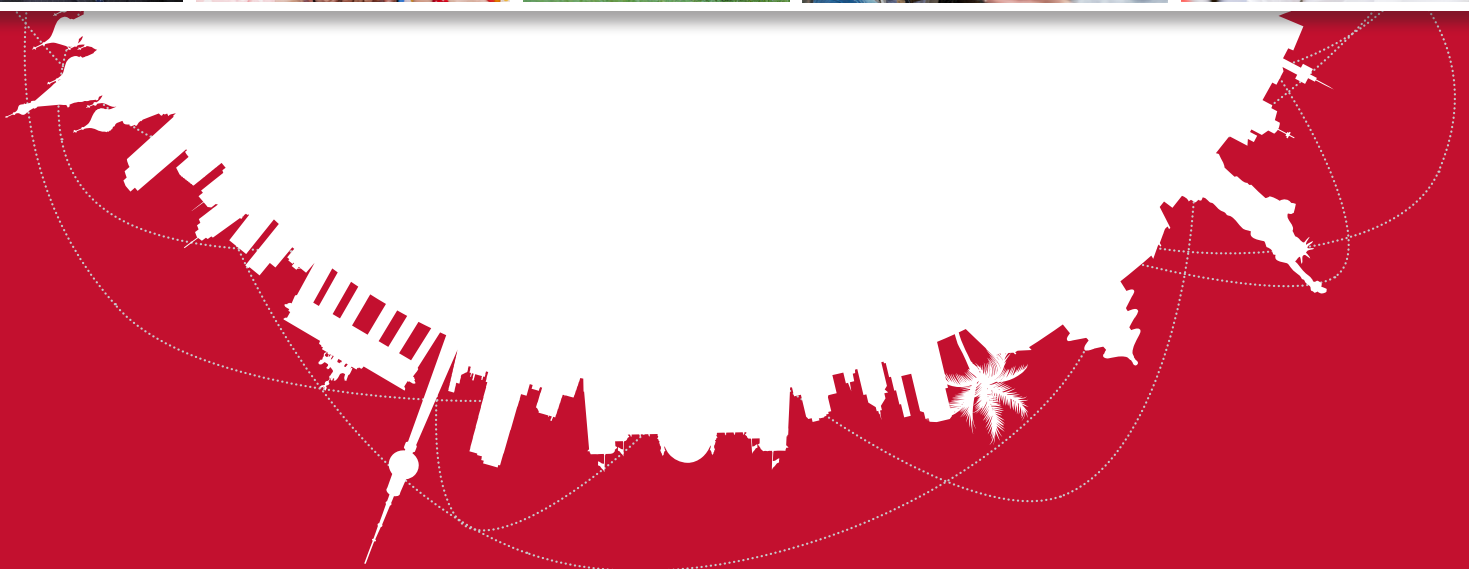
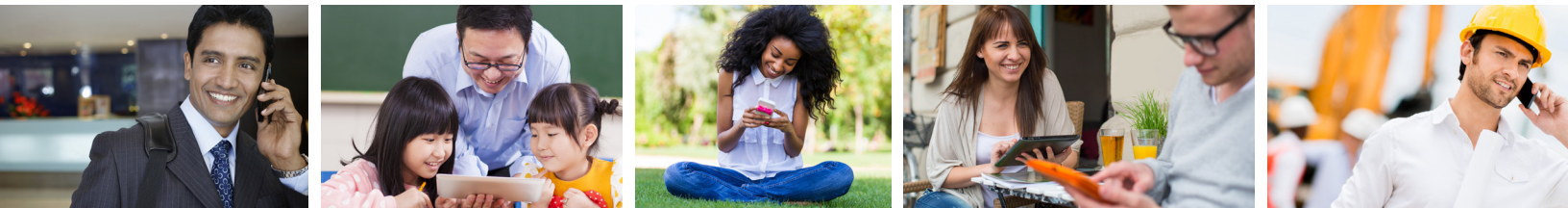




DragonWave

BUILDING BETTER BACKHAUL
EVERYWHERE





BUILDING BETTER BACKHAUL EVERYWHERE



As service providers and enterprises scale their wireless access networks to enable powerful new applications and services, many existing backhaul solutions are rapidly becoming a major bottleneck. DragonWave-X is building better backhaul everywhere with packet and hybrid microwave backhaul solutions that unleash the potential of true broadband mobility. Designed to meet the varied requirements of mobile networks, small cell deployments, public safety and other applications, our highly flexible backhaul solutions deliver unmatched capacity, reliability and cost efficiency, while supporting a smooth evolution to advanced packet networks.

