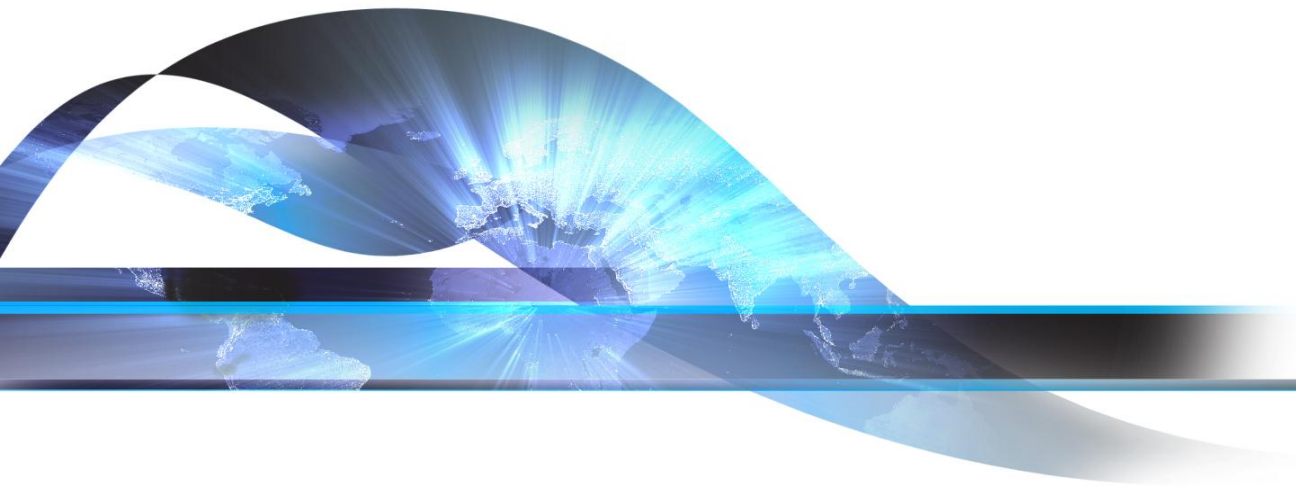


Access over Powerlines

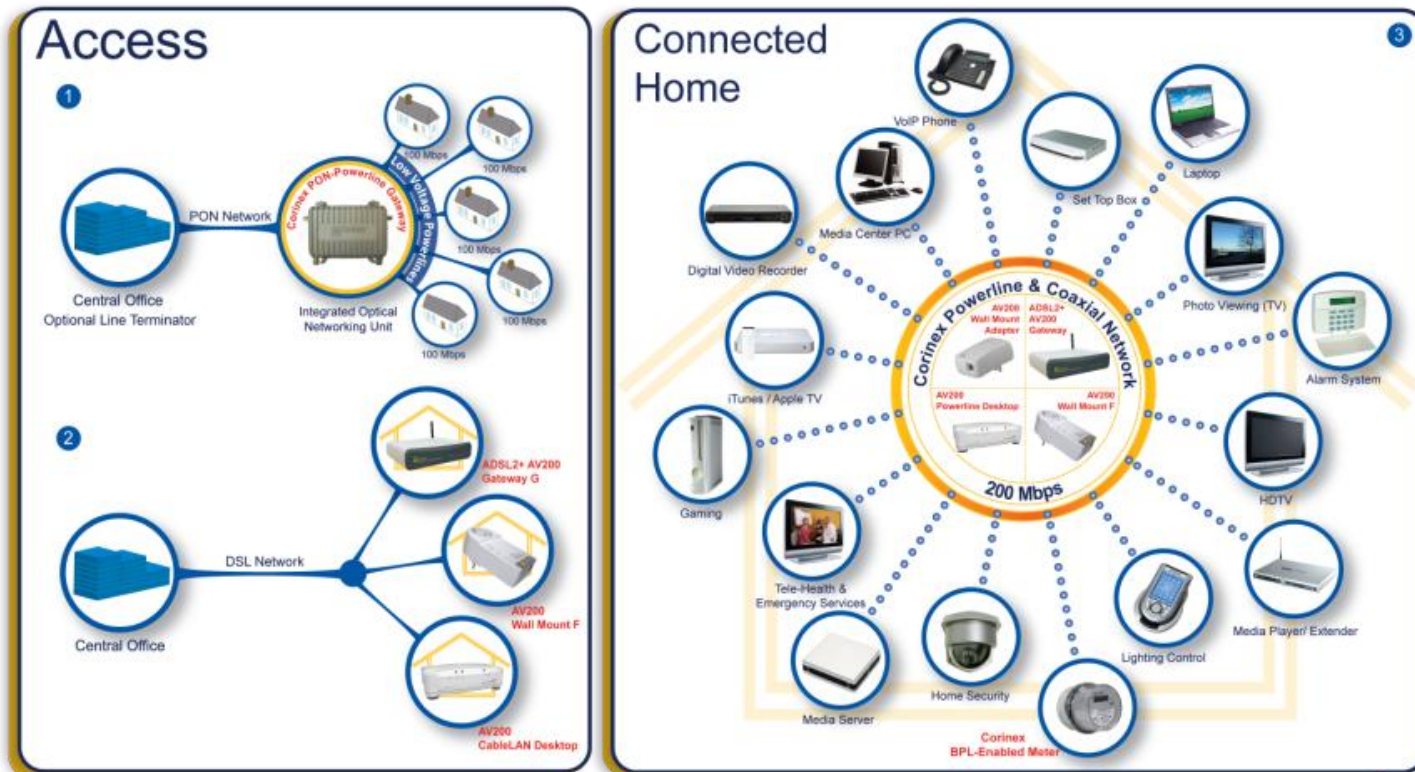
The Successful Story



Joint forces

Corinex Communications
BPL R/D/M

Marac Electronics
Strategic SI partner for Greece and Balkan



MARAC ELECTRONICS S.A.

studies, designs, supplies, installs and supports integrated solutions in the areas of:

- Telecommunications(ADLC, Wimax, Wi fi, Microwave , PLC)
- Information Technology
- Energy (RES,CHP, Electricity, Natural Gas)
- Maritime Systems
- Environment and
- Homeland Security

acting as a Systems Integrator and Value Added Provider in **Greece, South-East Europe** and **Middle East** regions through daughter companies and local partners.

