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The Forrester Wave™: WLAN Solutions, Q4 2005

by Ellen Daley

TECH CHOICES



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Evaluation Of Top WLAN Solution Vendors Across 44 Criteria

by **Ellen Daley**

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EXECUTIVE SUMMARY

Wireless LANs (WLANs) are being used or considered by more than 60% of the North American and European enterprises that Forrester surveyed in May 2005. These WLANs help herald in the mobile enterprise — where work is done continuously, anywhere. To assess the state of the WLAN solution market and see how the vendors stack up against one another, Forrester evaluated the strengths and weaknesses of top WLAN solution vendors across 44 criteria. The result: Cisco Systems leads the market by far with a strong current offering, market presence, and strategy. Aruba Networks, Trapeze Networks, and Nortel Networks follow close behind as strong technology leaders with solid strategies. All WLAN switching vendors' products are strong — differentiation is primarily on emerging applications, management, and wired infrastructure integration. However, the WLAN market is far from mature. Nortel and 3Com's strategic position relies on OEM deals with Trapeze, which can be acquired at any point. Included in this report is an interactive vendor comparison tool that provides detailed product evaluations and customizable rankings.

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NOTES & RESOURCES

Forrester conducted survey-based evaluations of WLAN solution vendors, including: 3Com, Aruba Networks, Cisco Systems, Nortel Networks, ProCurve Networking by HP, Symbol Technologies, and Trapeze Networks.

Related Research Documents

"The State Of Network And Telecom Adoption: Business Technographics® North America And Europe" June 23, 2005, Data Overview

"Companies Want Wi-Fi/Cellular Calling" May 24, 2005, Trends

"The Mobile Enterprise Warms Up" May 23, 2005, Trends

"Enterprise WLAN Grows Up" February 23, 2005, Tech Choices

"Cisco Broadens WLAN Strategy, Acquires Airespace" January 13, 2005, Quick Take

WLAN ADOPTION IS MAINSTREAM

Of the 1,007 telecom decision-makers at North American and European enterprises that Forrester surveyed in May 2005, more than 60% are piloting, deploying, or evaluating wireless LANs.¹ Why? The mobile enterprise is warming up — more than 50% of North American and European enterprises already have some type of mobile application deployed.² Wireless networks like 3G and WLANs provide the infrastructure for these applications. In particular, WLANs extend the wired network edge throughout the company's physical locations and, in contrast with carrier public networks, WLANs can be controlled by the company themselves.

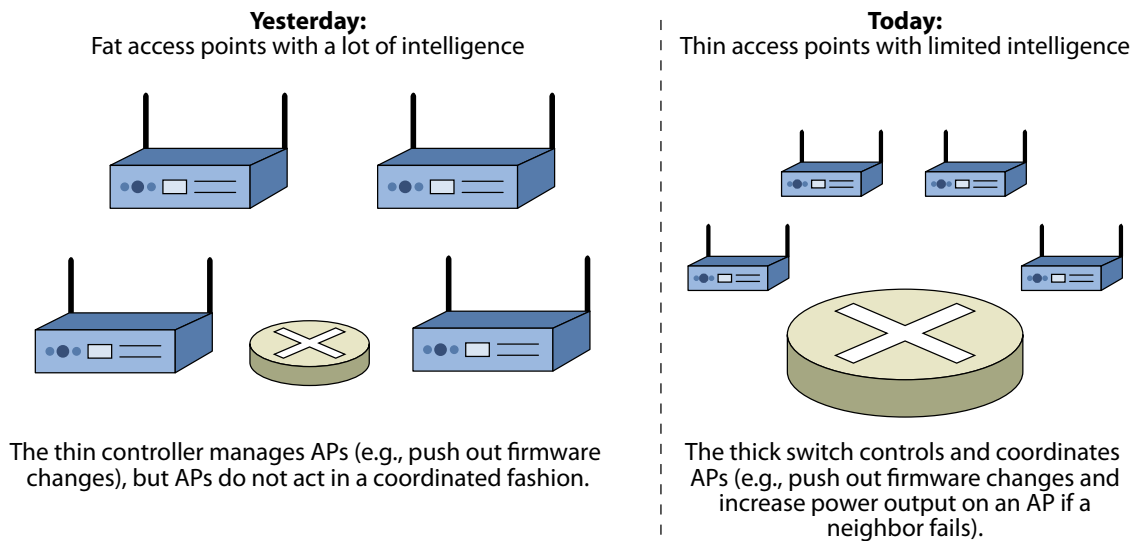
But although adoption of WLANs is broad today, it is not deep. Few companies have large WLAN deployments except in industries with a high number of in-building mobile employees, like retail and healthcare. Outside these verticals, companies typically deploy a few access points (APs) in conference rooms and customer waiting areas for convenient access to the Internet or corporate applications like email. But this is about to change. We are at an inflection point in WLAN enterprise adoption. Voice over WLAN (VoWLAN) and mobile data applications will drive WLAN deployments deeper in the company over the next five years. Why? Potential cellular cost savings by using WLANs for voice coupled with the availability of dual-mode Wi-Fi/cellular handsets.³ WLANs will become a required addition to enterprises' network infrastructure — not a replacement for wired infrastructure but an augmentation. Users will depend on WLANs for voice and data, putting a greater emphasis on the manageability, security, and reliability of WLANs.

