2005/2006

VoIP State of the Market Report

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2005/2006 VoIP State-of-the-Market Report

Introduction

For the fourth year in a row, users at Webtorials were asked during August and September of 2005 to share their perceptions of Voice over IP (VoIP) and their plans for implementing VoIP in their networks. This 2005/2006 VoIP State-of-the-Market Report is a summary of the findings from that survey, and, where applicable, these results are contrasted with similar reports prepared in 2002, 2003, and 2004.

Overall, there were few surprises in the data. In most cases, the major trends showed little change from the 2004 survey, indicating that the market is maturing. This is reassuring because drastic changes from the prior years' results would indicate flux in the market space. However, additional questions were added to this year's survey that provide insight into new and/or emerging areas that were not previously studied.

There were some significant findings. In particular:

- There was an increase, albeit somewhat minor, in satisfaction. This is in contrast to the prior two years in which there was not a major positive or negative shift in satisfaction.
- The ability to show a Return on Investment (RoI) based solely on cost savings is not a major factor.
- A new category, "Mobility and flexibility can be provided to employees," ranked as the top expected benefit.
- The most important factors inhibiting implementation remain concerns about security and the availability of systems for managing and troubleshooting VoIP quality.
- Issues surrounding Session Initiation Protocol (SIP) are viewed as quite important, especially for interoperability.

Webtorials State-of-the-Market Reports

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- Among specific applications, unified messaging is viewed as most important. For the applications considered, the extent to which targeted benefits are expected varied significantly.
- Most of the decisions concerning implementation are being made either by a combination of the traditional voice and data organizations within a company or primarily by the company's data organization. Also, respondents did not feel strongly that the data infrastructure and the VoIP/IP telephony infrastructure must be provided by the same vendor, and most will be operating and managing their own equipment.

The bottom line is that VoIP is becoming the *de facto* choice for voice communications, and, even though several implementation concerns still exist, none is viewed as a "show stopper."

Demographic Overview

Before drawing conclusions from the study, let us first examine the demographics of the respondents.

This survey was conducted by asking the Webtorials community to respond to an online questionnaire. As a rule, the Webtorials community consists of networking professionals who are planning the next generation of networks for their companies. For the 2005/2006 survey, about 375 professionals responded. Even though the Webtorials audience in general consists of end-users, service providers, and other various groups, the respondents in this case were – to the greatest extent possible – limited to end-users. For this year's survey, 60% of the respondents identified themselves as being Enterprise, 7% as Education, and 10% as Government. A review of those classifying themselves as "Other" (23%) revealed that they consisted largely of consultants and other classifications that still fit within the realm of end-users, plus a contingent that represented suppliers of telecommunications service and equipment. These demographics varied from prior years only in that there has been a gradual increase in the percentage of "Other" respondents. However, in examining the data, the results did not vary substantially when the "Other" contingent was included or excluded. For this reason, plus for consistency with prior reports, the results shown here represent the entire base of respondents.

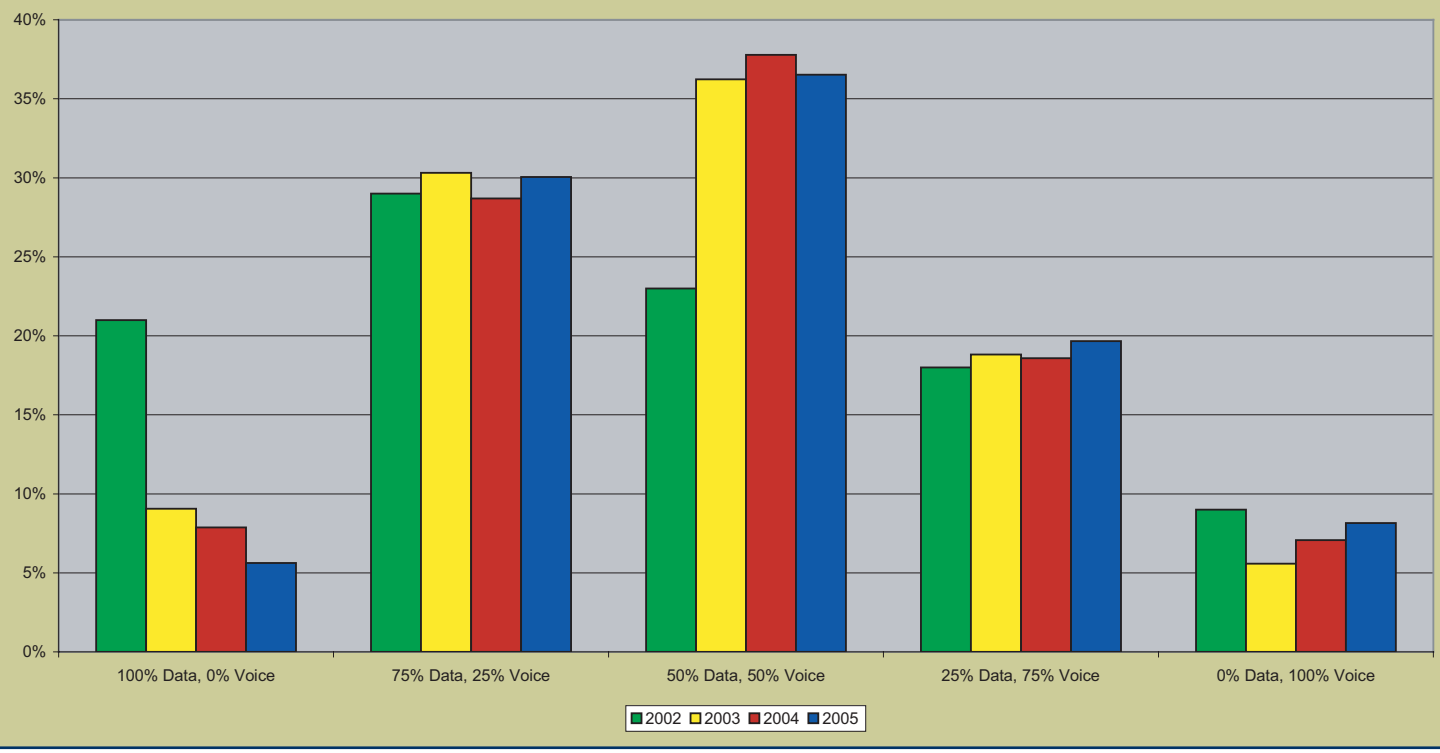
Reflecting the Webtorials worldwide community, the responses came from around the globe. The majority of the responses, 47%, came from the US, and 7% were from Canada. A significant percentage of the responses, 21%, came from Europe, and the remaining 25% were from a wide variety of other regions. This geographic distribution is typical both of responses for similar surveys and for the VoIP surveys in prior years.

One of the demographic questions – that is, whether the respondent has primarily voice or data responsibilities – is meaningful both for demographic purposes and for noting possible shifts in job responsibilities among the target survey group. As shown in **Figure 1**, a notable shift occurred from 2002 to 2003. In 2002, there was a heavy emphasis on the "data" side. This was primarily due to the difference in the survey base.[1] The answers are more consistent from 2003 to 2005. In examining these past three years' results, there is a notable trend in terms of a slight movement from respondents responsible 100% for data to respondents responsible 100% for voice. This can be explained at least in part by the broadened acceptance of VoIP during this timeframe.

Additional demographic charts are provided in the appendix. The result of examining the demographics is that they are sufficiently similar from year to year for comparisons made over time to be meaningful.

[1] *In 2002, the survey results were compiled via a questionnaire that was distributed to attendees at a series of seminars. By contrast, 2003 through 2005 results came from the online Webtorials community.*

Figure 1 - Voice versus Data Responsibilities for Respondents



Satisfaction Rate Increases Slightly

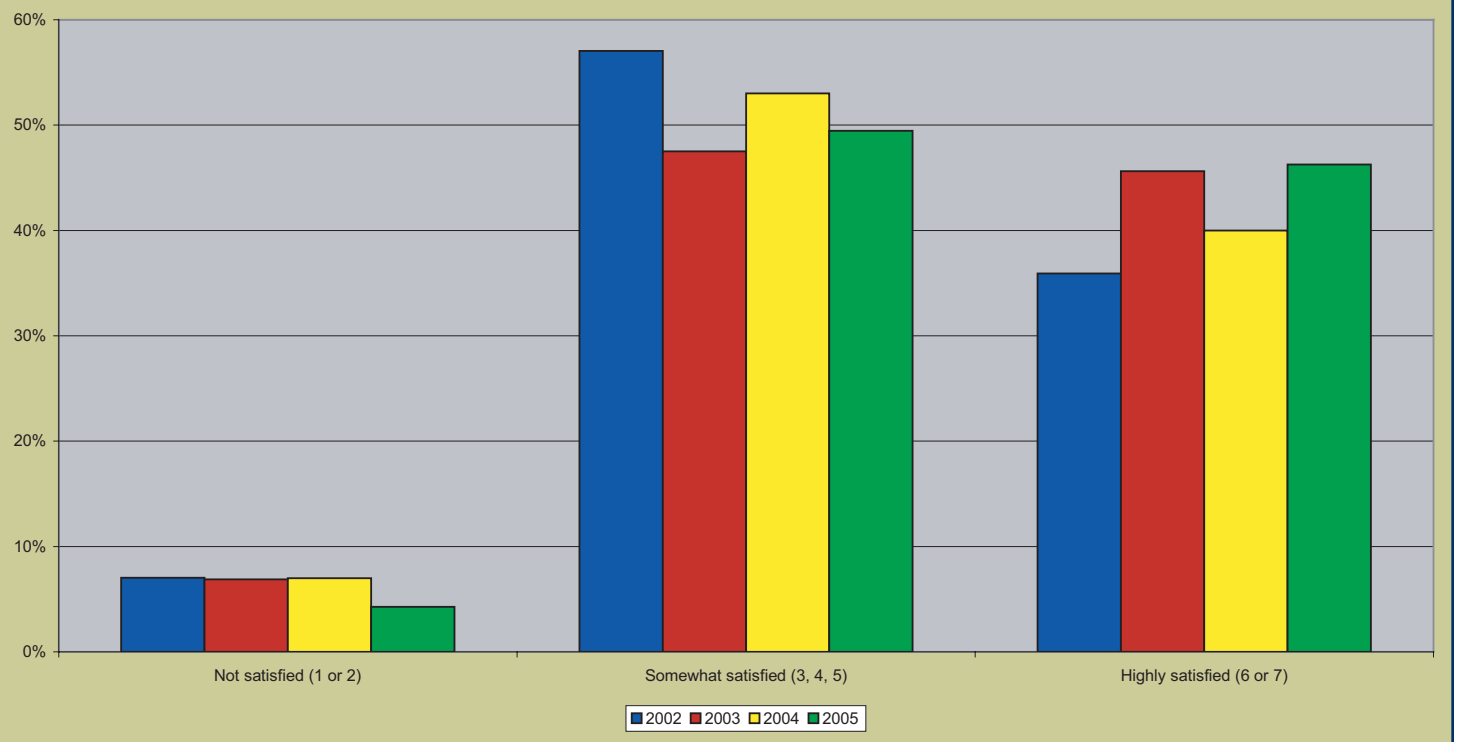
There's no question that VoIP is becoming mainstream and those who have implemented it are gaining considerable experience. Whereas in 2003 and 2004, just over half of respondents, 54% and 58% respectively, indicated that they had already deployed VoIP in some form, this year, over 70% have already deployed the technology to some extent. (This will be explored in more depth in the next section.)

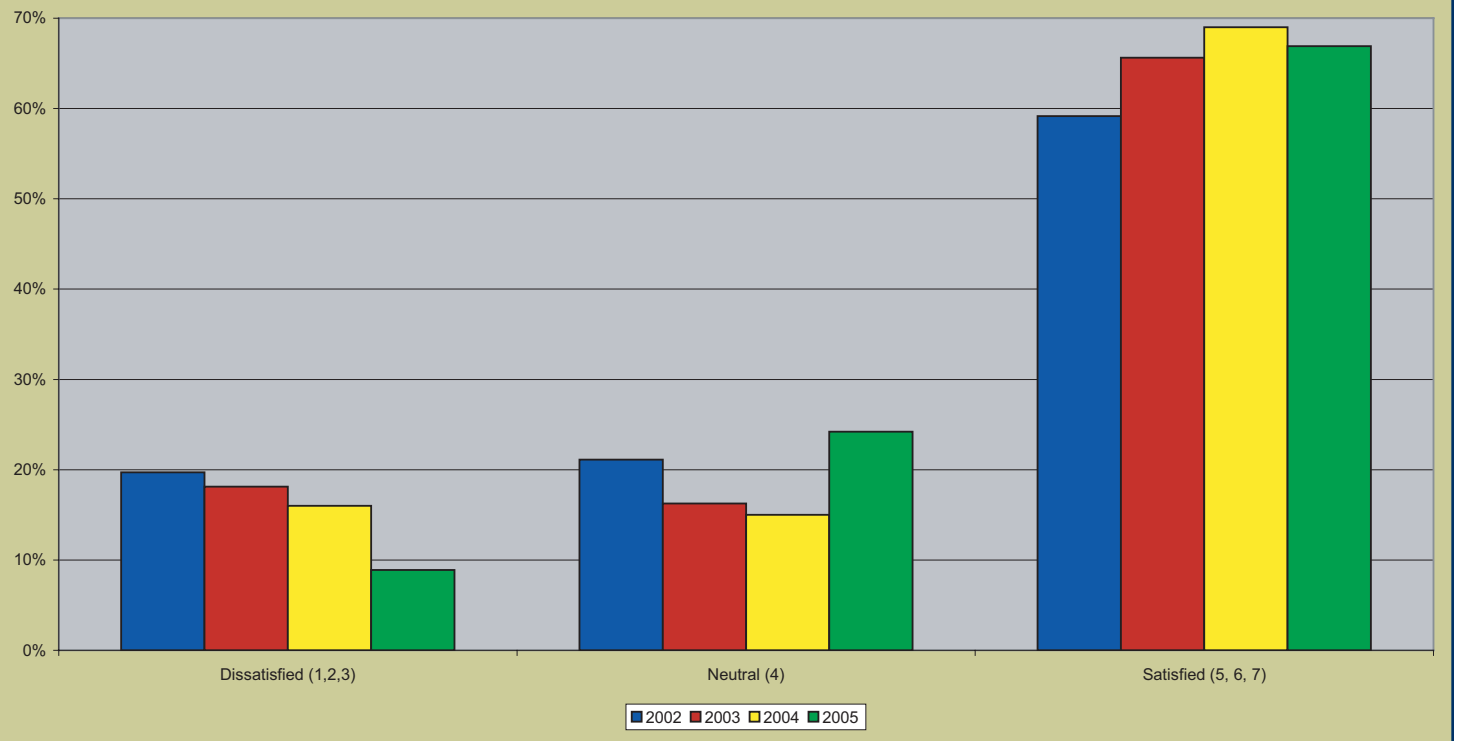
Overall, the users are quite happy with their VoIP deployments. Respondents were asked to indicate the extent to which they were pleased on a 7-point scale, in which 7 indicated "Extremely satisfied." In 2003 and 2004, the overall satisfaction score showed no change – 5.03 on this 7-point scale. This year, the satisfaction ranking increased to 5.19. And while this is not an earth-shattering increase, it does indicate a rise in satisfaction.

