FIVE TECH TRENDS TO WATCH IN 2015

CIOs are capitalizing on innovation to enhance their strategic roles within enterprises.

The long and sometimes brutal era of "doing more with less" may finally be ending for IT managers. A recent survey by InformationWeek found that more than half of CIOs saw their budgets increase in 2014, with a healthy percentage of the respondents reporting double-digit increases.

That doesn't exactly set the stage for wild spending sprees. Still, it may show that IT leaders have an opportunity to make judicious investments in potentially high-return technology.

For IT managers looking to "do the most with a little more" the timing is perfect. In 2014, some disruptive technologies matured into solutions that deliver clear business benefits, and that evolution will likely accelerate in the coming year.

The right choices will help IT managers enhance their role as strategic players who identify new opportunities and then deliver advanced services that help businesses grow and public-sector organizations serve constituents more effectively.

"The return-on-investment discussion is certainly important, but the bigger question is, 'What can you do to differentiate yourself from the competition?' " says Nick Rea, vice president of technical solutions at

Samsung Mobile's Business Innovations Group. "In 2015, organizations will have new ways to stand out, build better products and enable new experiences for employees and for their customers."

Here are five areas to watch for some of the biggest opportunities.

1 Big Data Analytics' Important Insights

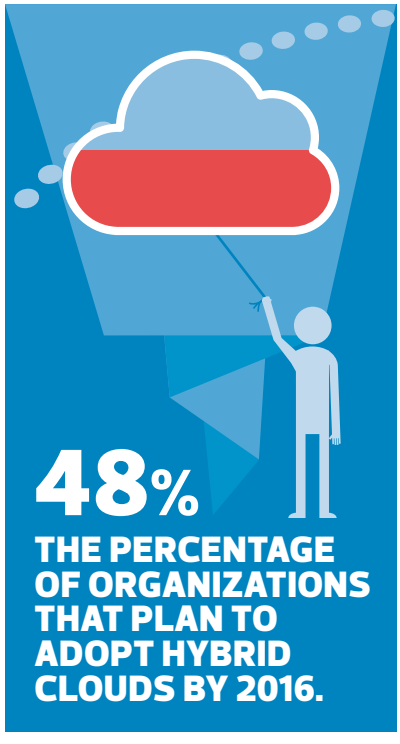
In 2014, senior executives understood that Big Data was about more than just managing large volumes of information. "Executives now really get the potential of Big Data," says Mary Shacklett, president of Transworld Data, a technology and market research firm. "They're now asking probing business questions, and there's an expectation that Big Data can answer them."

The key for IT managers is rolling out analytics solutions that can uncover insights hidden in large volumes of both structured and unstructured data – information that's contained within formal databases as well as in text, video and other free-form formats.

The coming year will also see wider adoption of real-time analytics to augment the batch processes that enterprises traditionally have used to slice and dice Big Data. For example, logistics providers serving the food and beverage industry may send a constant stream of data from sensors in shipping containers so a back-end analytics system can monitor temperature and humidity levels and issue alerts before perishables spoil during transit.

Ongoing technology innovations will help enterprises gather, manage and understand Big Data. "Over the last year, we've seen hardware and software trends that support more affordable solutions for dealing with large volumes of diverse data," says Charles King, principal analyst with the consulting firm Pund-IT. "This is making the overall value more attractive for underlying systems that run Big Data solutions."

For example, costs have dropped for solid-state storage drives, which are key components in Big Data solutions that use in-memory databases to speed performance. In addition, new generations of CPUs, such as the Intel Xeon E7 processor family, enable faster input-output processing and accommodate higher volumes of memory.



Source: RightScale, *"Cloud Computing Trends: 2014 State of the Cloud Survey"*

What can IT managers do to help Big Data initiatives succeed in the coming year? Forging closer relationships with key business managers will be essential. "The best thing a CIO can do is work very closely with the business to understand what the business needs are," Shacklett says.

