MIGRATING TO THE CLOUD
Options and Opportunities
Understanding Software, Platform and Infrastructure as a Service

CDW PEOPLE WHO GET IT
Today, users demand secure remote access to critical applications whenever they want them, from whatever device they use, wherever they happen to be. Consequently, the IT industry has been building a pathway to cloud computing.
If the concept of cloud computing seems familiar, it should. This model didn’t spring up overnight but rather evolved over many years.

In the history of modern-era computing, the rise of the commercial Internet in general and the web in particular have allowed for the shift toward cloud computing — essentially, the ability to provision applications, processing or platform services on the fly from a provider (whether within or external to the user’s own organization).

As web-centric computing took root within IT departments, a new reality dawned: Operations and applications need not be confined to distinct physical resources. In turn, a logical view of IT — enabled by the virtualization of computing, storage, client and network resources from underlying physical hardware — became not just possible but preferable to reduce costs and optimize performance.

This development dovetailed with increasing mobility. Today, users demand secure remote access to critical applications whenever they want them, from whatever device they use, wherever they happen to be.

The IT industry therefore has been moving toward an automated, dynamic, on-demand IT environment for some time. In other words, it has been building the pathway to cloud computing.
Let’s start with a basic question: What is cloud computing?

A widely accepted definition stems from early work done by the National Institute of Standards and Technology, an agency within the U.S. Department of Commerce that promotes measurement science, standards and technology.

NIST defines cloud computing as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.

In other words, cloud computing lets an organization provide its staff with access to the applications, infrastructure or platforms they need to do their jobs — all via a simple front-end interface, such as a web browser. These users might need access to the resources for a few minutes, a few months or a few years. Depending on the deployment model, the organization often pays on a utility basis only for what it consumes.

If this model seems more amorphous than other IT initiatives, that’s because it is. It represents a further evolution of the strategic principles of virtualization, which free an organization from the mindset of “this application runs on this server.”

In a cloud infrastructure, computing resources are pooled and ready for the taking by any application as needed. These computing resources, typically virtualized, are scalable on demand. They can scale upward to meet rising demand and then back down once an application need subsides. The result? Unprecedented levels of operational efficiency.

Any organization can benefit from this ability to handle unpredictable demand spikes quickly and efficiently:

- A company might rely on the cloud to bump up computing capability when a new product rolls out, leading to a temporary but sharp spike in orders and purchases.
- A university could grab infrastructure as...
With the array of cloud offerings available, testing out a cloud service has become increasingly easy. But beyond the quick-hit, tactical needs of an individual user or work group, using cloud computing on an organizationwide scale requires planning.

The goal should be a clear understanding of what the cloud can and cannot do for the organization. With so many opportunities now available, accomplishing this will help an organization clarify what it can expect from the cloud. Developing a roadmap for deployment can then follow.

A well-rounded cloud strategy requires careful consideration of each cloud service type, deployment model and access option weighed against an organization’s particular application characteristics.

Computing capacity is not the only pooled resource within the cloud. Other resources include client, storage and network capacity, which allow an organization to acquire disk space and bandwidth as needed.

Cloud will be to this decade and beyond what client-server distributed computing was to the past 20 years, and mainframe computing before that — the go-to template for computing operations.

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It’s equally important to remember that some applications won’t ever be suitable for a cloud environment. At the other extreme, some applications may not belong anywhere else. Obvious cloud candidates are applications that can run on standardized infrastructure; highly customized
applications will require detailed evaluation to determine their cloud viability.

These factors are applicable to all three cloud service models: software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS).

• **Software as a service:** Often geared toward the user who needs access through a web browser or other thin client interface, SaaS provides access to applications hosted on a provider’s cloud infrastructure.

An organization can find just about any general office application available via the SaaS model. Customer relationship management, calendaring, e-mail and human resources management are some of the more common applications currently delivered as services from cloud infrastructures.

For IT departments, IT service management, spam filtering, intrusion prevention and other traditional security software are application types increasingly available via SaaS.

With SaaS, the user organization neither owns the application nor the associated servers, operating systems, storage, network or other IT resources required for its support and delivery. Applications essentially come as-is, with little to no opportunity to tweak user preferences.

