameter for 6 km RPCU
	RPC cable distance
RPCU	-48 Vdc nominal
	650W, for maximum configuration
AIU-120	-48 Vdc nominal
	40W, for maximum configuration
DIU-T1	48 Vdc nominal
	55W, for maximum configuration
MCX-L	-48 Vdc nominal
	50W, for maximum configuration
MCX-R	-48 Vdc nominal
	240W, for maximum configuration
GSS	-48 Vdc nominal
	25W, for each unit GPS and GTU

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