One might expect the satisfaction rate to remain relatively stable as deployment becomes more widespread. On the one hand, it would make sense for satisfaction to increase as technology improves and kinks are smoothed out. On the other hand, when the technology gains more widespread adoption, the community adopting the technology moves from "experts" to the mass market, and the mass market might have higher expectations for smooth operation, leading to a decrease in satisfaction. Additionally, as more widespread adoption occurs, additional scaling issues could be uncovered for larger networks, which could account for a drop in satisfaction.

Figure 2 goes into a bit more depth concerning the distribution of responses. In the first perspective in Figure 2, using the 7-point scale, 1 and 2 are "Not satisfied;" 3, 4 and 5 are "Somewhat satisfied;" and 6 and 7 are "Highly satisfied." For this question, the number of respondents indicating that they were "Highly satisfied" showed a

Figure 2 - Two Perspectives on Satisfaction with VoIP Implementations





marked increase from last year, offsetting the decrease in "Somewhat satisfied" and "Not satisfied" respondents.

In the second perspective, the respondents are classified as "Dissatisfied," indicated by values of 1 through 3, "Neutral," indicated by a value of 4, or "Satisfied," indicated by a value of 5 through 7. Looking at the statistics from this perspective, even though the "Satisfied" group dropped 2% from last year, the "Dissatisfied" group dropped by 7%, and the "Neutral" group increased by 9%.

On the whole, the satisfaction level appears to be moving slowly in a positive direction.

Extent of Deployment

In prior years, respondents were simply asked whether or not they had made a production deployment of VoIP. This year, the question was made considerably more granular by asking about the extent to which they had deployed VoIP, both in terms of the percentage of desktops/phones and the percentage of call minutes.

As indicated above and as shown in **Figure 3**, for both deployment metrics, the percentage of respondents who have already made a deployment exceeds 70%, even including the respondents who did not know the extent of deployment.

The most striking feature of Figure 3 is the bimodal nature of deployment. Among those who have made a deployment (excluding the "Have not deployed" and "Don't know" categories), 29% of the respondents had deployed VoIP for more than 75% of call minutes and 30% had deployed to more than 75% of the desktops/phones. On the other extreme, 47% of the respondents had deployed VoIP for less than 25% of call minutes and 43% had deployed to fewer than 25% of the desktops/phones. Clearly, the two extremes – minor deployment and almost

Figure 3 - Extent to Which VoIP Is Deployed

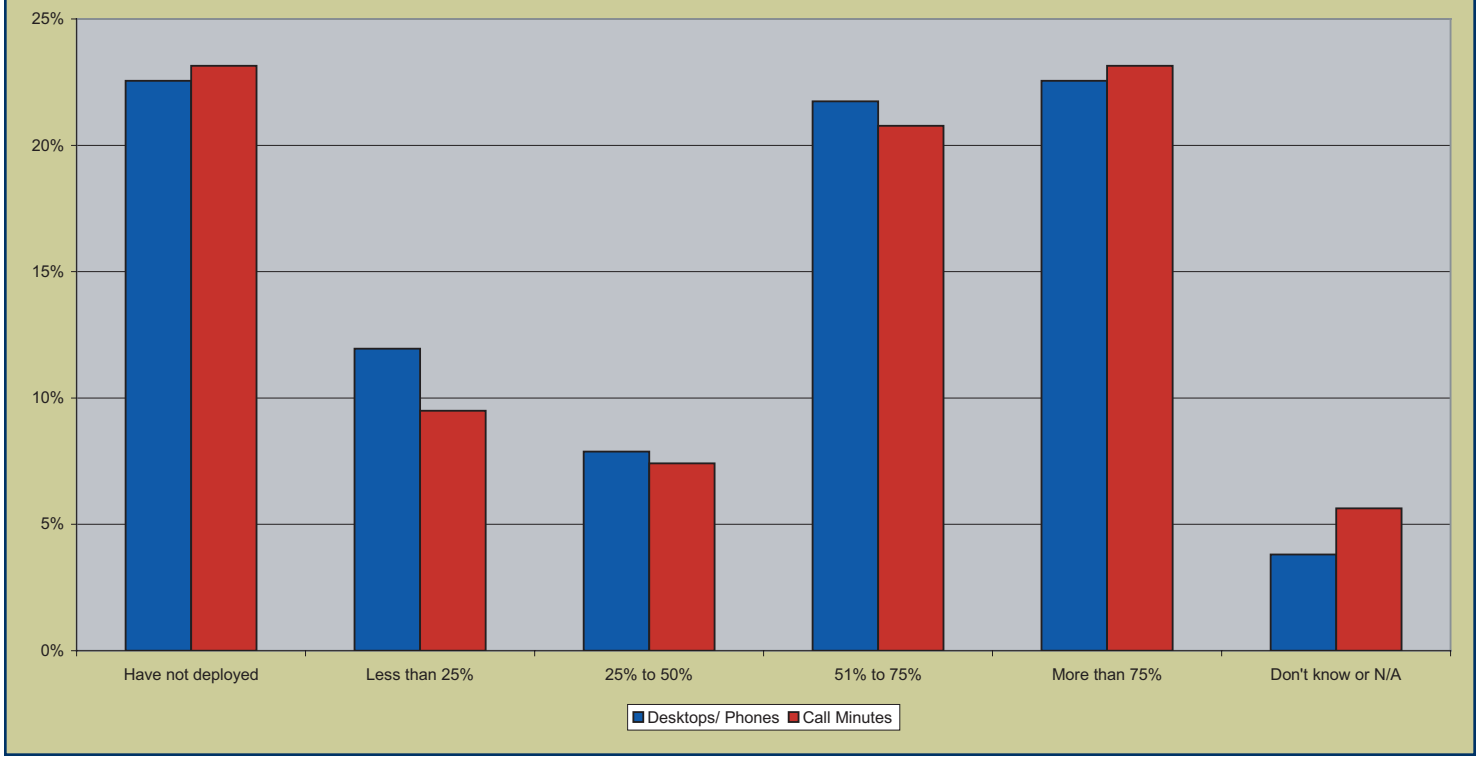
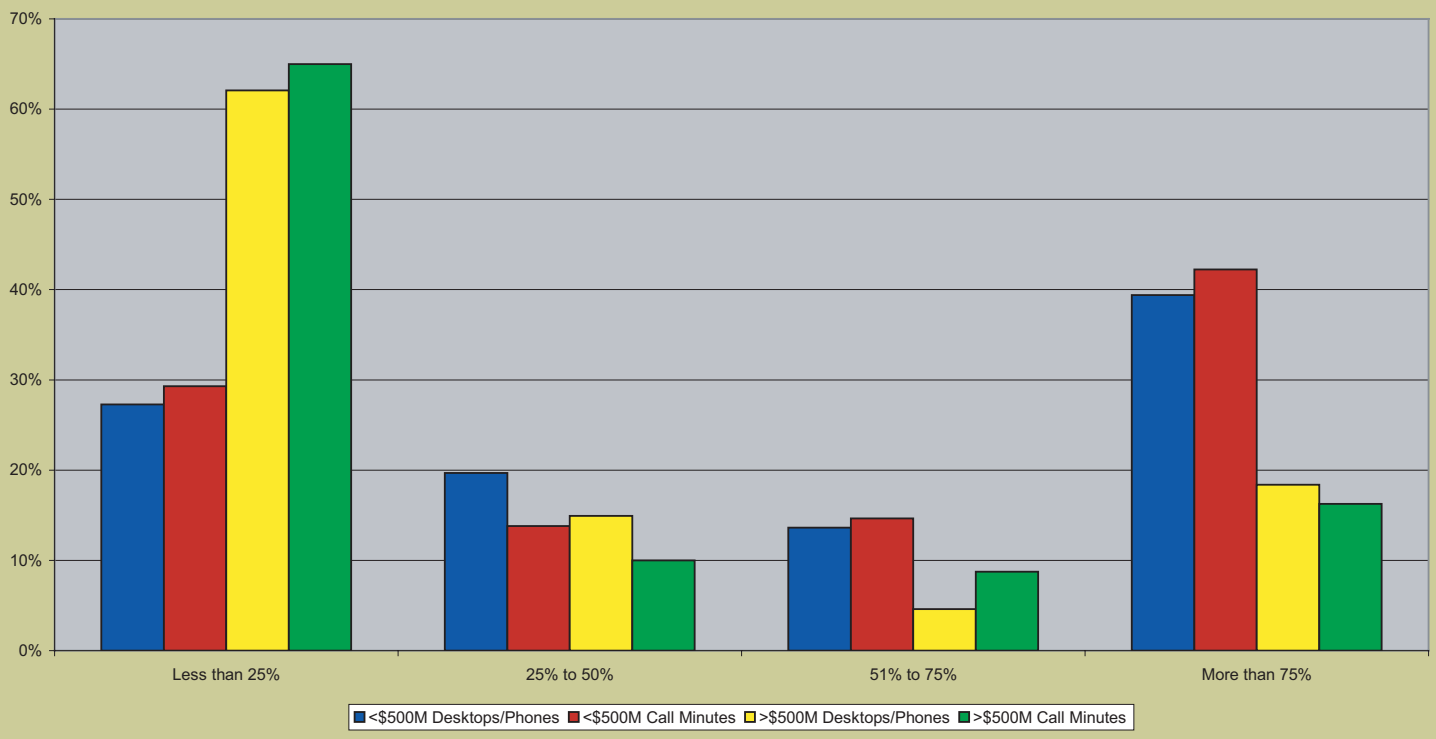


Figure 4 - Impact of Company Size on the Extent to Which VoIP Is Deployed



complete deployment outweigh the intermediate deployment stages.

This data led us to the hypothesis that there was a break-point where smaller organizations had more complete deployments while larger organizations – due to the sheer volume of devices in the network – had less complete deployments. Following this path further led to the discovery that the break-point seems to be companies with greater than or less than $500M (USD) in annual revenues. This striking dichotomy, especially for large companies with smaller deployments by percentage, is shown in **Figure 4**.

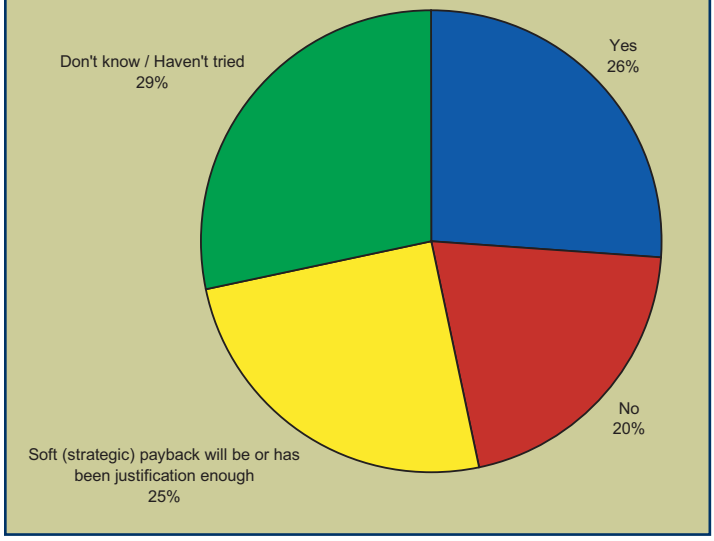
Return on Investment and Total Cost of Ownership

New questions were added this year concerning both Return on Investment (RoI) and Total Cost of Ownership (TCO). One of the more interesting aspects of the results from these questions is that, in spite of the emphasis given to these factors, roughly one-third of the respondents either didn't know the impact or had not tried to calculate the impact of either.

Figure 5 addresses the results to the question, "Have you been able to calculate and demonstrate a hard (tactical) ROI/payback for your VoIP/IP Telephony implementation?" Excluding the results from the respondents who did not know, a total of 71% of the respondents had either shown a tactical RoI (36%) or had found that a "soft" (strategic) payback will be or has been justification enough (35%). This latter point is particularly salient in that it demonstrates the additional value that a converged solution brings beyond simple cost savings.

The importance of strategic payback has grown greater and greater over the past five years. VoIP and convergence are no longer about simply saving money on toll charges;

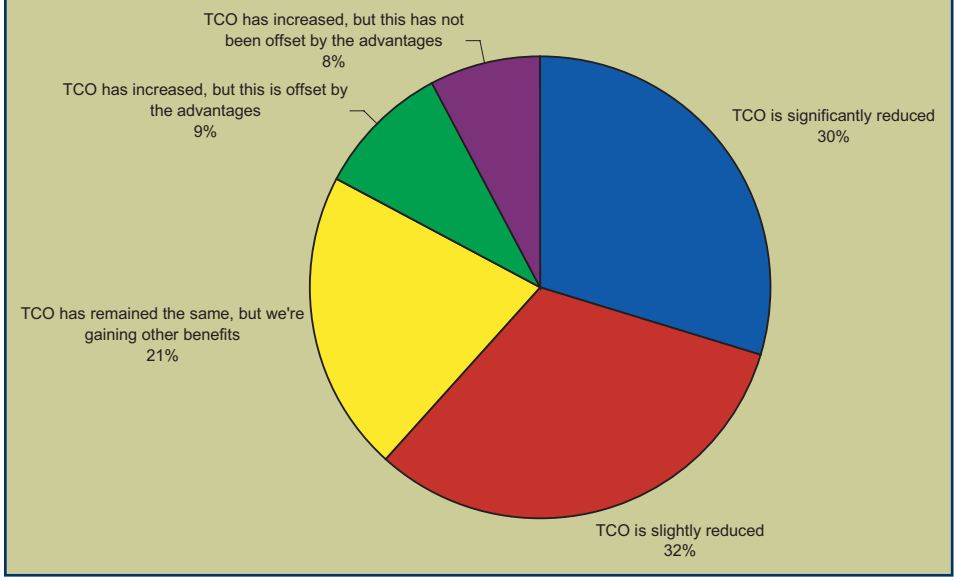
Figure 5 - Ability to Demonstrate a Return on Investment (RoI) for VoIP



rather, they provide the impetus for redefining fundamental business processes.

