Wireless Access Solutions

The Power of Virtualization Brought to Wireless—vWLAN®

Next Generation Wireless Solution

Today's enterprise communicates wirelessly. Users now carry multiple devices that need to connect to the enterprise Wi-Fi network from any point in the building and across the campus. These devices are mobile and are accessing applications that demand higher bandwidth. Wireless connectivity in the enterprise has moved from the access of convenience to the access of choice. Traditional enterprise wireless networks were designed before the explosion of Wi-Fi enabled devices and are now straining under the demand to support more devices, more access points, wider mobility, and greater bandwidth. A more scalable, cost-effective solution has emerged that leverages the power of virtualization to solve the scale challenges of the enterprise wireless network.

ADTRAN has developed and introduced the next generation enterprise wireless solution: vWLAN. vWLAN eliminates the scaling constraints imposed on the enterprise wireless network by eliminating the hardware controller and instead virtualizing the control and management of the network to run as software on a hypervisor. This fundamental shift brings extraordinary benefits.

Scalability

In conventional controller-based networks, scale is tied to a single purpose device which is the hardware controller. Adding more users and more access points causes the enterprise to buy a bigger controller or add additional controllers. The introduction of 802.11n, which increases bandwidth demand three to five fold, also drives the need to buy larger controllers. vWLAN breaks this constant upgrade cycle. Most large hardware controllers support approximately 150 access points and 4,000 users. A single software instance of vWLAN supports 1,500 access points and 48,000 users.

In conventional controller based networks, scale comes at a high price both in terms of OPEX and CAPEX because a single-purpose server is required. This is not the case with vWLAN. With vWLAN, the controller is software on a hypervisor. The cost of this virtual control software is zero.

Security

Virtualization not only unlocks cost effective scalability but it also enhances the security of enterprise wireless networks. Traditional controller-based networks have two security vulnerabilities. First, unwanted traffic actually enters the LAN through the thin, unintelligent access point. Only until the traffic reaches the controller is unwanted traffic discarded. Why bring unwanted and potentially harmful traffic onto the network? With conventional WLAN architecture, there is no other choice, but vWLAN provides a more secure solution. vWLAN uses intelligent access points that operate a stateful firewall. Unwanted traffic is turned away at the access point before it enters the network and becomes a security problem.

Second, a centralized physical controller is a target for malfeasance. This device is in the data path and, therefore, serves as a convenient point to intercept traffic. vWLAN eliminates this vulnerability by keeping the data sessions on the LAN. Only control traffic is centralized. And this centralization occurs in the enterprise data center as opposed to a single server

Reliability

ADTRAN's vWLAN brings wireless reliability to a whole new level. In vWLAN, the user data stream or data plane is separated from the control information about the data session. This separation of the control plane and data plane increases the reliability. In the conventional controller-based approach, any failure in the control plane interrupts the data plane. In vWLAN, the data session is the priority. The control plane can be completely lost and the user data sessions remain intact.

This separation of control and data allows vWLAN to support hitless failovers. A secondary virtual control instance can back up the primary control. If an access point loses connection with the primary virtual control instance, it will realign with the secondary control. This re-establishment of the control plane takes place with zero packet loss to any of the data sessions.

Virtualization

One of the most significant developments in enterprise computing is virtualization. Virtualization optimizes the computing power of an enterprise allowing for cost-effective scaling of critical applications. Single purpose servers tied to only one application or operating system isolate and sub-optimize computing resources and now seem like a relic of a past era in computing. Yet this outdated approach is exactly the design of most conventional WLANs. The answer from most WLAN companies was to build bigger and bigger controllers. And with the advent of higher data speeds and more users, the burden of the controller only becomes greater. ADTRAN took a different route, unshackling the wireless network from the limitations of an expensive physical controller. Rather than building a bigger, more expensive hardware

controller, ADTRAN merged the power of virualization with the wireless LAN - creating vWLAN. Rather than being tied to the scale and reliability of a single controller at every location, an enterprise can leverage the scale and reliability of their data center to serve all locations.

vWLAN

ADTRAN is the only company to provide wireless LAN control virtualized on software residing on either a hypervisor (e.g. VMware) or an appliance. This new, next generation wireless architecture is designed around a concept of simplified scalability and flexibility. vWLAN removes the complexities and limitations of dealing with controller capacity by centralizing the management and control functions. Therefore, adding additional access points to the vWLAN system is as easy as installing a software license, which can extend the coverage to thousands of APs.

