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Branch Office Networking

IT Business State-of-the-Market Brief

By Jim Metzler



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The Changing Branch Office Network State of the Market Brief

Introduction

Branch offices are key to the success of virtually all companies. That follows in part because branch offices typically provide a critical touch point between a company and its clients.

However, branch office networks can be extremely expensive to create and maintain. For example, consider a hypothetical company Acme, Inc. Assume that Acme has 100 branch offices, that Acme has a link from each of these branches to a central data center, and that Acme is looking to upgrade its branch office network.

Further assume that when Acme creates a business case for any IT project it uses a 36-month time lifecycle. Given that Acme has 100 branch offices and uses a 36-month lifecycle, this means that every dollar of monthly recurring cost in a branch office is multiplied by 3,600 (i.e., 100 branches x 36 months) in order to calculate the Total Cost of Ownership of the upgrade to the branch office network. Hence, if the upgrade results in an incremental recurring cost of merely \$100/month/office, this results in an incremental cost of \$360,000 over the three-year life of the upgrade.

Given the great expense that is associated with branch office networks, Ashton, Metzler & Associates (AM&A) performed market research to better understand the dynamics that surround this component of IT. In order to perform this research, AM&A surveyed the subscribers to Webtorials, the computer-networking industry's premier educational Web site. Throughout this document, the IT professionals who responded to this survey will be referred to as The Survey Respondents.

The survey focused on a number of topics, including the:

- Applications that are either currently running, or soon will be running, over branch office networks

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- Networking functionality that either currently exists in branch office networks, or will exist in the near term
- Role that traffic management plays in branch office networking
- Changes that are occurring within data centers
- Degree to which a company's telecommuters are satisfied with their current connectivity options

Throughout this document a number of conclusions are drawn relative to the changes that are happening in the marketplace. These conclusions are indicated in the document by the label "**Concl:**"

Applications

Table 1 depicts the applications that companies have either been running for a long time, or which they have recently started running or intend to start running on branch office networks. It is worth noting that the only two applications listed in Table 1 that are currently running on the majority of branch office networks are email and backup/storage.

Tables 1 and 2 demonstrate that the deployment of applications to branch offices has already started to shift and is going to shift even more dramatically by the beginning of 2005. In particular, Table 2 depicts the:

- Expected deployment of applications at branch offices in early 2005
- The percentage increase in the deployment of applications in early 2005 vs. what was shown in Table 1 as "Been Running for a Long Time"

One conclusion that can be drawn from Table 2 is that by early 2005 the only two key applications that will not be running on the majority of branch office networks are SCM and on-demand video streaming. And since 49% of the companies plan to be running on-demand video streaming, it could be argued that allowing for round-off errors, that there is only one key application (SCM) that will not be run-

Current Application Deployment to Branch Offices
Table 1

Rank in 2003	Application	Been Running for a Long Time	Have Recently Started to Run	Will Start to Run by Early 2005
1	Email	95%	1%	3%
2	Backup/Storage	65%	15%	7%
3	Citrix	36%	10%	4%
4	Customer Relationship Management (CRM)	30%	13%	20%
5	Enterprise Resource Planning (ERP)	27%	12%	15%
6	Sales Force Automation (SFA)	23%	16%	13%
7	Voice over IP (VoIP)	20%	27%	32%
8	Supply Chain Management (SCM)	20%	11%	11%
9	Real Time Video	19%	15%	22%
10	On-Demand Video Streaming	13%	15%	21%

ning in the majority of branch offices within the next twelve months.

It is also worth noting the great interest in running applications such as VoIP and real time video over branch office networks. These applications are interesting because in addition to adding new traffic to branch office networks, they also demand that those networks are highly available, and provide stringent levels of packet loss, delay and jitter.

Concl: *Within the next year, branch office networks will have to support a number of new applications, including some that demand a very robust network infrastructure.*

Table 3 depicts the answers that The Survey Respondents gave to the question "What is the biggest obstacle you face when rolling out applications to branch offices?"