Figure 6 addresses the similar – but not identical – issue of TCO. In this case, the query was "Which of the following best represents your company's view of the Total Cost of Ownership (TCO) for VoIP / IP Telephony?" Here, the figure does not represent the 32% who have not studied the TCO. Rather, it highlights the various responses of those who chose one of the other options. All but 8% of the respondents chose a response that would be considered "positive." Corroborating the "soft RoI" responses shown in Figure 5, 30% of the respondents saw that the TCO had either remained constant or increased but that these increased costs had been offset by other benefits. Similarly, the percentage of the respondents who found a significant reduction in TCO correlates well with the percentage who were able to demonstrate a "hard" RoI.

Figure 6 - Impact of VoIP Implementation on Total Cost of Ownership (TCO)



Types of VoIP Equipment

For the past three years, respondents have been presented with a list of possible types of VoIP equipment and asked to indicate which of these they are currently using and/or plan to start using. For ease of examination, the results are split into **Figures 7 and 8**. Each figure shows a summary of those responding with an answer other than "Don't know," with bar segments to show the percentage giving each response.

Let us begin by examining Figure 7. For essentially all five equipment types shown, the percentage of respondents currently using the product (or service) has increased steadily, and this trend is consistent with the on-going increase in implementation. The number of respondents using and planning to use VoIP voice quality monitoring and troubleshooting systems rose significantly after a drop last year. Last year, we hypothesized that an explanation for the drop was that, as this market became better defined, more users realized that they needed to make significant improvements before claiming that they actually have these systems in place. Going forward, we hypothesize that the market demand for these systems will

Figure 7 - Deployment Plans for Various IP Telephony Systems and Services

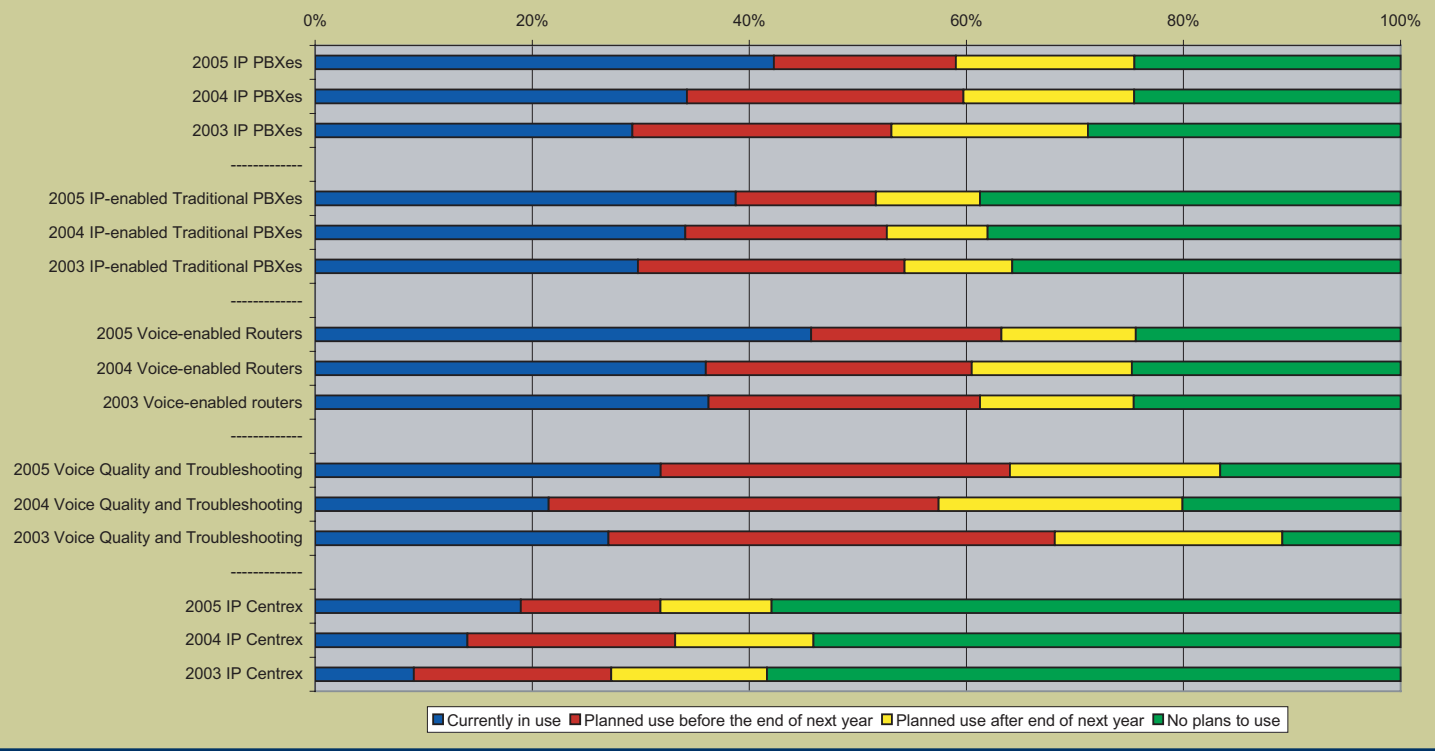


Figure 8 - Deployment Plans for Various Types of IP Phones

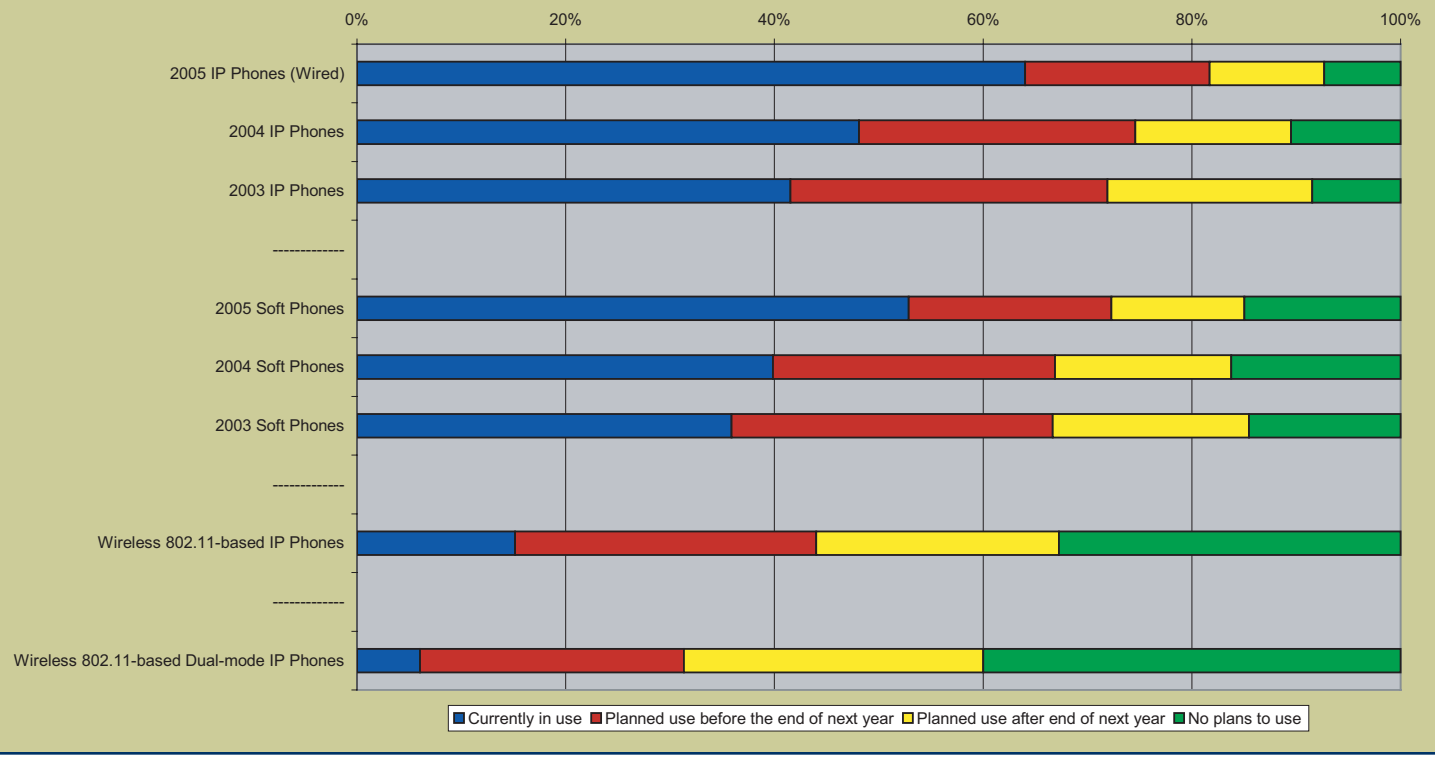
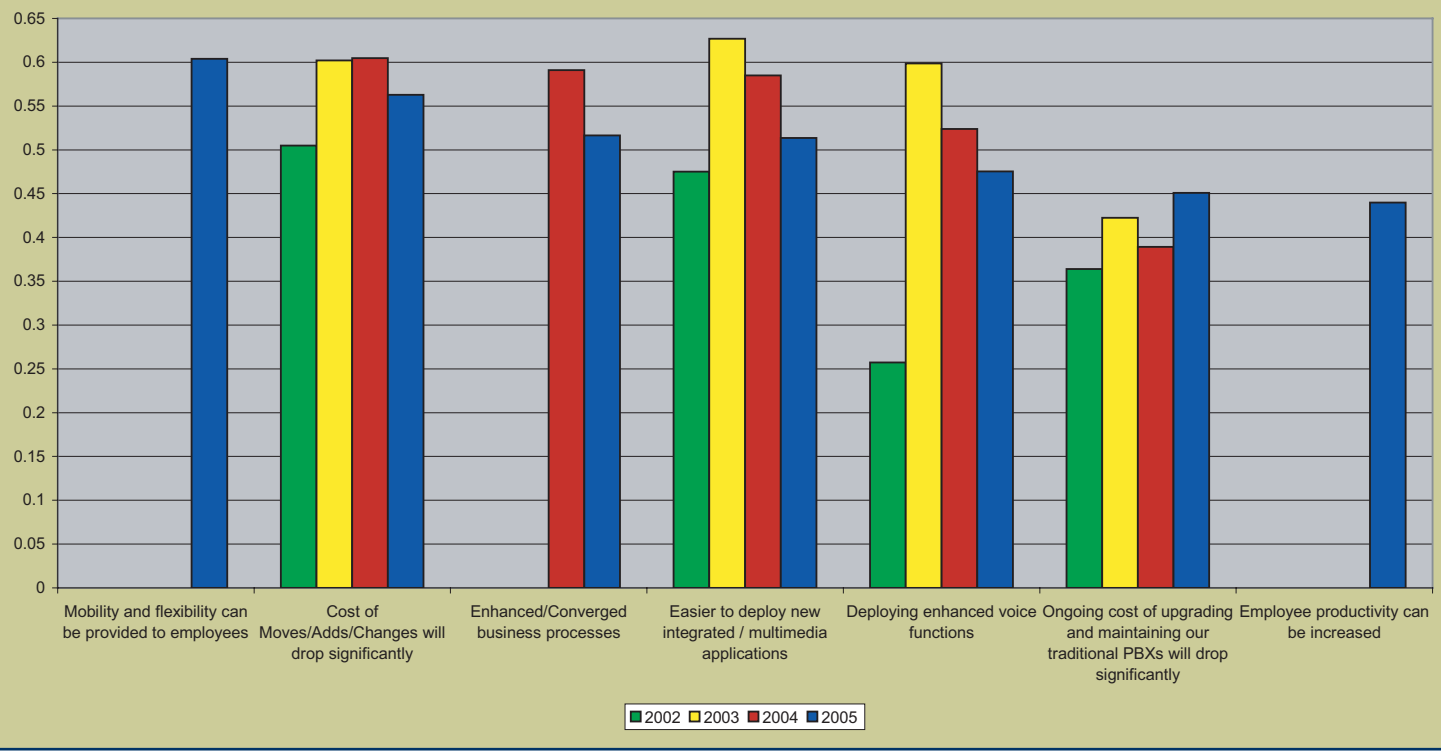


Figure 9 - Top Expected Benefits from Implementing VoIP



increase, and, as will be shown in a later section, this view is supported by the respondents' realization of the importance of these services.

There continues to be no great news for IP Centrex. The long-range plans for its use still fall well below the 50% mark, reflecting the trend of a general lack of interest in managed services.

Moving to Figure 8, we highlight the end-devices. The continued adoption of both traditional wired IP phones and soft phones again reflects the increased adoption of VoIP in general. This year, for the first time, we also asked about wireless 802.11-based phones, both as stand-alone 802.11 phones and as dual mode devices.[2] Even though the current implementation of these devices significantly lags behind the more traditional devices, the fact that they are a relatively new product category makes this unsurprising. It is especially encouraging for this market segment that two-thirds of the respondents expect to implement 802.11-based wireless phones eventually. (We also note that the assumption here is that an 802.11-based phone is a stand-alone device as opposed to a soft phone device running on a computer that is using 802.11 connectivity.)

Expected Benefits

One of the major goals of this report is to track the evolution of the market's expected benefits from implementing VoIP and the challenges it faces in doing so. **Figure 9** shows the most significant driving forces behind VoIP implementation over the past four years, based on the percentage of those surveyed who denoted each of the possible responses as an expected benefit.

[2] *It is assumed that the second mode in general is cellular, even though there is a developing market for dual 802.11 and DECT phone sets.*

It is of note that a newly added category, "Mobility and flexibility can be provided to employees," was the top expected benefit. Benefits are listed from left to right according to their popularity in this year's survey.[3]

As a rule, there was only minimal change in the responses from last year. In fact, the top five expected benefits appearing in both the 2004 and 2005 surveys did not change their rank order. It is also of note that another newly added category, "Employee productivity can be increased," ranked highly enough to be included as a seventh major expected benefit.