• **Platform as a service:** PaaS caters to developers’ needs. Rather than simply delivering prepackaged applications via the cloud infrastructure, as is the case with SaaS, a PaaS provider offers up the entire computing platform and solutions stack needed for an application.

With PaaS, organizations can deploy acquired or custom applications without incurring the associated upfront provisioning and ongoing maintenance and management costs of the underlying infrastructure. The user organization has application control, although in many cases its developers must be comfortable with the provider’s programming languages, interfaces, development tools and database support.

PaaS offerings vary, and the best fit for an organization depends on its goals for moving to the cloud. Some cloud offerings, for example, combine PaaS and SaaS, which lets organizations customize a packaged application. Being able to tweak an application could make SaaS more attractive in this scenario, but it’s also less portable when combined with PaaS.

The richest PaaS offerings let an organization support the entire application development lifecycle. In this situation, the provider supplies the platform and also ensures source code and version control, enables user testing (with rollbacks as needed) and provides change-tracking functions.

PaaS can also ease collaboration among far-flung developers.

• **Infrastructure as a service:** IaaS lets organizations forgo deployment of new equipment to support growing operational needs. Organizations obtain IT infrastructure as needed, often via a self-service catalog.

While a user organization can run applications, databases, operating systems and other software on top of its selected infrastructure, it has no direct control over or access to the equipment. The cloud provider manages the infrastructure.

Infrastructure as a service is similar in concept to a traditional dedicated hosting service. But there are two defining differences: Organizations tap into a shared, highly scalable pool of resources, and they pay only for what they use. This
means organizations won’t have to pay for dedicated gear sitting in a data center.

Typically, multitenancy applies across public cloud services. A provider manages the virtual resources running atop the infrastructure that an organization has provisioned from the cloud.

Matching operational requirements to cloud service type is fairly straightforward, but organizations must also determine their deployment method or methods. IT organizations have four from which to choose.

• **Public cloud**: A public cloud is what most typically comes to mind when people hear the phrase “cloud computing.” With this option, the service provider offers its cloud infrastructure for general use on a self-service, on-demand basis.

  Using a public cloud has significant appeal because it requires little to no infrastructure investment while enabling unprecedented scalability. The translation for IT shops: greater efficiencies and increased agility at a relatively low cost. But sharing resources across a public infrastructure may raise security and regulatory concerns, so operational need and the type of data involved will drive an organization’s decision about whether to pursue this method.

  Although public clouds let an organization avoid many infrastructure expenses, the IT team still will need to identify and plan for costs associated with a deployment, such as management processes, capacity planning, charge-back systems, incident management and service-level agreements (SLAs).

• **Private cloud**: An IT organization can build and maintain a private cloud within its own data center or centers. This cloud would be for the exclusive use of the organization’s staff or other privileged users.

  As an alternative, a private cloud also may run externally at a hosted cloud provider’s site. In this case, the provider maintains and manages the cloud infrastructure, which comprises pooled resources dedicated to a set of defined users.

  Organizations concerned with compliance, privacy, security and data availability often choose to build a private cloud rather than move processing to public services. This could also be the case if an organization intends to incorporate legacy infrastructure as part of its cloud environment.

  With a private cloud, organizations will need to plan for capital expenses and define their infrastructure limitations. There is greater scalability available within a private cloud than in a legacy environment, but it isn’t limitless.

  Some organizations may opt for a private cloud as a step toward an eventual public cloud deployment. This positions the IT department to develop the disciplines and processes required for managing cloud operations.

• **Community cloud**: A community cloud provides an opportunity for multiple organizations with similar needs or like interests to share infrastructure. The community option doesn’t provide the full cost benefits of a public cloud, but it can facilitate requirements for higher levels of privacy, security and compliance as needed.

  A community cloud can reside within an organization’s data center or at an external site.

• **Hybrid cloud**: Some organizations opt for a hybrid cloud, mixing and matching among the private, public and community options.

  In one common scenario, an organization can break out of a private cloud by allowing applications to burst into a public cloud to grab additional resources if needed. In an ideal situation, the distinct clouds link via a standard interface to support data and application portability. More common today, proprietary technologies bind different clouds together.

  No matter the type of cloud, IT departments will need to focus on processes for managing the services they deliver through the cloud. Adopting a framework for processes such as problem management, change management, vendor management, charge back and capacity planning is critical to the success of moving services to the cloud. The IT Infrastructure Library and the IT Service Management framework offer methods for integrating such processes.