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Application Deployment to Branch Offices in Early 2005
Table 2

Rank in 2005	Application	Percentage Expected in early 2005	Percentage Increase over late 2003
1	Email	99%	4%
2	Backup/Storage	87%	34%
3	Voice over IP	79%	295%
4	CRM	63%	110%
5	Real Time Video	56%	195%
6	Enterprise Resource Planning	54%	100%
7	Sales Force Automation	52%	126%
8	Citrix	50%	39%
9	On-Demand Video Streaming	49%	277%
10	Supply Chain Management	42%	110%

Given the cost associated with branch office networks, it would be reasonable to assume that capacity is the primary obstacle that companies face when rolling out new applications. Alternatively, given the great interest in deploying VoIP and real time video, it would be reasonable to assume that latency is the primary obstacle that companies face when rolling out new applications. However, the data in Table 3 leads to a different conclusion.

Concl: Management is the primary obstacle that companies face when rolling out applications to branch offices.

As noted, Tables 1 and 2 quantify the shift to deploy a steadily increasing number of applications to branch offices. However, another shift is also occurring that will also have a dramatic affect on branch office networks. That shift is the movement to deploy more web based applications on branch office networks. Web based applications

can have a major impact on branch office networks due to the 'chatty' nature of the subtending protocols.

Obstacles to Application Deployment
Table 3

Inhibiting Factor	Percentage of Companies
Management	34.1%
Capacity	24.7%
Latency	13.9%
Control	11.5%
Visibility	7.3%
Other	5.6%
Packet Loss	2.8%

Table 4 quantifies both the current amount of traffic on branch office networks that is a result of web-based applications, as well as the amount web-based traffic that is expected by early 2005. For example, consider the far right column in Table 4. This column refers to branch office networks in which between 76% and 100% of the traffic is from web-based applications. As shown in Table 4, currently only 5.2% of branch office networks fit this description. However, by early 2005, that percentage will more than double to 11.5%.

Current and Anticipated Penetration of Web Based Applications
Table 4

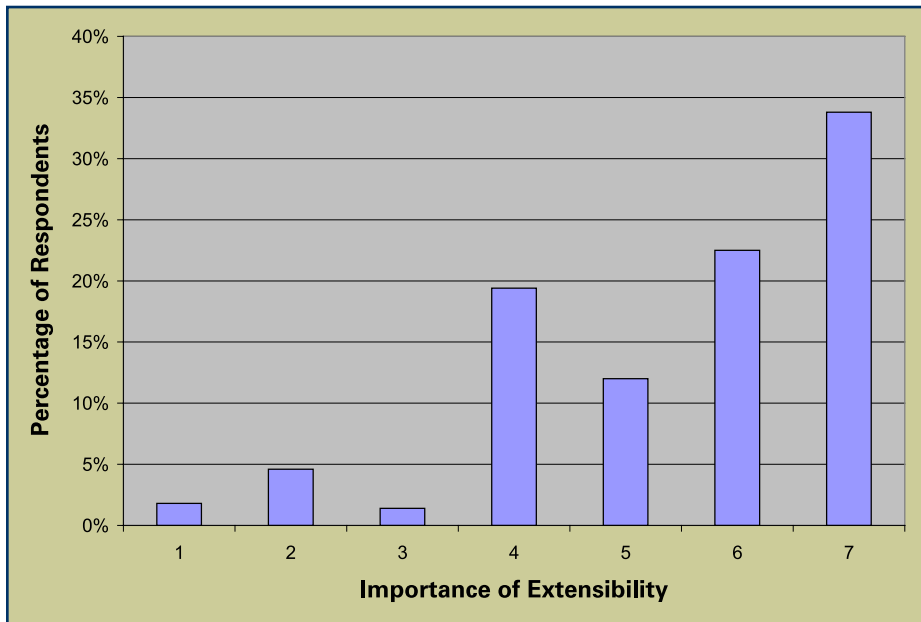
Timeframe	0%	1% - 25%	26% - 50%	51% - 75%	76% - 100%
Currently	4.8%	41.1%	27.0%	21.8%	5.2%
By Early 2005	2.7%	23.5%	28.8%	33.6%	11.5%

Concl: There is a significant shift underway to deploy 'chatty' web-based applications onto branch office networks.

