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The Year Microsoft Built Its New Foundation

It's rare I use the word “transformative,” a buzzword we tech journalists loathe, but it's hard to avoid saying that it describes the year through which Microsoft has gone. Consider the outlook a year ago: Uncertainty reigned as rumors swirled that Ford CEO Alan Mulally was the frontrunner to replace the retiring Steve Ballmer. What a difference a year makes, Mulally did retire from Ford but he's now ironically on the Google board of directors. The Microsoft decision to tap Satya Nadella as CEO has proven wrong critics opposed to an insider getting the nod, fearing it would be impossible to change the culture at Microsoft. It's impossible to turn a big ship around on the fly but it's safe to say in 2014 Nadella has established a new foundation for Microsoft. Most notably, Nadella insured Windows was no longer the Microsoft cash cow by shifting it from the platform to a platform. Microsoft now acknowledges iOS, Android and Linux as equal citizens in the end-user and IT infrastructure picture. That came into view weeks after Nadella took over when he enthusiastically opened the floodgates for multiplatform support for Office with the launch of a version for the iPad. Since then Microsoft has extended support for iOS and Android on Office and in numerous other ways including making editing and key features in Office 365 free for iOS and Android consumers and through its new Enterprise Mobility Suite. The new “platforms and productivity” mantra Nadella started espousing started taking full shape when Microsoft agreed to support Docker containers. It was a critical yet once unthinkable move that will pave the way for Windows Server and the Microsoft Azure cloud to move into the next wave of computing, rather than risk it evolving into legacy platforms. In every presentation and briefing company execs deliver these days it's clear Microsoft has a new attitude and has changed the way it does business within the IT and open source communities. Columnist Mary Jo Foley picks her five biggest Microsoft changes of 2014 on p. 32. Overall, Nadella has led Microsoft to lay a strong new foundation, but now the challenge is to build on it.
Asigra Cloud Backup™ is an agentless, multi-tenant software solution that enables the maximum in security, reliability, manageability and affordability. Asigra can help you lower your total cost of ownership with one software platform that provides data protection for physical, virtual, mobile and cloud environments with the flexibility of a private, public, and/or hybrid cloud architecture.

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JJ Milner, Managing Director
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Redmond Report

Microsoft Azure Marketplace Is Now Open

Approximately 1,000 applications and tools are available on the new one-stop Microsoft store to provide Azure virtual images.

By Jeffrey Schwartz

If the Microsoft Azure public cloud is going to be the centerpiece of its infrastructure offering, the company needs to bring third-party applications and tools along with it. That’s where the newly opened Microsoft Azure Marketplace comes in. Launched in late October, it’s a central marketplace in which providers can deliver to customers to run their software as virtual images in Azure.

A variety of providers have already ported these virtual images to the marketplace—some are pure software vendors, while others are providers of vertical industry solutions—and a number of notable offerings have started appearing.

Cloudera Apache Hadoop

One that Microsoft gave special attention to at the launch of the Azure Marketplace was Cloudera Inc., a popular supplier of the Apache Hadoop distribution. Cloudera has agreed to port its Cloudera Enterprise distribution, which many Big Data apps are developed on, to Microsoft Azure. That’s noteworthy because Microsoft’s own Azure HDInsight Hadoop as a Service is based on the Hortonworks Apache Hadoop distribution. While it could cannibalize Azure HDInsight, those already committed to Cloudera are far less likely to come to Azure than if Cloudera is there.

“To date, most of our customers have built large infrastructures on-premises to run those systems, but there’s increasing interest in public cloud deployment, and in hybrid cloud deployment, because infrastructure running in the datacenter needs to connect to infrastructure in the public cloud,” said Cloudera Founder and Chief Strategy Officer Mike Olsen, speaking at the Microsoft cloud briefing in San Francisco. “This we believe is—for our customers—a major step forward in making the platform more consumable still.”

Also up and running in the Azure Marketplace is Kemp Technologies Inc., a popular provider of Windows Server load balancers and application delivery controllers. The Kemp Virtual LoadMaster for Azure lets customers create a virtual machine (VM) optimized to run natively in the Microsoft cloud, said Maurice McMullin, a Kemp product manager.

“Even though Azure itself does have a load balancer, it’s a pretty rudimentary one,” McMullin said. “Having the Kemp load balancer in there totally integrated into the Azure environment allows you to script some of those environments and application scenarios. The impact of that is for an organization that’s looking toward the cloud, one of the big challenges is trying to maintain the consistency by having a consistent load balancer from on-premises, meaning you get a single management interface and consistent management of apps and policies, on-premises or in the cloud.”

Security in the Marketplace

Lieberman Software Corp. has made available as a virtual image in the marketplace its Enterprise Random Password Manager (ERPM), which the company said provides enterprise-level access controls over privileged accounts throughout the IT stack, both on-premises and now in Azure.

The company says ERPM removes persistent access to sensitive systems by automatically discovering, securing and auditing privileged accounts across all systems and apps within an enterprise. Authorized administrators can delegate to users quick access to specific business applications, as well as corporate social media sites in a secure environment, and those activities are automatically recorded and audited. It also ensures access to such identities is temporary and able to ensure unauthorized or anonymous access to sensitive data.

Another security tool is available from Waratek Ltd., a supplier of a Java Virtual Machine (JVM) container, which lets enterprises bring their own security to the cloud. Called Runtime Application Self-Protection (RASP), it monitors for key security issues and provides policy enforcement and attack blocking from the JVM.

In the JVM, the company offers a secure container where administrators can remotely control their own security at the application level, said Waratek CEO Brian Maccaba. “This is over and beyond anything the cloud provider can do for you and it’s in your control,” Maccaba says. “You’re not handing it to Microsoft or Amazon, you’re regaining the reins, even though it’s on the cloud.”

The number of offerings in the Azure Marketplace is still relatively few—it was about 1,000 at press time, though it is growing.

Jeffrey Schwartz is editor of Redmond.
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BlueStripe Embeds App Monitor into System Center, Windows Azure Pack

BlueStripe Software is now offering its Performance Center tool as a management pack for Microsoft System Center 2012 R2 Operations Manager. The company earlier this year released the dashboard component of FactFinder, which monitors distributed applications across numerous modern and legacy platforms.

With the addition of Performance Center, the company has embedded its core FactFinder tool into System Center. FactFinder can monitor everything from mainframe infrastructure including CICS and SAP R3 transactions, along with applications running on Unix, Linux and Windows infrastructures. BlueStripe said it provides visibility and the root causes of performance to application components on physical, virtual and cloud environments. It works with third-party public cloud services, as well.

FactFinder integrates Operation Manager workflows, providing data such as response times, failed connections, application loads and server conditions, the company said. It also maps all business transactions by measuring performance across each hop of a given chain and is designed to drill into the server stack to determine the cause of a slow or failing transaction.