  Client interface flexibility is one of the truly welcome features of cloud computing. IT organizations can abstract client resources, including the operating system, applications, associated data and client interface, from the underlying physical machine. Users can then tap these pooled resources as virtual services on the device of their choice — desktop PC, notebook, tablet or smartphone.

  The look and feel of the interface persists even as the user closes down a desktop and accesses the same application from a smartphone, for instance. Not having to adjust to a new interface with every device boosts user flexibility and productivity. The centralization behind the data center firewall also adds security.

  For IT organizations, this end-user flexibility presents an opportunity to build out a client infrastructure that’s more cost-efficient and easier to manage. One critical requirement includes establishing an adequate process for application change management to avoid improper or errant changes affecting every user of the organization’s cloud services.
The expectations for this quickly emerging computing model are high, with potential gains across organizations, both for managing IT and for using it.

**Solutions for every need and budget:** Cloud computing is available in many shapes, sizes and pricing levels, from the strictly private cloud, which requires capital investment in supporting infrastructure, to the completely public, pay-as-you-go cloud.

Pricing for public cloud services varies depending on the type of offering — SaaS, PaaS or IaaS. Basic computing and storage resources are available for reasonable pay-for-use fees.

**Increased flexibility:** IT teams can build an internal private cloud, set up a hybrid cloud for bursting into the public arena
The benefits of cloud computing may be plentiful, but IT executives need to do their due diligence. Here are eight considerations an organization should ponder before committing to a cloud initiative.

1. LAYERS OF SECURITY: Organizations may need to tighten up existing security and/or add additional layers to match the provider’s security measures. This will ensure that assets are protected equally whether inside the public cloud or their own domain. In cases where multiple cloud services are in use, IT security professionals might give users single sign-on access to multiple cloud applications. Finally, encryption of data — while in transit and cloud services are in use, IT security professionals might give users single sign-on access to multiple cloud applications. This will ensure that assets are protected equally whether inside the public cloud or their own domain.

2. FIREWALLS AND PROXIES: Organizations should look at whether the security technologies being used within internal clouds match up to those of potential public cloud providers, as well as how data flows through the firewall-based perimeter to the external cloud. In some cases, IT organizations may deploy proxy servers that intercept sensitive data for local delivery rather than via the cloud.

3. REGULATORY COMPLIANCE: Many organizations may need to be able to stipulate where their data resides geographically for reasons of regulatory compliance. They also may need to verify that only authorized users can gain access to the data.

4. PROCESS FRAMEWORK: If the organization does not use a framework such as ITIL or ITSM, it should consider doing so to help manage services that it migrates to private, public or hybrid clouds.

5. LEGACY APPLICATIONS: IT executives must determine which legacy applications are and are not appropriate for delivery via cloud. Many legacy applications, such as those pulling information out of multiple databases, are too rigid to take advantage of the elastic nature of cloud computing. Some applications may need modifications; others may need to be completely re-architected.

6. INTERNET CONNECTION: Using the cloud may require high-speed Internet access capable of supporting increased traffic. Plus, users typically need Internet connectivity from wherever they happen to be.

7. BANDWIDTH MANAGEMENT: IT organizations looking to place applications with large data sets in a cloud must evaluate potential performance degradation. There are ways around this, such as moving user clients into the cloud.

8. PROVIDER DEPENDENCY: Organizations will want to avoid vendor lock-in. Portability and data availability should be defined in the SLAs.

Because cloud services are delivered on demand — on a pay-as-you-go basis — the IT department ultimately can manage and allocate the organization’s services more effectively.

**Improved security:** Organizations that go either the public or private cloud route as needed, use public cloud services where appropriate and take part in community clouds for specified user groups.

**Better resource utilization:** Dynamic scalability is an integral feature that will let the IT staff reduce the footprint of the organization’s data facilities, freeing up valuable real estate, and reducing power and cooling expenses.

**Improved efficiency, greater agility:** Cloud computing takes the restrictive binding of application to infrastructure. This helps manage services that it migrates to private, public or hybrid clouds. Dynamic resource allocation lets the IT group operate more efficiently and with greater agility than previously possible.