Thin Is In

The WLAN enterprise architecture has morphed from a distributed, decentralized architecture with a lot of intelligence in “thick” APs to a centralized architecture using “thin” access points with intelligence in WLAN switches (see Figure 1). This centralized architecture provides easier management and allows a WLAN network to act in a coordinated fashion. For example, one AP can automatically be configured to increase its power output to cover a failed neighboring AP. Most of the innovation in WLAN switching came from startups. Lagging large network infrastructure vendors started acquiring this technology last year to work on integrated wired/wireless network products; Siemens bought Chantry Networks in late 2004, and Cisco acquired Airespace earlier this year.⁴ Forrester clients have told us that enterprises are favoring a centralized architecture today. Offerings are coming from three types of vendors:

- **Pure-play WLAN vendors.** Startup vendors like Aruba and Trapeze offer comprehensive WLAN switching equipment and are solely focused on WLAN offerings. These pure plays are the technology behind the name in some of the established enterprise network vendors like 3Com, Alcatel, and Nortel via OEM relationships.

Figure 1 WLAN Enterprise Architecture Has Moved From Distributed To Centralized



 Source: Forrester Research, Inc.

- **Enterprise network equipment vendors.** Vendors like 3Com, Cisco, Nortel, and ProCurve Networking by HP offer wired switch and router products and include WLAN in their offering — touting the promised integration of wired and wireless networking. However, some vendors, like 3Com, Alcatel, and Nortel, are OEMing from the pure plays.
- **Specialized vendors.** Symbol Technologies is the only vendor in this category and is unique because of its heritage in handheld devices for retail. It is taking this expertise and trying to expand its offerings to compete in the larger WLAN enterprise market across multiple verticals.

WLAN SOLUTION EVALUATION OVERVIEW

To assess the state of the WLAN solution market and see how the vendors stack up against one another, Forrester evaluated the strengths and weaknesses of top WLAN vendors.

Evaluation Criteria

After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria (see Figure 2). We evaluated vendors against 44 criteria, which we grouped into three high-level buckets:

Figure 2 Evaluation Criteria

CURRENT OFFERING	
Breadth of offering	How extensive are the WLAN product's current capabilities? Are additional wired and wireless products in the vendor's portfolio?
Scalability and performance	How scalable is the WLAN product? How many access points and users can the switches support?
Reliability	How reliable is the WLAN product?
Security	How secure is the WLAN product's approach and features? How does it integrate with wired security features?
Management	How simple is it for a user to install the WLAN product, and how extensive are the management capabilities?
STRATEGY	
Vision, strategy, and value proposition	What is the overall value proposition of the WLAN product's offerings? Is the vision unique and bold?
Technology strategy	What is the vendor's overall technology strategy?
Cost	What is the expected cost of the WLAN product?
MARKET PRESENCE	
Client base	How large is the vendor's install base of paying customers for the WLAN product?
Financials	Is the company financially strong?

Source: Forrester Research, Inc.

- **Current offering.** We compared the current offerings of each company, with a focus on how products support emerging WLAN applications, like voice. We focused on the breadth of offering to support both large and small companies. We know from our clients that manageability of WLAN networks is a pain point, so we placed heavy emphasis on the ease of managing the solution.
- **Strategy.** We compared the technology vision and go-to-market strategies with Forrester's vision of the WLAN market to assess how vendors are positioned for future success. This includes looking beyond just WLAN products and evaluating how the vendors' overall strategy and product portfolio can help companies integrate wired and wireless networking. The vendors' management tool strategy was added to help our enterprise customers assess the potential of the planned management tools.
- **Market presence.** We combined information about each vendor's installed base, international presence, and deployment size with Forrester's recent demand-side data collected to determine current market presence.