DRAGONWAVE-X SOLUTIONS



4G-Optimized Backhaul

Engineered for the requirements of tomorrow's networks, DragonWave-X's solutions respond to the needs of LTE service providers, delivering native packet transport, synchronization, low latency, multi-Gigabit capacity and convergence of existing TDM traffic.



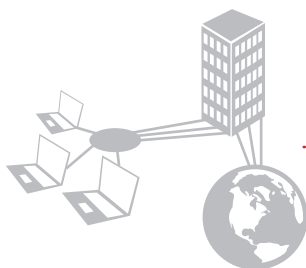
Long Haul Backbone

With DragonWave-X's Harmony Trunk products, operators can build high capacity longhaul network backbones.



Small Cell Networks

DragonWave-X's fully integrated, zoning-friendly small cell platforms allow mobile operators to expand their mobile presence, improve coverage and increase network capacity in high user-density areas.



Lease Line Replacement

Replace leased line services and eliminate expensive recurring telecom costs while improving capacity and availability with a packet microwave network.



Private and Enterprise Networks

Municipalities, healthcare facilities, financial institutions, schools, government institutions and other organizations can build carrier-grade private networks, achieving payback within the first year.



Cloud RAN

With integrated CPRI and OBSAI capability, operators can expand and distribute their RAN using DragonWave-X Fronthaul.



Last Mile Fiber Extension

Extend high-speed IP services beyond your existing network. DragonWave-X products are ideal for network hardening and disaster recovery, as well as for applications that require both legacy TDM services and carrier-grade, high-capacity native Ethernet.



Public Safety

DragonWave-X provides essential inter-site connectivity and backhaul solutions for first responders, city facilities, wireless mesh networks, surveillance systems, city fleets and sensor networks.



Multi-Generation Mobile Backhaul

DragonWave-X offers the industry's only software-configurable microwave solution that can easily switch from hybrid to full-packet transmission, offering a smooth transition from 2G to next generation 3G / 4G networks. Providing TDM and packet interfaces with a single end-to-end management framework.

PACKET RADIOS

DragonWave-X packet microwave solutions deliver new levels of capacity, spectral efficiency and reliability—all at the lowest total cost of ownership. To provide maximum flexibility, the products cover licensed and unlicensed frequencies from 6 GHz to 80 GHz.

The Harmony product family delivers unmatched all-outdoor performance for a wide range of point-to-point wireless applications. The Enhanced product line delivers the industry's highest system gain supporting transmit powers of up to 34dBm in an all outdoor radio. Lastly, the Harmony Enhanced^{MC} takes licensed microwave capacity to a higher level with multi-channel capability.

With unmatched radio performance, simple installation and operation, as well as sophisticated remote management capability, DragonWave-X's Packet solutions deliver significant life-cycle cost savings for service providers, enterprises and government organizations.



- Licensed and license-exempt point-to-point wireless from 6 GHz to 42 GHz
- High spectral efficiency using a combination of Bandwidth Accelerator and 4096QAM
- Highest capacity support with dual channel capabilities up to 112MHz channel support delivering up to 4 Gbps per radio
- Packet based network synchronization with Synchronous Ethernet (SyncE) and IEEE 1588v2 TC/BC
- TDM/Ethernet interfaces with optional indoor units for network evolution
- Service-aware radio to support differentiated QoS with up to 8 hardware queues
- 30% reach improvement with industry leading system gain
- Service aware Adaptive Code and Modulation (ACM)
- Comprehensive Ethernet OAM support (per IEEE 802.3ah, IEEE 802.1ag and ITU Y.1731)
- Carrier Ethernet 2.0 and SDN ready

HYBRID/ SWITCH

The Harmony FirstMile 200 and Hub800 are access and nodal switches providing pure packet support with ethernet and pseudowire capabilities, as well as hybrid modes with native TDM support. The Harmony switches are highly scalable and upgradeable, allowing a seamless transition from hybrid to packet networks. The Harmony Switches are compact indoor units which provide maximum flexibility for 2G, 3G and LTE traffic aggregation.