Wireless Access Points

ADTRAN's line of Bluesocket wireless access points are designed for secure, mission critical, wireless access. These reliable, performance-based APs offer multiple antenna options, support 802.3af Power over Ethernet for trouble-free deployment, and are completely plug and-play, requiring no manual configuration.

Wireless Access Solutions

Virtualizing the Wireless Network

ADTRAN's next-generation vWLAN architecture brings all the benefits of virtualization to the wireless network. vWLAN unifies wireless and existing wired networks to produce a truly integrated and optimized networking solution. vWLAN enables customers to dramatically reduce the cost of deploying and operating large-scale Wi-Fi networks while providing wired-equivalent performance to wireless users, with seamless roaming and enterprise-class security and policy management.

Simplified Scalability

vWLAN architecture was designed around a concept of simplified scalability and flexibility. In the era of wireless advancements including 802.11n, voice, and larger wireless networks; maintainability and Total Cost of Ownership (TCO) are at the forefront of new network designs. vWLAN removes the complexities and limitations of dealing with controller capacity by centralizing the management and control functions. Further advantages are gained with security and mobility distributed at the edge of the network, the logical placement in networks that are designed for scalability and high availability. Adding additional access points to the vWLAN system is as easy as installing an ADTRAN software license, which extends coverage to thousands of APs without needing to worry about controller capacity or adding additional hardware.

Unprecedented Wireless Security

ADTRAN's robust security architecture is integrated into vWLAN providing NAC, authentication server integration, enhanced guest access, and policy enforcement. These security features are optimized for performance and scalability. vWLAN's identify-based access control removes restrictions that were part of traditional wireless LAN solutions and provides more flexibility in managing wireless access.

Optimized Performance

With vWLAN, 802.11n system capacity is no longer computed by the backplane capacity of the hardware-based controller; rather, it's determined by the aggregate throughput of the APs. This is a revolutionary change from traditional, centralized wireless LAN solutions. The vWLAN distributed architecture enables over a 10x increase in the total capacity.

Because the packet forwarding functionality is offloaded from the controller to the access point, the controller is free to now manage thousands of AP's and 10s of thousands of users.
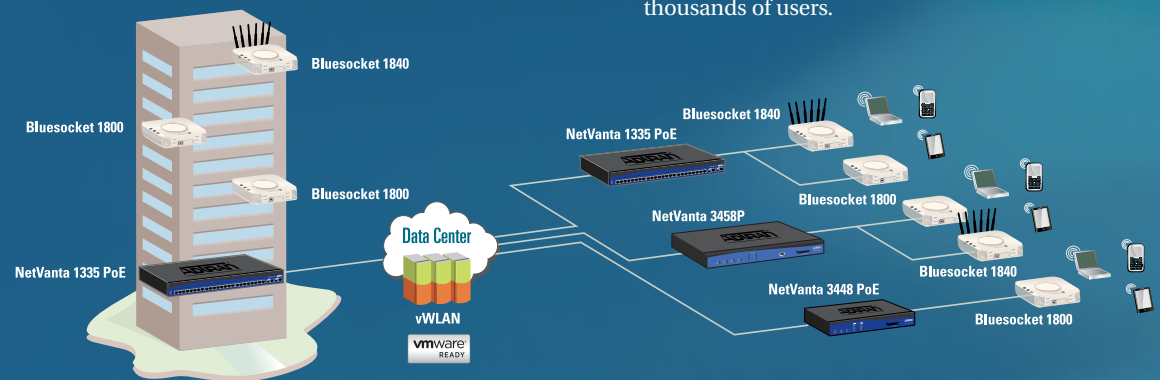
Businesses of all Sizes

vWLAN provides a flexible solution that can oper-
ate in multiple deployments from a branch office to
a large campus environment while offering a lower
cost of ownership and optimal performance. Remote
offices deployments are demanding more from wire-
less LAN solutions and vWLAN responds by integrat-
ing flexibility into the security and data forwarding
modules.