The top benefits continue to demonstrate an interesting juxtaposition of strategic hopes versus nuts-and-bolts tactical expectations. "Cost of Moves/Adds/Changes will drop significantly" (highly tactical) ranked high, and it's easy to calculate an exact return on the investment in hard dollars. This is in contrast with the more strategic and "soft" benefits from several of the other choices, which provide an ultimate return by offering capabilities that would not otherwise be available. For example, while there are clear economic benefits of having added "mobility," this represents an enhanced capability for which it is more difficult to show an immediate financial impact. This indicates once again that VoIP is viewed as more than just a replacement technology for traditional voice telephony.

A long list of possible benefits did not make the top list. These include, in descending order:

- Cost of domestic calls between company sites will drop significantly (40%)
- Cost of communication operations will drop significantly (38%)
- Customer service and interaction can be improved (36%)
- Cost of wiring will drop significantly (34%)
- Cost of international calls will drop significantly (31%)
- Cost of domestic calls other than between company sites will drop significantly (24%)
- Ability to connect to and integrate with third-party application servers, such as Microsoft Live Communications Server (LCS) (24%)

The list above includes more of the traditional, tactical benefits, especially including three items related to "toll bypass." Once again, we find even more evidence that the market is maturing both in terms of products and in terms of movement toward converged business processes rather than simple cost reduction.

Deployment Impediments

If the respondents saw all of these benefits in deploying VoIP, why aren't they moving more quickly toward putting it into place? **Figure 10** shows the primary impediments to deployment cited by survey respondents.

Of note, the top five concerns are the same as they were last year, and a new option, "Waiting for more widespread availability/deployment of SIP," came in sixth.

"Concerns about security" remained the primary inhibiting factor cited, and "[Lack of] Systems for managing and troubleshooting VoIP quality"[4] came in at a statistical tie; each response was chosen by 42% of respondents. This tie actually represents a slight decrease in concern about security, because the latter choice was two percentage points behind security last year.

Perhaps the most striking indicator of the maturity of the market is that "lack of the budget" is cited half as often as

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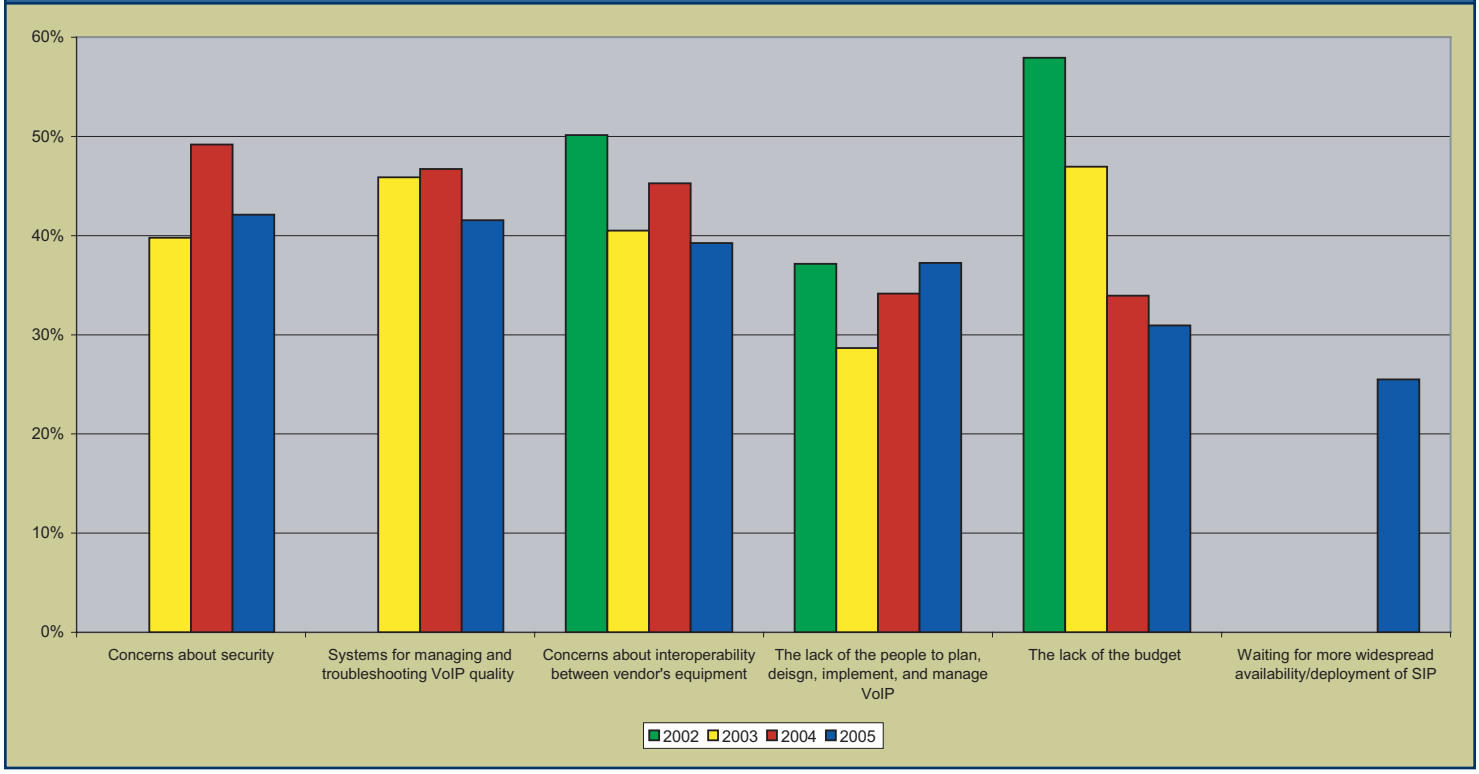
3 *N.B. For this question, the response order on the survey was randomized to avoid positional bias. The term positional biasis used to describe a phenomenon where the first few items in a list of possible answers are more likely to be chosen than items farther down the list. In all questions for which the method was appropriate, the survey software presented the possible choices in a randomized order.*

4 *It was implicit in the questionnaire that the implication was a lack of these systems.*

Figure 10 - Primary Impediments to Deploying VoIP



it was four years ago, moving from a deterrent for 58% of respondents in 2002 to only 31% in 2005.

Second-tier concerns for this category were:

- Concerns about E-911 issues (25%)
- The benefits of VoIP are not compelling enough to deploy additional systems at this time (23%)
- Having an installed base that must be fully depreciated (21%)
- Do not think that a broad deployment of VoIP is easily managed (19%)
- Do not think that technologies such as QoS are ready for broad deployment (17%)
- Concerns about Power over Ethernet (POE) standards (10%)

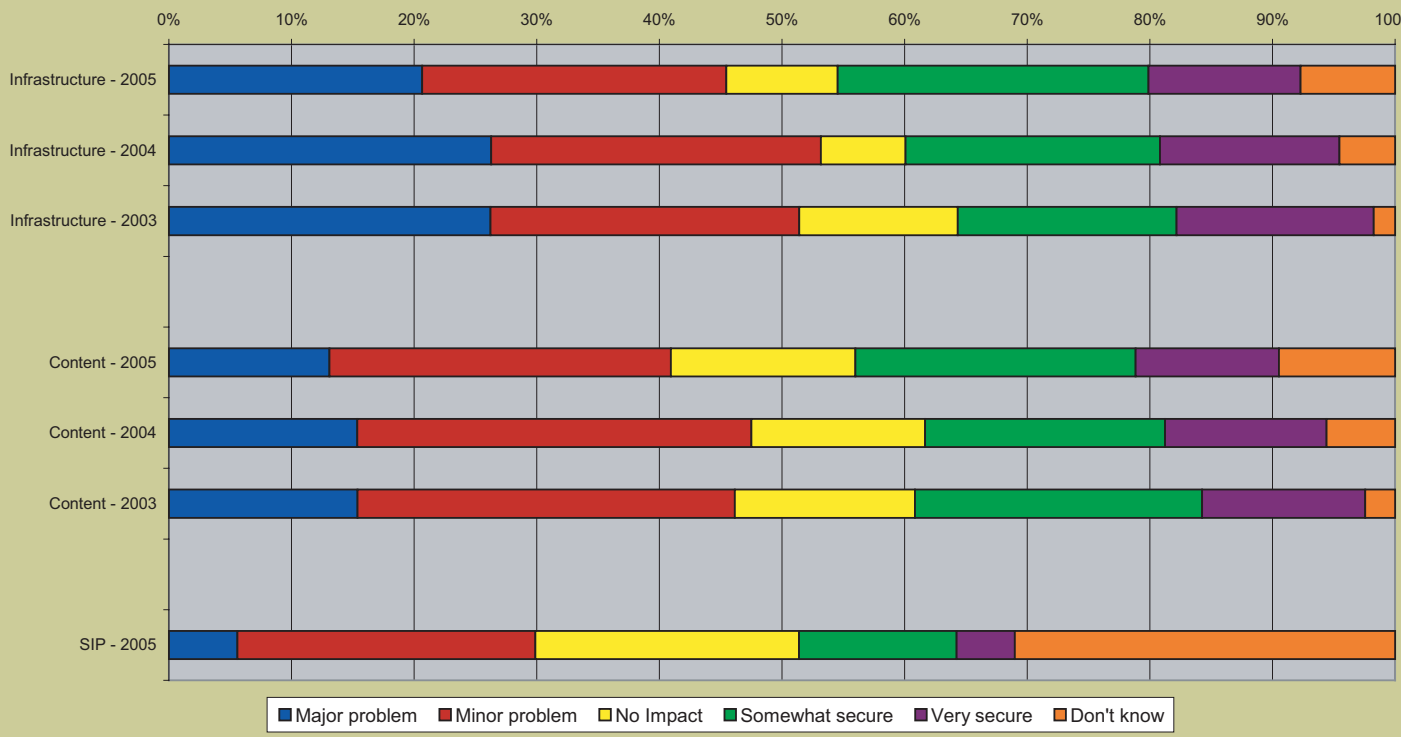
It should be noted, though, that the difference between SIP as a "major" concern and E-911 as a "minor" concern was only by one percent, again indicating a statistical dead heat. Nevertheless, since E-911 is a well-known and understood issue and SIP is still emerging, we will cover SIP in more detail in a later section.

Details on Security Concerns

As noted above, security was once again cited as a major impediment to the deployment of VoIP. In order to dig a bit deeper into the question of VoIP security, we must first determine the relative concern about security of the voice/data network infrastructure versus the security of individual conversations. For instance, concern about Distributed Denial of Service (DDOS) attacks is a network infrastructure issue, while hacking a specific conversation via a LAN sniffer is a conversation security issue.

As detailed in **Figure 11**, the percentage of the respondents who considered security of the network infrastructure to be either a major or minor problem decreased

Figure 11 - Extent to Which Security Is a Concern for the Infrastructure, for Conversation Content, and by Use of SIP



significantly from more than 50% in 2004 to roughly 45% this year. Disregarding those whose response was "Don't know," the number of respondents who considered security of the network infrastructure to be a major or minor problem decreased by a greater percentage – from 56% last year to 49% this year. (Note that, on the chart, a shift in the bars to the left reflects an increase in comfort with the level of security.)

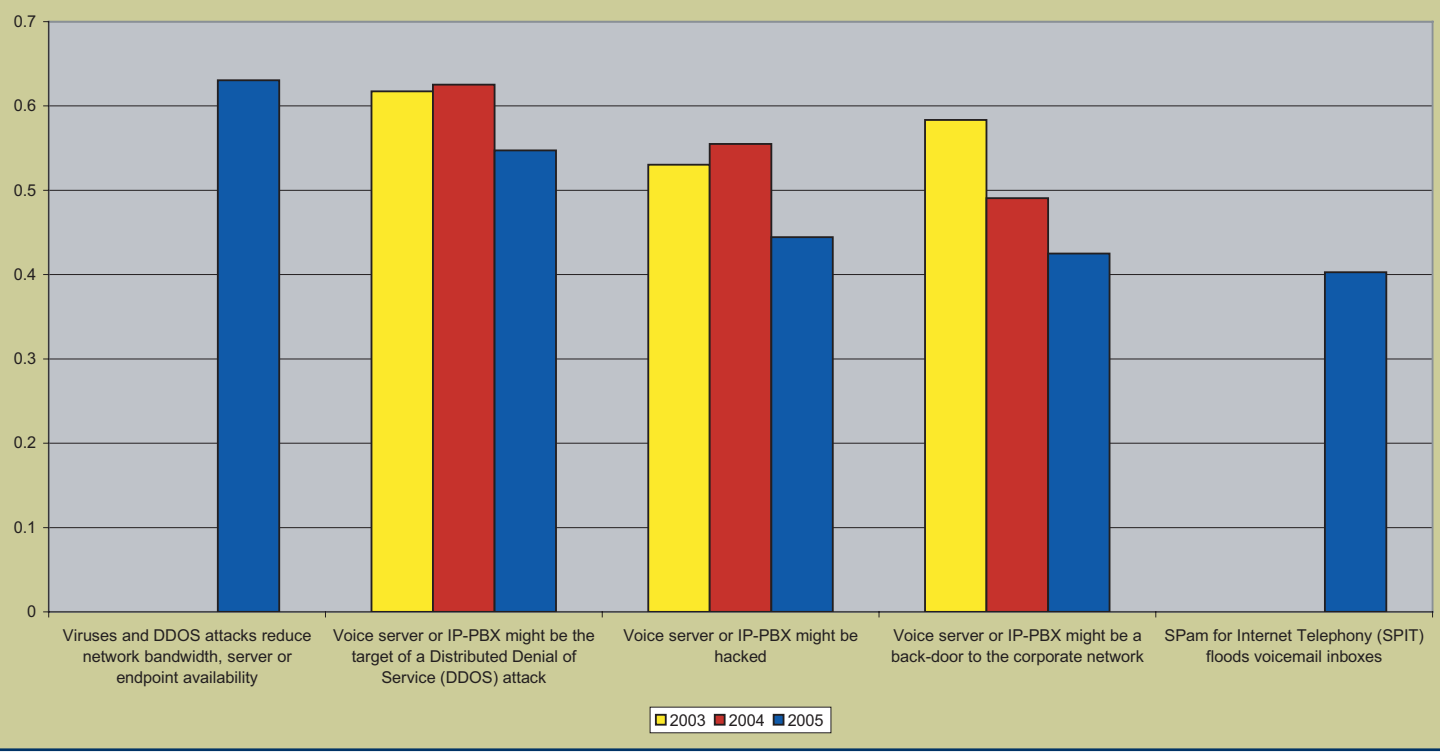
Mirroring this shift, the concerns about conversation content also decreased. Again, disregarding respondents who did not know, roughly 50% considered conversation security to be either a major or minor problem last year as compared with 45% this year. Consistently, security of the network infrastructure is considered to be a more significant problem than security of the content.