Branch Office Network Functionality

Figure 1 depicts the answers that The Survey Respondents gave to the question "How important is it to your company that the platform that gets deployed to branch offices is

The Importance of an Extensible Branch Office Platform
Figure 1



extensible to support new network features and new applications?" The question had a 7 point scale, where "1" indicated of no importance, "4" indicated moderate importance, and "7" indicated extremely important.

As can be seen in Figure 1, only 6.4% of The Survey Respondents answered this question with a "1" or a "2," while 56.3% answered this question with a "6" or a "7".

Concl: The majority of companies believe that it is very important to deploy an extensible platform to branch offices.

The Survey Respondents were asked to indicate what networking functionality was either in their branch office networks, or soon would be. Their responses are shown in Table 5.

Some of the data that is contained in Table 5 is perfectly consistent with the overall direction of branch office networking. For example, given the great interest in deploying more VoIP and real time video to branch offices, it is very reasonable that 34% of The Survey Respondents intend within the

next twelve months to deploy QoS either based on queuing or on MPLS.

Concl: The most common functionality that will get deployed on branch office networks over the next 12 months is QoS.

However, with the great interest in security, it was less obvious why only 60% of branch offices currently have firewalls. Also, with all of the new applications that will start to be run over expensive branch office networks, it was a little surprising that there was not more interest in deploying compression.

As companies look to add new functionality to branch office networks, they may well need to add new networking devices at each branch office. With that in mind, The Survey Respondents were presented with a set of criteria and asked to indicate which was the number one criteria they use when choosing networking devices for branch offices. Table 6 also contains their responses.

Branch Office Networking Functionality
Table 5

Function	Currently Exists	Will Implement within 12 Months	Will Implement in More than 12 Months	No Plans to Implement
Encryption	52%	15%	7%	19%
Firewalls	60%	6%	4%	22%
Compression	38%	10%	9%	29%
Monitoring probes	40%	13%	10%	21%
QoS based on queuing	31%	19%	12%	19%
QoS based on MPLS	16%	15%	15%	28%

Importance of Selection Criteria
Table 6

Criteria	Percentage
Total Cost of Ownership	36.0%
Transparent Fit into the Network	21.6%
Feature Richness	13.1%
Initial Cost	9.5%
Low Operational Cost	7.1%
Simplicity	4.2%

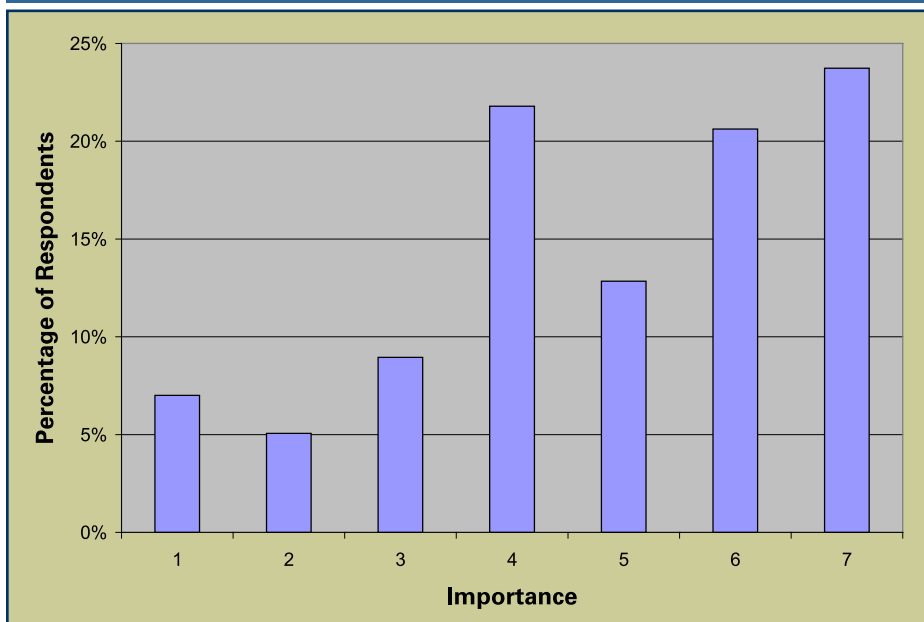
The results shown in Table 6 are totally consistent with the great economic pressure on most IT organizations.