**Access to new technology:** Cloud providers have teams — even entire departments — at work on application upgrades, infrastructure enhancements and protection mechanisms. That gives organizations access to continuous improvements in the tools available from the cloud without investing their time or budget in development.

**Cost avoidance:** IT organizations can realize cost benefits in a number of ways. Organizations can gain savings by leasing cloud infrastructure gear rather than buying it.

**New cost model:** Because services are delivered on demand on a pay-as-you-go basis, the IT department can monitor, control and meter the use of cloud services more effectively. End users, in turn, get transparency into their usage and can make smarter budgetary and planning decisions.

**Improved collaboration:** In an instant, team members can tap into enterprise-class collaborative applications, including calendaring, e-mail, file sharing, instant messaging, social networking and web conferencing.
MIGRATING TO THE CLOUD

The move to the cloud is an evolutionary process. A full-fledged migration strategy will likely include numerous items, but three broad areas take precedence: virtualization, IT governance and organizational culture.

Virtualization is a foundational technology for cloud computing. The more virtualized the infrastructure, the higher the resource utilization within the shared pool. Adopting virtualization in critical IT areas (namely servers, storage, clients and applications) will lay the groundwork for future cloud computing initiatives.

Many organizations have studied how to better align IT services with user needs, knowing that doing so can increase agility and improve operational efficiencies. The imperative to adopt strong IT service management and governance becomes even more important under the cloud model, in which services are provisioned dynamically and not tied to specific pieces of the infrastructure.

Organizations that have not embraced IT service management will want to do so as a preparatory step toward the cloud. Consider implementing the ITIL framework for identifying, planning, delivering and supporting IT services to the organization.

Finally, for many IT professionals, cloud computing and its self-service model can be a daunting prospect. Common concerns include loss of administrative control over service delivery, increased operational workloads and loss of “ownership” of IT resources as computing, storage, database and network resources all are wrapped up and delivered as a service rather than managed separately. But none of these need be deterrents. It’s incumbent on IT leaders to adequately prepare their teams, senior management and the user community for the ramp-up to cloud computing.

CHECK IT OUT AT THE LIBRARY: The IT Infrastructure Library, itil-officialsite.com, offers excellent guidance for cloud management and can serve as a go-to resource for planning out a cloud initiative. Get some additional insights at vinf.net/2011/02/01/of-itil-and-cloud.
Indiana University and an Illinois K–12 consortium forge their own cloud routes

On-demand IT resources, infinite scalability, pay-for-use pricing structures, reduced capital expenditures: These benefits of a public cloud are hard to ignore. But the public approach may not be compatible with a particular organization’s situation.

If going public is not an option, an organization can still apply the same principles and make similar technology choices for its enterprise. Building an internal private cloud might not be such a leap for some organizations — at least on a technology level. That’s because their data centers or their IT strategies likely have been evolving toward a next-generation computing ideal for some time.

That’s exactly what led Indiana University to develop its Intelligent Infrastructure (IUII), which offers storage and infrastructure as a service to IU users at eight campuses across the state.

The IUII suite of services provides remote access to the same high-performance, high-availability hardware and security devices that University IT Services uses to deliver mission-critical university applications.

In 2003, the “first wave of our virtualization — using VMware ESX — was all about saving space, saving power, making it easy to manage. Those were primary drivers to virtualization, and that has continued to be the case,” CIO Dennis Cromwell says. After reducing about 380 physical servers down to fewer than 20 devices, the university IT team began to look at whether it should be offering its users cloudlike services. The Intelligent Infrastructure opened for business in 2007.

“We have had great success with a few hundred servers to support a few dozen departments, but the real measuring stick is a few thousand servers supporting a few hundred departments,” Cromwell says of what the future holds for IUII’s expansion. “This is a challenge — one I believe is worth achieving.”

The university has set the stage for that evolution with several critical technologies:

• VMware ESX virtualization software
• x86 servers
• Hitachi Universal Storage Platform
• HP ProCurve 6600 switches
• Brocade 48000 Director switches
• Tivoli Storage Manager
• IBM TS3500 and 3584 tape libraries

“If you’ve got a fairly large installation of physical hardware, it really should be virtualized,” Cromwell says. Why? “It’s a better financial investment in the long run. It’s a matter of trading a capital expense for an operational one.” Plus, groups within an organization don’t duplicate work, and the entire organization gains by driving up capacity utilization rates.

