

The Importance of Your Network In Next-Generation Application Architectures

A commissioned study conducted by Forrester Consulting
on behalf of Cisco Systems

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Executive Summary

Enterprises are putting an increasing emphasis on services-oriented architecture (SOA) and Web 2.0 in their business applications.¹ Why? Because of accelerating requirements to change and adapt, distributed workforces, and mounting regulatory compliance challenges. At the heart of these initiatives is continual business transformation and the new partnership between IT and business management this change requires.

We found that organizations are heavily committing budget and resources to implementing these new IT approaches — and are achieving excellent business value, as well. But it's not all downhill from here. We discovered that, in many organizations, consideration of the network in the success of SOA and Web 2.0 initiatives is an afterthought. This attitude is unsustainable, given how reliant SOA and Web 2.0 are on the network to connect and secure users with new application services.

At the heart of this challenge is that the function of the network itself has changed. It's no longer just transport-oriented plumbing. It's now a much more intelligent layer of infrastructure capable of executing complex security and application services. The good news is that companies are rethinking the network's role in this context and applying it to SOA and Web 2.0 application architectures. Most companies are interested in using the network to provide a platform that not only improves application performance, but can also run services natively and provide APIs to support application and business logic.

To ensure that companies maximize their network investments, Forrester recommends a proactive embrace of the network as a key *platform* within new application architectures. Specifically, we believe companies should:

- **Get the network group involved in SOA and Web 2.0 initiatives early and often.** Most companies recognize that network architecture plays an important role in actualizing new application architectures. However, most companies do not rally the network engineering and architecture teams early enough in SOA and Web 2.0 deployments. As a best practice, companies that invest in networking teams create a tighter linkage between the network initiatives, application architectures, and business priorities.
- **Pave the way for initial network services.** Look to your existing network infrastructure and take advantage of pre-existing capabilities. Chances are, infrastructure deployed within the last three years contains a significant amount of untapped functionality that can be exposed as a service to your apps. In particular, application services like security and application acceleration are good examples of services best deployed on the network rather than on traditional server platforms. These initial services are transparent to the applications and users, but deliver quick impact and business value for your SOA and Web 2.0 efforts.
- **Architect more advanced services.** And finally, we recommend companies leverage more advanced network-resident services with additional network investment. This second wave of services should focus on more complex, cross-domain functions like data and application governance, message transformation and authentication, and network resource abstraction and virtualization. Although still transparent, these services play a more active role in the delivery of your SOA and Web 2.0 strategies. In particular, we found companies were explicitly leveraging opportunities to run location and presence awareness as advanced application services.

Forrester identified these network services as falling into three categories: control, collaboration, and delivery. To build out these network services, empower enterprise architecture teams to coordinate cross-domain efforts. We recommend a tiger team comprised of application development, project managers, lines-of-business managers, security officers, networking ops, and server admins to architect services in all three categories.

Companies Are Shifting To Embrace A More Digital Business

In most organizations, the line separating business activities from the IT applications that support those activities is either gone or on the way out. As companies seek to automate their key business processes, the applications become indistinguishable from the business. Forrester calls this state of affairs *digital business*. Why is this change occurring? Because:

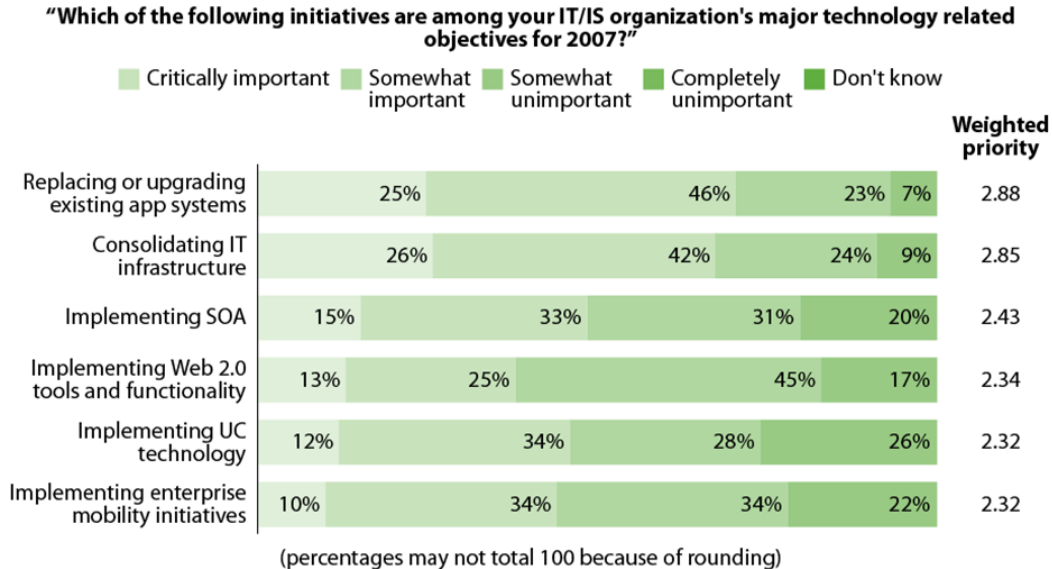
- **Businesses seek to automate key processes.** Now that most companies have automated their key transaction sets, they are seeking efficiencies in the key business processes that surround these transactions.
- **Businesses need to keep pace with an increasing rate of change.** If the business activity is expressed in “bits,” it can be reformed and adapted more easily than if it’s expressed on paper or in other physical repositories.
- **People are IT-savvy, and both work and markets are distributed.** The young generation of workers brings a new IT sophistication and mobility. They want immediate results from the IT systems they use, and will use public alternatives if needed.
- **Content and data must be managed with a higher level of accountability.** IT bears the burden of implementing the governance and policy frameworks, access-control measures, and privacy safeguards required to comply with new regulations.