For the 2005/2006 survey, we added a question to ask about concerns about SIP. The greater a protocol is standardized and published, the more open it is to everyone – including those who would try to attack the network. While SIP is considered to be a relatively minor security risk, the large percentage – almost one-third of respondents – who responded "Don't know," prompted the inclusion of that category on this figure. Note also that the percentage with a judgment of "no impact" is greater than for any of the other categories. Clearly, this is an area of confusion that deserves and will continue to receive further scrutiny in the coming years.

Parenthetically, it is of interest that when the respondents were asked about their perception of the overall security of VoIP as compared to traditional telephony, there was very little change the responses gathered in 2004.

Figure 12 highlights the respondents' reactions to specific threats. A new choice, "Viruses and denial of service attacks reduce network bandwidth, server or endpoint availability," came in as the top concern, selected by almost two-thirds of the respondents. The next three con-

Figure 12 - Percentage of Respondents Concerned about Major Specific Security Threats



cerns were the same as in 2004: "Voice server or IP-PBX might be the target of a Distributed Denial of Service (DDOS) attack," "Voice server or IP-PBX might be hacked," and "Voice server or IP-PBX might be a back-door to the corporate network." These concerns further confirm the importance of securing the network infrastructure.

The fifth major concern was also a new option this year, "SPam for Internet Telephony (SPIT) floods voicemail inboxes," cited as a threat by 40% of the respondents. Once again, this is a topic to watch carefully over the coming years. As the power of integrating IP telephony with other network functions increases, so will the ability for this power to be exploited for less-than-honorable uses.

The minor concerns for this year are separated by seven percentage points from the lowest major concern, so differentiating between the two groups was rather easy. The minor concerns were:

- Identity management / authentication (33%)
- Voice server or IP-PBX might be spoofed (32%)
- Voice conversations might be intercepted in the LAN (30%)
- Voice conversations might be intercepted in the WAN (30%)
- Voice conversations might be intercepted on the Internet (29%)
- Increased toll fraud (20%)
- Concerned that all LAN segments have access to all conversations (14%)

It is somewhat heartening that the option "Concerned that all LAN segments have access to all conversations" dropped to 14% (from 21% last year) since it was added as a red herring. In reality, as there are very few shared media LANs in existence, this is seldom a problem

because the only place with access to all traffic on the LAN should be in the wiring closet. However, there remains a realistic concern about shared media when wireless LANs (WLANs) are used to transport VoIP traffic (a topic that was not addressed).

Performance and Infrastructure

In response to ongoing concerns about the impact of VoIP on other applications – especially due to bandwidth requirements – respondents were asked whether they were concerned about the impact that implementing VoIP would have on the performance of existing data applications on the LAN and/or WAN. Separate responses were requested for the LAN and WAN.

As shown in **Figure 13**, there continue to be significant (albeit abating) concerns about VoIP having a negative impact on the performance of other applications on the WAN but only limited concern about application impact on the LAN. Of course, this is consistent with the reality that LAN bandwidth is abundant, while WAN bandwidth typically is a small fraction of LAN bandwidth.

In addition to being asked about performance concerns, the respondents were asked again whether they felt their current infrastructure for the LAN, WAN, and cable plant was ready for VoIP. As shown in **Figure 14**, significant progress in readiness is demonstrated as compared with the 2004 results. In fact, there is also a higher degree of readiness than shown in 2003 in most cases. This raises the question as to why the 2004 results were anomalous and/or, at a minimum, counterintuitive. In 2004, we postulated that the results reflected a heightened awareness that network upgrades might be needed and that adding VoIP isn't always "just another application." This year we postulate that the networks are indeed closer to being ready to support VoIP.

Figure 13 - Extent of Concern about VoIP Impact on Existing Applications in the LAN/WAN

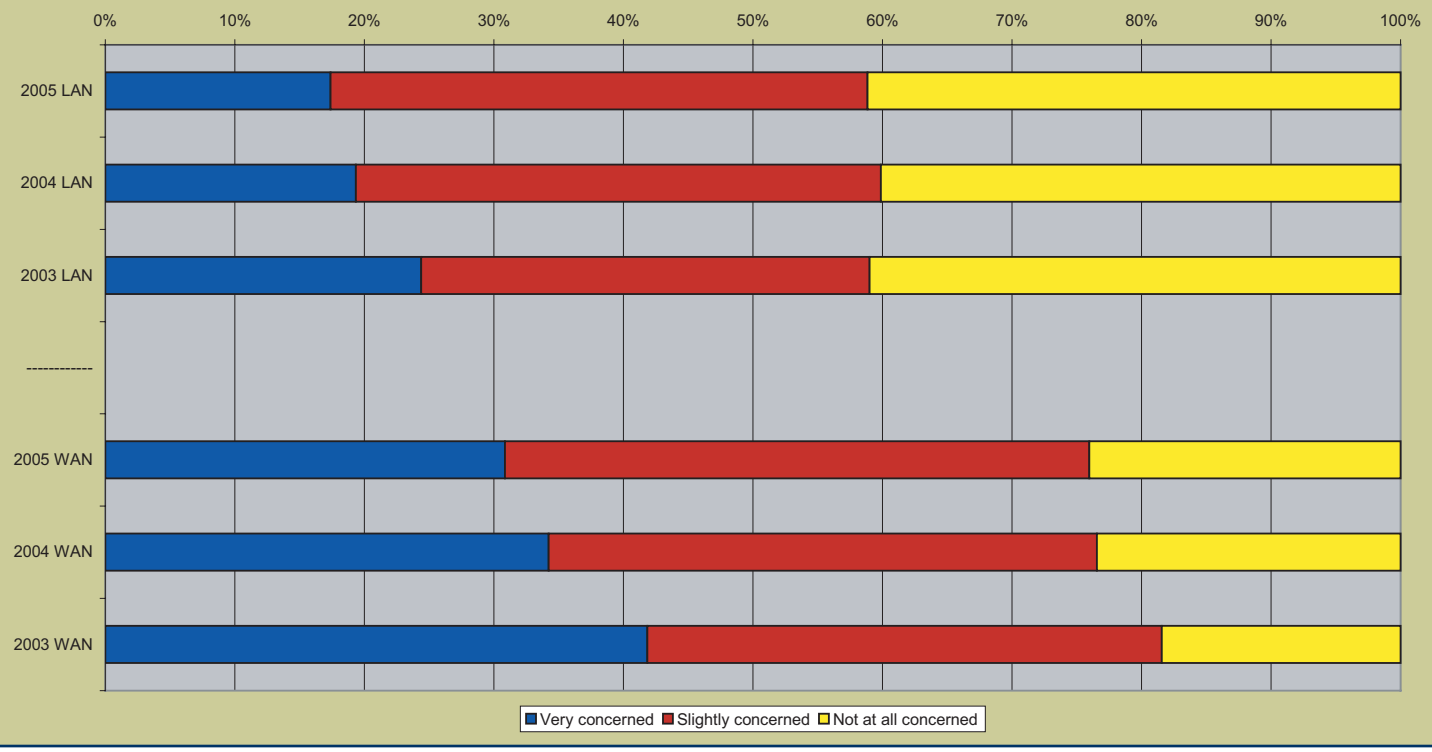


Figure 14 - Extent to Which Various Network Components Are Ready for VoIP

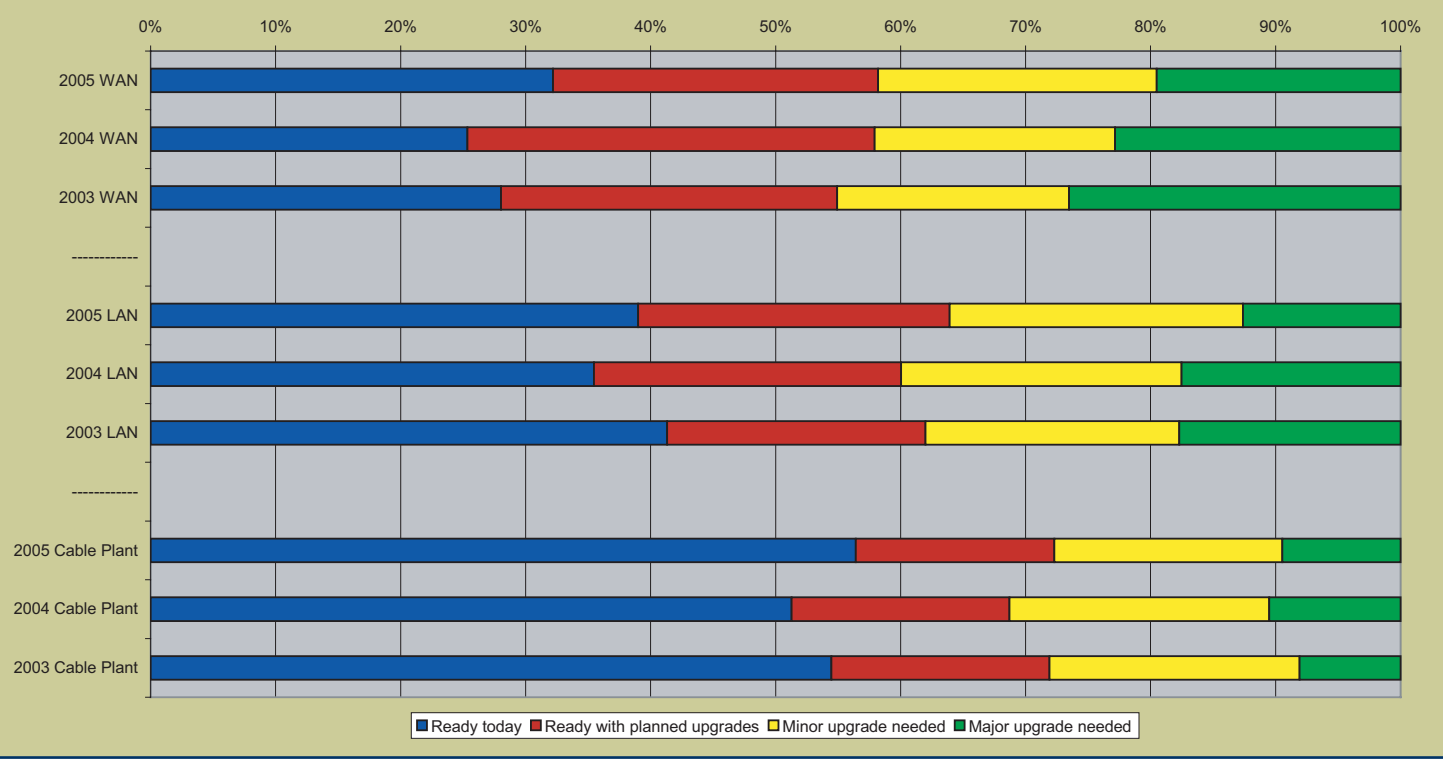
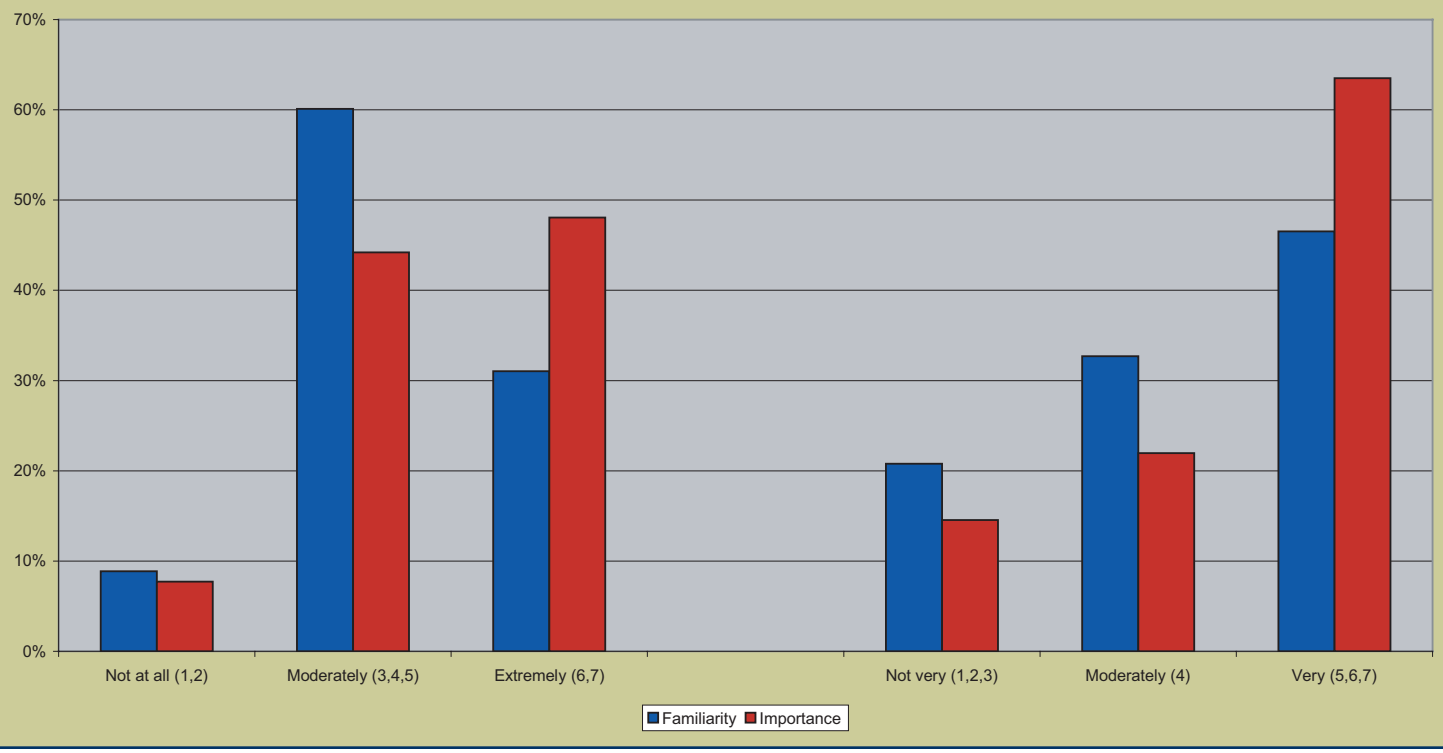


Figure 15 - Familiarity with and Importance of Session Initiation Protocol (SIP)



Session Initiation Protocol (SIP) Issues

Over the past year, few, if any, topics have received more attention than the developments surrounding SIP. As shown in **Figure 15**, the survey respondents were asked about both their familiarity with SIP and the importance of SIP. In both cases they were asked to use a scale of 1 to 7 to indicate (respectively) how familiar they were with SIP and how important they viewed SIP as being. In each case, a value of 1 indicated "Not at all," 4 indicated "Moderately," and 7 indicated "Extremely."