Pooling resources (compute and financial) is definitely an attraction of the IlliniCloud, which offers services to the 869 K–12 school districts across Illinois.

“We’re all doing the same things,” says Jim Peterson, director of technology for Bloomington Public Schools. “We’re implementing student information systems, enterprise resources planning applications and e-mail. Why should all the districts scramble for money every year to pay for these when we could set up a cloud and pool our resources?”

Through the IlliniCloud nonprofit consortium, launched in 2009, participating districts — as well as private and parochial K–12 schools — share resources that are managed through district-owned data centers.

7 Questions

THINKING ABOUT A PRIVATE CLOUD? ANSWER THESE QUESTIONS

1. Is the organization prepared to give users the autonomy they’ll expect?
2. Has it standardized its procedures well enough?
3. How far is the organization willing to take automation?
4. Will end users willingly share resources?
5. Does the organization charge IT usage fees? If not, will it?
6. Do you understand the cost to deliver every IT service?
7. Do you have a process management framework?
Designing Private Clouds: Tools from CDW Partners

Looking up and down their IT stacks, many organizations will find that they already have some building blocks for launching an internal private cloud.

Virtualization is the foundational technology. The higher the utilization within the organization’s shared resource pool, the more fluidly workloads can move across the data center to support private cloud users. CDW partners Citrix Systems, VMware and Microsoft all offer capabilities for enterprise virtualization.

The more streamlined the IT operation, the easier it is to manage and optimize cloud service delivery and application performance. Organizations will therefore want to consolidate servers, storage and network bandwidth. Respective considerations here will focus on the use of blade-server-filled chassis, deployment of storage area networks and migration to 10 Gig-E network links.

Cisco Systems, EMC and VMware have teamed up to form the Virtual Computing Environment (VCE) coalition, with the idea that the shift to the cloud is a technology journey and that the private cloud option appeals to organizations that have a desire to take advantage of existing infrastructure components. By working together, these CDW partners can cover a spectrum of services: virtualization, networking, computing, storage, security and management technologies.

The VCE approach offers organizations a way to make large, incremental leaps and speed up consolidation. By providing products and services in configurations that the VCE coalition calls Vblocks, data centers can rapidly step up their consolidation efforts because computing, networking and virtualization tools come preintegrated in the hardware components. It offers a leapfrog route toward cloud migration.

HP takes a similar approach with CloudSystem, which it describes as cloud in a box. This offering pools virtualized network, storage and processing resources. An organization can adjust the components on the fly to meet dynamic workload demands. By unifying the tools, processes and architecture of an organization’s physical and virtual worlds, CloudSystem can help reduce costs while speeding delivery of cloud services.

For organizations making the initial steps toward cloud computing, CDW partners EMC, HP, IBM and NetApp offer critical hardware components for building out infrastructure to support virtualized environments capable of supporting private cloud services. These tools include:

- EMC cloud-optimized storage hardware
- HP CloudSystem with BladeSystem Matrix and 3PAR Utility Storage
- IBM BladeCenter and System
- NetApp network-attached storage and SAN hardware

Because of its many partners, CDW can help organizations appropriately mix and match products and capabilities to develop infrastructures capable of scaling as cloud service demands grow. CDW system engineers work directly with an organization’s IT teams to develop a cloud evolution strategy that builds on the existing enterprise infrastructure.
The libraries worked with CDW to buy the Microsoft Business Productivity Online Standard Suite messaging and collaboration service to replace a proprietary e-mail system. BPOS costs less annually than the library was paying for its old messaging system, Sendze says. “If you want to host a Microsoft system, who better to host it than Microsoft?” Working with CDW, Sendze says, gained her organization a 55 percent discount on licenses over the retail price.

BPOS includes applications beyond messaging, including SharePoint, Office Communications, Live Meeting and mailboxes that are 50 times bigger. Microsoft is slated to release the next-generation version of BPOS, Office 365, later in 2011.

Organizations can find a full complement of IT and cloud options available through CDW’s cloud services:

- real-time, automated provisioning and scaling of virtual and physical infrastructure such as servers, storage, networks, load balancing and security;
- servers requested, created, configured and decommissioned on the fly — typically with operating systems and memory allocation specified by users;
- storage for files or data backups scalable up and down on demand;
- applications delivered in the software-as-a-service model;
- the entire computing platform and solutions stack needed for an application during testing, development and, if desired, deployment.