In addition to the new System Center Management Pack, BlueStripe launched Performance Center for the Windows Azure Pack, which is designed to provide administrators common visibility of their Windows Server and Microsoft Azure environments. This lets administrators and application owners monitor the performance via the Windows Azure Pack.

BlueStripe Marketing Manager Dave Mountain, attending the TechEd Conference in Barcelona in late October, said he was surprised at the amount of uptake for the Windows Azure Pack. “There’s a recognition of the need for IT to operate in a hybrid cloud world,” Mountain said. “It’s reason for existing is to ensure the delivery of business services. Tools that allow them to focus on app performance will be valuable and that’s what we are doing with FactFinder Performance Center for Windows Azure Pack.”

Netwrix Tackles Insider Threats with Auditor Upgrade

Netwrix Corp. has upgraded its auditing software to offer improved visibility to insider threats, while warning of data leaks more quickly. The new Netwrix Auditor 6.5 offers deeper monitoring of log files and privileged accounts, which in turn provides improved visibility to changes made across a network, including file servers and file shares.

The new release converts audit logs into more human readable formats, according to the company. It also lets IT managers and systems analysts audit configurations from any point in time, while providing archives of historical data against which to match. Netwrix said this ensures compliance with security policies and thwarting rogue employees from making unauthorized changes.

In all, Netwrix said it has added more than 30 improvements to the new release of Auditor, resulting in higher scalability and performance.

Riverbed Extends Visibility and Control

Riverbed Technology launched the latest version of its SteelHead WAN optimization platform, including a new release of its SteelCentral AppResponse management tool to monitor hybrid environments, including Software-as-a-Service (SaaS) apps.

Core to the new SteelHead 9.0 is its tight integration with SteelCentral AppResponse, which Riverbed said simplifies the ability to troubleshoot applications using the app’s analytics engine, making it easier to manage such processes as policy configuration, patch management, reporting and troubleshooting. The SteelCentral dashboard lets administrators track performance of applications, networks, quality of service and reports on how policies are maintained.

SteelCentral AppResponse 9.5 also gives administration metrics on end-user experiences of traditional and SaaS-based apps, even if they’re not optimized by the SteelHead WAN platform. Riverbed said providing this information aims to let IT groups respond to business requirements and issues causing degraded performance. The new SteelHead 9.0 also is designed to ensure optimized performance of Office 365 mailboxes.
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In today’s new age of “always-on” business, prolonged downtime or even brief outages are no longer acceptable. Whether it’s at a global enterprise with thousands of employees, a 200-person organization or even a small office, all are expected to have their core information systems up and running all the time. Providing the ability to recover from downtime—scheduled or unplanned—is becoming easier and more affordable thanks to a growing number of emerging enterprise-grade cloud-based Disaster Recovery-as-a-Service (DRaaS) options.

Many such DRaaS offerings, where organizations replicate snapshots of their data, system settings and applications to either a local or major cloud provider or dedicated hosting operator, have been around for some time from specialists such as SunGard or Verizon Communications and a variety of high-end solutions. But over the past year, the sheer number and scope of options has started to amass, and many more are building out cloud-based disaster recovery service operations with varying types of capabilities, architectures and costs.

In 2014 Microsoft made a huge splash launching an extensive new portfolio of cloud-based disaster recovery options, recognizing and emphasizing disaster recovery as a key driver for its hybrid and Infrastructure-as-a-Service (IaaS) offerings. The Microsoft disaster recovery thrust came on the heels of last year’s release of Windows Server 2012 R2, which included the second version of Hyper-V Replica, providing point-to-point replication of Hyper-V virtual machines (VMs) via either a LAN or WAN connection (see “Hyper-V Replica for Disaster Recovery,” p. 14).

Building on that, Microsoft this year made it possible to use its Microsoft Azure cloud in lieu of a secondary datacenter for disaster recovery. At the core is Azure Site Recovery, which Microsoft announced in May at its TechEd conference in Houston. Azure Site Recovery, which became generally available in October (see “First Look: Azure Site Recovery” on p. 20), is a service enabling the replication of VMs between two datacenters or from an organization’s site to Azure datacenters. The service, which unlike Hyper-V Replica also supports VMware VMs and Linux servers, offers automated protection of VMs, which Microsoft backs with a service-level agreement.

The July acquisition of InMage gave Microsoft an on-premises appliance that offers real-time data capture on a continuous basis, which simultaneously performs local backups or remote replication via a single data stream. Microsoft is licensing Azure Site Recovery with the Scout technology on a per-virtual or per-physical instance basis.

At its recent TechEd conference in Barcelona, Microsoft introduced some additional capabilities including support for its Azure Automation, a runbook automation service now in
same time, not all are created equal and IT architects need to consider numerous scenarios, requirements and capabilities, warns Enterprise Strategy Group analyst Jason Buffington. “Providers and IT decision makers need to beware of over promising on what disaster recovery means,” Buffington says. “Real disaster recovery—even in the cloud—still means I’ve got to have orchestration, I’ve got to build a sandbox so I can do testing, it means I’ve got to be able to define policies, so the right [VMs] come up in the right order. Based on priority and based on dependencies of those VMs, there’s a lot more to it than, ‘I’m going to make a copy of my VMs and put them someplace else and when something bad happens I’m going to turn them on.’”

Among those large enterprises using Hyper-V Replica to connect to secondary datacenters and the Azure cloud is ABM Industries Inc., the largest United States provider of facility management services ranging from HVAC repair, security and landscape maintenance with 100,000 employees and nearly $5 billion in annual revenues. Andre Garcia, ABM’s assistant vice president of global technology, referred to the disaster recovery scenario during a panel session on Hyper-V migration at the August TechMentor Redmond conference, which, like Redmond magazine is produced by 1105 Media Inc. “Hyper-V Replica is just a feature of Hyper-V that’s on by default—you just have to right-click and tell VMM [Virtual Machine Manager] what the target is for that source,” Garcia said during the panel discussion. “It’s a phenomenal capability,”

Of course, not all organizations need, or can justify the cost, of the RTOs and RPOs of mere minutes and most commonly, it depends on the application and business function. “Where this allows the customer to have private cloud, as well as data backup to a second site, it also means you look at integrating that file-level restore, which we do for Microsoft servers all day long,” Blight says. “So it integrates in with our existing backup and restore and [DRaaS] option, but also specifically on the Cloud OS it gives them a second site to ensure their data is there.”

**DRaaS Considerations**

Indeed, while Microsoft and all of its rivals including Amazon Web Services Inc. (AWS) and VMware Inc., as well as thousands of local and regional managed services providers and hosting operators have similar designs on DRaaS. Whether or not you use all or part of the Microsoft DRaaS or Cloud OS stack, customers have no shortage of options. At the same time, not all are created equal and IT architects need to consider numerous scenarios, requirements and capabilities, warns Enterprise Strategy Group analyst Jason Buffington. “Providers and IT decision makers need to beware of over promising on what disaster recovery means,” Buffington says. “Real disaster recovery—even in the cloud—still means I’ve got to have orchestration, I’ve got to build a sandbox so I can do testing, it means I’ve got to be able to define policies, so the right [VMs] come up in the right order. Based on priority and based on dependencies of those VMs, there’s a lot more to it than, ‘I’m going to make a copy of my VMs and put them someplace else and when something bad happens I’m going to turn them on.’”