2 Cloud Computing's Continued Evolution

Savvy IT managers have moved beyond discussions of which cloud computing models are most effective. Instead of considering private vs. public clouds, they're updating roadmaps to include private and public clouds. "In 2015, running part of an IT infrastructure in public clouds and part on-premises will become normal operations," says Steve Shah, vice president of product management at Citrix Systems.

Enterprises see a number of benefits from hybrid clouds, including the ability to do "cloud bursting." For an added boost of flexibility, enterprises can run core applications in an on-premises data center, but quickly tap into public-cloud capacity when demand spikes during month-end financial closes or heightened order processing during the holidays, for example.

Workload portability, one option with some hybrid clouds, reverses the resource flow seen with cloud bursting. "Some organizations may choose to move application development into a public cloud, develop a new application there and then bring the app to on-premises production systems that operate behind the firewall," says Gee Rittenhouse, senior vice president and general manager of Cisco's Cloud Virtualization Group.

Experts also expect the emergence of cloud client computing strategies, in which an enterprise runs applications in a cloud where they can be centrally updated, patched and managed. These programs then deliver their business services to end users no matter where they're working or what type of device they're using.

"Gone are the days of simply supporting a business application on a single platform, such as a desktop PC," King says. "Organizations now need to seamlessly deliver applications and the processes that are attached to them to any platform. Doing that in a virtual environment can be much more seamless and cost-effective than in a traditional environment." >

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vCloud Air from VMware and capabilities within Microsoft Azure enable organizations to write extensions to help move workloads back and forth in hybrid clouds.

But IT managers must make sure an organization's network has ample capacity to support hybrid clouds and cloud-client initiatives. For example, available bandwidth between mobile devices and the cloud typically falls far short of local area network (LAN) or wide area network (WAN) resources. "Enterprises will have to balance the tension between bandwidth and acceptable user experiences," Rittenhouse says.

3 Software-defined Infrastructure

As data centers become more complex, IT organizations need new ways to manage their infrastructures more efficiently. Growing numbers of IT managers began exploring software-defined infrastructures in 2014. "Look for that to grow in 2015," King says.

That includes the latest variation — software-defined application controls that offer another tool for helping end users consume enterprise applications in a variety of ways, whether as traditional onsite programs, via Software as a Service (SaaS)solutions or as a mobile app.

For example, VMware's new Workspace Suite integrates resources within a unified workspace. "A more fluid, software-defined world provides agility for end users while also enabling enterprises to maintain the management control they need," says Noah Wasmer, vice president of strategy for end-user computing at VMware. "This allows IT managers to set security policies around an application so it can freely move out to a cloud service or other destination."

For example, an organization may embed security controls that limit what data and other resources offshore developers can access from a main data center. "If requirements change, IT managers have the ability to adjust those settings in near real time," Wasmer says.

Software-defined networking will also gain momentum in 2015, according to Rittenhouse. "It allows organizations to enforce the same policies in virtual machines across the entire LAN," he says. "So as an IT manager, I can send workloads to a public-cloud service and place them behind my subnet and my firewall. This enables me to string together data centers in a very natural way."

4 Learning From Web-scale IT

Enterprises want to learn from large public-cloud providers how to increase efficiency and reduce costs. Techniques for managing web-scale IT could benefit enterprises in two important ways.

The first is enhanced automation. By necessity, web-scale operations must be highly automated to contain costs and reduce administrative overhead in infrastructures running tens of thousands of servers.

For example, manually applying new security patches to vast server farms would require many costly administrators. But by standardizing server hardware and operating systems, a core group of administrators can write scripts and templates that quickly apply updates without further human intervention.

"Web-scale IT is about doing the same thing over and over again, so I don't have to worry about how much infrastructure I have," Shah says. "I only worry about how many templates I need to support."

