



Architectural Backgrounder

So much of what wireless LANs do is becoming standardized in the ever-evolving IEEE 802.11 standard. Meaningful benefits available to network managers and users alike have been, and clearly will continue to be a function of a given wireless LAN's *system architecture*. What do we mean by architecture? It's the way in which functions are designed, implemented, and distributed within the wireless LAN network. For example, *traditional* wireless LANs are based on a network of access points, which provide the bridging between wireless users and the rest of the network infrastructure. While this architecture works, vendors providing *switched* wireless LAN architectures have correctly pointed out that centralizing many of the functions otherwise in the access point allows access points to become very "light-weight" and thus less expensive. Switched architectures also claim savings on operational expense, as network management deals only with a single wireless switch and not with an increasingly larger number of individual access points.

But switches are still inadequate for deployments of varying shapes and sizes. And the reasons for this are simple—switched WLANs are based on closed, proprietary implementations, and they introduce a single point of failure (the switch itself) into what needs to be a robust, reliable environment. Moreover, switches are still isolated Layer 2 subnets, making them difficult to manage, secure and scale to meet the needs of an ever changing network environment. Switches operating on this layer are also limited in their ability to handle seamless roaming and voice traffic. For this, a much more sophisticated wireless LAN architecture is required; one that provides the scalability and availability that finally makes the WLAN *a full peer in the enterprise network*.

Chantry Networks' *BeaconWorks™* is the first complete, enterprise-class infrastructure for wireless voice, data and application traffic. What makes BeaconWorks so fundamentally different from switched architectures is that it's based on Layer 3 (IP, routing), not Layer 2 (Ethernet, VLAN, switch). Why build a Layer 3 wireless LAN? Because so much of the functionality of modern WLANs depends upon facilities *best implemented above the MAC layer*, and because the router is naturally and logically the core element in designing large enterprise networks—networks which cannot be adequately served by traditional or switched WLANs.

BeaconWorks consists of our wireless controller (*BeaconMaster™*) communicating with our access points (*BeaconPoints™*). Using a Layer 3 controller at the core of a WLAN network has many important benefits:

- BeaconWorks is instantly at home in your IP-based infrastructure. Unlike switched WLANs, dedicated wiring between the access points and the wireless router is not required. There's no 100-meter limit between the BeaconPoint and the BeaconMaster as they leverage your IP infrastructure for communications. A routed WLAN can be configured to meet your needs, across any set of enterprise requirements, and in record time.
- BeaconWorks provides QoS-based seamless Layer 3 roaming for wireless multimedia traffic, providing virtually zero latency when roaming. This technical feature is designed for widespread adoption of voice over Wi-Fi (VoFi) and multimedia applications across wireless networks.

- BeaconWorks offers the CAPWAP Tunneling Protocol (CTP) for interoperability between wireless access points. CTP provides mobile session management seamlessly across WLAN infrastructures, independently of your IP network topology (LAN, MAN, WAN).
- BeaconMaster can be located quite literally *anywhere* in your network. And thousands of BeaconPoints can coexist in a single WLAN installation, providing unparalleled *scalability* with all of the benefits of centralized configuration and management. Switched WLANs have inherent limitations with respect to configuration and installation flexibility—there are no such limitations in BeaconWorks. Chantry believes that WLAN systems designed without inherent limitations are the only acceptable approach to enterprise wireless deployments today and in the future.
- BeaconPoints are designed for reliability, with one or more automatically assuming the load if a unit fails. We extend this philosophy to BeaconMasters as well; one BeaconMaster automatically picks up the load from another BeaconMaster if it goes off-line. And, because BeaconMasters in such fault-tolerant configurations do not have to be near one another physically, the cost to provide such reliability is minimized – a distinct advantage over switched architectures. This is extremely important because the WLANs being deployed today are being used in mission-critical applications that demand a high degree of reliability and availability

So much of the functionality required to make WLANs usable in an enterprise deployment naturally exists above that which is defined in the IEEE 802.11 standard. For this reason, we have built upon the architectural principles noted above in *VNSWorks™*, our unique Virtual Network Services. VNSWorks is based on the concept of *virtualization*, which allows elements in a wireless network to be managed and used independent of their physical relationship with the wireless LAN itself—ideal in the highly mobile environment that is enabled by wireless connectivity. User groups with specific security profiles and quality-of-service needs can be easily defined, and these policies can remain with them as they move around the network—in addition to policy-based security management with a broad range of options. VNSWorks also allows network services to be defined based on the specific location of a user as well as time of day. For example, access for a particular user can be automatically enabled or blocked based on location within an area covered by BeaconWorks, or disabled entirely outside of specified hours of availability.

BeaconWorks is the first wireless LAN system designed to meet the needs of enterprise wireless and public-access deployments. While providing complete support for all 802.11 (a/b/g) features, BeaconWorks ties the WLAN to the rest of the enterprise network through a router, not a switch. Beyond that of any other WLAN product, BeaconWorks allows enterprises of all shapes and sizes to deploy sophisticated WiFi and VoFi technology cost effectively without sacrificing the benefits of centralized management, high availability, scalability and secure seamless mobility. BeaconWorks also provides extensive benefits via virtualization and an approach to network management which allows customization based on unique installation requirements of individual enterprises, such as user populations, geographic locations, deployment strategies and existing infrastructure.

Layer 3 WLANs are the future. Chantry Networks is leading the way to this exciting opportunity.



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