The result of this has been a shift in the ever-increasing list of IT priorities. While few IT shops are shifting focus outright, this unparalleled rate of change is causing many companies to place increased emphasis and investment back on applications. In fact, we see this as a pervasive theme throughout all the companies we surveyed. The IT decision-makers we spoke with told us that replacing or upgrading applications was the No. 1 initiative, with one in four companies citing it as a critical initiative, and another 46% citing it as a major initiative. Continuing down the list, we found that IT consolidation came in as the next highest priority, with 23% claiming it was a critical initiative, and 42% calling it a major initiative. However, we were encouraged to also find:

- **New initiatives like SOA and Web 2.0 show promise.** . . . But it’s not just about upgrading legacy apps or controlling IT costs. Companies reported a strong interest in new application architectures like SOA, Web 2.0, and Unified Communications.² This is consistent with other data that Forrester has gathered. We’ve found that SOA has achieved 62% penetration in North American and European enterprises as well as 59% penetration in Asia Pacific enterprises.³ As for Web 2.0, recent Forrester surveys have found that 43% of enterprises across both North America and Europe plan to make at least some investment in Web 2.0 technology in 2008.⁴
- **. . . By creating a change-ready foundation.** Digital business relies to some degree on the industrialization of previously variable business and IT processes to allow easy manipulation of process inputs and rules to achieve desired outputs. But it also relies on

new IT underpinnings — SOA and Web 2.0 — that can make software adaptable. By investing in SOA and Web 2.0, companies can put themselves in position to stay on top of a constantly changing set of requirements, users, and regulatory pressures.

Figure 1: Applications Are A Predominant Theme Throughout The Top 2007 IT Priorities



Base: All respondents; N = 402

Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

So why are companies so interested in SOA and Web 2.0?

SOA Value Spectrum: From Integration To Business Transformation

SOA is first and foremost about the design of your business, not technology. Each year, we find more enterprises are committing to an enterprisewide service-oriented architecture. Forrester defines SOA as:

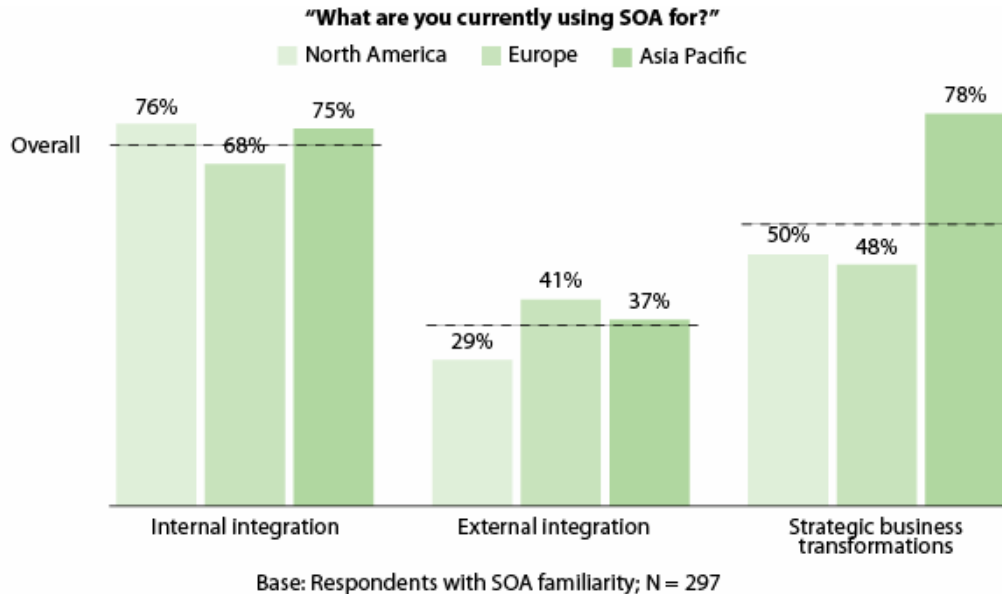
An application architecture that supports the connection of heterogeneous applications and the exchange of shared data through standardized interfaces and protocols.

Companies typically start with departmental SOA projects and expand as they master the approach. More specifically, we found (see Figure 2):

- Most companies start their SOA adoption with internal application integration.** Over the past few years, integration has consistently been a high priority for CIOs. As firms try to automate their business processes, they need to connect their applications that process transactions in a coherent way. SOA offers the design principles, and Web services the strong standards for cross-platform application communication. Together, the two can help greatly with internal integration, as confirmed by 72% of respondents, making it the No. 1 driver for SOA adoption. SOA can improve IT performance by making it easier to create, modify, and deliver solutions to lines of businesses.

- **But companies eventually reach for strategic business transformation.** With experience, firms begin to understand how SOA can transform their business processes. SOA provides a foundation to rapidly implement and create new or altered business processes. Fifty-six percent of respondents cited strategic business transformation as an SOA driver, making it the second highest driver. Forrester has also observed this trend in other surveys, finding it particularly strong among organizations with 20,000 or more employees.

Figure 2: More Than Half Of Companies Deploying SOA Do So For Business Transformation



Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

We found significant variations among Asia Pacific respondents for both external integration and — most dramatically — strategic business transformation. The results suggest that more large enterprises are coming onboard with SOA initiatives in rising global powers like India and China. Companies in these countries have less legacy infrastructure and more greenfield opportunity, which allows them to leapfrog their competitors in the West. As a result, they are standardizing on new, transformational SOA initiatives and extracting business value sooner than peer organizations in established nations.

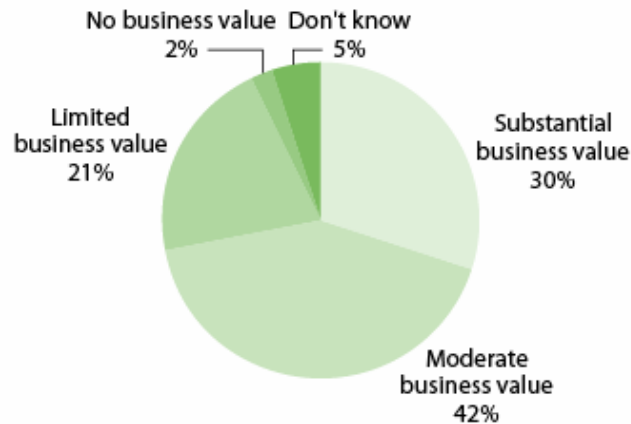
The bottom line on SOA: It appears to be here to stay. Specifically:

- **SOA works.** Respondents reported that, done right, SOA pays off. Thirty percent of respondents claimed SOA delivered substantial business value, while another 42% claimed moderate business value (see Figure 3). In fact, only 2% reported obtaining no business value at all from their SOA investments.
- **Spending on SOA seems strong.** We found that 12% of respondents expect to significantly increase investment in 2008, growing to 18% in 2009, and climbing to a steep rise of 22% to increase spending in 2010. In fact, over the next three years, only 8% of firms investing in SOA today expect to decrease yearly spending.