Figure 15 shows two different groupings of the responses. In the first case, the results are grouped by answers of 1 or 2 (Not at all); 3, 4, or 5 (Moderately); or 6 or 7 (Extremely). In the second view, the results are grouped by answers of 1, 2, or 3 (Not very); 4 (Moderately); or 5, 6, or 7 (Very).

Regardless of the grouping, two results are most clear: SIP is viewed as a very important issue, and it is an issue that ranks higher in importance than in familiarity. The overall averages of the scores on the seven-point basis were 4.58 for the familiarity score (just above the middle) but 5.15 for the importance score.

A third conclusion is evident in the statistics shown in **Figure 16**. This graph shows the importance score for various groupings of respondents based on their answer for familiarity. From it, one can see that the more a user knows about SIP, the more important it is considered. It is particularly impressive that those respondents with a familiarity score of 6 or 7 gave an average importance score of 5.86.

So, if SIP is so important, what is its attraction? As shown in **Figure 17**, its most attractive features involve increased interoperability. Figure 17 shows the most popular responses to the question "What do you see as the primary benefits you will receive from implementing equipment that supports SIP?" In particular, "Enhanced

Figure 16 - Importance of Session Initiation Protocol (SIP) for Groups with Various Degrees of Familiarity

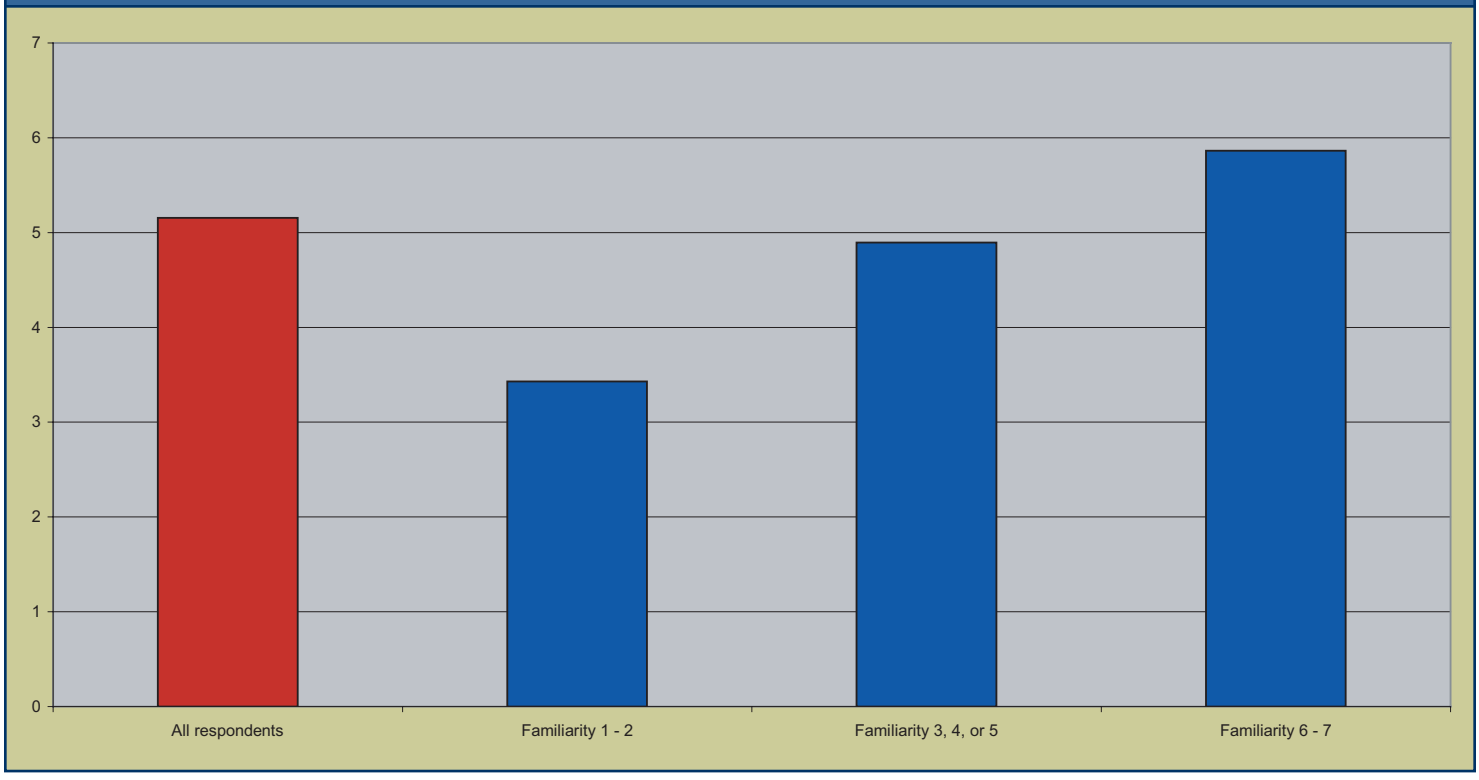
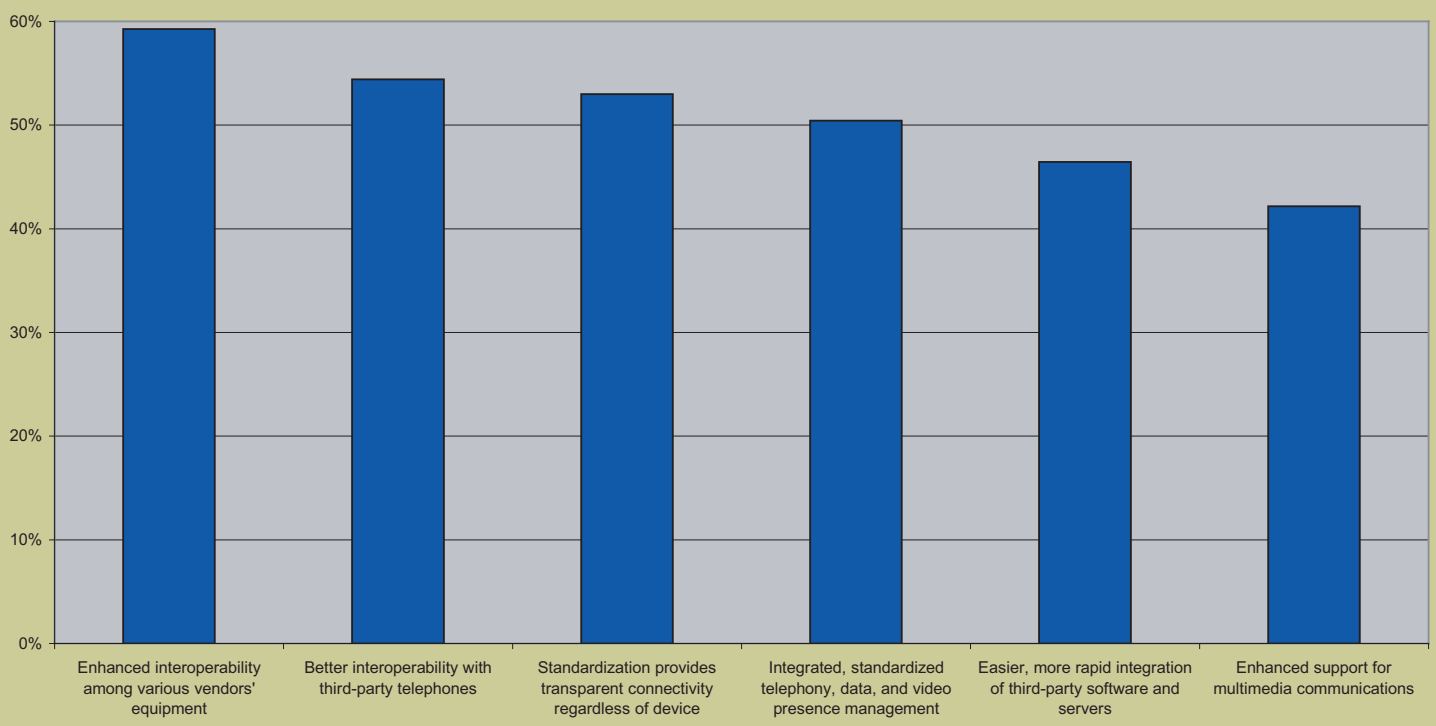


Figure 17 - Major Perceived Benefits of Implementing Equipment Supporting Session Initiation Protocol (SIP)



interoperability among various vendors' equipment," "Better interoperability with third-party telephones," and "Standardization provides transparent connectivity regardless of device" top the list.

Whether SIP will be implemented in a manner that truly delivers these benefits remains to be seen. For several years, a hope has often been expressed that VoIP in general, and SIP in particular, will increase the ease of interoperability among equipment from various vendors. However, this is in stark contrast to the way most PBXes – whether IP-PBXes or traditional PBXes – operate in reality. In both cases, there are many features specific to the individual manufacturer. Indeed, this is what provides the impetus for a manufacturer to build a "better" as opposed to a "cheaper" product.

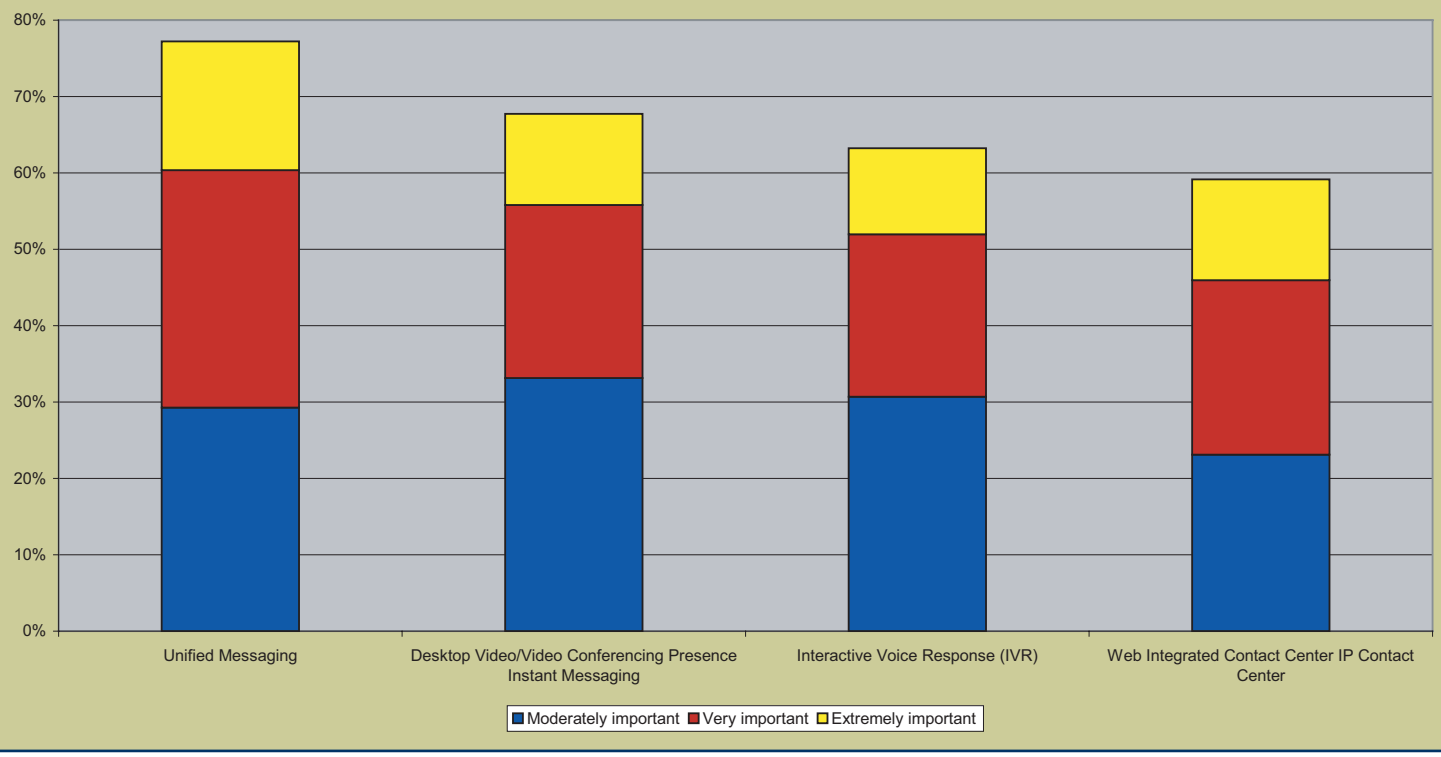
Today, one can only get "the best of the best" features from a manufacturer if all of the implementation comes from a single source. This particularly causes problems when corporate mergers and acquisitions bring together two networks from different manufacturers.

In reality, it is doubtful that SIP will remove all product differentiation. Nevertheless, it does provide an important framework that will allow a greatly enhanced set of functions to be implemented in a largely interoperable manner.

