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EVALUATING IT RELIABILITY—PREREQUISITE TO CIO SUCCESS

Definitions May Vary, But CIOs Agree the 'R-word' Transcends Uptime

Reliability is often cited as one of the most important requirements IT professionals consider when evaluating IT solutions. It's become a cliché to say systems need to be available 24/7 in today's web-enabled world. "System down" means money, customers and reputation lost.

Dive deeper into reliability, though, and you find C-level executives asking themselves: Can my end users and customers depend on the application? Can I accurately predict system interruptions? How will this system handle changing business requirements and uses over time? What platforms and technologies will allow me to implement a highly reliable solution today that will scale to my business needs in the future?

It's a world where uptime is king, but it is supported by a court made up of a host of other key factors that get invoked when the word "reliability" is mentioned.

The Survey Says …

So just what are CIOs and other business decision makers saying about reliability at the highest levels of business? That was the driving question behind a recent survey by IDG Research Services. IDG reached out to 10 CIOs to gauge their attitudes and opinions on the importance of reliability—for both operating systems and networks—and what it means for the success of their businesses.

These executives came from industries spanning health care, manufacturing, hospitality, professional services and finance. They were asked how they define reliability; how it's measured in their enterprises; and how important are factors like uptime, predictability and manageability when gauging reliability. A special focus was put on operating system and network reliability, with an emphasis on simplicity and efficiency as enablers of reliability.

The results: Reliability is not just an issue for the IT staffer at the operational level. It's keeping the business decision makers up at night as well. CIOs at medium-size and large organizations view reliability as a key component in achieving top-tier performance and profits. The IDG Research Services study found that CIOs are not only aware of the need for reliability, they're also actively seeking ways to transform the concept into reality.

A reliable IT infrastructure directly equates to business success. The Center for Information Systems Research (CISR) at the MIT Sloan School of Management found that a reliable infrastructure can "lower costs of goods sold, increase profit and innovation, and help [boost] market value."

The challenge is that reliability is a broad concept that includes divergent criteria. Recent research has defined reliability in terms of availability, predictability and manageability. The CIOs interviewed by IDG added a host of factors to that bucket, including adaptability, scalability and security.

They say they need their networks and systems to be adaptable to changing business and regulatory conditions. "Any vendor I use has to be currently

and constantly updating my operating system," says Ken Bixel, CIO for Mount Nittany Medical Center in State College, Pa., a 201-bed acute care facility that employs nearly 1,100 health care professionals. "Otherwise I'm not keeping ahead of the viruses, and I can't be a viable source of information or run my business."

To these CIOs, a reliable system and network has to be scalable and relatively easy to maintain. Security figures into the reliability equation as well, with all 10 of the CIOs interviewed rating security as "very important" (5 out of 5) among factors when making a server operating system platform decision for their organizations.

Uptime Is King

The one criterion that made everyone's list, however, was system availability or uptime. As broadly as reliability can be defined, in "real world" applications, most businesses think of reliability in terms of uptime.

As one executive interviewed by IDG put it: "Because of our uptime and the industry we're in, we can't be taking servers up and down. The business depends upon us 24/7 to be up."

RELIABILITY METRICS MATTER

Putting Measurements and Metrics to Work

Although there's no single definition for reliability—and every enterprise must blaze its own path to success—it is possible to identify key factors that lead to an effective strategy. First, there's the need to identify key internal metrics. At Kichler Lighting, a privately held lighting manufacturer based in Cleveland, CIO John Schindler places a heavy emphasis on metrics.

Schindler makes it a point to define the areas of reliability that are most important to the firm. Kichler has service level agreements in place for all key enterprise systems, including enterprise resource planning, digital asset management, warehouse and planning systems. At the application and platform level, it depends on clusters and failover capabilities—with the use of virtualization—to boost availability. "As long as [users] can access the application, they really don't care what's going on behind the scenes," he says.

Schindler uses a 360-degree view of various performance factors and guidelines, and examines monthly statistics for uptime, availability, help-desk performance and more. The goal, he says, is to stress flexibility, simplicity and the ability to adjust dynamically to changing business conditions. He prioritizes projects in order to understand how different choices affect overall performance as well as the bottom line.

An array of other factors and metrics also drives the process. Among them: CPU utilization rates; network, server and application uptime; bandwidth fluctuations; security; and support center IT performance. In fact, many organizations are now developing user-centric measurement tools that assess key criteria rather than use averages that span the entire enterprise. This approach helps frame the discussion onto actual infrastructure issues and monetary costs rather than general numbers that may or may not relate to the specific challenges of the business.

Others focus on business processes and the delivery of business services over the performance of specific systems and technology. Auto parts maker Affinia, for example, is attempting to venture beyond the flat earth of server uptime and order entry performance and scrutinize the flow of data "from the customer service representative's personal computer through the network, through the application and back again," CTO Fred Dingraudo says.

In some cases, CIOs and other IT executives are turning to analytics applications and modeling tools to better understand potential problems—and factors that could lead to downtime or performance lags. By plugging in past data and examining current conditions, these tools identify the likelihood of performance problems and business breakdowns, allowing IT executives to take a proactive approach. Others supplement the use of metrics, analytics and other tools with customer surveys to obtain a 360-degree view of the business.

Enterprise visibility is increasingly important. "You could have internal metrics…that tell you that the servers are available 99 percent of the time. However, if you are causing a significant problem for a particular user with that 1 percent, then it doesn't make any difference how high the availability is," states Stephen Pickett, president of the Society of Information Management in Chicago.