- **Caveat: Large organizations must be patient for the payoff.** One surprise: Larger organizations have not been able to squeeze as much value out of their SOA deployments as smaller firms. Given the sheer number of applications to integrate, it's no surprise that firms with 20,000 or more employees see a delay in realizing business value.

Figure 3: Seventy-Two Percent Of Companies Claimed SOA Delivered Business Value

"Using your best estimate, how much business value has been derived from your deployment of SOA technologies?"



Base: Respondents SOA familiarity; N = 297

Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

Web 2.0 Deepens Employee, Customer, And Partner Interactions

Web 2.0, which began as a consumer phenomenon, has begun to find a home within enterprises for one simple reason: efficiency. In fact, Forrester defines Web 2.0 as:

A set of technologies and applications that enables efficient interaction among people, content, and data in support of collectively fostering new businesses, technology offerings, and social structures.

For businesses, Web 2.0 efficiency manifests itself on two major fronts (see Figure 4):

Figure 4: Customer Experience And Employee Productivity Drive Web 2.0 Adoption

“Which, if any, of the following best describe why your company has adopted or is considering adopting Web 2.0 technologies?”



Base: Respondents with Web 2.0 familiarity; N = 298

(multiple responses allowed)

Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

- **Customer-facing marketing.** For marketers, Web 2.0 presents a new set of tools to listen to, talk with, energize, support, and embrace customers and prospects. In fact, when we ask firms investing in Web 2.0 tools what their objectives are, 61% cited improving their Web site experience, and 51% look to use Web 2.0 to drive deeper relationships with customers and prospects.
- **Employee-facing collaboration and productivity.** Web 2.0 tools like mashups, RSS, and wikis enable workers to easily create and share knowledge within the enterprise. Sixty-one percent of IT decision-makers we surveyed cited worker efficiency and collaboration as a key driver for their investment in Web 2.0. Further still, 32% of respondents indicated that employee demands for Web 2.0 tools pushed them to adopt.

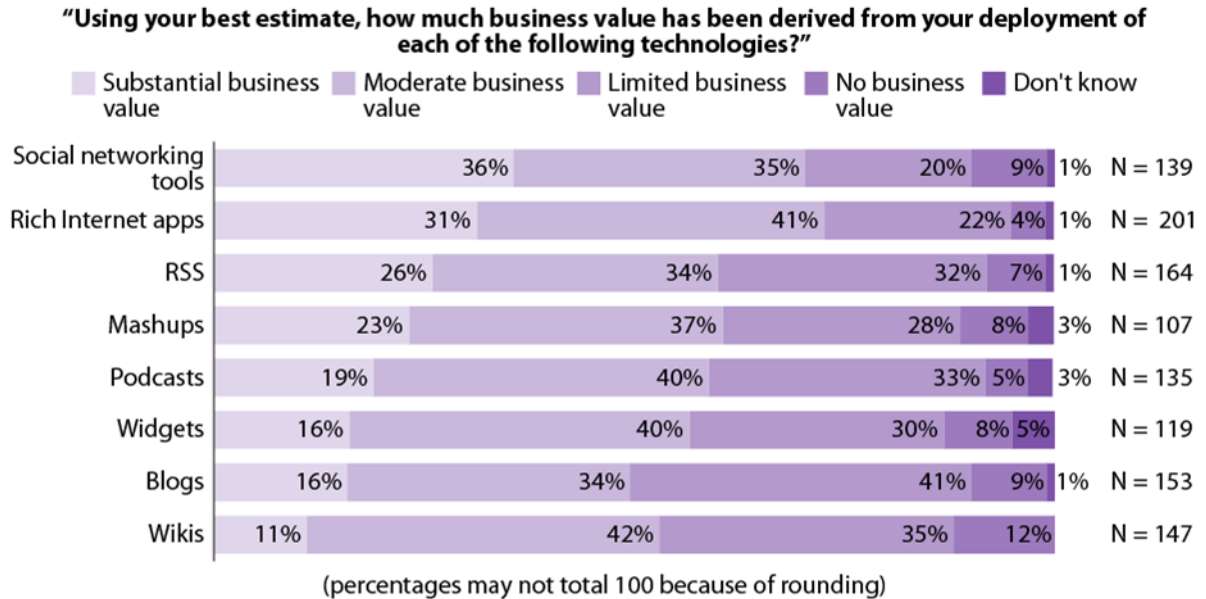
Businesses are paying nearly equal attention to external-facing and internal-facing implementations of Web 2.0 technology. While the same percentage (61%) of respondents cited Web site improvement and worker efficiency as drivers for Web 2.0 adoption, only 33% are actively engaged in both. This fits the general pattern of Web 2.0 adoption Forrester has seen: technology investigation, experimentation, test deployment to strategic job functions and departments, and finally broadening adoption. Today few firms have progressed past small-scale deployments.

The bottom line of Web 2.0: Expect spending to rise on key categories within Web 2.0. Specifically:

- **RIAs and collaboration provide the highest business value.** Respondents to our survey reported that social networking tools and rich Internet applications (RIA) are showing the most transformational business value today, whereas blogs and wikis — two of the technologies most strongly associated with Web 2.0 — come out at the bottom (see Figure 5).
- **Spending likely to increase slowly.** Fourteen percent of respondents expect to significantly increase their Web 2.0 budget in 2008, 15% in 2009, and then a jump up to 22% in 2010. In fact, by 2010, 62% of respondents expect to have increased their spending

over 2007 levels, while only 5% expect to see decreases. These results suggest that Web 2.0 is still in the early proving phases of adoption in most firms.

Figure 5: Rich Internet Apps And Social Networking Tools Also Derive The Most Value



Base: Respondents who have implemented or are piloting each Web 2.0 technology

Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

Traditional Silos Still Make These Next-Gen Application Initiatives Difficult

The future for next-generation application architectures — as represented by SOA and Web 2.0 investments — looks bright, with more than half of organizations claiming SOA and Web 2.0 technologies deliver business value. Unfortunately, it won't be so easy. As noted earlier, IT's ability to create applications that keep up with fast business change depends on a new relationship with the business. Most IT organizations report substantial barriers to deploying new application technologies. And as with most changes in IT, it's not the technology, but the people and processes that hold back progress.