Evaluation Methodology

Forrester used a combination of two data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria.
- **User inquiries.** To validate product and vendor qualifications, Forrester also leveraged past research and Forrester user inquiries.

Evaluated Vendors

Forrester included seven vendors in the assessment: 3Com, Aruba Networks, Cisco Systems, Nortel Networks, ProCurve Networking by HP, Symbol Technologies, and Trapeze Networks. Why these vendors? Each has demonstrated:

- **Momentum in the market.** Based on the current customer base and recent growth rates, these vendors are either leaders in customer deployments or are rapidly acquiring customers. While most of the deployments today are thick APs, the small companies like Trapeze and Aruba have quickly been sealing OEM deals and acquiring new clients, like Aruba's recent big Microsoft win.
- **Demonstrable success in enterprises and SMBs.** We selected vendors that not only address the enterprise market but that also have products that support SMBs.

VENDORS DIFFERENTIATE ON STRATEGY

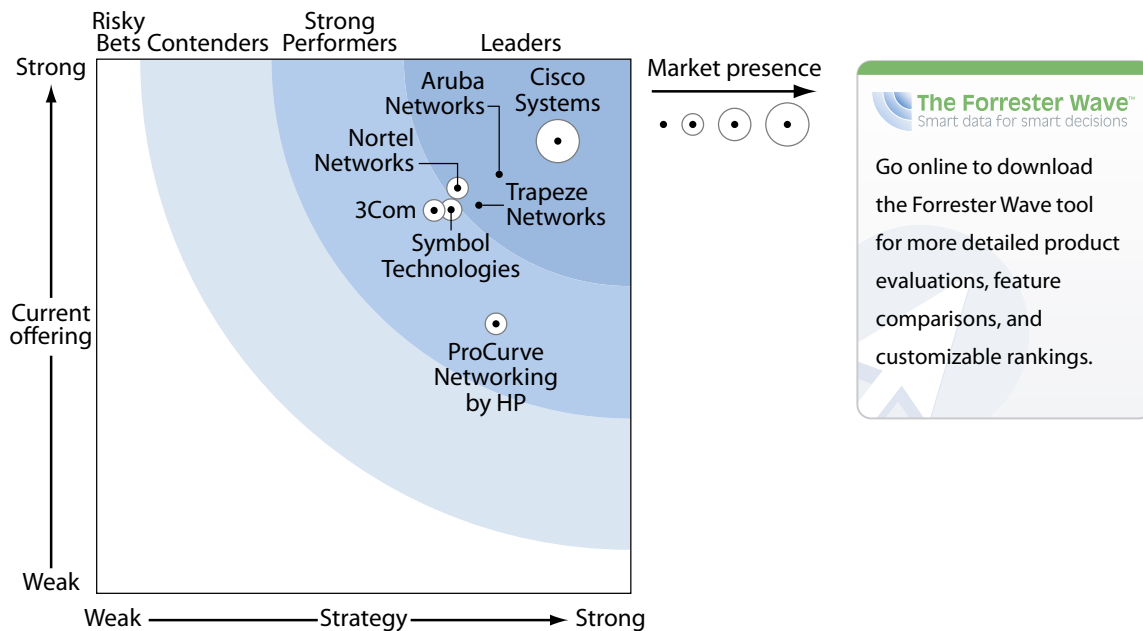
The WLAN market is still maturing, both in standards and vendor consolidation.⁵ However, vendor products today offer relatively similar capabilities and value to enterprises. The real differentiation among vendors is their overall strategy, particularly their vision and ability to offer a wired/wireless portfolio. The leading vendors have a clear wired/wireless integration story. In contrast, many of the followers are still hedging their bets by OEMing components. Our evaluation uncovered a market in which:

- **Cisco, Aruba, Trapeze, and Nortel lead the pack.** Cisco not only has the largest market presence — about 70% of all WLAN deployments use Cisco gear — but it also has the most complete vision of WLANs and their integration with wired networks. Aruba and Trapeze are fast followers in technology, but both have small market presence compared with Cisco. Aruba has a particular focus on security with built-in features like firewalls and is appropriate for companies that want a bit more security. Trapeze has a rich OEM business — 3Com and Nortel OEM Trapeze components — providing a multitiered channel strategy that helps mitigate viability concerns. Even though Nortel is OEMing Trapeze components, it has strong plans for integration with its wired products.