The Harmony Hub 800 is the perfect backhaul node for Harmony radio systems, with 16 Gbps switching capacity, and support for up to 12 radio directions in a single unit. In addition to supporting advanced Ethernet processing features, the Harmony Hub 800 can carry TDM traffic natively or via circuit emulation – a simple and cost effective solution for operators moving to converged packet networks.



The Harmony First Mile 200 is a perfect access aggregation unit delivering 8 Gbps switching capacity. With its extended operating temperature range and compact size, the Harmony First Mile 200 can be deployed on its own or within an outdoor base station housing for zero-footprint site installation.

- Powerful IDU options for Carrier Ethernet transport and network evolution
- Pair with any DragonWave-X radio
- Up to 12 directions and 20Gb/s switching throughput
- Up to 48 x E1/T1 and 4 x STM-1/OC-3 TDM ports and 4 x 100/1000BaseT and 2xSFP Ethernet Interfaces
- Full suite of clock synchronization and recovery mechanisms
- E-LINE and E-LAN Carrier Ethernet services
- Advanced QoS mechanisms, performance monitoring and fault detection



SMALL CELLS

DragonWave-X's Small Cell portfolio provides backhaul solutions that are urban-optimized to comply with strict city zoning regulations and designed to blend perfectly into the urban landscape.

Avenue Link delivers unparalleled backhaul performance and flexibility in the 24-60 GHz bands, with 400 Mbps capacity per hop and up to 1 Gbps with the DragonWave-X Bandwidth Accelerator for high capacity, low latency and availability.

Avenue Lite is a complete sub-6 GHz microwave system that is extremely compact, weighing less than 4 pounds, and operating in LOS and NLOS conditions, and offering sub- 3ms delay. Engineered to provide the greatest flexibility for mobile operators, Avenue products are designed to meet the size, weight and aesthetic requirements set by city zoning officials and can be deployed on various structures, including street lamps, traffic light poles and the sides of buildings.



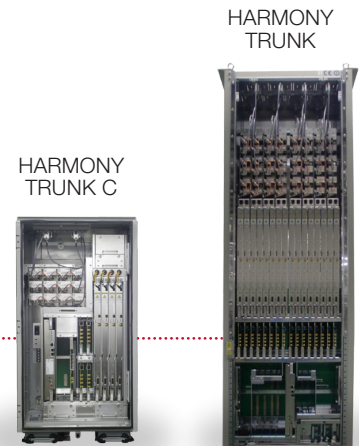
DragonWave-X's Small Cell portfolio is fully integrated in Netviewer and interoperable with the complete DragonWave-X solution.

- Licensed and license-exempt point-to-point wireless from 6 GHz to 80 GHz
- Integrated backhaul radios and antennas
- Zoning-friendly, environmentally hardened enclosures
- Backhaul powered by Horizon for unparalleled packet microwave performance
- Non-line-of-sight and line-of-sight options
- SynchE and 1588v2 support
- Low delay backhaul
- Low power consumption (15W with Lite)
- Licensed and license-exempt point-to-point wireless from 6 GHz to 80 GHz

LONG HAUL

The Harmony Trunk and Trunk C long haul trunk microwave solutions offer a simple migration plan when requiring support of legacy TDM to Native Hybrid (TDM & IP) to Full IP data communications within the your network.

With all-indoor and all-outdoor deployment options, these long haul trunk microwave systems provide a cost-optimized solution for long distance backbone or remote site connectivity. Both platforms support an innovative dual terminal design greatly reducing space and power requirements.