Concl: *The number one criteria that IT organizations use when choosing a new network device for branch office networks is the Total Cost of Ownership.*

Optimization

Figure 2 depicts the answers that The Survey Respondents gave to the question “How important is it to be able to provide QoS and compression enterprise wide and not just on some links?” The question had a 7 point scale, where “1” indicated of no importance, “4” indicated moderate importance, and “7” indicated extremely important.

Importance of Enterprise Wide Solutions
Figure 2



As can be seen in Figure 2, only 12.1% of The Survey Respondents answered this question with a “1” or a “2”, while 44.3% answered this question with a “6” or a “7”.

Concl: *There is wide spread agreement on the importance of providing QoS and compression enterprise wide, and not just on some links.*

Obstacles to Doing Effective Traffic Management
Table 7

Obstacle	Percentage
The complexity associated with doing effective traffic management	41.3%
The lack of understanding of application requirements	21.4%
The amount of time that it takes to do effective traffic management	17.1%
The amount of management overhead	14.3%

The Survey Respondents were given a list of obstacles and asked to indicate which was the biggest obstacle to their company being able to implement traffic management in support of their company’s key applications. Their answers are shown in Table 7.

Since the amount of time that it takes to do effective traffic management is related to the complexity of traffic management, it is reasonable to combine these two obstacles into a single obstacle. Combining those two obstacles into one obstacle, leads to a very clear conclusion.

Concl: *By a wide margin, the biggest obstacle to effective traffic management is the complexity associated with traffic management.*

Data Centers

One of the most volatile components of the IT infrastructure is the data center. To quantify this volatility, The Survey Respondents were given a number of fac-

tors and asked to indicate which of the factors was impacting their company's data center(s). Their responses are shown in Table 8.

Factors Impacting Data Centers Table 8	
Factor	Percentage
Consolidation of servers within a data center	56.4%
Virtualization of storage and/or servers	44.0%
Consolidation of data centers	41.7%
Deployment of blade servers	24.8%
Other	9.4%

The Survey Respondents were asked to indicate how much impact the changes that were happening in their company's data centers would have on their company's WAN. The question had a 7 point scale, where "1" indicated of no impact, "4" indicated moderate impact, and "7" indicated extensive impact.

Figure 3 contains the answers to that question from just those survey respondents who had indicated that their company was consolidating data centers.

The data in Figure 3 is not quite as compelling as the data shown in some of the other figures in this document; i.e., Figure 1. However, Figure 3 certainly suggests that IT professionals need to consider data center consolidation when planning for WAN evolution.

Concl: Data center consolidation will have a significant impact on a company's WAN.

Telecommuters

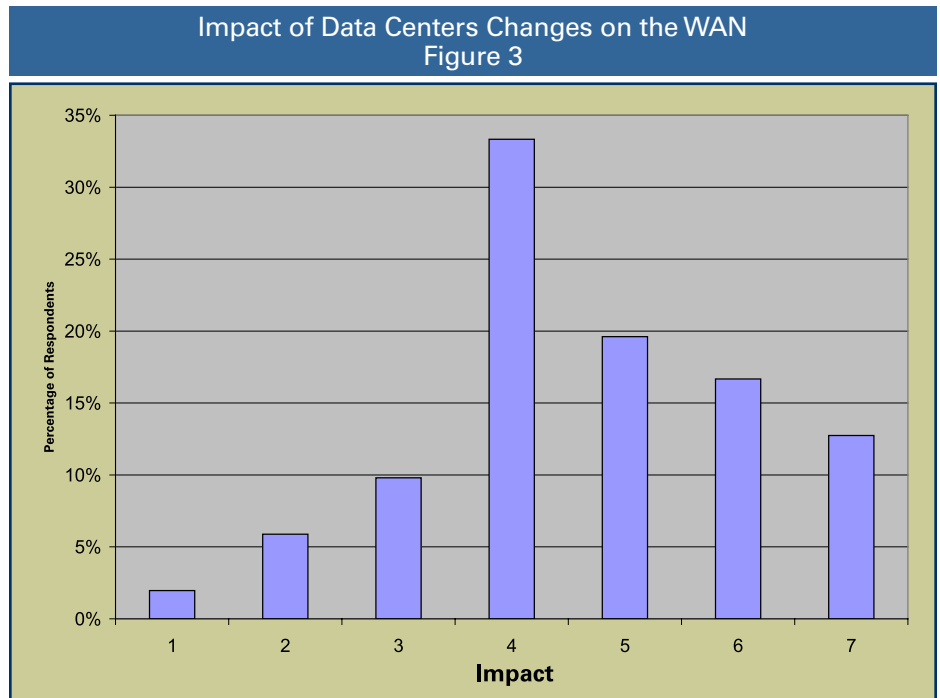
Figure 4 depicts the answers that The Survey Respondents gave to the question "How important is it to your company to support telecommuters?" The question had