Wireless LAN systems, especially in large campus
environments, are expected to provide minimal
downtime as they support a significant number of
users and critical applications. vWLAN addresses this
requirement by providing a seamless, high availabil-
ity solution that is transparent to the wireless users
(with zero packet loss) while also providing flexible
deployment options.

Virtualization

By virtualizing the centralized management and con-
trol function and making it available on a hypervisor,
like VMware, ADTRAN removes 100 percent of the

controller hardware, vastly reducing capital
costs and TCO. This in conjunction with the
other benefits that virtualization provides like,
speedy deployments, infinite scale and virtual
consolidation across the organization, makes
vWLAN on VMware the most powerful and
complete choice for a efficient, secure, high
performing and cost-effective wireless
LAN solution.

vWLAN Benefits

- **Eliminates the cost and constraints of a physical controller:**
Eliminating the physical controller triggers a number of advantages
not the least of which is cost. Both the initial CAPEX and the
ongoing OPEX associated with the controller are gone.

- **Enforces network security at the edge:** vWLAN takes advantage
of intelligent access points and enforces security polices at the
edge. A full stateful firewall is configured and managed centrally
but the policy is enforced at the access point.

- **Provides seamless, cost-effective scaling:** vWLAN separates
the control and data plane. This allows for separate scaling and
greater capacity. Adding more access points (data plane) does
not drive an increase in the control plane. Likewise, adding more
locations or more users does not require an additional investment
in the control plane.

- **Optimizes Performance:** With vWLAN, system capacity is
no longer determined by the backplane capacity of the controller;
rather, capacity is a function of the aggregate throughput of
the APs.

- **Flexibility:** Virtualization permits a single application to run
independent of the underlying server infrastructure. A vWLAN
control instance in one city can control access points anywhere in
the world.

- **Reliability:** vWLAN can be configured in a high availability
arrangement such that a failover can take place with zero packet
loss. Reliability is based on the dependency of the data center
as opposed to a single purpose controller.

vmware®
READY

Scalability and Simplicity Come Together

Remove the hardware controller from the wireless LAN and suddenly you remove complexity and add scalability. By virtualizing the control of the wireless network, some amazing things happen. No longer is an enterprise tethered to the LAN for control of the wireless network. Control can happen anywhere. Need to add another AP or deploy a new site? No problem with vWLAN, an access point can be anywhere in the world. One instance of vWLAN can control and manage a worldwide deployment of access points.
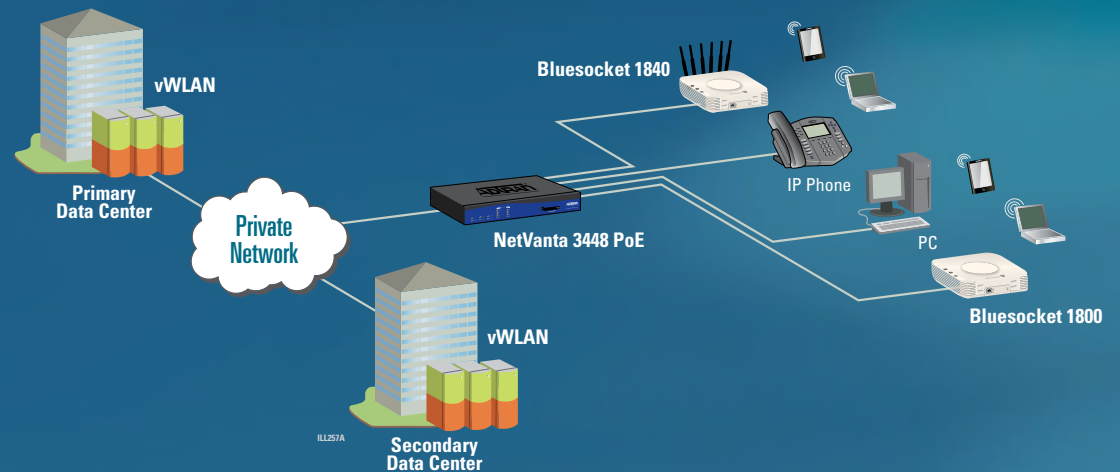
Intrusion Detection, Worm Protection and Clientless Scanning