- Trunking radios for long-haul, high-capacity transport
- Best in class density with up to 16 RF channels per rack
- +35dBm transmit power
- Native TDM and native IP transmission, providing multiple software-selectable hybrid modes within a single platform
- Flexible modulation from 4QAM to 512QAM with Hitless Adaptive Modulation
- XPIC, space and frequency diversity support



SIMPLE MANAGEMENT

NETVIEWER

NETWORK AND ELEMENT MANAGEMENT SYSTEM

NetViewer is a comprehensive, carrier-class management solution for Service, Network and Element layers (NMS/EMS). NetViewer offers network operators a broad set of tools that simplify the operation, administration, maintenance and provisioning (OAM&P) of DragonWave-X's end-to-end portfolio of products. This solution also provides extensive fault management, performance monitoring, and security management capabilities.

This standards-based solution uses a highly scalable application server and delivers a real-time representation of network topology, connectivity and operational status. NetViewer enables operators to respond quickly to changing requirements, thereby reducing time-to-service and delivering significant operational cost savings.

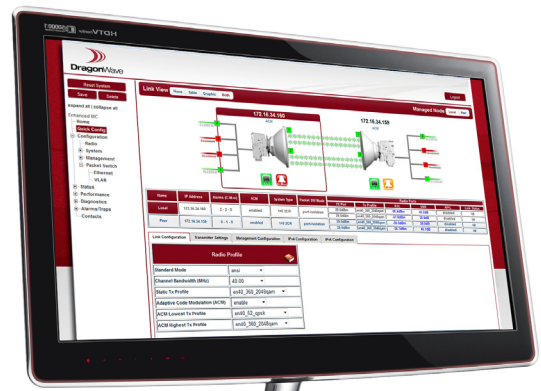
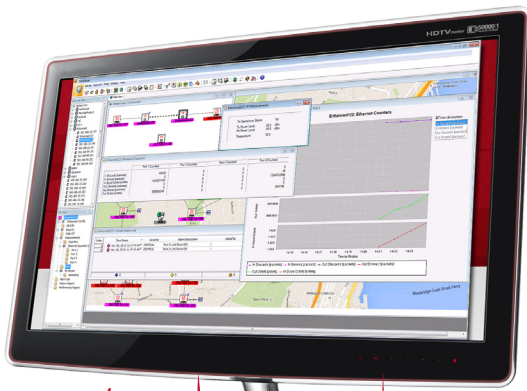
- Simple and intuitive point-and-click Graphical User Interface (GUI)
- End-to-end service provisioning
- Network-wide device discovery
- Real-time dashboard with performance monitoring, statistics and charting
- Bandwidth utilization indicators
- Advanced fault isolation and management
- Real-time configuration and security management
- Simple integration with external operations support system (OSS)
- Innovative and scalable application server architecture
- Covers complete DragonWave-X portfolio

LINKVIEW

WEB-BASED LINK MANAGEMENT

LinkView is DragonWave-X's intuitive Element GUI available across the full product portfolio and easily accessible as a web-based application. LinkView provides the user with an easy to use web interface to monitor and configure the full radio link. The visual representation of the full link (includes HSB and XPIC) delivers a quick view of the link status to help operators troubleshoot their radio or link issues. The local and remote end of the link can be managed through the same window greatly simplifying the troubleshooting process. LinkView comes standard on all DragonWave-X radio platforms, no separate application install is required.

- Simple and intuitive point-and-click Graphical User Interface (GUI)
- Ethernet, Radio, and Link Based Stats
- Flexible presentation of statistics
- View and control of the full radio link
- Real-time dashboard with performance monitoring, statistics and charting
- Bandwidth utilization indicators
- Real-time configuration and security management
- Covers complete DragonWave-X portfolio



DRAGONWAVE-X

FEATURES AND BENEFITS



Best in class spectral efficiency with 4096QAM and DragonWave-X's proprietary Bandwidth Accelerator+ technology



30% Reach improvement with industry leading system gain



Complete product portfolio covering 2 GHz up to 80 GHz with Carrier class Ethernet switching



End to end network management including service provisioning FCAPS capability



Packet synchronization solutions for next generation mobile networks



Urban-optimized Solutions tailored for Small Cell backhaul



Highest capacity wireless solutions delivering up to 8 Gbps per link





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