To better understand this challenge, we polled enterprises on their attitude relative to the network team. Why? Because as one CIO recently put it, “Our network team is like our mainframe team was 10 years ago — always saying ‘No’ and ‘That application can't be deployed on time.’” We found that less than half of respondents (46%) agreed that the network team is neither involved early nor is influential in the application deployment or upgrade process. This is compared to more than 60% that claim the application development and enterprise architecture team are both involved and influential in the business' decision-making process. In fact, much of the problem may lie at the feet of CIOs who, unlike their direct reports, are likely to believe the networking group already has a high degree of influence. In other words, CIOs have the misperception that the network is as involved as it should be.

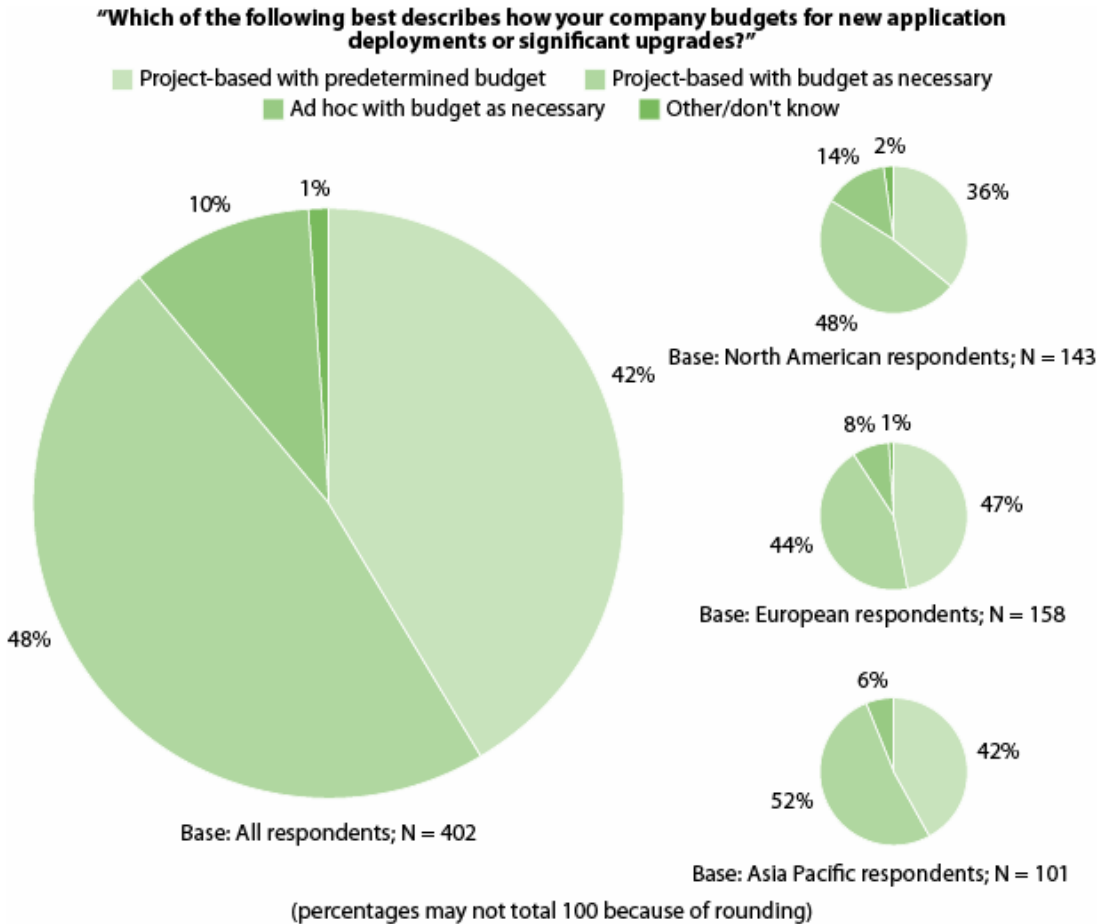
The Importance of Your Network In Next-Generation Application Architectures

We see these challenges are further exacerbated by the fact that respondents claimed:

- **Nearly 40% of their IT shops are decentralized or federated.** We asked respondents how their IT organization was structured. At 59%, the majority of IT departments were centralized. However, approximately 25% of respondents claimed to be completely decentralized (i.e., all IT functions are spread across individual business units), and another 14% indicated they were federated (i.e., corporate IT group with a central CIO, but each business unit has its own resources and development staff). Networking teams are traditionally a centralized department and, as highlighted above, are typically under-involved in application processes. Thus, the 40% of fragmented organizations will be challenged with engaging the networking team and making sure the proper cross-domain collaboration, training, and best practices are disseminated.
- **Budgeting is decentralized nearly a quarter of the time.** Budgeting wasn't quite as distributed as the actual IT staff, although there were of course similarities. We found that 14% of organizations had decentralized budgeting, with various IT organizations holding final authority — which is consistent with the percentage of federated IT organizations. However, an additional 10% have a decentralized budget where lines-of-business hold the purse strings. For the networking team, this means further vying for wallet share among multiple IT teams struggling to articulate business benefits. Networking is typically a shared-expense line item, and companies that embrace decentralized budgeting will require strict justification for any network upgrades. This is further complicated by the fact that network deficiencies like latency — which often kills end user application performance — is fairly intangible and difficult to justify to a budgeting committee.
- **There is a discrepancy between those who initiate versus fund SOA and Web 2.0 projects.** We found that 63% of SOA projects are initiated by IT and only 16% by the business (the remainder is a combination). Web 2.0 is a little more business oriented, with 50% of respondents claiming IT initiates investment with another 26% claiming the business starts the process. In both cases, IT actually funded the projects half the time. This means the people who actually know what they want — coming from the business side — then hand over the reigns to IT for funding and execution. This can lead to a mismatch and delay in achieving desired results. Historically, the networking team is not as adept as other IT domains at approaching and engaging directly with business leaders, which is typically the domain of their application development and enterprise architecture colleagues.