Unlike signature-based tools or OS-specific scanners, vWLAN has implemented real-time monitoring of Wi-Fi users' data to detect malicious traffic based on the users' actual behavior without requiring any client-side software. This enables administrators to automatically block network access to hackers or worm infected users even for "zero-day" attacks well before traditional signature-based tools have updates available. vWLAN fully integrates clientless scanning, to provide a maintenance-free way to protect wireless devices from viruses, worms, Trojan Horses, spyware/malware and other threats and anomalies before they are allowed to log-on and gain access to the wireless LAN. Taking advantage of automated Web-based scanning, ADTRAN's vWLAN is unique in providing trusted endpoint security, ensuring the user's device is free from viruses and worms, and has the required security and OS patches.

Flexible Role-Based Access Control and Policy Enforcement

ADTRAN's unique role-based approach provides convenient management of privileges for different categories of users. The vWLAN solution matches user permissions to your organizational structure. IT Administrators can define destinations (such as a finance server, router or IP address subnet), services (such as HTTP, FTP, POP3), user locations, time/date schedules, and available bandwidth to control which users have access to each resource. Multiple service and destination groups simplify policy creation and reduce the complexity and cost of the administration of large-scale networks.

vWLAN

Primary
Data Center

Private
Network

Bluesocket 1840

IP Phone

NetVanta 3448 PoE

PC

Bluesocket 1800

ILL257A

Secondary
Data Center

vWLAN

Quality of Service for VoIP and Video

802.11n is a shared bandwidth technology, so network contention becomes an issue as the number of users and network traffic increases. ADTRAN overcomes this problem by providing administrators fine-grained bandwidth and wireless LAN prioritization with QoS controls to ensure low latency performance for voice and video. ADTRAN's unique stateful packet inspection allows administrators to identify and secure dynamic, real-time voice protocols such as SIP, H.323 and SCCP and provides a complete platform for converged voice, video and data over a single wireless LAN infrastructure.

High Availability

ADTRAN's High Availability (HA) solution is designed to provide uninterrupted wireless LAN service and to hitless failover "Zero Packet Failover Event".. This high availability scheme is based on installing a primary vWLAN software

and a hot-standby vWLAN software. Both vWLAN software can be deployed anywhere as long as ADTRAN's Bluesocket APs have connectivity to them (same building, across campus or over the Internet). If a Bluesocket AP were to fail to communicate to the primary vWLAN software it will seamlessly failover to the secondary vWLAN software, guaranteeing that existing authorized users will not lose a single packet and new users will be redirected to the secondary vWLAN software for authentication.

Key Features

- **Secure Mobility:** Gives users of mobile devices wireless access to corporate networks and the Internet while moving across subnets.

- **Flexible Role-Based Access Control and Policy Enforcement:** Provides convenient management of privileges for different categories of users.

- **Universal WLAN Authentication:** Provides comprehensive authentication options utilizing username/password combinations or digital certificates, with the authentication database held locally or centrally in RADIUS, LDAP, NT Domain servers, or Windows Active Directories.

- **LAN Security:** Intrusion detection, worm protection and clientless scanning for trusted endpoint security.

- **VoIP:** Security, maintained QoS, and fast roaming for VoIP.

- **High Availability:** Seamless failover with zero packet loss, no matter the location of the backup data center.