a 7 point scale, where "1" indicated of no importance, "4" indicated moderate importance, and "7" indicated extremely important.

As can be seen in Figure 4, only 8.8% of The Survey Respondents answered this question with a "1" or a "2", while 45.8% answered this question with a "6" or a "7".

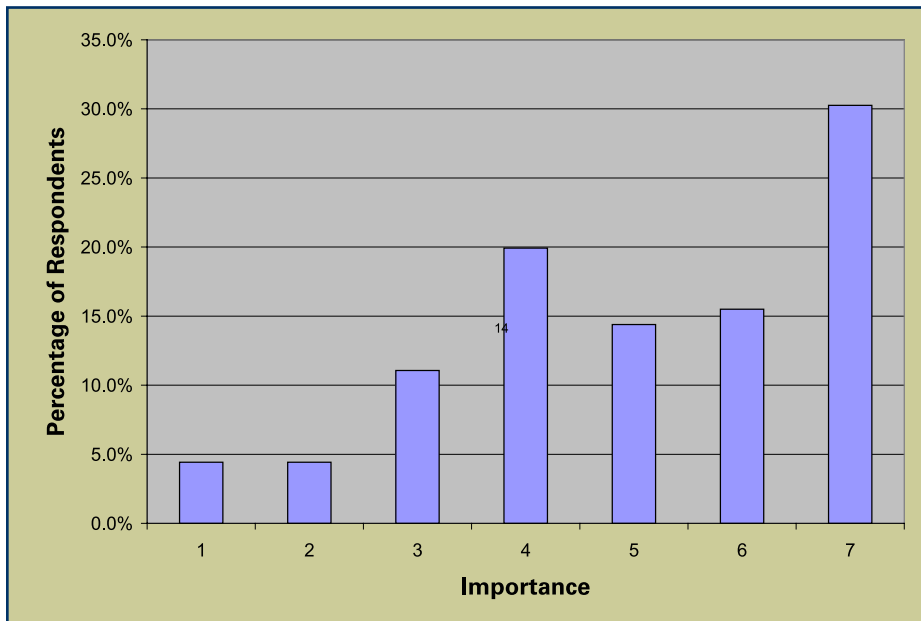
Concl: Supporting telecommuters is a high priority for most IT organizations.

Figure 5 depicts the answers that The Survey Respondents gave to the question "How satisfied are your company's telecommuters with their current productivity options?" The question had a 7 point scale, where "1" indicated of extremely dissatisfied, "4" indicated neutral, and "7" indicated extremely satisfied.



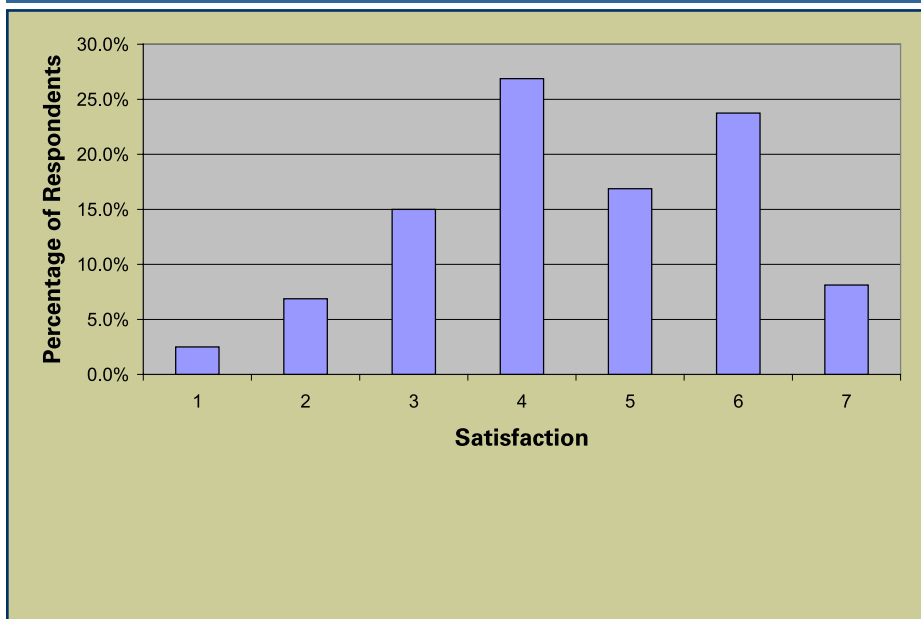
The results depicted in Figure 4 are heavily skewed to the right, which represents the importance of supporting telecommuters. However, the results depicted in Figure 5 are clustered on the center, which represents neutrality in terms of satisfaction. In particular, 58.8% of The Survey Respondents answered this question with a "3", "4", or a "5".