The result of distributed people and budget processes can lead to an ad hoc application approach. In fact, when we asked how companies budget specifically for new apps and upgrades, we found that 48% use a project-based approach where budget is determined as necessary, and an additional 10% are even worse, with a completely ad hoc approach and no predetermined budget. That's nearly 60% of organizations that don't follow rigorous app budgeting (see Figure 6)!

Figure 6: Fifty-Eight Percent Of Respondents Don't Use Predetermined Application Budgets



Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

Why has the network garnered such a bad rap? Because, unlike other infrastructure elements, the network is often neglected from an investment standpoint. In fact, most large organizations only dedicate 8% of the IT budget to network infrastructure and operations — the lowest of any infrastructure category.⁵ Forrester predicts that as companies begin to connect more applications together with SOA and Web 2.0 technologies — both architectures that are highly dependent on high-performance network connectivity — the network will become a potential bottleneck.⁶

The Network Is Often An Afterthought, Not An Enabler

Companies intuitively understand the value of the network. But it's important to get everyone on the same page; the definition of the enterprise network has changed. Originally it was defined as plumbing and made of components like routers, switches, and hubs. But today's enterprise networks are far more complex — and valuable. Hardware advancements, more sophisticated network software, and better management tools mean that firms can reliably embed intelligent security, mobility, virtualization, and acceleration directly into the network. In fact, in a separate survey conducted by Forrester, we found that 77% of enterprises believe the network is a more intelligent platform.⁷ It's the connective tissue and one of IT's truly shared assets. As a result, when companies push SOA and Web 2.0, the network is often upgraded to ensure a successful deployment. We found that 70% of respondents upgraded at least some portion of their network as part of an SOA initiative, and 59% did so for Web 2.0.

The problem is that most companies upgrade their network in an incremental fashion — only throwing bandwidth or particular security products at it when the need arises. We know this because, despite the emphasis on network upgrades, it’s an afterthought as part of the deployment process. Specifically, we found:

- **Network upgrades was the least critical SOA consideration.** . . . Network upgrades came in last during the SOA evaluation process, with only 23% of respondents citing it as critically important. This is in contrast with business benefits and IT benefits, which ranked first and second at 54% and 47% critically important (see Figure 7).
- . . . **And second to last in Web 2.0 considerations.** Similarly, network upgrades came in towards the bottom of the Web 2.0 evaluation list, with 28% of respondents citing it as critically important. As with SOA, business benefits topped the list of considerations, although availability of IT resources slotted in at No. 2 with 40% claiming it to be critical (see Figure 8). Only the explicit cost of deployment, which is typically quite low for Web 2.0 technology, was less critically important.

Figure 7: The Network Is At The Bottom Of The List For SOA Considerations

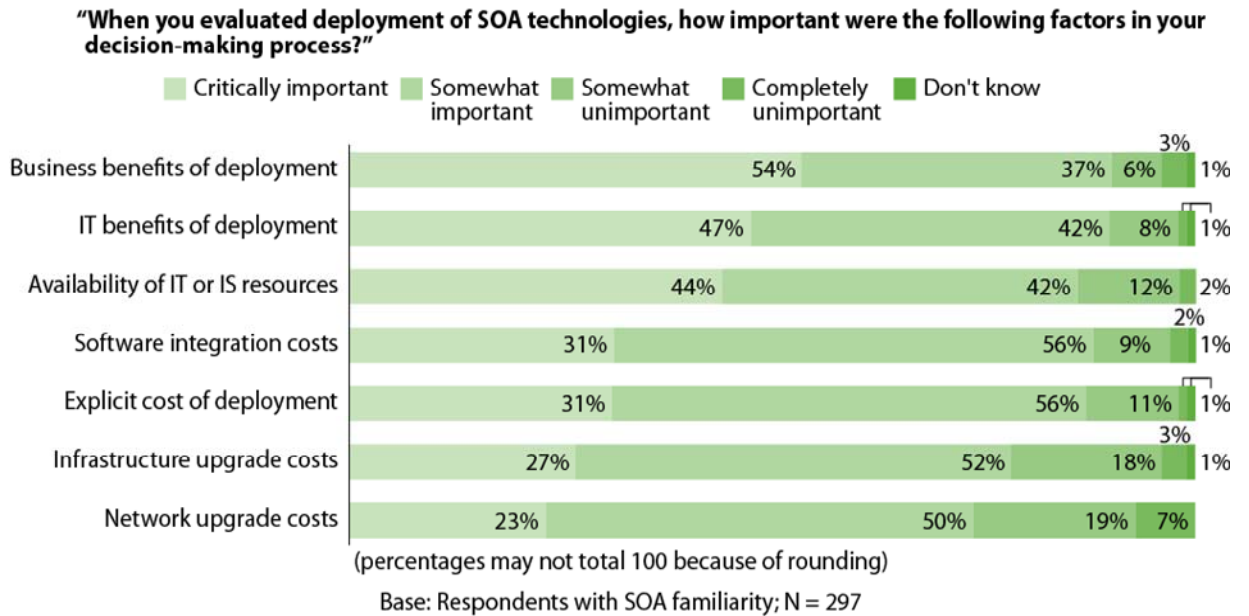
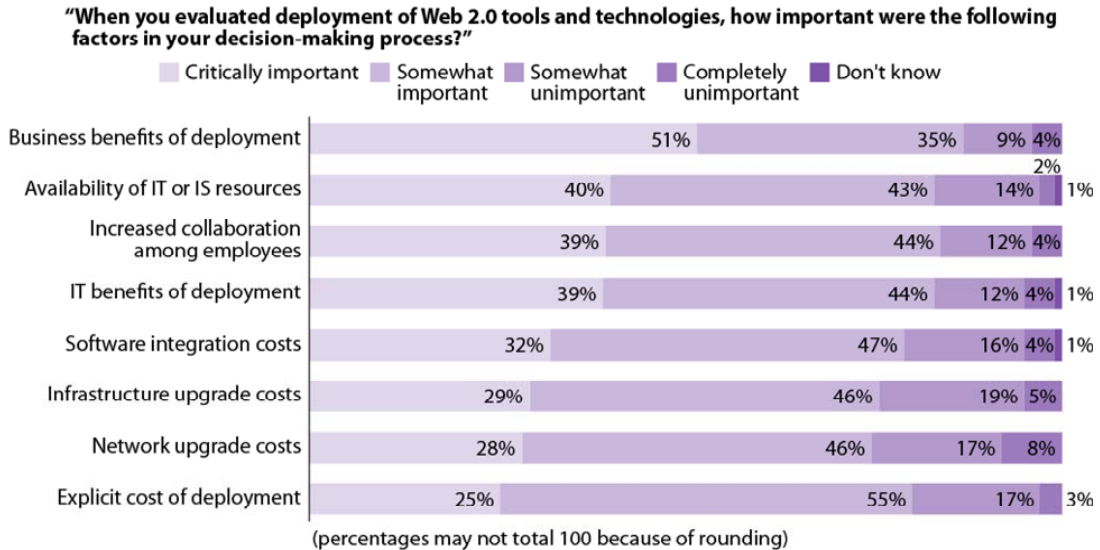