Since 1976 with more than 140 personnel we deliver important complex projects to many customers, including Telecom Operators, Utilities, Public Authorities, Banks, Big Corporations of Private and Public Sectors, Universities and Research Institutes, the Armed Forces as well as Marine Companies.

- Technology
- Devices
- Structure
- Application

- Technology
- Devices
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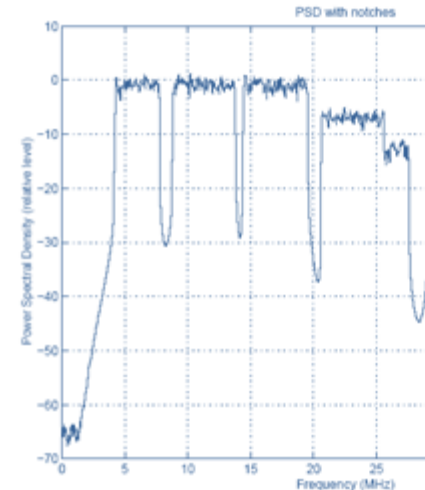
Requirements:

- **End to end IP** – service independent structure with bidirectional realtime communication
- **Performance** – including bandwidth, robustness and reliability
- **Security** – Access and data security
- **Coverage** – with feasible CapEx
- **Scalability** – to adopt needs for further expansion of any given solution
- **Coexistence and compliance** – with existing technologies and regulations
- **Management** – remote configuration, upgrades and monitoring