It was the stability of the cloud services that drew Intermedix EMSystems to CDW. The Milwaukee company developed an Internet-based hospital diversion solution in 1998 and now delivers more than 10 interoperable communications products for emergency medical responders as cloud services.
CDW houses and manages Intermedix EMSystems’ IBM BladeCenter systems at its multiple remote data centers. Intermedix EMSystems also meets its own IT infrastructure needs with services from the data centers.

The business relies on the flexibility and resiliency of cloud computing to deliver services to its clients, says Chief Technology Officer Bob Hedgcock. “We get bandwidth flexibility from CDW, and our customers get to focus on what they do best as emergency responders,” he says.

Intermedix EMSystems’ customers range from metropolitan-area emergency response organizations to entire states.

The managed services provided by CDW let the company customize private cloud offerings to meet these users’ changing demands, Hedgcock says.

“Our solutions scale up very easily because they are delivered from the cloud,” he says. “If a hurricane hits, our customers can quickly add an unlimited number of users, focus on the emergency response and not worry about the IT aspects of the job at hand.”

A managed-services private cloud offers a convenient option for organizations that don’t want to incur the expense of building an internal private cloud but are wary about the openness of a public cloud. Managed-services private clouds allow customers greater control over their environments than they would have with hosted public cloud services.

For example, organizations can make security adjustments, specify infrastructure requirements and fine-tune SLAs.

When compared with the internal private option, the managed-services private cloud offers the benefits of infrastructure cost avoidance and places no management burden on internal IT staff. But when application, infrastructure and security control are nonnegotiable, the internal route is less risky than other private cloud options.

HOSTING SERVICES: CDW’S MANAGED-IAAS CLOUD

CDW’s Managed Infrastructure as a Service is a cloud solution for organizations interested in having access to a high-performance, fault-tolerant systems infrastructure for critical systems and applications. The objective is to provide a scalable platform while reducing the need for organizations to make a long-term capital investment in IT infrastructure.

Cloud Server Instances: CDW offers customer-dedicated Windows and Linux server instances from a VMware infrastructure pool. The flexibility within the pools allows users to deploy highly customized virtual machines consisting of processor, memory and network connection per operating system. Users can adjust their VM loads as circumstances and growth warrant. CDW actively manages the large physical infrastructure and related capacity for the physical layer so that organizations’ server instances have fully available allocated capacity. In the event of a hardware failure in the physical layer, affected server instances seamlessly transfer to nonaffected hardware.

Data Storage and Backup: Managed-IaaS includes pay-as-you-go data storage designed to provide quick enabling of applications using storage and data. The storage solution relies on a fully redundant Cisco Systems storage area network, an IBM Storage Volume Controller and IBM disks so that users can choose among archive, primary and high-performance-class disk solutions. For backup, the service makes use of a Tivoli Storage Manager and an IBM tape and disk infrastructure. CDW can install and configure any required backup software, maintain offsite copies of data, and monitor and alert users of backup errors.

Secure Networking: The Managed-IaaS includes enterprise-class Cisco firewall and load-balancing services to assure security, high availability and complete path redundancy for server, storage and telecommunications infrastructure. In addition, CDW provides highly available Internet access load-balanced across multiple geographically diverse Tier 1 Internet providers.

Managed Services: CDW can provide several levels of managed services for hosted server instances and dedicated network and server hardware. These range from advanced monitoring to full availability management. CDW can handle infrastructure systems for organizations, removing the burden of day-to-day maintenance, monitoring and patching of virtual and physical servers.

Advantages of CDW’s Managed-IaaS Cloud:

- Low capital investment; limited capacity planning required
- Flexibility to allocate resources as required
- Enterprise-class solution
- Guaranteed service-level agreement; highly available hardware in Tier 3 data center
- 24x7 operations
- Compliance with SAS 70 auditing standards and PCI data security standards
- Adherence to IT Infrastructure Library best practices
- Support for hybrid private-public cloud models
- U.S.-based support from a network operations center
- High visibility through the CDW Customer Operations Portal
- Flexible software licensing