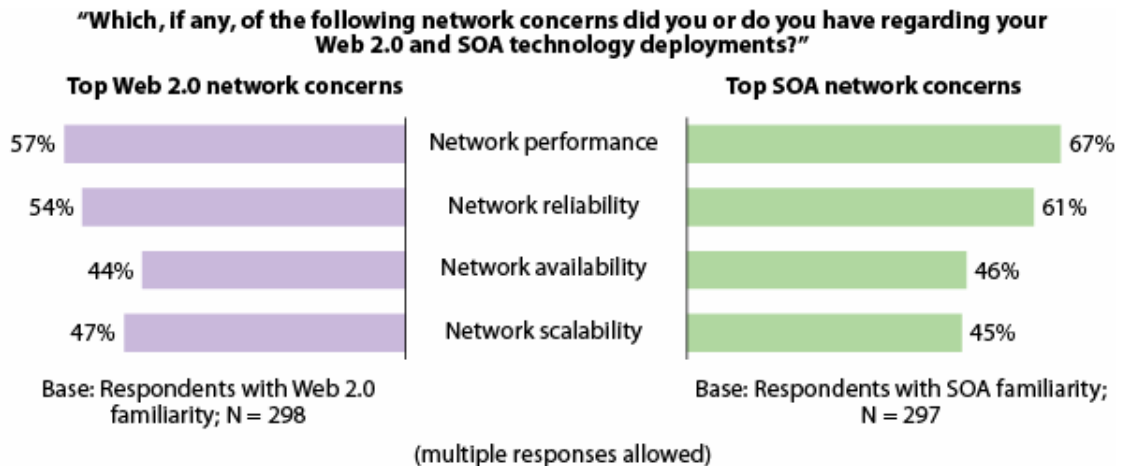
Figure 8: The Network Is Second To Last On The List For Web 2.0 Considerations



Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

This reactive, incremental approach to network upgrades leaves companies struggling with several network issues. We found 67% and 57% of respondents cited network performance as a concern for both SOA and Web 2.0, respectively (see Figure 9). Moreover, in both cases, reliability came in as the second biggest concern, with 61% concerned around SOA implementations and 54% for Web 2.0. Issues like compatibility, governance, and integration were typically a concern for 40% of respondents or fewer.

Figure 9: Performance Tops The Chart As The No. 1 Network Concern



Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

Understanding The Role Of Your Network For Maximizing SOA And Web 2.0 Initiatives

To overcome network challenges and maximize IT investment in SOA and Web 2.0, Forrester believes enterprises must look to better leverage their network investments. Rather than a reactive deployment consideration, companies need to think of the network as an extension of their application development and delivery platforms. This means architecting the network as more than just plumbing and leveraging network-resident services.

Forrester groups these services into three categories:

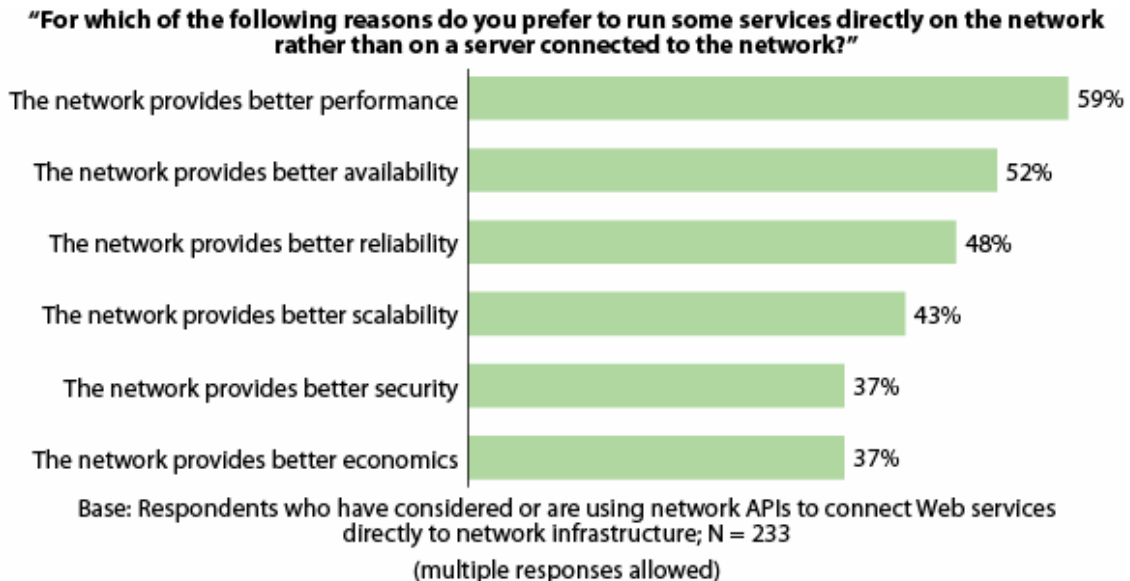
- **Control services.** Control services enable IT to take advantage of network intelligence and run services to 1) increase security through threat mitigation and encryption; 2) enforce governance by logically segmenting transactions, data, and users; and 3) streamline authorization and authentication by offloading proprietary, application-specific functions. These services can be embedded where the network can apply wire-speed policies that are transparent to users and applications. Control services reduce the operational burden of compliance initiatives and improve end-to-end security postures.
- **Collaboration services.** Collaboration services communications-enable your applications and business processes. Companies can look to 1) increase productivity by quickly connecting users via presence awareness and 2) increase accuracy by providing applications with location awareness. These services are real time and application-agnostic, which means companies quickly connect users and data without investing in proprietary interconnects. Moreover, collaboration services create a smooth onramp and improve the ROI of unified communications deployments.
- **Delivery services.** The last category of services improves the delivery of SOA and Web 2.0 applications by 1) improving performance through acceleration and offload, 2) assisting in orchestration by transforming and routing messages and transactions, and 3) providing dynamic resources allocation by abstracting and virtualizing application components. Delivery services create dynamic infrastructure components and participate as part of your application middleware to improve application responsiveness, availability, and scalability.