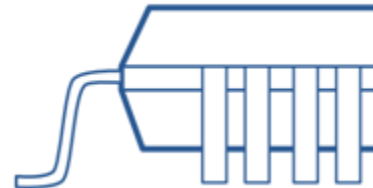
Operation Mode

- **Orthogonal Frequency Division Multiplexing** with Forward Error Correction and frequency bandwidth from 2 to 30 MHz
- Hundreds of carriers with **adaptive bit loading** based on SNR
- Allows **over 200Mbps** maximum physical speed
- Allows **any wire** to be used for transmission
- **Flexible frequency configuration** to optimize channel usage
- **Power Mask Control** to mask transmitted power spectral density by eliminating or attenuating certain frequency bands for dynamic notch configuration and application with predefined IARU PM.
- Designed for power line and coaxial medium
- **EPI** and low consumption



Features

- **Bridge Control and RSTP**
- **Service classifier** for incoming traffic from all interfaces to ensure QoS
- **VLAN** support with customizable settings (tagging, behaviour, filtering, output format, translation)
- **Provisioning and authentication system** for automated deployment and management
- **3DES and AES** encryption of communication
- **SNMP / TR-069** for remote management and monitoring
- **Serial** communication integration
- **Modular software** to address different demands
- **A set of features** to support customer needs



ITU-T G.hn

- **Interoperability** by globally unified PHY and MAC layers
- **Reduce blackspots** by providing higher coverage
- **Hi-bandwidth solution** (350Mbps app. rate for BPL)
- **Coverage over different media with single solution** using anywire approach
- **Reduced costs** based on reduced market fragmentation and world-wide standard
- **Testing and certification framework** that will be industry wide



- Technology
- Devices
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Segmentation by Form and OS

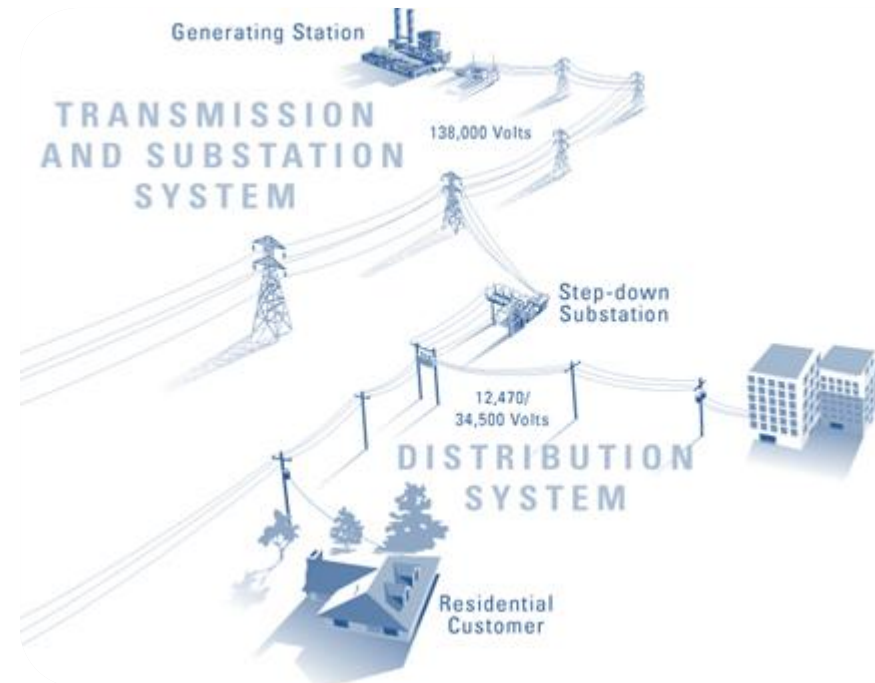
- **Outdoor gateways**
 - Higher PSD
 - Industrial grade
 - Weather resistant
- **Embedded solutions**
 - Related to requirements
 - Modular or Integrated
- **Indoor adapters**
 - Designed for end user comfort
- **Enterprise Access software**
 - Supports complex infrastructure
- **Enterprise AMI software**
 - Designed for dense AMI deployments
- **InHome Plug&Play software**
 - Provides plug&play with self insall support