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There’s no shortage of those who have stepped up their DRaaS offerings and market presence this year. Among them in various stated of delivering new DRaaS capabilities are Acronis International GmbH, ArcServe (spun off from CA Technologies), Asigra Inc., Axcient Inc., Dell Inc. (AppAssure), Hewlett-Packard Co. (via its Helion cloud platform), Nasuni Corp., Symantec Corp., Vision Solutions Inc., Unitrends, Veeam Software and Zerto, while CommVault is said to have new DRaaS capabilities in the works.

“Hyper-V Replica definitely has a place for the lower tier workloads,” says Tim Laplante, a senior product director at Vision Solutions Inc., supplier of DoubleTake. “But where you need true high availability or you need to replicate it to something other than Hyper-V, you’re going to need to solve a situation like ours, where you need the real time and the flexibility from a target perspective.”

Laplante points to Peak 10 as a provider that subscribes to that model. Peak 10’s Blight says while using Hyper-V Replica is suitable in certain scenarios is suitable, in others he sees the need for third-party solutions, notably Double Take and Zerto. “The customer who needs DoubleTake requires real-time replication,” Blight says. In cases where CDP is necessary, Peak 10 has also been working with Zerto, whose namesake software has long-offered that capability for VMware environments and last month gained Hyper-V support.

Many providers of backup software are making big pushes into DRaaS. Veeam, the rapidly growing provider of VM backup and disaster recovery software for midsize organizations, in October kicked off a major push into DRaaS, adding a component to its newly branded suite called Veeam Backup and Replication v8. A key new component in its new release, Cloud Connect, offers an interface that lets users search a network of partner cloud providers and MSPs. The initial Cloud Connect supports just backup and recovery. Next year providers will also be able to deliver DRaaS using Cloud Connect.

“We believe that next year will be the year where disaster in the cloud will start to become mainstream,” says Veeam CEO Ratmir Timashev, “and we will be one of the driving forces for that, because we have a better license base and we provide this very easy out-of-the-box experience for end customers and for our service providers.”

The MSP Azure Connection

Veeam is also enabling its MSP partners to use the back-end services of Azure. The company has made Cloud Connect available in the new Azure Marketplace (see Redmond Report, p. 4). “Veeam cloud providers who want to offer Veeam Cloud Connect can leverage Azure to provide the underlying core infrastructure—network, compute and storage in the form of VMs,” says Rick Vanover, a Veeam product strategy specialist. Selecting the Veeam Cloud Connect option in the Azure Marketplace will let that Veeam partner run the Cloud Connect infrastructure in Azure.

Unlike Veeam, Unitrends operates its own cloud and argues it offers higher service levels than what’s available by larger cloud services like Amazon EC2/S3 and Azure. In addition to integrating its on-premises appliance with its cloud, Unitrends offers its own DRaaS and touts a tool called Reliable DR, which offers governance and compliance auditing. The company says its DRaaS has grown 180 percent this year to hundreds of customers. “They have the advantage of our software to build out similar services that we have,” says Ubo Guha, Unitrends vice president of product management. Unitrends is still considering whether to forge ties with Azure, Amazon or another major cloud network.

Not all DRaaS providers see the benefits of using a larger cloud provider. “Public clouds are generally not purpose built, so they’re good at many things, not great at any one application layer,” says Justin Moore, CEO of Axcient, which provides a turnkey replication appliance and runs its own multi-petabyte cloud for DRaaS. “If you think of disaster recovery as a service, it’s more of an application layer offering than it is an infrastructure.”

The City of Williamsburg in Virginia is among those who have deployed a DRaaS solution using the Axcient service, where it backs up 10TB of data including its Novell GroupWise server, SQL Server databases and file systems, all running on 22 servers tied to VMware-based VMs. The replication is performed overnight, meaning in a worst-case scenario, the city’s data would be 24 hours old. “We’re pretty small so that’s a pretty good recovery time objective,” says the city’s IT manager Mark Barham. “I could knock it down to 30 minutes if I wanted to.”

The Outdoor Group LLC, which supplies sporting goods gear—mainly high-end archery equipment—has started using the Veeam Cloud Connect tool through DR provider Offsite Data Sync to replicate its Exchange e-mail system, SQL Server databases, and various application servers. “If we lose that information we’re basically starting over from scratch,” says IT Director Jim Klossner.

TBG Partners, a landscape architecture firm uses Nasuni’s replication service. With the Nasuni appliances, CTO Greg Nichols says his company can replicate large CAD files that could be gigabytes in size each. Nasuni offers customers a choice of AWS or Azure to host their backed-up data. Nichols says data is backed up more frequently for the firm’s architects. “Having it backed up every five minutes is great for our users, because they literally don’t lose anything,” he says.

Buyer Beware

Gartner Inc. analyst Pushan Rinnen warns customers that Backup as a Service shouldn’t be confused with DRaaS, even as many of the same companies offer both. “Disaster recovery involves not just the bits of the data, a copy of the storage part, but a lot of the business processes in the servers, applications and the consistency of the data,” she says. “It’s a lot more complex than backup.”

If you’re not using DRaaS yet, you’re not alone. Many of these services are in their evolutionary state, Rinnen says. “We are definitely seeing more implementations of Disaster Recovery as a Service,” she says. “But we’re still very early at the beginning stage.”

Jeffrey Schwarz is editor of Redmond.
Top 10 Free Tools for System Administrators

Track changes to Active Directory, Exchange, file servers, manage passwords and troubleshoot account lockouts at absolutely no cost.

The following freeware tools by Redmond Reader’s Choice Awards winner Netwrix Corporation can save you a lot of time and make your network more efficient – at absolutely no cost. Some of these tools have advanced commercial versions with additional features, but none of them will expire and stop working when you urgently need them.