Plug-and-play Wireless Deployments

ADTRAN's family of high-performance Access Points (APs) are the perfect fit for enterprises looking to deploy secure wireless networks. An integral component of the vWLAN solution, these APs are completely plug-and-play requiring no manual configuration and deliver optimal performance with ADTRAN's DynamicRF™ technology. Whether you want to add wireless to your office or light-up an entire campus, ADTRAN's Bluesocket APs are designed to meet your needs.

Endpoint Compliance

BlueProtect™ is an integrated endpoint client scanning solution. With BlueProtect, IT staff can be confident that client devices connecting to the corporate wireless network are safe and will not introduce threats into the network environment. After completing the scan, the AP receives the updated role information and begins switching the client traffic locally. Managed via the administration GUI of vWLAN,

BlueProtect allows IT staff to monitor, control and enforce policies relating to:

- Anti-Virus
- Anti-Spyware
- Firewall
- Files/Registry
- Custom Rules
- Peer-to-Peer Applications
- OS/Patch Level

Bluesocket 1800

- Two 802.11a/b/g/n dual band radios
- Embedded 2nd generation MIMO antenna
- A Gigabit Ethernet port for dual concurrent 40 Mbps streams
- 802.3af compliant PoE support

Bluesocket 1840

- Two 802.11a/b/g/n dual band radios
- Six R-SMA connections for external antennas
- A Gigabit Ethernet port for dual concurrent 40 Mbps streams
- 802.3af compliant PoE support
- Functions in 802.11a/b/g mode with an optional 11n license upgrade

WiFi CERTIFIED®

"We needed a solution that would allow us to upgrade to 802.11n technology, accommodate the proliferation of devices hitting our network, and allow expansion cost-effectively and efficiently across remote sites."

Douglas Tamasanis, Senior Director of IT

KRONOS®

Traffic Handling

ADTRAN's Bluesocket APs offer many class/quality of service components including bandwidth management, admission control, packet prioritization, and load balancing to assure each user's traffic is handled appropriately to provide the highest level of performance.

In addition, the Bluesocket APs incorporate an award winning fairness algorithm to provide optimal voice performance in a mix-mode VoIP/Data deployment.

RF Management

ADTRAN's RF management functionality, DynamicRF, ensures that your entire wireless LAN system is appropriately setup with a balance of channels and power. DynamicRF, reduces the effort to setup and maintain your wireless network. The system detects any non-optimal environmental conditions such as:

• General interference or noise
• Co-channel interference introduced by a neighboring AP
• Loss of connectivity to an AP
• Poor wireless client characteristics (low RSSIs, multiple failures or retries)
• High user load

In addition, will either automatically adjust the RF parameters or provide the administrator with a list of recommended changes.

Key Features

- **A Wi-Fi Certified, Centrally Managed WLAN Solution:** ADTRAN's Bluesocket APs have achieved Wi-Fi certification from the Wi-Fi Alliance, guaranteeing interoperability with all client devices to provide a high performance, centrally managed wireless LAN solution for enterprises.

- **Zero Touch, Plug-and-Play Deployment:** ADTRAN's Bluesocket APs are completely plug-and-play and self-configuring, requiring no manual configuration.

- **Unmatched Security:** Security features include local MAC authentication, 802.1x port-based authentication, Temporal Key Integrity Protocol (TKIP), Wireless Protected Access (WPA), and 802.11i (WPA v2) with multiple Extensible Authentication Protocol (EAP) methods for user authentication such as PEAP, FAST, TTLS, AKA, SIM and TLS.

- **DynamicRF:** Constantly monitors the RF spectrum for RF noise, interference, coverage holes, and optimizes power and channel settings to ensure optimal performance.