- Technology
- Devices
- **Structure**
- Application

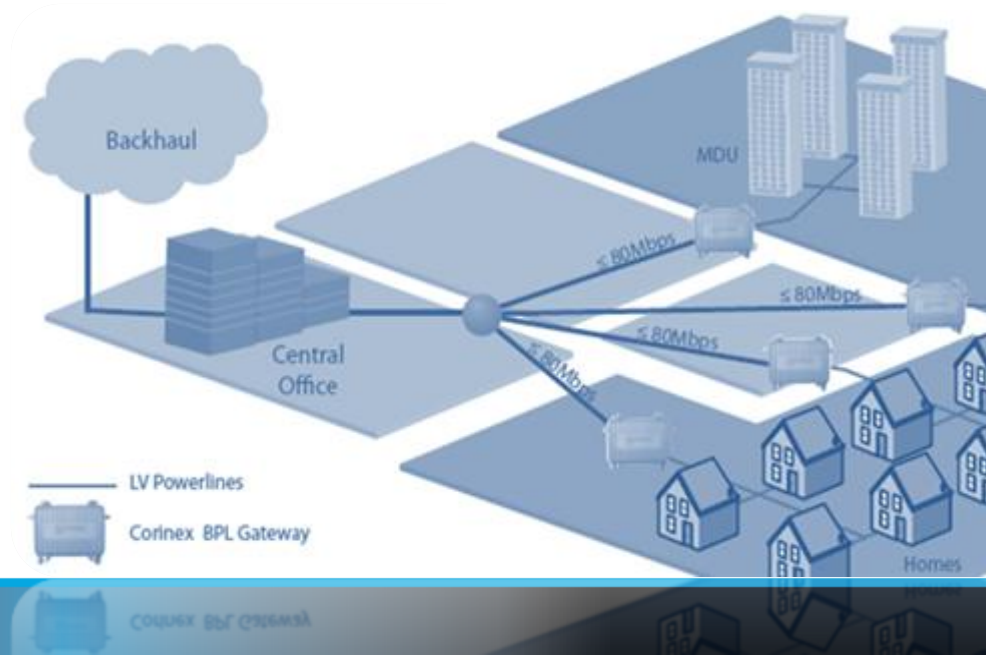
SmartGrids

- Medium and Low voltage coverage
- Real-time bidirectional communication
- Smart network reconfiguration
- Additional services support for both utility and customers
- Transparent data transfers or pre-processing
- Support for concentrator-centric solutions



Access Networks

- Last mile solutions
- Support range from AMI to Broadband
- Low voltage distribution and multi-dwelling units
- Point to multipoint MAC
- TDD and FDD repeating techniques
- Deployment and management software available



Connected Home

- SoHo networks
- Complements CE 3.0
- Plug & Play
- Smart routing and repeating features
- Already adopted by leading T1 Operators and Service providers around the world
- P2P topology
- Supports multi-phasic environment and coaxial networks



- Technology
- Devices
- Structure
- Application

Utilities

- Automated Metering Infrastructure
- Substation management
- Load management
- Demand management
- Preventive maintenance
- Outages management
- Micro-generation management
- Real-time data collection (scheduled / on demand)
- Bidirectional communication
- Scalable architecture
- Functional decentralization
- Reduced utility labor cost
- End customer portals / interfaces

Telco and Service Providers

- Broadband Internet
- Voice over IP
- IP TV

Home networking

- Connected home
- Easy interconnection
- Completes the convergence of Internet and TV services
- Aggregation of HAN and AMI services
- Consumption monitoring