1. Change Notifier for Active Directory
   (reviewed by Redmond Magazine: http://url2open.com/R1)
   Tracks changes to Active Directory (AD) users, group memberships, OUs, permissions, and provides visibility into what’s happening inside your AD. This freeware tool is a winner of multiple awards from Redmond Magazine and Windows IT Pro Magazine.
   Download link: http://url2open.com/r1

2. Change Notifier for Group Policy
   Tracks every change made to your group policy objects (GPOs), including GPO links, audit policy, password policy, and software deployment changes, and fills major gaps found in native auditing tools.
   Download link: http://url2open.com/r2

3. Account Lockout Examiner
   (reviewed by itsmdaily.com: http://url2open.com/R3)
   Alerts on account lockouts, helps troubleshoot these events, and analyzes their potential causes. The accounts can be unlocked via Netwrix Account Lockout Examiner console or mobile device.
   Download link: http://url2open.com/r3

4. Change Notifier for Exchange
   Reports on what’s happening inside your Exchange servers, and tracks both configuration and permission changes with “before” and “after” values.
   Download link: http://url2open.com/r4

5. Password Expiration Notifier
   (reviewed by freedownloadcenter.com: http://url2open.com/R5)
   Automatically reminds your users to change their passwords before they expire so you can avoid password reset calls. It works nicely for users who don’t log on interactively and never receive standard password change reminders at logon time (e.g., VPN users).
   Download link: http://url2open.com/r5

6. Change Notifier for File Servers
   Tracks changes to files and shares permissions, detects deleted and newly-created files, and reports on file-access attempts. This freeware tool strengthens security of your Windows-based file servers.
   Download link: http://url2open.com/r6

7. Password Manager
   Reports on what’s happening inside your Exchange servers, and tracks both configuration and permission changes with “before” and “after” values.
   Download link: http://url2open.com/r7

8. Change Notifier for SQL Server
   Detects changes made to your SQL Server configurations, including database creation and deletion, changes to database users, roles, and schemas. It also reports “before” and “after” values for every change, and sends daily reports showing all changes made.
   Download link: http://url2open.com/r8

9. Change Notifier for VMware
   Allows you to control changes in your virtual environments. It notifies you about changes to VMware virtual machine settings, creation and deletion of virtual machines. It also reports “before” and “after” values for every change, and sends daily reports showing all changes made in the last 24 hours.
   Download link: http://url2open.com/r9

10. Change Notifier for Windows Server
    Alerts you about changes made to your Windows Server configurations, including installed software and hardware, services and scheduled tasks. It sends change summary reports listing changes made in the last 24 hours with “before” and “after” values.
    Download link: http://url2open.com/r10

John Bagley
Award-winning professional writer and independent consultant
Although many small and midsize businesses run their workloads on virtualized servers, they haven’t been able to take advantage of the fault tolerant capabilities of virtualization such as failover clustering. The licensing and hardware costs and technical complexity involved in building a clustered Hyper-V deployment tend to put failover clustering out of reach for smaller organizations. Fortunately, Hyper-V offers a replica feature that’s well suited for helping smaller organizations improve their disaster readiness.

Appropriately called Hyper-V Replica, Microsoft introduced it with Windows Server 2012 R2 and upgraded it in the subsequent release. While it provides replication designed to ensure business continuity, Hyper-V Replica is not a substitute for failover clustering. If your organization has the budget to build a clustered Hyper-V deployment, you should definitely do so. Although there are similarities between replication and failover clustering, failover clustering is the preferred method for protecting your virtual machines (VMs).

Of course, that isn’t to say the Hyper-V Replica feature is inadequate—quite the contrary. I use Hyper-V Replica to protect my own VMs. I recommend the use of failover clustering whenever possible because a failover cluster’s job is to make sure critical workloads never go offline. Replication won’t guarantee that your VMs stay running in the event of a disaster, but it will give you at least one “spare copy” of your VMs, which you can launch at a moment’s notice.

The Hyper-V Replica feature is based on the idea of asynchronously replicating a virtual disk from a primary site to a replica site. Although Microsoft refers to the source and target in terms of sites, it’s important not to confuse the concept with Active Directory sites or geographic sites. In my own organization, for instance, my primary and replica “sites” exist within the same rack and on the same network segment.

The replication process occurs at the virtual hard disk level on an asynchronous basis. Once the initial copy process has been completed, replication occurs on a scheduled basis. In the version of Hyper-V Replica delivered with Windows Server 2012 R2, it’s now possible for administrators to adjust the replication frequency. Replication can be scheduled to occur at 30-second, five-minute or 15-minute intervals. Intervals of 30 seconds do the best job of keeping the replica up-to-date, but aren’t always appropriate. If the primary server is heavily utilized or if there’s a slow link between the primary and the replica servers, then a longer duration replication frequency might work better.

Another improvement is the addition of Hyper-V Extended Replication. Extended Replication allows for the creation of a secondary replica. The most common use for this feature involves placing one replica within the local datacenter (so that it’s easily accessible) and placing the secondary replica in a remote location (so that it’s protected against datacenter-level disasters).
Planning Considerations

First, the server that will store your replica doesn’t need to be 100 percent identical to your source server, but it needs to be capable of hosting your VMs if necessary. As such, you’ll need to make sure the replica server has adequate hardware resources to ensure a good UX in the event that it ever has to be put into use.

Another important consideration is the authentication type that’s used by the replication process. By default the replication process is based around the use of Kerberos and the HTTP protocol. If you require encryption, however, you might be better off using certificate-based authentication, which is based on HTTPS.

You’ll also need to consider the initial synchronization process. Normally, you should be able to perform the initial synchronization process across the network. In the case of excessively large VMs, you’re often better off using removable media to create the initial replica.

In addition, you’ll need to consider other aspects of the replication process, such as the most appropriate frequency and whether you’ll require extended replication.

Enabling Hyper-V Replication

The process of enabling Hyper-V replication involves performing various tasks on both the source server (the primary site) and the destination server (the replica site). Incidentally, the focus here is on Hyper-V replication in terms of a source server and a destination server, but you can replicate a VM to or from a cluster, or even between clusters so long as the Replication Broker is installed.

The destination server must be configured first. Open the Hyper-V Manager, select the listing for the destination host server and then click on the Hyper-V Settings dialog box, found in the Actions pane. When the Host Server Settings dialog box opens, select the Replica Configuration container (see Figure 1).

Next, select the Enable this Computer as a Replica Server checkbox. You’ll also need to select the type of authentication you want to use: allowing replication from any authorized server or specifying a list of Hyper-V servers from which you want to allow replication. Finally, click the Browse button and specify the location where you want to store the VMs. Click OK to complete the process. You might receive a warning message saying you need to configure your firewall to allow replication traffic.

The next thing you need to do is to open the Hyper-V Manager on the source server. Next, right click on the VM you want to replicate and select the Enable Replication command from the shortcut menu. You can replicate multiple VMs, but you’ll need to enable replication separately for each VM.

At this point, Windows will launch the Enable Replication Wizard. Click Next to bypass the wizard’s Welcome screen and you’ll see a screen prompting you to enter the name of the replica server. Enter your destination server’s name and click Next. When prompted to enter an authentication type, make sure to specify the same authentication method you used on the destination server and click Next.

You’ll be asked if you want to compress the data sent across the network. Compression reduces bandwidth consumption, but slightly increases CPU utilization. It’s usually a good idea to use compression. Make your selection and click Next.

The next screen you’ll see asks you to specify the virtual hard disks you want to replicate. Remember, replication
works on a per-virtual hard disk (not a per-VM) basis. Click Next and you'll be asked to specify your replication frequency. After doing so, click Next.

The following screen asks you to choose the number of recovery points you want to store for the VM. Creating recovery points allows you to revert the replica to an earlier point in time. Windows Server 2012 R2 allows up to 24 hours’ worth of recovery points to be maintained (the previous limit was 15 hours). It’s worth noting that the replica’s storage requirements increase as you add recovery points.