- **RF Intrusion Detection System (IDS):** Built-in RF IDS allows ADTRAN's Bluesocket APs to find and contain rogue APs, rogue clients, ad-hoc networks and a host of wireless LAN DoS and spoofing attacks that threaten the security of your network.
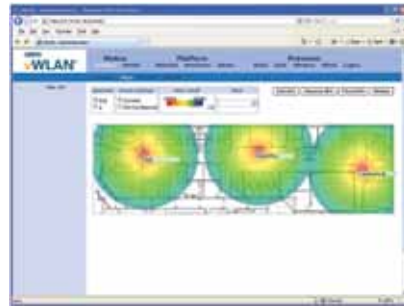
Support, installation, and maintenance services.

Having insurance is a necessity and your network is no exception. For that reason, ADTRAN provides an industry-leading product warranty with award-winning customer support and service.

Put Your Mind at Ease That Your Network is Protected

All ADTRAN products come standard with an industry-leading domestic warranty, pre-sales design assistance and post-sales technical support provided by a staff of highly trained network engineers. In addition, a number of system engineers are region-ally based throughout the United States, Canada and abroad to support distribution, reseller, and customer support and training needs. ADTRAN's warranty also includes a return-to-factory and repair and replacement program. Phone support is free for the life of the product warranty for trouble-shooting and is available during normal support hours. Emergency after-hours support is available for network outages.

Installation and Maintenance Services

For customers who need an extended guarantee or a more rapid response, ADTRAN offers a compre-hensive and flexible Installation and Maintenance Services program, called ADTRAN Custom Extended Services (ACES). ACES offers priority access to an entire group of operations and engineering experts including ADTRAN's technical support engineers, as well as a trained network of field support engineers.

Installation services include product selection, application validation, site surveys, configura-tion, staging, installation and testing. Ongoing support and service with options for on-site and remote installation services for both ADTRAN products as well as select products from other manufacturers is also available.

ACES maintenance programs protect both hardware installations, as well as software-based deployments. Hardware maintenance services include guaranteed rapid phone response, 5x8 hardware support coverage, depot sparing, and next business day advance replacement. Software maintenance services include guaran-teed rapid phone response, 7x24 or 5x8-support coverage for troubleshooting via phone, software updates, and access to online technical support resources. For 24/7 access to online technical support resources visit *www.adtran.com/support.*

Smart solutions for a connected world.

ADTRAN, Inc. is a leading global supplier of networking and communications equipment with an innovative portfolio of more than 1,700 solutions for use in the last mile of today's tele-communications networks. Widely deployed by carriers, distributed enterprises and SMB, ADTRAN solutions enable voice, data, video, and Internet communications across copper, fiber and wireless network infrastructures. Our solutions are currently in use by every major U.S. service provider and many global ones, as well as by thousands of public, private and govern-mental organizations worldwide.

Simple, Reliable, and Affordable

When you need a networking solution that fits the unique connectivity requirements of your business, ADTRAN is the smart altern-ative. Our product portfolio offers a breadth of solutions, including a product suite that is tailored to the specific needs of SMB and distributed enterprise customers. With ADTRAN's award-winning and innovative NetVanta switches, routers, multiservice access routers, VPN solutions, wireless and Unified Communications products, it is easy to find a quality solution that is perfect for your specific network needs.

Every product is backed by an industry-leading warranty, best-in-class telephone technical support from our team of degreed engineers, and is eligible for free firmware upgrades. As a TL 9000 3.0 and ISO 9001:14000 certified supplier supporting next-generation quality standards, the company maintains in-house labs for reliability, component and compliance testing — all with a focus toward customer satisfaction.

Comprehensive Training and Certification Services

ADTRAN provides innovative training solutions designed with a focus toward varying skill levels and job functions. Professional certification pro-grams are designed to help customers structure and individualize continuing education needs. Access to the certification and training programs includes both free and fee-based options. Sessions are available both on- and off-site, using Instructor-Led Training (ILT); Computer-Based Training (CBT); or virtual classroom training with real-time, Web-enabled classes.

Technical Questions
888-785-7393

Where To Buy
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Fixed-port Access Router
NetVanta 3100

Ethernet Switch
NetVanta 1200s, 1500s and 1600s