Importance of Supporting Telecommuters
Figure 4



Concl: Within the vast majority of companies, the telecommuters are at best neutral relative to their current connectivity options.

Satisfaction with Telecommuter Connectivity Options
Figure 5



Summary of Conclusions

This paper highlighted a number of conclusions relative to the evolving branch office network. Those conclusions were:

- 1** Within the next year, branch office networks will have to support a number of new applications, including some that demand a very robust network infrastructure.
- 2** Management is the primary obstacle that companies face when rolling out applications to branch offices.
- 3** The majority of companies believe that it is very important to deploy an extensible platform to branch offices.
- 4** The most common functionality that will get deployed on branch office networks over the next 12 months is QoS.
- 5** The number one criteria that IT organizations use when choosing a new network device for branch office networks is the Total Cost of Ownership.
- 6** There is wide spread agreement on the importance of providing QoS and compression enterprise wide, and not just on some links.
- 7** By a wide margin, the biggest obstacle to effective traffic management is the complexity associated with traffic management.
- 8** Data center consolidation will have a significant impact on a company's WAN.
- 9** Supporting telecommuters is a high priority for most IT organizations.
- 10** Within the vast majority of companies, the telecommuters are at best neutral relative to their current connectivity options.

Survey Demographics

In February 2004, the subscribers to Webtorials (www.webtorials.com) were asked to answer a web-based survey on the topic of branch office networking. This request resulted in 366 valid survey responses. Throughout this section, the network professionals who responded to this survey will be referred to as The Survey Respondents. The companies that employ The Survey Respondents will be referred to as The Companies.

The Companies represent a wide range of organizations based on factors such as a company's annual revenues, the number of branch offices that the company supports, as well as the location of the company's headquarters. The Survey Respondents represent network professionals with a wide range of responsibilities relative to the evolution of their company's WAN.

For example, Table 9 characterizes the annual revenues of The Companies

Annual Revenues of The Companies Table 9	
Annual Revenues	Percentage of The Companies
Less than \$100M	47.2%
Greater than or equal to \$100M, but less than \$1B	23.5%
Greater than or equal to \$1B	29.3%

Table 10 depicts the geographic distribution of the headquarters location of The Companies.

Headquarters Location of The Companies Table 10	
Survey Respondents	Percentage of The Companies
US	53.8%
Canada	8.7%
Western Europe, including the UK	18.0%
Latin and South America	6.2%
Asia-Pacific	13.3%

Table 11 depicts the number of branch offices associated with The Companies.

Size of The Companies based on the Number of Branch Offices Table 11	
Number of Branch Offices	Percentage of The Companies
Less than or equal to 25	53.3%
More than 25, but less than or equal to 100	15.2%
More than 100, but less than or equal to 250	12.2%
More than 250, but less than or equal to 1000	9.4%
More than 1000	9.9%

Table 12 depicts the role of The Survey Respondents in the evolution of their company's WAN.

Role of The Survey Respondents Table 12	
Role of The Survey Respondent	Percentage of The Survey Respondents
Decision Maker	23.9%
Influencer	21.2%
Recommender	31.1%
Other	23.9%



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