Click Next and you'll be prompted to select the method you want to use for the initial synchronization process. After doing so, click Next. Assuming you’re synchronizing across the network, you’ll be asked when you’d like the replication process to begin. Make your selection and click Next. You should now see a summary screen displaying the replication options you’ve chosen. Take a moment to make sure everything is correct and click Finish. When you do, the VM Status should change to Initial Replication.

**Replica Failover**

As previously noted, replicas exist for disaster recovery purposes. As such, you can perform a planned failover or an unplanned failover. You can also perform a test failover.

A planned failover is useful in situations in which you need to take the primary host offline for maintenance. To do a planned failover, however, you need to first power down the VMs being replicated.

To perform a planned failover, right-click on the VM and select the Replication | Planned Failover commands from the shortcut menu. You’ll see the dialog box in Figure 2 (p. 15). You can complete the failover by simply clicking on the Fail Over button. However, it’s usually a good idea to select the Reverse the Replication Direction After Failover checkbox first. This checkbox causes the source VM to become the replica and the replica to become the primary.

You can safely perform a planned failover at any time. An unplanned failover should only be performed in the event that your primary VM has suffered a catastrophic failure. The reason for this is that an unplanned failover does not perform a synchronization as part of the failover process. Consequently, any data not already synchronized will be lost. The amount of data lost depends on the length of your replication cycle and the volume of data that was added to the primary VM since the last successful replication cycle.

To perform an unplanned failover, open the Hyper-V Manager on the server that contains your VM replica. Right-click on the replica and select the Replication | Failover commands from the shortcut menu (see Figure 3). Next, choose the recovery point that you want to use for the failover and then click the Failover button.

It’s a good idea to perform a test failover. A test failover doesn’t actually result in a failover. Instead, the process creates a brand-new test VM. This test VM lacks network connectivity, so it can be safely powered on and tested. There’s a VM named Mirage-Test (see Figure 4), which is a test VM.

You can perform a test failover by going to the replica server, right-clicking on the VM, and selecting the Replication | Test Failover commands from the shortcut menu. Upon doing so, you’ll be asked to select the recovery point you want to test. Make your selection and click the Test Failover button.

When you’re done with your tests, right-click on the destination VM (not the test VM) and select the Replication | Stop Test Failover commands from the shortcut menu. This will cause the test VM to be deleted and everything will be put back to normal.

**Replica Resynchronization**

If you’re going to use the replication feature, I strongly recommend enabling the automatic resynchronization of replicas. Replicas occasionally fall out of sync, and the resynchronization feature can fix the problem whenever necessary. You can access this feature by right-clicking on your VM and selecting the Settings command from the shortcut menu. When the Settings dialog box appears, expand the Replication container to reveal the Resynchronization container. You can choose to manually resynchronize, automatically resynchronize or automatically resynchronize during a scheduled time.

The Hyper-V replica feature is relatively easy to use, but there are loads of features not covered here, which you should explore.

Brien M. Posey is a seven-time Microsoft MVP with more than two decades of IT experience. He's written thousands of articles and several dozen books on a wide variety of IT topics. Visit his Web site at brienposey.com.
Learn:

- Answers to common questions about backup and recovery.
- Ten tips for easier backup and recovery.
- How to address the modern data protection challenges caused by virtualization, the cloud and data growth.
If Microsoft’s Hyper-V Replica doesn’t meet your service-level requirements, there’s no shortage of providers of software, hardware and appliances that suppliers are making available for cloud-based Disaster Recovery as a Service (DRaaS). Many are offered as appliances, others as pure software and services solutions.

Some suppliers run their own cloud services, others are in the process of enabling partner networks of local and regional managed services and hosting providers to deliver those services. A number now also offer the option to use both local services providers and large ones such as Amazon Web Services (AWS) and Microsoft Azure. Others are still looking into doing so. Here are seven providers that have recently updated their offerings:

**DRaaS Coming to Veeam Availability Suite in 2015 via Cloud Connect**

The newly released Veeam Software Data Availability Suite v8 looks to enable customers who have used its virtual machine-focused backup and recovery software to implement disaster and recovery capabilities via secondary datacenters or using a cloud services provider. CEO Ratmir Timashev says that Veeam is on pace to post $500 million in booked revenue (non GAAP) this year and is aiming to double that to $1 billion by 2018. To get there, Timashev sees the growing DRaaS business as a key catalyst of that growth.

Timashev says Veeam can reach those fast-growth goals without deviating from its core mission of protecting virtual datacenters. The new Data Availability Suite v8 incorporates the company’s new Cloud Connect interface that will let customers choose from a growing network of partners that are building cloud-based and hosted backup and disaster recovery services.

Released last month, the Cloud Connect component initially only supports backup and recovery with DRaaS replication promised early next year, Timashev says. “From the user perspective, they are just going to see in the interface, ‘Do you want to also backup up to cloud?’ and then they can select, ‘Yes,’ and then they can go directly to our Web site for the services provider they want to use. We have a simple registration and certification process for them to become a services provider who is using the Cloud Connect. So customers will be able to select in different countries the services providers in their cities.” Because Veeam Cloud Connect just became available, the company has only formally announced a handful of providers offering the service. They Include Cirrity LLC, iLand, NewCloud Networks, OffsiteDataSync and Phoenix NAP. Veeam says it aims to have 1,500 services providers available in the coming year.

The new v8 suite offers a bevy of other features including what it calls “Explorers” that can now protect Microsoft Active Directory and SQL Server, and provides extended support for Exchange Server and SharePoint. Also added is extended WAN acceleration introduced in the last release to cover replication and a feature called Backup IO, which adds intelligent load balancing.

**Unitrends New Offering Links Appliances and Cloud Service**

The new Unitrends DRaaS offering uses the company’s own cloud network, which it believes offers higher service levels than larger cloud services providers such as AWS Inc., Microsoft and Google. Though the company hasn’t ruled out partnering with such players or others in the future for certain capability, the DRaaS offering lets customers use its appliances to conduct on-site backups of servers and virtual machines (VMs) and utilize its continuous data replication technology for data, systems and applications to the company’s No Limits Cloud service, which the company says offers 24x7 telephone services and the use of its newly acquired optional Reliable DR disaster recovery testing tool to meet compliance and governance requirements.

Either live VMs or physical servers are spun up in real time to the cloud, providing recovery of those systems in the event of unplanned downtime or a disaster. On-premises appliances range in configuration from 1TB to 97TB and the company also offers software-based virtual appliances for instant recovery of both physical and VMs.

“We take it one step further and provide what we call deep virtualization, meaning we can go into the application that
sits on the virtual machine,” says Ubo Guha, Unitrends vice president of product management. “There may be an application like Exchange or custom apps that need to have a lot more deeper management of the operating system, the application, and you might want to adjust things.”