- **Symbol and 3Com have strong, competitive offerings.** Trapeze and 3Com both offer similar WLAN functionality because 3Com OEMs Trapeze. 3Com is still working through its wired product integration strategy. Symbol is still a niche player and must prove that it can offer true enterprise-class offerings, even though its heritage is in mobile devices and WLANs for branch office deployments in retail.
- **ProCurve is warming up.** ProCurve is a strong contender even though it does not have a WLAN switch product available yet. ProCurve offers a thick AP approach with a simple controller. It has a growing wired install base, as it offers an alternative to Cisco at a reasonable price point. This wired base provides ProCurve an opportunity to sell WLAN products easily to wired switching clients — once it announces.

This evaluation of the WLAN solution market is intended to be a starting point only. Readers are encouraged to view detailed product evaluations and adapt the criteria weighting to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool (see Figure 3).

Figure 3 Forrester Wave™: WLAN Solutions, Q4 '05



Source: Forrester Research, Inc.

Figure 3 Forrester Wave™: WLAN Solutions, Q4 '05 (Cont.)

	Forrester's Weighting	3Com	Aruba Networks	Cisco Systems	Nortel Networks	ProCurve Networking by HP	Symbol Technologies	Trapeze Networks
CURRENT OFFERING	50%	3.56	3.90	4.21	3.77	2.50	3.57	3.61
Breadth of offering	30%	3.95	3.90	4.08	4.08	1.95	3.15	3.93
Scalability and performance	10%	4.00	4.00	4.00	4.00	2.50	4.00	4.00
Reliability	10%	4.50	4.50	4.50	4.50	2.00	4.50	4.50
Security	20%	2.38	4.00	4.45	3.00	3.00	3.08	2.83
Management	30%	3.50	3.60	4.15	3.65	2.88	3.88	3.40
STRATEGY	50%	3.12	3.73	4.28	3.34	3.70	3.28	3.54
Vision, strategy, and value proposition	35%	3.05	3.60	4.80	3.55	3.40	2.85	3.45
Technology strategy	35%	2.85	4.05	4.85	3.00	3.30	3.10	3.65
Cost	30%	3.50	3.50	3.00	3.50	4.50	4.00	3.50
MARKET PRESENCE	0%	2.26	1.62	4.86	2.41	2.13	2.88	1.65
Client base	70%	2.15	1.46	4.90	2.15	1.65	2.50	1.50
Financials	30%	2.50	2.00	4.75	3.00	3.25	3.75	2.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc.

VENDOR PROFILES

Leaders

- **Cisco Systems.** Cisco leaped ahead from a losing position earlier this year with its clever Airespace acquisition, which gave it a complete WLAN switch portfolio.

Cisco now offers a broad product portfolio that is being integrated with its wired networking products and management tools. Cisco must remain focused on this to realize the full potential of the acquisition. Cisco's dominance in the enterprise network market lends value to enterprises as a one-stop shop for networking gear. Cisco will introduce WLAN controller blades for its Catalyst switches to unite wired and wireless management. Given that the largest WLAN install base in the market is made up of thick APs from Cisco, Cisco's migration plan for converting them to thin APs helps protect companies' previous investments.⁶

- **Aruba Networks.** Aruba provides a complete WLAN product portfolio with a focus on security, leveraging built-in features like firewalls that provide added security. Although it does not offer wired products, Aruba espouses a wired/wireless vision. However, Aruba clearly feels that the technology must mature further before that occurs, and it offers a strong overlay solution. Aruba's market presence is growing, as attested by recent wins like Microsoft's campus LAN deal. Aruba's challenge is to grow its channel distribution to accelerate growth.⁷

- **Trapeze Networks.** Trapeze's Mobility System offers a comprehensive overlay WLAN solution that is layered on top of a wired infrastructure. It has a robust management suite based on XML that easily integrates with other management tools, like HP OpenView. Trapeze has a three-tiered selling strategy via direct, OEM, and VAR. It is a successful OEM partner with 3Com and, most recently, Nortel. Forrester predicts that Trapeze will be acquired soon — either by Motorola, which just infused \$5 million into Trapeze, or Nortel. Even though 3Com is Trapeze's biggest partner, 3Com's financial situation will make it unlikely to fund a purchase.⁸
- **Nortel Networks.** Nortel OEMs Trapeze and offers the basic Trapeze capabilities, with limited added value so far. Strategically, Nortel has the right idea; it espouses tight integration of WLAN with its voice and enterprise switching products. But Nortel was caught with its pants down when Cisco acquired its previous OEM partner Airespace and has just regrouped with the new Trapeze OEM deal. As a result, it has not been able to advance down the wired/wireless integration path yet. Even though Nortel is well-protected contractually if Trapeze gets acquired, it should buy Trapeze to limit its risk.⁹