A second enterprise-worthy strategy common to web-scale operations is horizontal scale-out techniques. In this approach, IT managers define a standard unit of IT resources, whether for processing, networking or storage. They roll out these pre-set units as needed to address growing business demands. As with scripts and templates, standardized IT resources enable a relatively small number of IT professionals to oversee extensive data center operations.

"By managing storage for enterprise resource planning the same way as for email services, organizations avoid an unnecessary layer of complexity not only in configuring the infrastructure but also in how it's managed," Shah explains. "By normalizing the infrastructure, the enterprise needs only one team that knows how to manage one type of device and one type of storage."

Enterprises can apply similar standardization to networks using unified network fabrics for an approach known as flat networking. Solutions include Cisco's Nexus switch series. "With a unified fabric, administrators have something that enables them to build out an extremely large network where one component can talk to any other

component, without worrying about the system overflowing," Shah says.

The efficiencies possible with web-scale IT techniques offer advantages beyond just the ability to support a larger and more complex environment. "The IT infrastructure isn't just a source of operating expenses, it becomes something that helps grow the top line," Shah says. "To play a leading role in helping business units reduce costs and improve efficiency, IT managers must figure out how to fill out their infrastructures to support this effort. Being able to scale capacity without increasing IT headcount can do that."

5 Mobility: New Ways of Working

IT managers are growing more comfortable with iOS and Android devices as secure resources in enterprise environments. In its latest iteration of the Android operating system, known as Lollipop, Google announced that encryption will be enabled by default to help protect information. As security capabilities mature, IT managers can expect innovations from both hardware vendors and solutions partners that enhance mobile productivity and usability.

The result may be new ways for end users to gain value from their devices. For example, Samsung is looking for ways to capitalize on the broad range of screen sizes it now offers across its various hardware families. It recently released a software developer kit known as Flow, which, like Apple's Continuity, helps users easily display content. "Flow provides application programming interfaces [APIs] that allow content to flow to different screens with a few simple clicks, as people roam from their offices to conference rooms or even to break rooms," Rea says.

This display flexibility may also become important in retail environments where stores will be able to deliver to shoppers the most appropriate marketing messages based on the displays they're near at any time.

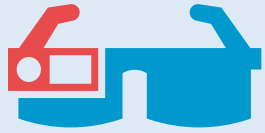
Business processes will also see mobile-enabled transformations. "Instead of using a tablet just to walk through a simple presentation, sales reps will be able to go from a quote to a signature to a purchase order once data repositories are accessible on any device," Wasmer says.

But new mobile computing models will also create additional challenges for IT managers, particularly when it comes to transforming business processes. Help will come from an emerging trend that abstracts legacy client-server architectures to make them more accessible from a mobile standpoint.

One way of doing this is with specialized APIs using standards, such as the representational state transfer (REST), that enable mobile apps to communicate with cloud services. "This allows enterprises to keep still-valuable legacy systems in place while also leveraging their capabilities from a mobile standpoint," says Rea.

With so many technology considerations, IT managers may need help in crafting a mobile roadmap. "Finding answers to these questions will be difficult for organizations that don't have extensive mobile expertise," says Rea. "Getting assistance from a partner in the mobile space helps enterprises navigate through the clutter to enable a rich experience and a secure infrastructure." ■

2015: THE YEAR VIRTUAL REALITY GETS REAL



Many observers believe 2015 will be the coming-out year for virtual reality (VR) on mainstream mobile devices. Samsung's Gear VR may point the way to wider adoption.

When the headset ships, it will connect with some smartphones to create immersive ways for mobile users to interact with data and applications. In the meantime, a growing portfolio of VR content is being created by third-party developers to support the hardware, says Nick Rea, vice president of technical solutions for Samsung. "There's a growing interest among enterprises about how they might be able to use the technology," he adds.

One idea is to create a virtual representation of an enterprise's IT network to help administrators design and troubleshoot the environment. "Traditional diagrams can be difficult to understand, but if I can see the layout in an immersive 3D environment, it's much easier to visualize the architecture," he explains.