Parameters

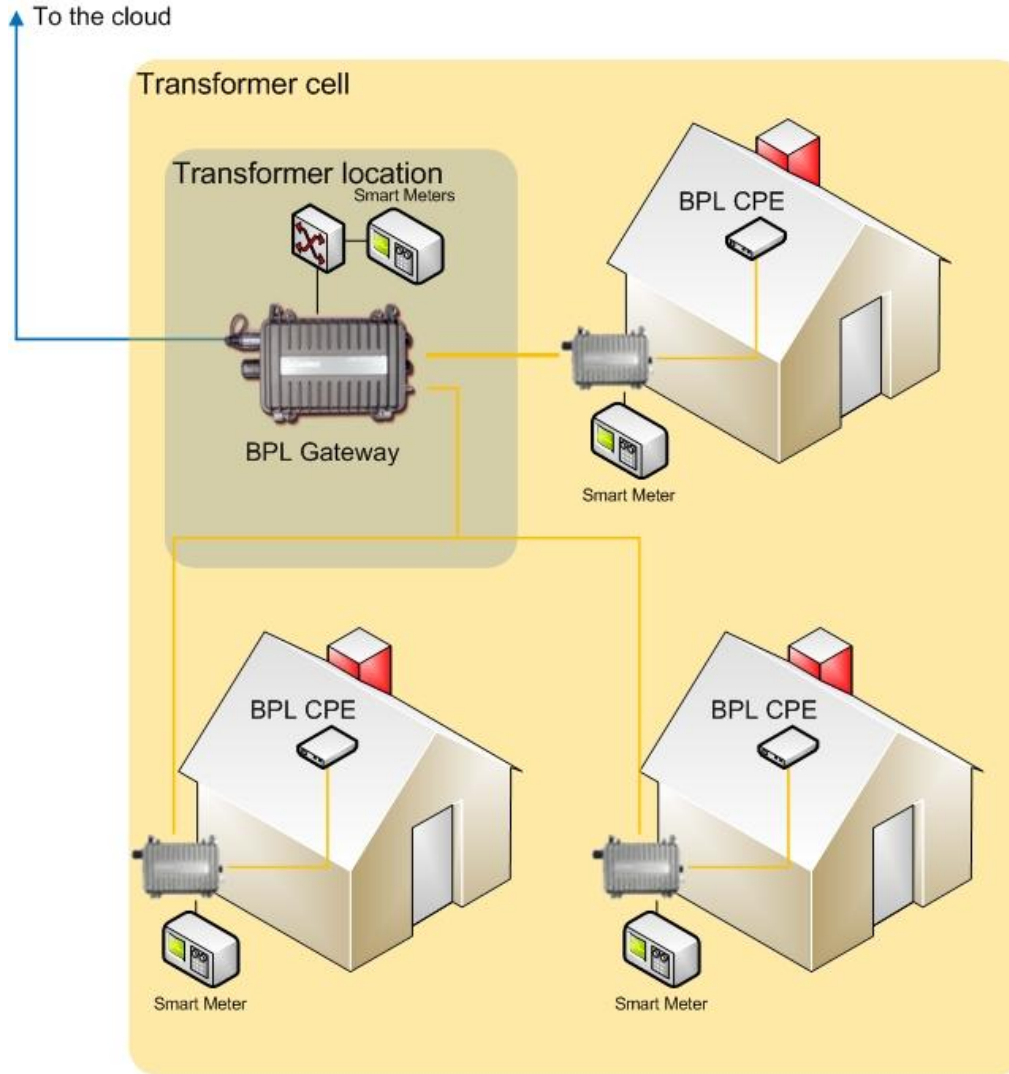
- Low voltage cells with 10 to 58 end points each
- 1 PoP for each cell
- Underground electricity distribution

Target

- Broadband distribution across the cells
- Metering data collection (first stage)
- Network integration with NOC
- Remote monitoring and management

Challenges

- Integration of different technologies
- Minimize the impact on existing ICT environment
- Back to back transparency for all SG services
- Generalize the procedures for rapid deployment





Achievements

- 100% signal coverage
- Minimum of 5Mbps reached per unit
- Replicable setup of network segments to generalize procedures
- No infrastructure modification
- Onsite training of personal

SmartGrid Services

- Real time data collection
- Remote data processing
- Return path of processed data back to customer
- Full integration to given environment





The End

Thank you.

www.corinex.com

www.marac.gr