**Vision Solutions Adds DRaaS to DoubleTake**
The new DoubleTake 7.1, released last month from Vision Solutions Inc., dons a number of improved migration and high-availability features, but also provides disaster recovery for Windows hybrid cloud environments. It’s suited for DRaaS, thanks to a new metered usage feature available for cloud and managed services providers deploying the product. DoubleTake 7.1 is also now fully API-enabled and designed with full server data replication and is container-based rather than volume-based. It supports the new Microsoft virtual hard drive format VHDX and its Volume Shadow Copy Service (VSS), says Tim Laplante, director of product strategy at Vision Solutions.

“This provides more granular level of control and gives you that near CDP [continuous data protection], which is nice because it gives you the best of both worlds,” Laplante says. “If there’s a disaster and you need to execute your DR plan, it gives you the option at that point to say, ‘Do I need to go back to that exact point in time, or do I need to go back to 15 minutes ago because it was really just a virus or data corruption that happened, so I need to step back for a couple of minutes to the point that happened before then?’”

Besides the metered usage, it’s suited for DRaaS in that the DoubleTake 7.1 repository can replicate both physical machines and VMs on-premises to another datacenter, private cloud or public cloud. Likewise, recovery service can be anywhere in the physical, virtual and cloud mix, as well. Administrators can specify discrete repository server targets, so customers know exactly where a specific system and data is, which should appeal to those who have sovereignty requirements. “It’s not that your data is in multiple zones,” Laplante says. “You know exactly where that data is when you need it for compliance purposes.”

With the new disaster recovery feature in DoubleTake, LaPlante says Vision Solutions will step up working with services providers to offer DRaaS. “It’s a huge piece of where that data is when you need it for compliance purposes.”

**Zerto Virtual Replication Now Supports Hyper-V**
Zerto, a 4-year-old company with headquarters in Israel and the United States that provides disaster recovery and replication software, until now has a following among VMware Inc. shops. The company has recently entered the Hyper-V world. The Zerto Virtual Replication now supports replication of Hyper-V hypervisors to other Hyper-V targets, as well as to vSphere and vice versa.

In short, the company says its CDP-based replication tool is now hypervisor-agnostic. Gil Levonai, the company’s president of marketing, says its software offers recovery point objectives (RPOs) of seconds, and said it can provide consistent recovery of multiple VM applications. It doesn’t use snapshots, just CDP, automatically orchestrates disaster recovery processes ensuring the consistency of applications and data, and generates reports.

“We took real hard enterprise-class replications from storage and moved it into the hypervisor,” Levonai says. “You don’t have to worry about where the VM is and you don’t care about where the data is. You can move it between storage. We are agnostic to storage because we are replicating virtual objects, which can be VMs or volumes.”

**Dell Combines Backup and DRaaS in New AppAssure Suite**
Dell Inc. was one of the earliest players to offer DRaaS to enterprises and earlier this year said it has more than 1,000 managed services providers (MSPs) offering its AppAssure replication software. The latest release, AppAssure 5.4, offers multi-target and multi-hop replication, which the company claims makes it suited for multi-tier disaster recovery.

AppAssure 5.4 also lets customers set multiple data retention policies both for on-premises and off-site cloud and MSP facilities. Customers can customize replication schedules for each target, enabling them to throttle when needed and restrict speed in bandwidth-limited situations.

Dell is offering AppAssure as part of a new data protection that includes NetVault Backup and vRanger backup and recovery offerings. The company is also now offering a capacity-licensing model with a range from 1TB going as high as 250TB of data.

**Acronis Enters DRaaS with nScale Deal**
Known for its protection of Windows physical and virtual file server data protection wares, including specialty versions for SharePoint, Exchange, SQL Server and VMware environments, Acronis International GmbH in September jumped into the DRaaS mix with the acquisition of San Francisco-based nScaled.

Acronis says users of its Hosted Backup as a Service offering will be able to use nScale to extend that into a cloud-based disaster recovery offering. The company will enable its partners to offer the nScaled DRaaS offering, which is designed to enable remote and local sites to failover via the cloud to ensure recovery within minutes of an outage.

**Nasuni Adds Azure to DRaaS**
Until recently Nasuni Corp. has relied on AWS as the cloud provider for its DRaaS offering, now the company has added the Microsoft Azure service as an option. Customers can now choose which provider they want their data replicated to, or if they prefer, can use both for contingency.

The latest version of its offering was released this summer. It includes the 6.0 release, which the company says adds file data virtualization that separates file data from storage hardware. It adds global file locking to utilize cloud storage architectures. With it is the new Nasuni Filer NF-100 appliance, the company says service is suited for providing recovery of blocks of data including CAD and BIM files.

Jeffrey Schwartz is editor of Redmond magazine.
The best way to truly protect your data is to have at least three copies of it. First, there’s the original copy—the live data, of course. Next, you need a backup copy of the data that you can quickly and easily restore. The third copy is the alternate backup that resides outside your datacenter.

Once upon a time you could fulfill these requirements by writing a nightly backup to redundant tapes and keep one tape on-site and ship the copy off-site for safe keeping. This tried-and-true backup technique is now outdated. Nightly backups have largely become inadequate. Organizations have come to expect near-real-time data protection. In the scramble to provide top-notch protection in the virtual datacenter, a number of competing solutions have evolved. Even Microsoft provides several different ways of protecting Hyper-V virtual machines (VMs).

At first glance, one of Microsoft’s solutions would seem to be ideal: Hyper-V Extended Replication. If you aren’t familiar with Hyper-V Extended Replication, it’s a feature that was introduced with Windows Server 2012 R2 that allows you to create two separate replicas of a VM. One of these replicas can reside in the local datacenter, while the other can reside outside the datacenter. As such, the Hyper-V Extended Replication feature provides near-real-time protection.
while also meeting the requirements of my three-copy rule. When you consider that Hyper-V replicas can be configured to provide point-in-time rollback capabilities, Hyper-V replicas appears to be an ideal solution.

There’s just one problem with protecting your VMs using Hyper-V Extended Replication. The feature was designed for small and midsize businesses and simply doesn’t scale well enough to make it a viable option for protecting large, enterprise-class organizations. So what’s a company to do?

Enter Microsoft Azure Site Recovery—new disaster recovery feature in Azure that can replicate Hyper-V VMs in a way that can provide better scalability.

While native Hyper-V replication is designed to replicate individual VMs (or even individual virtual hard disks), Azure Site Recovery is focused on private cloud replication. In other words, if you have a System Center Virtual Machine Manager private cloud, you can replicate your Hyper-V VMs to another private cloud that’s running in another datacenter. As an alternative, you can replicate VMs to Azure.

Although enabling protection for VMs involves a little bit of work up front, the process is surprisingly straightforward. The key to making the process work is ensuring the certificates are configured correctly. The certificates are used to positively identify your Virtual Machine Manager server to Azure.