For completeness, the minor benefits anticipated to be delivered by SIP are listed below. Again, it was easy to differentiate between "major" and "minor" issues due to a 10% difference in the number of respondents choosing the option. These minor benefits include:

- Enhanced mobility (32%)
- Reduced hardware costs (28%)
- Standardized security (28%)
- Easier to traverse/negotiate firewalls (26%)
- Easier integration with the PSTN (25%)

Figure 18 - Importance of Selected Applications



Impact of Specific Applications

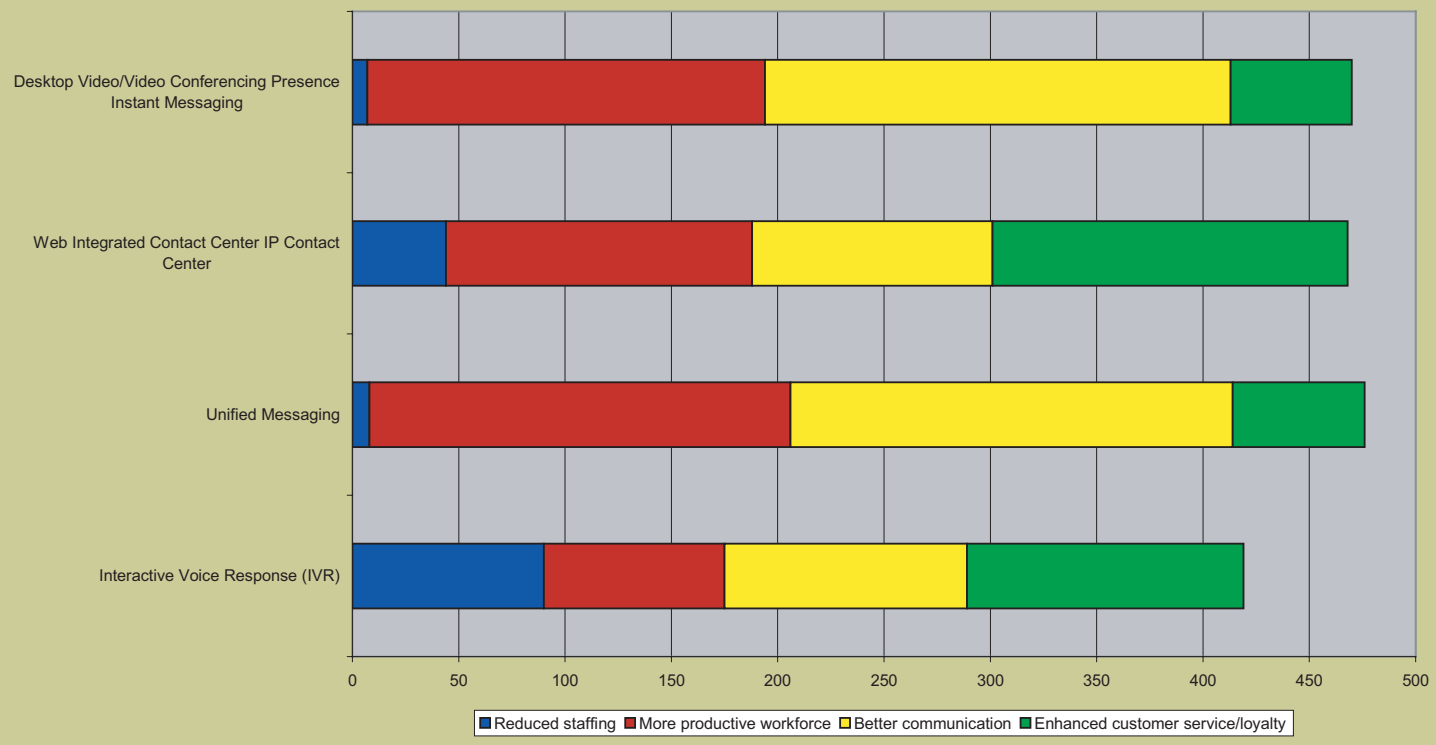
For the first time, we asked survey respondents to indicate how important each of four specific applications was in their VoIP deployment. The choices were rated on a five-point scale, ranging from 1 meaning "Not at all important" to 5 meaning "Extremely important." As shown in **Figure 18**, "Unified Messaging" and "Desktop Video/Video Conferencing, Presence, Instant Messaging" were viewed as most important when looking at the percentage of respondents who gave the application a 3, 4, or 5 on the five-point scale.

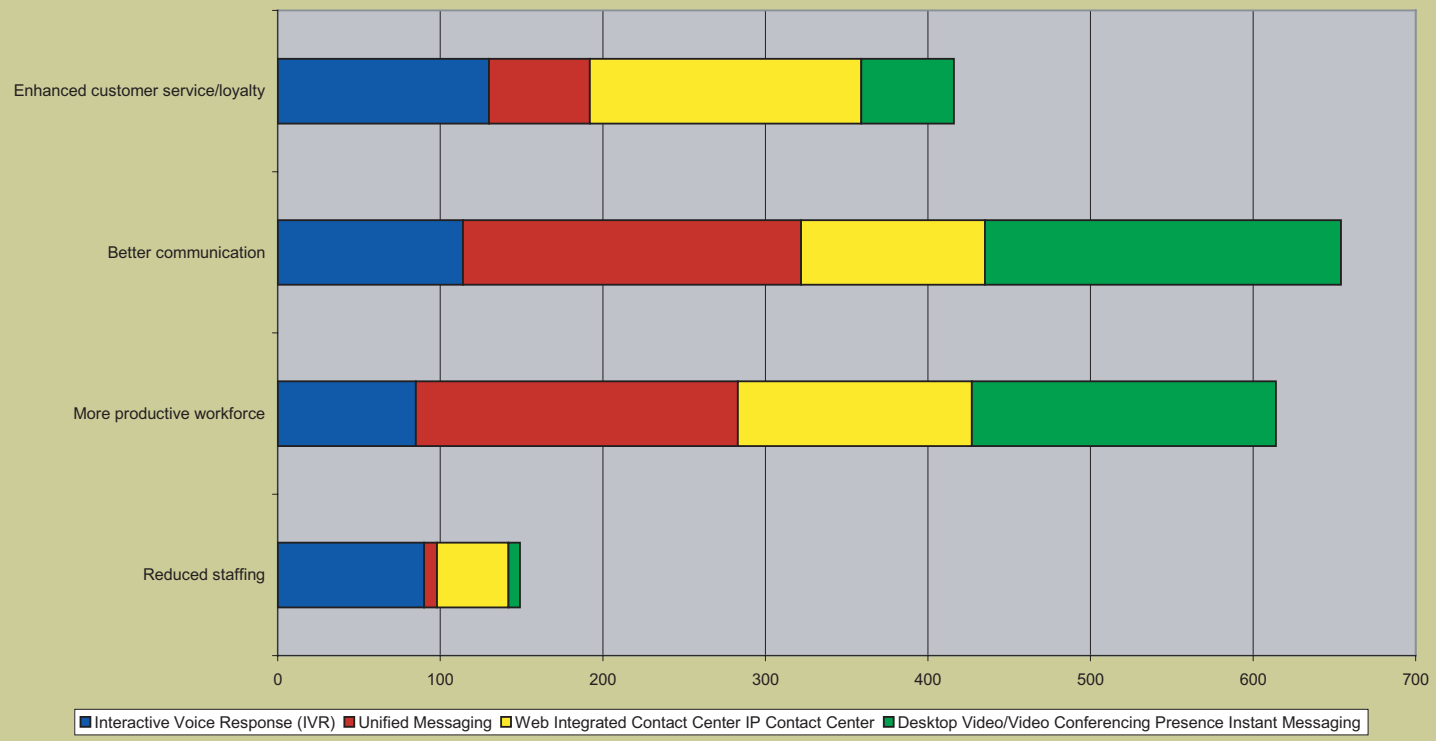
As an alternative way of looking at the results of this question, one can also simply average the responses. In this case, "Unified Messaging" takes a commanding lead, with an average response of 3.44. "Desktop Video/Video Conferencing, Presence, Instant Messaging" is a weak second-place finisher with an average response rate of 3.19, and "Interactive Voice Response (IVR)" and "Web Integrated Contact Center / IP Contact Center" each garnered an average response of 2.92.

In a related question, the same four applications were given, and for each the respondents were asked to indicate what primary benefit (or benefits) were expected. **Figure 19** shows the answers from two perspectives. In the first view, the bar represents the total number of respondents choosing a given response for each application.[5] Here we see that both "Desktop Video…" and "Unified Messaging" primarily provided a "More productive workforce" and "Better communication," while all four benefits were more evenly distributed for 'Interactive Voice Response." The "Integrated Contact Center" provided less benefit in terms of "Reduced staffing" while the other three benefits were fairly evenly balanced.

[5] *Note that the sum is greater than the total number of survey responses since respondents were requested to "check all that apply."*

Figure 19 - Two Perspectives Major Benefits That May Be Realized by Implementing Specific Applications





The second view is a bit more dramatic. In this view, the combined number of respondents choosing each benefit is shown with a separate entry for each of the specified applications. From this, one may determine that insofar as the four targeted applications are concerned, "Better communication" is the primary benefit, followed closely by a "More productive workforce." "Enhanced customer service/loyalty" was the third most important benefit, with the majority of responses coming from IVR and "Integrated Contact Centers." Not surprisingly, reduced staffing was only a minor benefit, and the majority of the responses contributing to that category came from the IVR category.

Sourcing and Managed Services

This year, we began to address both the buying process and the receptiveness to managed services. Respondents were asked about the extent to which extent VoIP deployment is being driven by the traditional "data" versus the traditional "voice" part of each organization. As shown in **Figure 20**, a plurality (28%) of the implementations is driven by a combination of voice and data, as one might expect. Also, and not surprisingly, a significant percentage (19%) is being driven primarily by the traditional data organization.

The respondents were also asked about the importance of having the data networking infrastructure and the VoIP/IP Telephony infrastructure supplied by the same equipment manufacturer. The responses, highlighted in **Figure 21**, showed two distinct spikes. A weak plurality (25%) chose the middle-of-the-road option of "Moderately important." Somewhat surprisingly, almost as many (22%) chose the answer "Not at all important." This is in rather stark contrast to the single-vendor model that is often touted.

Finally, the respondents were asked about their plans for ownership and management of their VoIP/IP Telephony implementation. Confirming the earlier comments about the lack of support for "IP Centrex" and other managed

Figure 20 - Extent to Which Implementation Is Being Driven by the Traditional Data versus Traditional Voice Group in Respondents' Organizations

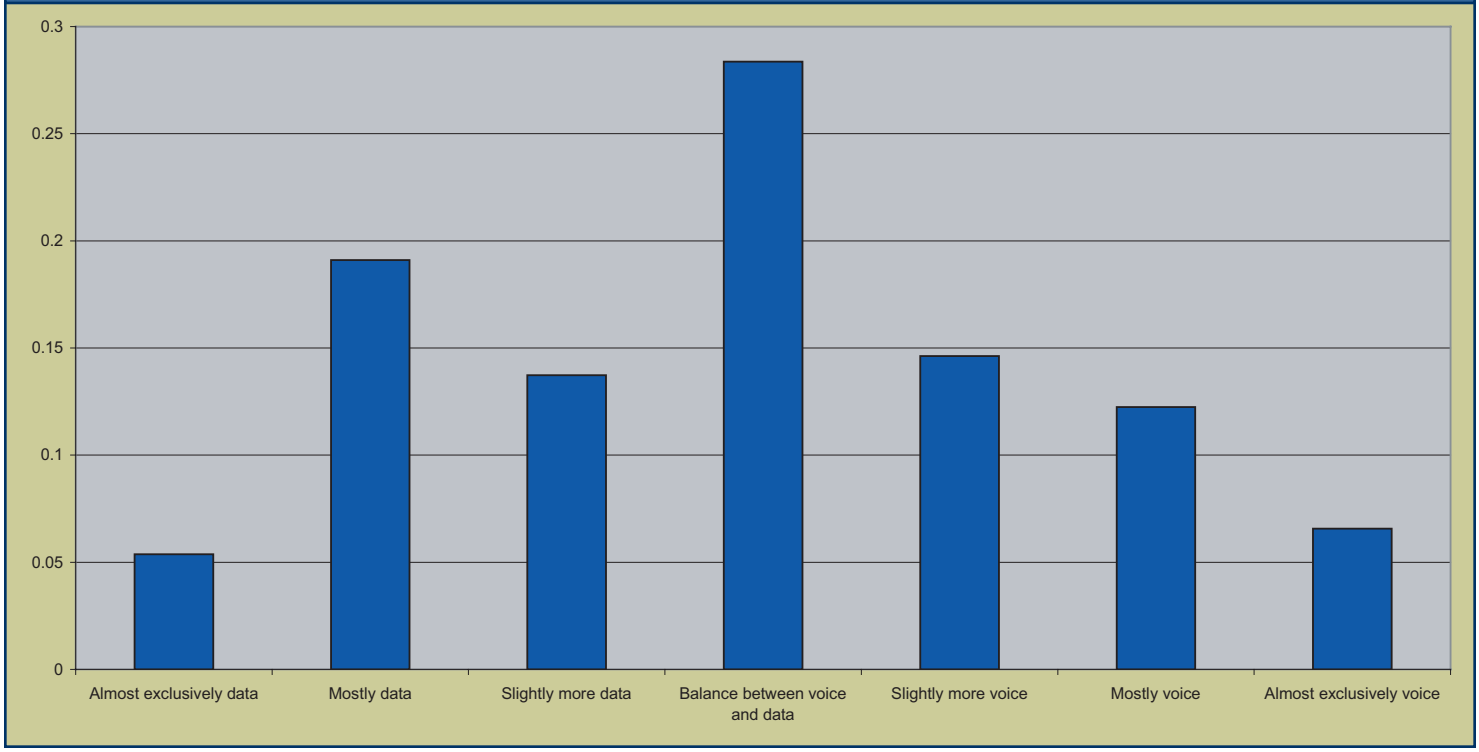
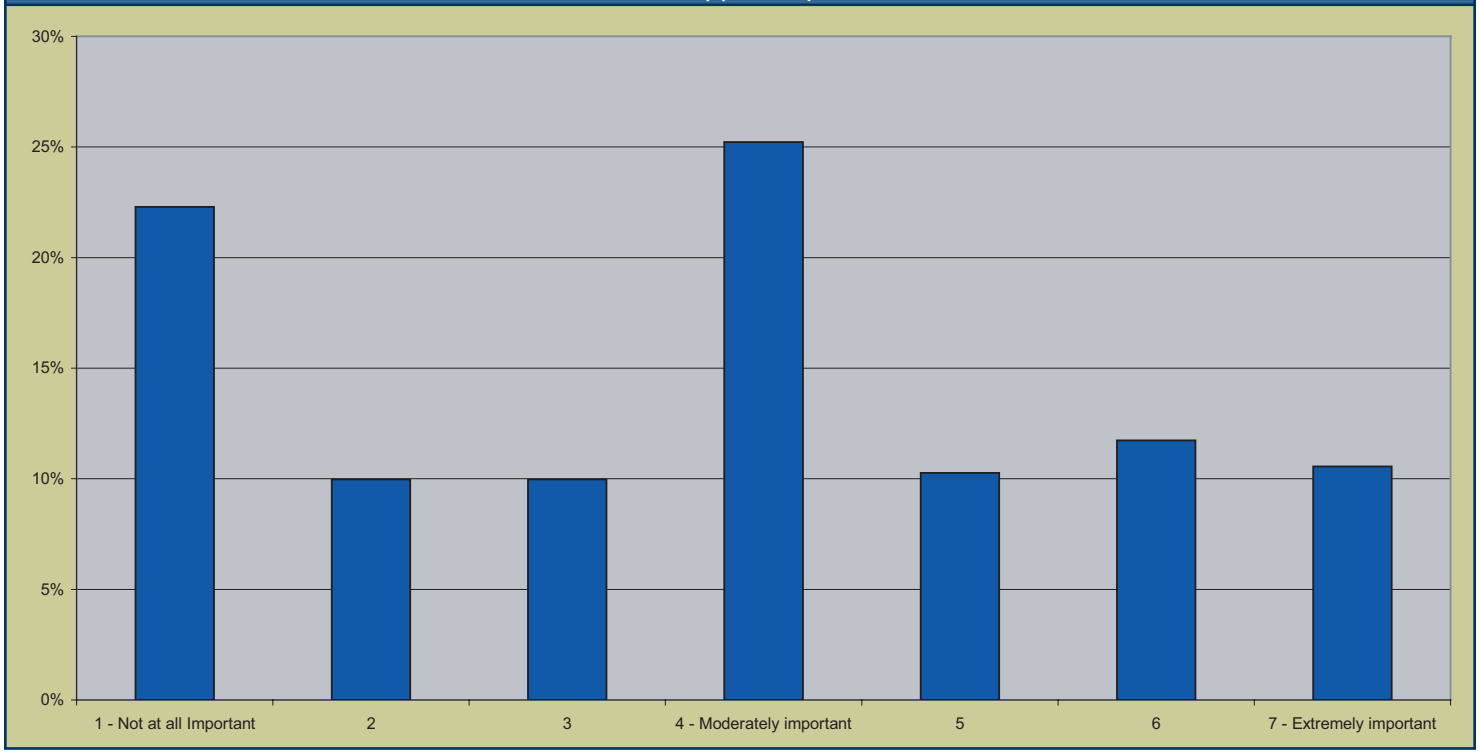
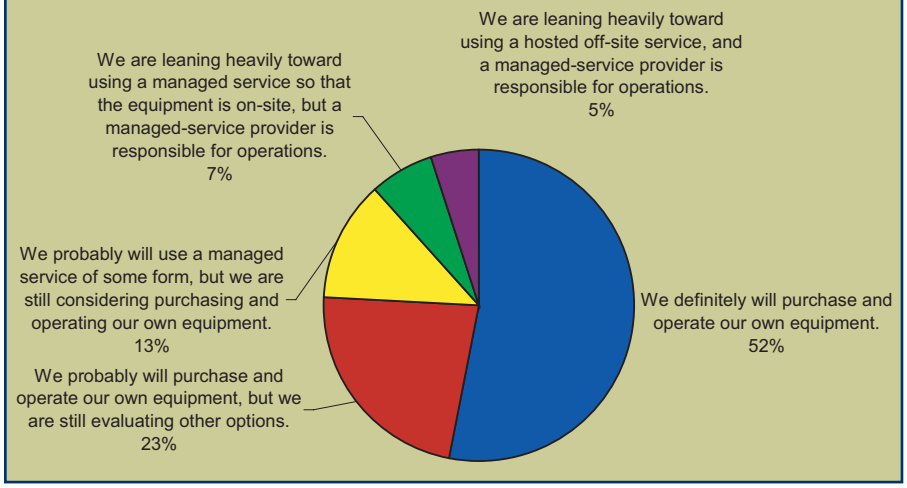