Historically, these services could not be found in network infrastructure. But the networks of today aren't like yesteryears' where running software functions on a router would kill throughput. Instead, today's networks consist of routers, switches, load balancers, application accelerators, security gateways, and a plethora of other network middleware devices that can execute complex application functions at wire-speed. Sounds like science fiction? If so, you're in the minority. Most of the companies we surveyed indicate a strong preference for network services and:

- **Run advanced software functions directly on the network.** We asked companies if they'd prefer to run functions like identity management, presence awareness, and location-based services directly on the network rather than on servers connected to the network. Fifty-five percent of respondents said yes.
- **Provide APIs to connect Web services directly to network infrastructure.** In addition to running services directly on the network, 58% of respondents were amenable to leveraging APIs so that Web services could call directly upon network infrastructure to execute part of the business process and logic of applications.

- **Increase performance, reliability, availability, and scalability of apps.** When asked why companies would leverage services resident in the network, we found a mirror image to the reasons previously listed as concerns. In other words, when asked to think about the network proactively, companies listed improved performance, availability, reliability, and scalability as the top benefits (see Figure 10). A third of respondents also felt that running services directly on the network would improve security and deployment cost.

Figure 10: Performance Also Tops The Chart As The No. 1 Benefit Of Network Services



Source: A commissioned study conducted by Forrester Consulting on behalf of Cisco, Fall 2007

Recommendations: Invest In Your Network To Cure — Not Cause — Next-Generation App Woes

Forrester consistently finds that innovative companies look to optimize the entire IT technology stack. They do so to maximize next-generation application architectures and overcome common barriers like performance and reliability. However, we also believe that to do so, companies must fundamentally rethink their network architecture and the role the network plays in application strategies. By investing in the network as a platform, not just transport, companies can actually accelerate adoption of application initiatives like SOA and Web 2.0. By shifting expectations of the enterprise network, we feel companies can decrease the operational burden of supporting next-generation applications, as well as provide a foundation of network-resident services that provide additional user-centric context and security. To continue on this trajectory, companies need to change traditional networking people, process, and technology in lockstep.

People: Get the network group involved early and often.

So how do you improve the influence and involvement of your network team? Make sure the network staff has the proper business skills. To do so, you will need to ratchet up their business IQ. Start by getting your network professionals to enroll in application boot camps, brush up on certifications, and spend more time interfacing with business counterparts. For example, one large Wall Street bank requires that all IT ops managers spend one week per quarter "outside the datacenter" rotating among business units.⁸

Process: Set aside budget to build network services.

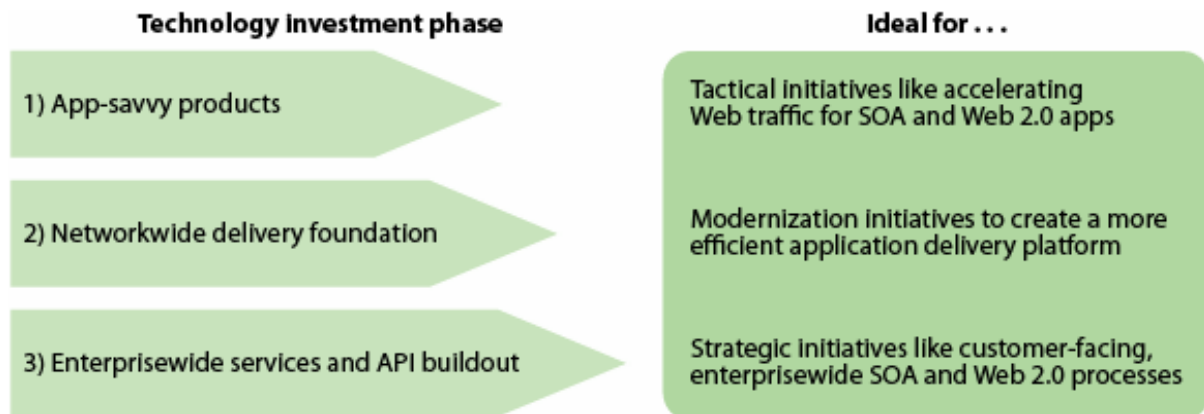
On average, respondents claimed they are setting aside \$1.8M for their organization's networking budget. But don't just earmark funds for new technology acquisition and ongoing maintenance. Instead, ensure that money is set aside for network, apps, architects, and knowledge management professionals to define and build better network policies and services. For example, one global manufacturing company created an SOA "tiger team" that, using the best practice above, included the network team from day one. As part of their post-deployment support, this team is also responsible for defining and implementing specific security and acceleration services to improve select SOA processes. They estimate they have shaved six months off the time to deliver new SOA projects to the business.

Technology: Take advantage of refresh cycles to get more network-resident intelligence.

We found 64% of companies have done a major refresh of network infrastructure in the last three years. That means the majority of companies have been purchasing equipment more than capable of executing advanced, network-resident services. The intelligence to take advantage of app services is probably there — you just need to use it! For the remaining third, be sure to include application services in your thinking as you refresh in the coming years. The key is to move beyond just speeds and feeds and think of the network as an application delivery platform. To do so, we recommend a three-phase approach (see Figure 11):

- **Phase 1: Start with specific products for specific application pains.** The first step is to inject overlay technologies that can kick-start your network services. For example, WAN optimization technology can accelerate SOA and Web 2.0 interactions out to branch offices where bandwidth may be limited. Or an XML gateway may provide a specific Web services authentication function to help integrate with an external business partner. The key is that embracing an app-savvy network does not require an overhaul. Instead, take measured steps based on the business need and your network staff's ability to connect the network to a pressing SOA or Web 2.0 initiative.
- **Phase 2: Optimize networkwide infrastructure for application delivery.** The next step is to create an enterprisewide foundation for delivering network services beyond just surgically inserted products. By tying together network infrastructure throughout the datacenter, you can supplement specific intelligence that transforms, authenticates, encrypts, and accelerates SOA and Web 2.0 messages. Moreover, you can provide additional user context to your applications with location and presence awareness services outside the datacenter.
- **Phase 3: Re-architect the network for dynamic participation in app strategies.** The final step is to overhaul how the network participates in next-generation application architectures. Deploy more virtualization-savvy network technology in order to abstract intelligence without exposing complexity. For example, rather than deploying additional network hardware, run technology like firewalls, load balancers, and access controllers as segmented virtual instances. Also, leverage Web services management APIs so that these virtual services can be automated and dynamically provisioned from third-party developers and applications.