Creating a Self-Signed Certificate

In order to use Azure Site Recovery, you need to generate a certificate. A self-signed certificate will work fine. There are a few different ways of generating the necessary certificate, but Microsoft recommends using a tool found in the Windows SDK for Windows 8.1 called MakeCert.exe (bit.ly/1DrOjTG). The SDK has a lot of different components, but the only component you have to install is the Windows Software Development Kit.

After installing the MakeCert utility, open an elevated command-prompt window and navigate to C:\Program Files (x86)\Windows Kits\8.1\Bin\x64 and run the following command:

```
makecert.exe -r -pe -n CN=AzureBackup -ss my -sr localmachine -eku 1.3.6.1.5.5.7.3.2 -len 2048 -e 01/01/2016 AzureBackup.cer
```

Azure is very picky about the way you create the self-signed certificate. If you deviate from the command here, MakeCert may tell you that you’ve entered too many parameters, or you could end up creating a certificate that Azure won’t accept. Both are common problems you want to avoid, so be sure to correctly type the command.

Importing the Certificate

Now that the self signed certificate has been created, you need to import it into the computer on which Virtual Machine Manager is running. To do so, enter the Microsoft Management Console (MMC) command at the server’s Run prompt. Then, choose the Add/Remove Snap-in command from the shortcut menu. When the list of snap-ins appears, choose the Certificates option and click Add. When prompted, make sure to choose the Computer Account option, and then click Next. After that, choose the Local Computer option and click Finish, followed by OK.

Right-click on the Personal container and select the All Tasks | Import command from the shortcut menu. This will cause Windows to launch the Certificate Import Wizard. Click Next, and then browse to and select the certificate you created earlier. Now, complete the wizard. When you’re prompted to specify the certificate store, be sure to put the certificate in the Personal store.
Exporting the Certificate

Now you need to export the certificate in PFX format. To do so, navigate through the Certificates console tree to Certificates (Local Computer) | Personal | Certificates. Right-click on the certificate and select the All Tasks | Export commands from the shortcut menu. This will cause Windows to launch the Certificate Export Wizard. Click Next and you'll be asked if you want to export the private key. Choose Yes and click Next. Make sure the wizard is set to export the certificate in PFX format and then click Next. On the following screen, you must enter and confirm a password that can be used to encrypt the private key. Click Next and you'll be prompted for a path and filename to use for the exported certificate. Click Next, followed by Finish to complete the process.

Now you need to import the certificate on your Virtual Machine Manager servers. If you only have a single Virtual Machine Manager server and you already imported the certificate on that server, then you can skip this step. Otherwise, open the Certificates console on your Virtual Machine Manager server and import the PFX file you just created.

Create a Site Recovery Vault

The next step in the process is to create a Site Recovery Vault. You'll need to log in to the Azure Management Portal. Now, click New and then click on Data Services | Recovery Services | Recovery Site Vault | Quick Create. You'll need to enter a name for the vault you're creating, and you must specify the region in which the vault is to be created, as shown in Figure 1 (p. 20). Click Create Vault to complete the process.

Now that you've created the vault, it must be configured. Click on the Recovery Services tab and then click on the vault you just created. The first thing you'll need to specify is whether site recovery will occur between a Hyper-V site and Azure, or between two on-premises Hyper-V sites (see Figure 2, p. 21).

Next, click on the Manage Certificates link. When prompted, provide the certificate (the .CER file) that you created earlier. Once the certificate has been uploaded, click on the Get the Vault Key link. Be sure to make a note of the key.

Azure Site Recovery Provider

Now it's time to download the Azure Site Recovery Provider and install it on your Virtual Machine Manager servers. Select the Download Microsoft Azure Site Recovery Provider and Install it on the Virtual Machine Manager servers link. When prompted, save the file to a centrally accessible location. Now, shut down the Virtual
Machine Manager service and then run the executable file on each of your Virtual Machine Manager servers.

When you run the executable file, Windows will display the Microsoft Azure Site Recovery Provider Setup wizard. Click Install to begin the installation process.

After a few seconds, you should see a message telling you that Setup completed successfully. Click Next and you’ll be prompted for your Internet connection settings. Click Next again and you’ll be taken to the Vault Registration screen. You’ll need to select your certificate and then specify your vault and your vault key (see Figure 3, p. 22).

Click Next and you’ll see a prompt asking you if you want to encrypt replicated data. If you allow this option, an encryption certificate will be automatically generated. You’ll have to provide this certificate whenever you fail over VMs. Click Next, followed by Register to complete the process. When the process completes, you should see a message confirming you’ve successfully registered the Virtual Machine Manager server with your vault (see Figure 4, p. 22).

**Protecting a Cloud**

At this point, you’ve created a vault on Azure and associated the vault with Virtual Machine Manager. Usually, the next step in the process is to protect a private cloud. This will vary depending on your goals and whether you’re replicating to Azure Storage or to a private cloud.

To protect a private cloud, you must right-click on the private cloud within the Virtual Machine Manager console (assuming the cloud isn’t already being synchronized) and select the Properties command from the shortcut menu. When the cloud’s properties sheet appears, go to the General tab and select the Send Configuration Data About this Cloud to the Azure Hyper-V Recovery Manager checkbox, and click OK. After doing so, go into Azure, click on your vault, and select the Protected Items tab. You should see your cloud listed in the vault, as shown in Figure 5.

Click on the cloud and select the Configure Protection Settings link. You can now complete the process by answering questions about the protection you want. For instance, you’re initially asked to select a target. This is where you would specify whether you want to replicate the cloud to Virtual Machine Manager or to Azure. After making this selection, you can specify your storage account (if you’re synchronizing to Azure), as well as your copy frequency, recovery point retention period, and the frequency of application consistent snapshots (see Figure 6). Click Save to save your changes.

And that’s it! Replicating a Virtual Machine Manager to the Microsoft cloud using Azure Site Recovery is a fairly straightforward process. The key to making the process work is to generate the certificates correctly.

*Brien M. Posey is a seven-time Microsoft MVP with more than two decades of IT experience. He’s written thousands of articles and several dozen books on a wide variety of IT topics. Visit his Web site at brienposey.com.*
It was a breakout year for Microsoft Azure, and IT pros with skills in the company’s cloud technology are the highest earners in the 19th annual Redmond Salary Survey.

By Jeffrey Schwartz

"The quickest way to improve your financial situation is to change jobs where someone is willing to overpay to get you in that job."

John Reed, Senior Executive Director, Robert Half Technology
starts with people on your team, you need to pay them properly, you need to increase their compensation,” Reed says.

**Women in IT**

With the backdrop of Microsoft CEO Satya Nadella saying women who want to earn more should rely on “karma,” this year’s survey looked at how female readers are faring. Of the 1,450 respondents, only 200—or 14 percent—were women. The number of women who said they were in IT management was 53 (27 percent of the respondents), while 420 were men (29 percent of the sample). The average male salary in IT management was $104,655 compared with $100,392 for females.