This goes not just for servers but for application uptime as well. "If I walked into my CEO's office and tried to explain why we lost $1 million in sales yesterday because our trucks couldn't leave our distribution centers, the only thing he's going to ask me is why the application wasn't up," says Fred Dingraudo, CTO of Affinia, an automotive aftermarket manufacturer and distributor in Ann Arbor, Mich. "He's only going to ask me the one question and probably my career is going to be based on that one answer."

System reliability is more than another buzzword on the IT landscape. According to IDG Research, 100 percent of CIOs and other executives believe that reliability is either "very important" or "important" in successfully executing their business strategy.

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VINCE SHEEHAN
CIO, INDIANA UNIVERSITY SCHOOL OF MEDICINE

Variations on a Theme

It's no surprise that the definition of reliability—and the CIO's emphasis on the very factors that make up what we call "reliability"—varies from industry to industry.

In health care, where patients' lives can be in the balance, uptime is critical. Vince Sheehan, CIO of the Indiana University School of Medicine, says: "In health care, we never close. Clinical applications and many administrative applications have to be available every day, all day long."

Adds Mount Nittany Medical Center's Bixel: "We concentrate very heavily on the uptime, because without uptime some of the other things just don't even occur. I don't have any efficiencies if I'm not up."

For Affinia, manageability is a key component of reliability.

"We're finding that with all the interoperability issues that arise, that the easier we architect our environment, the easier it is to manage and the more reliable it becomes," says Dingraudo.

At O'Charley's, which operates 230 company-owned and franchised casual dining restaurants in 17 states and has $1 billion in annual revenues, CIO Jim Gray pays close attention to uptime but understands that it doesn't tell the entire story.

A critical component for O'Charley's is the number of service interruptions. "An interruption, even though it may be a small percentage of downtime, has a significant impact on our business," he says. In addition, with hundreds of computer systems and servers to oversee and remote management a necessity, he must stay focused on manageability. Ultimately, Gray explains "availability is not as important as predictability and adapting to market changes. New functions and new software constantly come out and we must be on a mainstream computing platform."

Acushnet Golf CIO Peg Nicholson echoes the emphasis on uptime, but also counts manageability—which she defines in terms of a component of total cost of ownership—among top reliability factors.

"How many dollars and how many people does it take to maintain it?" she asks. "That's extremely important. It's definitely part of reliability."

Security also plays a role. The organizations surveyed by IDG Research spend between 10 percent and 20 percent of their IT budgets on security tools. The heavy spenders in the security realm are those with most government compliance and regulatory issues. However, the prevention of viruses, intrusions, spyware and other problems can go a long way toward achieving a stable and reliable IT environment.

The Real World

All of the CIOs interviewed work in heterogeneous

IT environments. Microsoft Windows, IBM, UNIX and Linux operating systems work to support a slate of home-brewed and off-the-shelf applications that make these businesses run. And the CIOs report that simplicity, stability and interoperability are critical.

A stable, predictable and scalable operating system like Microsoft Windows increasingly provides the backbone of a reliable IT system.

"I think that Microsoft by far is where we've seen the most progress of anybody out there," says Affinia's Dingraudo. "If I was running a business intelligence suite on SQL Server, Microsoft has really simplified certain components of marrying their products and outside products as well in with Microsoft."

At Mount Nittany Medical Center, the emphasis is on a robust and mature operating system. "I can have the best network in the world, but if the operating environment isn't good, I'm not going to get anything out there. Hardware is much the same thing. If it doesn't run the operating system then we have more problems," says Bixel. He relies on a combination of Windows 2000, Windows Server and UNIX (AIX and Solaris).

Vince Sheehan finds a single vendor approach, however, can help provide reliability for the health care provider.

"I think the key element is that we don't worry a significant amount about interoperability and interaction between the various components of a Microsoft environment," he says. If we're using Microsoft operating systems at both the server and the desktop ends, if we're using Microsoft applications and Microsoft SQL Server database, we believe that simplifies our operations and we're not learning multiple vendors' ways of doing things. Data interchange and data operability issues we think create a much higher level of efficiency."

And don't lose sight of the people in the equation. For Sheehan, having the right people is a huge ingredient in the reliability recipe.

"We seem to have no difficulty finding people who are steeped in the Microsoft technologies and the particular server operating systems and server environments that we build," says Sheehan. "It goes to the sustainability issue. As we talk with other universities, obviously a UNIX/Java development world is outstanding. It's often more difficult to find people at the right price, especially for universities, than it is in the Microsoft technologies."

Conclusion

Reliability is no longer an option or a luxury. It's an essential component of operating a business and keeping an IT infrastructure operating at maximum efficiency. Customer satisfaction, employee retention and shareholder value all hang in the balance.

And beyond the obvious benefits of 99.999 percent uptime, a stable, reliable operating system and application environment builds business value by freeing resources to focus on innovation, IT-business alignment and the strategic role today's CIOs must aspire to.

Says Stephen Pickett, president of the Society of Information Management, "[IT professionals] stay in the back office if your infrastructure is not working properly, and you move into the boardroom if it is working correctly. That is one of the key learnings that we have had in the SIM Advanced Practices Council. If your utility is working correctly, then you get to play at the board level,at the executive management level. If your infrastructure isn't working correctly, you spend most of your time in the back office."