Figure 11: Invest In A Three-Phase Approach Depending On The Business Need



Appendix A: Research Methodology

From September to December of 2007, Forrester Consulting conducted an online survey of 402 IT decision-makers and influencers in North America, Europe, and Asia. A key goal of this survey was to probe the knowledge and attitudes of networking professionals about SOA and the set of Internet application technologies broadly known as “Web 2.0.” Since SOA and Web 2.0 are of primary interest to application development and enterprise architecture professionals, not all networking decision-makers are familiar with these topics. To obtain a meaningful reading from all of these roles, we sought the opinions of individuals who are knowledgeable about their organizations’ use of SOA and Web 2.0. Thus, our findings about adoption will reflect this increased awareness. However, we found the results of this survey to be consistent with the results of Forrester’s large Business Data Services survey, which is not subject to self-selection bias.⁹

In the online survey that is the basis for this report, we achieved a balanced worldwide audience:

- Twenty-one percent of respondents were the senior-most IT decision-makers in their companies; 33% were IT executives; 28% were IT managers or directors; and 18% were individual contributors. All respondents had decision-making authority and influence for IT projects.¹⁰
- Twenty percent of respondents were chief information officers (CIO) in their companies; 11% were chief technology officers (CTO); 11% were enterprise architecture professionals; 19% were network operations professionals; 15% were application developers; 17% were information and knowledge management professionals; and the remaining 6% were other senior-level IT decision-makers.
- Thirty-six percent of the respondents were from companies headquartered in the United States; 5% from companies headquartered in India; 12% from companies headquartered in the United Kingdom; 11% from companies headquartered in Germany; 16% from companies headquartered in France; and 20% from companies headquartered in China.
- Thirty-four percent of respondents worked for companies with 1,000 to less than 5,000 employees; 33% for companies with 5,000 to less than 20,000 employees; and 34% for companies with 20,000 or more employees.

- Five percent of respondents were from companies with revenues of less than \$200 million; 23% from companies with revenues of \$200 million to less than \$750 million; 29% from companies with revenues of \$750 million to less than \$5 billion; 36% from companies with revenues of greater than \$5 billion. Eight percent of respondents did not know their company's revenue.
- Respondents represented a broad range of industries.

Appendix B: Endnotes

¹ The term "Web 2.0" describes the latest ideas for great Internet applications. App dev professionals use rich Internet applications (RIAs), Web 2.0 collaboration tools, and hosted Internet apps and services to create new kinds of Internet applications and extensions to existing apps. Software shops use these technologies to support new business models like software as a service (SaaS), improve user experience, and grow product ecosystems.

² For this particular survey, we spoke to companies knowledgeable about SOA and Web 2.0 technologies. We specifically found 15% of respondents claimed SOA was a critical initiative (a combined 48% citing it as an important initiative overall), and 13% claimed Web 2.0 was a critical initiative (a combined 38% citing it as an important initiative overall).

³ In our 2007 outlook for service-oriented architecture (SOA) adoption, SOA continues to deepen its penetration into the plans and implementations of enterprises and small and medium-size businesses (SMBs). Twenty-one percent of North American and European (NA-EU) enterprises say that they will adopt SOA in 2007, bringing SOA penetration to 62%. Similarly, 22% of Asia Pacific (AP) enterprises and 14% of NA-EU SMBs plan to adopt SOA in 2007, bringing total penetration in these markets to 59% and 40%, respectively. But looking at data from a year ago, Forrester has reason to think that current usage might not grow quite so fast: While 14% of NA-EU enterprises said that they would adopt SOA in 2006, it seems that only 2% actually did. Still, firms broadly recognize SOA's strategic value for business transformation and business flexibility, and current users of SOA appear satisfied and expect to do more SOA, so SOA's strong market momentum will continue to build. For more information, see the February 28, 2007 Forrester report "Planned SOA Usage Grows Faster Than Actual SOA Usage."

⁴ As of yet unpublished research "Web 2.0 Buyer Profile: 2008."

⁵ Source: January 2007 Infrastructure & Operations Panel Survey.

⁶ For example, one area where the network is more apt to become a bottleneck is the wide area network, or WAN. The WAN is the connective fabric that holds a distributed organization together. It connects applications and data to employees in branch offices, home offices, or on the road — as well as partners and customers. Most companies understand that the WAN must be architected for high availability but still suffers from inadequate performance. Why? IT shops are struggling to balance a multitude of initiatives — all of which overload enterprise networks and create a WAN bottleneck. See the June 20, 2007, "The Forrester Wave™: WAN Optimization Appliances, Q3 2007" report.

⁷ We surveyed companies to see if they prefer a "smart" network (one with embedded intelligence like security, virtualization, and optimization technologies) or a "dumb" network (one with simple "plumbing" that just routes and switches). According to our survey respondents, this debate has

been settled — smart networks have won. Companies, regardless of size, region, or industry, overwhelmingly prefer to use smart networks in their architecture. Hardware advancements, more sophisticated network software, and better management tools mean that firms can reliably embed intelligent security, mobility, virtualization, and acceleration directly into the network. See the September 8, 2006, “The Debate Is Over: Businesses Prefer Smart Networks” report.

⁸ See the December 14, 2007, “Five Trends That Will Shape The IT Infrastructure And Operations Profession In 2008” report.

⁹ During 2007, Forrester surveyed 3,000 IT decision-makers in North America, Europe, and Asia Pacific under its Business Data Services program.

¹⁰ The sum of percentages in this paper may not equal 100 due to rounding.