Strong Performers

- **Symbol Technologies.** Symbol's heritage is in mobile and wireless, both in selling devices and WLANs, even before there was an 802.11 standard. However, it is primarily focused in retail. As a result, many products are geared toward smaller branch offices; for example, its largest WLAN switch only supports 48 ports. These distributed deployments in retail have made Symbol excel at management of large deployments. Its SEMM and MSP products not only manage WLANs but also provide device management. Symbol must carry its successful vertical value proposition into other industries. The focus must be on transforming its engineer-friendly marketing messages to a CIO message, appropriate for all verticals.¹⁰
- **3Com.** 3Com OEMs Trapeze, like Nortel. It has support for legacy 3Com APs, helping to protect customers' investment in the high install base of legacy 3Com WLAN equipment. 3Com has the best access to the SMB market of the vendors evaluated — an area of opportunity — but it is facing increased competition, as Cisco recently announced its SMB market plans. 3Com plans to capitalize on its TippingPoint acquisition to offer a comprehensive wired/wireless secure approach, but it has limited integration to date.¹¹
- **ProCurve Networking by HP.** ProCurve does not have a WLAN switching product yet but will be announcing one shortly. Currently, ProCurve offers a distributed thick AP and controller solution. ProCurve has a robust wired switching portfolio and the second largest install base after Cisco in enterprise networking. This will give the company access to sell its WLAN product, once available. ProCurve plans on tight integration with its cost-effective switch product line and, as a proof point, already has an integrated wired/wireless architecture: Its Switch xl Access Controller Module integrates with HP switching products. HP offers clear differentiation on customer service, like offering lifetime support for equipment.¹²

SUPPLEMENTAL MATERIAL

Online Resource

The online version of Figure 3 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we narrow our final list to those presented here. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in this document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and readers are encouraged to adapt the weighting to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

ENDNOTES

- ¹ Sixty-one percent of the 653 telecom decision-makers at North American and European enterprises surveyed are at the following stages: evaluating, piloting, initial rollout under way, fully deployed or in production, or upgrade under way. See the June 23, 2005, Data Overview “The State Of Network And Telecom Adoption: Business Technographics® North America And Europe.”
- ² More than half of the telecom decision-makers at North American enterprises surveyed said they are deploying some type of wireless application. See the August 16, 2005, Trends “Mobile Application Adoption Leaps Forward.”
- ³ Companies have shown demand for dual-mode WLAN/cellular handsets. See the May 24, 2005, Trends “Companies Want Wi-Fi/Cellular Calling” and see the June 13, 2005, Trends “Will Mobile Phones Get Wi-Fi?”
- ⁴ Cisco acquired Airespace and broadened its WLAN strategy. See the January 13, 2005, Quick Take “Cisco Broadens WLAN Strategy, Acquires Airespace.”

- ⁵ There are a number of standards being worked on that will impact the WLAN technology, like QoS (802.11e), fast roaming (802.11r), and new MIMO technology (802.11n).
- ⁶ View the scorecard summary for more detailed analysis on how Cisco fared in this evaluation. See the October 19, 2005, Tech Choices “WLAN Solutions Scorecard Summary: Cisco Systems.”
- ⁷ View the scorecard summary for more detailed analysis on how Aruba fared in this evaluation. See the October 19, 2005, Tech Choices “WLAN Solutions Scorecard Summary: Aruba Networks.”
- ⁸ View the scorecard summary for more detailed analysis on how Trapeze fared in this evaluation. See the October 19, 2005, Tech Choices “WLAN Solutions Scorecard Summary: Trapeze Networks.”
- ⁹ View the scorecard summary for more detailed analysis on how Nortel fared in this evaluation. See the October 19, 2005, Tech Choices “WLAN Solutions Scorecard Summary: Nortel Networks.”
- ¹⁰ View the scorecard summary for more detailed analysis on how Symbol fared in this evaluation. See the October 19, 2005, Tech Choices “WLAN Solutions Scorecard Summary: Symbol Technologies.”
- ¹¹ View the scorecard summary for more detailed analysis on how 3Com fared in this evaluation. See the October 19, 2005, Tech Choices “WLAN Solutions Scorecard Summary: 3Com.”
- ¹² View the scorecard summary for more detailed analysis on how ProCurve Networking by HP fared in this evaluation. See the October 19, 2005, Tech Choices “WLAN Solutions Scorecard Summary: ProCurve Networking By HP.”

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