Figure 21 - Degree of Importance for the Voice Infrastructure and the Data Infrastructure to Be Supplied by the Same Manufacturer



services, there is a strong preference among respondents for purchasing and managing their own equipment. As shown in **Figure 22**, three-fourths of the respondents will either definitely (52%) or probably (23%) purchase and operate their own equipment. Of the remaining 25%, only 5% chose the totally externally managed option "We are leaning heavily toward using a hosted off-site service, and a managed-service provider is responsible for operations," which could be considered a definition of IP Centrex. Note that the percentage choosing this option is significantly lower than the percentage choosing IP Centrex as an option in Figure 7.

Figure 22 - Plans for Use of Managed Services as opposed to Purchasing and Managing Systems Internally



This lack of demand for the managed services market continues to be a bit of a conundrum. On the one hand, there are continual arguments being made in the popular press both by managed services providers and by independent authors for the benefits of using managed services. However, these arguments do not seem to be having a measurable impact on a movement toward using these services.

Summary

Prior reports have consistently ended with the statement that there was a clear trend of moving ahead with some caution, and that we could expect the deployments to pick up when major impediments were resolved. Clearly, these deployments have now become mainstream, and the market has considerably stabilized.

In fact, as we look forward, this will be the final version of this report in this format. In 2006, we will instead move toward tracking and expanding on some of the trends that were explored for the first time this year. Once a market has matured, we start to see little change in the trends tracked on a yearly basis. The changes in the responses to this survey from 2004 to 2005, including projecting those results into 2006, show that the VoIP market has indeed stabilized.

About Webtorials

Steven Taylor is editor and publisher of the Webtorials networking education Web site, which conducted the survey for this report. An independent analyst, author, and teacher since 1984, Mr. Taylor is one of the industry's most published authors and lecturers on high-bandwidth networking topics.

Complexities of Convergence

Simple for Network Services Experts

FROM THE SPONSOR

NORTEL

By Wendy Herman, Nortel

When communication services are at their simplest – accessed anywhere, anytime on any device – the complex worldwide web of networks delivering those services must execute flawlessly to millisecond precision for reliability and security.

Regardless of whether networks are wireless or wireline, supporting a large global enterprise, government operations or delivery of healthcare, the communications they deliver have become essential elements of everyday life. Even the slightest disruption to communications can have huge financial impacts on business and delay responses to emergencies or disasters.

For service provider and enterprise network operators worldwide, the powerful levels of uninterrupted performance networks must sustain every second of every day have never been more demanding.

Unlike traditional separate networks which were dedicated to only voice or data, today's converged IP broadband networks must provide a single reliable and secure infrastructure capable of delivering a wide range of services – voice, video, multimedia, data – at the same time and accessible anywhere by a variety of devices – computer, cell phone, PDA.

"When all applications are seamlessly integrated and very easy to use regardless of device or location the number of points within the network where failure might occur or security can be breached increases significantly," said David Downing, president, Global Services, Nortel.

"You can't have simplicity in communications without network complexity and that means it's essential for operators to have an end-to-end approach that's proactive rather than piecemeal, to make sure potential problems are detected before communications are interrupted and if something unforeseen does happen, the response needs to be immediate – minutes rather than hours," Downing said.

With the complexities of converged networks and the steady introduction of new technologies, it's often cost prohibitive for operators to support the full range of network expertise needed in-house, said Downing.

Nortel addresses this need with Nortel Global Services, a portfolio of integrated professional services designed to help deliver end-to-end, multi-technology, multi-vendor network solutions, from design and installation through to maintenance and managed services.

"Our ability to work with customers to help maximize capital investment and accelerate revenue growth by deploying new applications quickly is an essential part of the value Nortel brings to operators of converged networks," Downing said.

"Through the past 100 years, Nortel has evolved to become much more than just an equipment supplier," he said. "Nortel has been designing, installing, maintaining and servicing networks around the world for decades, accumulating an end-to-end, multi-technology and multi-vendor expertise that is an invaluable resource to both service providers and enterprises.

With more than 300 wireless networks installed in over 50 countries, Nortel's major service provider customers include Verizon Wireless, Sprint PCS, mm02, Orange, T-Mobile and Vodafone. In the past two years, more than 550 carrier VoIP installations have been completed.

"There were a number of vendors vying for our VoIP business but Nortel was the only company that could provide the most complete end-to-end solution," said Ricky Wong, chairman of Hong Kong Broadband Networks. "We feel that we are dealing with a business partner rather than a third-party vendor. During the implementation phase, the Nortel team worked as if their own business was at stake."

Nortel's collaborative team of professional services experts includes 1,000 network architects, consultants and engineers and 500 project managers to support network planning, migration and optimization initiatives. More than 2,200 technical support engineers provide product support, handling over 20,000 customer support cases every month globally. A dedicated group of emergency recovery experts delivers immediate assistance when any emergency threatens communications, recovering 90 percent of outages in four hours or less for carrier customers.

"Clearly, when there is a disaster, communications becomes a national security risk because, without it, any country becomes very vulnerable," says Murray Gault, director of the Nortel's Emergency Response Center in Raleigh, North Carolina. "We're just like a hospital emergency room here. If you think of the way an emergency room operates, you've got us pegged."

Nortel also provides multi-vendor managed services to more than 100 enterprises, service providers and cable operators worldwide through its 600 specialists at three network management centers in North Carolina, New York and the U.K. These centers maintain a 24/7 vigilance, monitoring customers networks for potential problems before they happen and keep security defenses updated to defeat such external threats to the network as viruses and hackers.

During emergencies such as natural disasters or a terrorist event, calling loads on networks can spike to overload levels. Through remote network monitoring, Nortel helps service providers manage traffic, redirecting it to underused parts of the network to prevent vital communications from going down.

"Remote monitoring provides a proactive service to customers," says Eric Phillips, Nortel Raleigh Network Management Center. "When we are remotely watching a network, we can see that a router, for example, is close to failing and we can re-route traffic to avoid that weakness.

"When the customer comes into work the next morning, we can say – you had a problem with your network last night but we already isolated it and worked with Technical Support to get a part on its way to you."

From its 1,000 stocking depots worldwide and six global hubs, Nortel supplies more than 500,000 parts annually to customers who outsource their spares management requirements to Nortel or contract for their repair needs to lower operating costs.

"The key advantage of Nortel Global Services that we believe is unique in the industry lies in the strength of our customer focused, single point of contact for all network solutions and services for both service providers and enterprises," said Downing. "We have the depth of experience serving both markets to achieve it quickly and cost effectively. That's why customers around the world trust the convergence of their networks to Nortel."

Demographics for 2005-2006 VoIP State-of-the-Market Report

The respondents to the survey represented over 375 networking professionals from around the world. This number is quite sufficient to ensure that the overall results would not vary significantly by having more respondents. In fact, the number of respondents far exceeds the number needed to have consistent results among the surveyed population.

Figures A-1 through A-4 summarize the demographic results.

Figure A-1: Respondents' attitudes toward early adoption of new technologies.

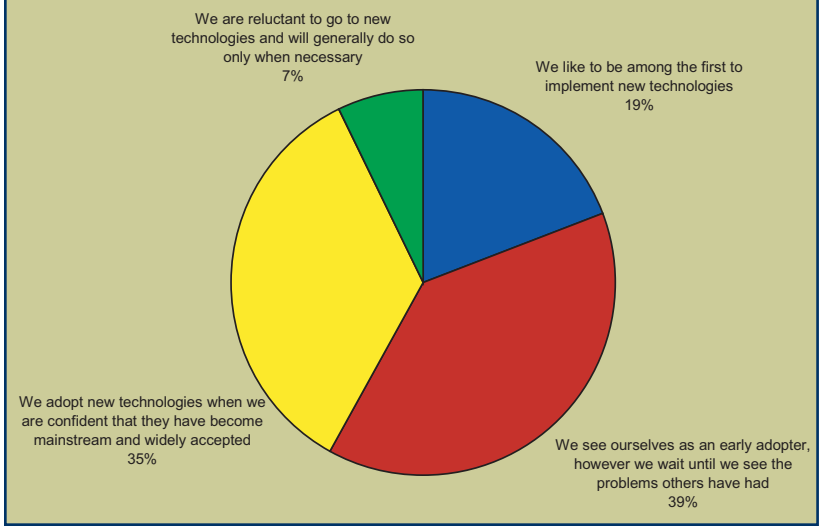


Figure A-2: Respondents' type of company/organization.

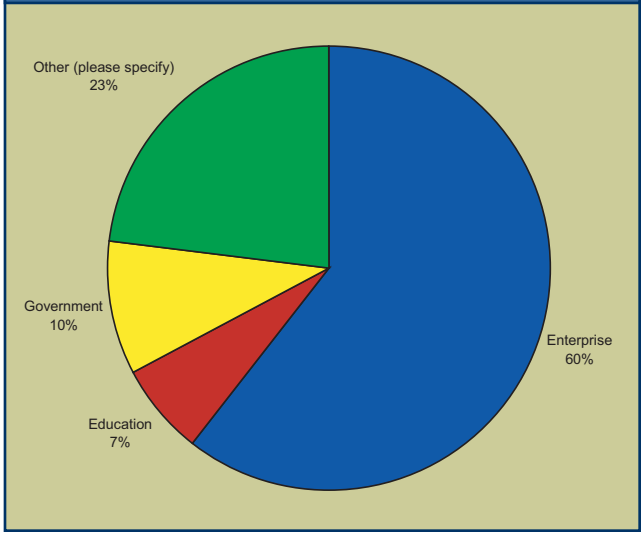


Figure A-3: Annual revenues of respondents' companies.

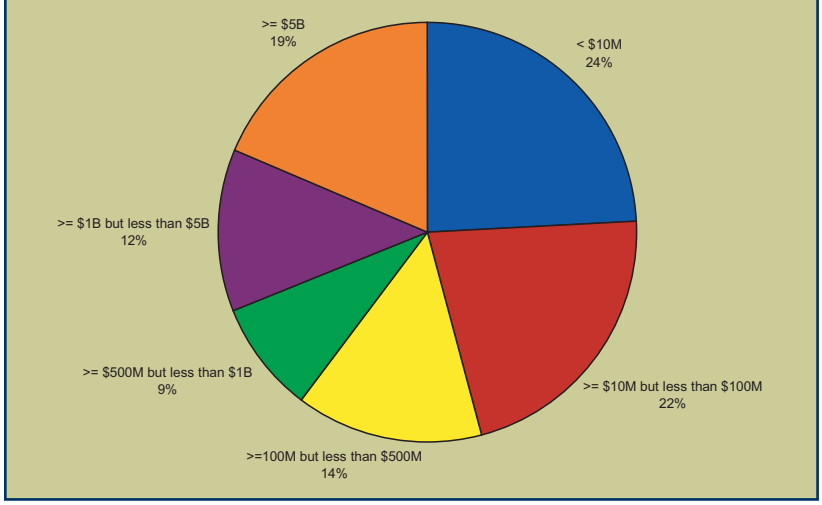


Figure A-4: Country/region in which respondents' companies are headquartered.