Microsoft Azure expertise is by far the most lucrative. Demand for Lync has pushed the average Lync salary up markedly, as well, and Windows PowerShell also saw a respectable boost. After falling last year, the average salary of SharePoint experts has risen, though Office 365 salaries have fallen.

Looking to Change Employers?

The number of respondents looking to change employers doubled in last year’s survey and that figure held firm this year.

Average Salaries Barely Rise

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<th>2012</th>
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Following two years of job growth, overall salaries are essentially flat this year.

Salary by Technology/Job Function

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Salary by Microsoft or Product Expertise

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<thead>
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<th>Microsoft or Product Expertise</th>
<th>2014</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Active Directory</td>
<td>$85,985</td>
<td></td>
</tr>
<tr>
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<td>$87,569</td>
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</tr>
<tr>
<td>Office</td>
<td>$89,764</td>
<td></td>
</tr>
<tr>
<td>Office 365</td>
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<td></td>
</tr>
<tr>
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</tbody>
</table>

Average Salaries Barely Rise

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>$87,360</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td>3.25%</td>
<td>3%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Following two years of job growth, overall salaries are essentially flat this year.

Salary by Technology/Job Function

<table>
<thead>
<tr>
<th>Technology/Job Function</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup and Storage Management</td>
<td>$99,221</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big Data, Analytics, Data Warehousing</td>
<td>$116,529</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloud Computing</td>
<td>$101,400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database Administration</td>
<td>$94,281</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hadoop</td>
<td>$144,643</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardware/Configuration Management</td>
<td>$87,962</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help Desk Support</td>
<td>$82,094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linux</td>
<td>$97,247</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Messaging/E-mail Management</td>
<td>$88,600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility/Device Management</td>
<td>$92,756</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NoSQL</td>
<td>$125,554</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novell</td>
<td>$91,842</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Networking</td>
<td>$85,870</td>
<td></td>
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Looking to Change Employers?

The number of respondents looking to change employers doubled in last year’s survey and that figure held firm this year.
The number of respondents who expected to see more job openings has increased marginally.

Women in IT

The makeup of men to women responding has remained consistent over the years.

Employees Treated Fairly Regardless of Race, Religion or Nationality

Nearly two-thirds reported employees are treated fairly regardless of their faith, race or ethnicity, but there’s also a notable number who said that’s not the case.

Compensation for Women

While two-thirds of respondents said men and women receive equal pay, more than one-quarter believed women make less.

Challenges for Those Laid Off

While only 5 percent were laid off this year, same as last, it has become harder for many of them to find new positions.

Equal Treatment Regardless of Gender

While a majority said men and women are treated equally, a significant percentage indicated varying levels of gender bias.

Women in the IT Organization

The presence of women in IT jobs has increased but there are many shops that are all-male.

Jeffrey Schwartz is editor of Redmond magazine.
As 2014 comes to a close and you start looking toward the coming year, what sorts of challenges can you expect your IT team to encounter? Frankly, you’ll have to contend with quite a few.

A major shift in the way software is delivered will change the way you work—or make your life really, really difficult if you don’t adapt. Some of these challenges are already upon many of you, although they may not have become obvious or painful, yet.

The shift in how software is delivered is changing how you manage your IT environment. For companies like Microsoft, becoming a services provider is where its financial growth is. As customers, you’ve refused to buy every new version of Windows that trots out the door, so Microsoft needed to look elsewhere for ongoing revenue and growth. The company has responded by selling services, and in 2014, reaped huge growth from it. Consequently, Microsoft has made clear it’s only going to do more of it. That means the products Microsoft creates are going to be more cloud-focused, with an emphasis on automation and massive scale.

What’s that mean to you? It means your IT environment is going to become difficult to manage, unless you buy into the “private cloud” management approach. That means you’ll have to have a team capable of building automation into pretty much every back-end function, because doing things manually is going to become more difficult and more time-consuming than ever. “Manual effort” is going to fight the way the products “want” to work, and is going to create more obstacles and bottlenecks. This is a huge shift for many IT teams, and if you’re not already preparing for it, it’s probably going to catch you off-guard in the coming year.

Assembly Required

The “cloud-first engineering” approach Microsoft is now embracing also means it’s going to offer fewer tools and pre-built solutions. Instead, Redmond will focus on building platforms that support broad customization. In other words, instead of shipping you a completely pre-built set of toys, Microsoft will be shipping buckets of LEGO bricks, and you’ll be expected to put those together into your own, unique toys that meet the specific needs of your business.

Again, this is a huge shift for many organizations. You’re used to getting plug-n-play software that more or less works after a bit of minor, point-and-click configuration. Those days are disappearing. With shorter product cycles, Microsoft product teams will focus more on raw functionality, and less on tooling. Instead, it will give us APIs—like Windows PowerShell—that let you create your own workflows and tools. This vision will play out, of course, if you’re ready to do so.

And “ready” means having the right skills. Too many organizations have focused their training efforts on either reducing training, or on skill sets that meet the organization’s current needs.

That focus must change. Your team needs access to future-ready training, meaning they need to have a basic familiarity with a lot of things, and the ability to quickly dive deeper on technologies and approaches that become relevant. Weeklong classroom training is probably going to fade, simply because it can’t keep up with product release cycles anymore.

Look for training options that offer a more on-demand approach, such as the Microsoft Virtual Academy video offerings or other on-demand libraries. More important, learn to start treating those training options as first-class citizens. Create a mini training center where your IT team can retreat for a couple of hours per day to focus on uninterrupted training time. You’ll get more efficient training, at a lower cost, that more precisely meets the business demands of the day.

Brace for Change

All of this simply means that IT, after a decade or so of relatively little “movement,” has become exciting again. Now, “exciting” doesn’t always mean “good.” Exciting can be dangerous, and it can be stressful. But by and large, I’m looking forward to an exciting new IT. I like change, and I like the challenges of bringing that change into business environments. Are you ready for the changes?

Don Jones is a multiple-year recipient of the Microsoft MVP Award, and is an author evangelist for video training company Pluralsight. He’s the president of PowerShell.org, and specializes in the Microsoft business technology platform. Follow him on Twitter: @ConcentratedDon.
Visual Studio Live!'s first stop on its 2015 Code Trip is Las Vegas, situated fittingly near Historic Route 66. Developers, software architects, engineers, and designers will cruise onto the Strip for five days of unbiased and cutting-edge education on the Microsoft Platform. Navigate the .NET Highway with industry experts and Microsoft insiders in 60+ sessions and fun networking events – all designed to make you better at your job.
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System Center Technical Preview: What’s New and What’s Missing

Given the hubbub surrounding the Windows 10 announcements, it can be easy to miss the other two arguably more important releases in this wave: the Windows Server and System Center vNext Technical Previews.

Ignoring for a minute whatever’s new in Windows Server, it’s the System Center update that appears to me most curious. Dig around the Web for details on what’s new in the System Center Technical Preview, and more often than not you’ll instead find details of what’s missing.

That early focus on what’s not in vNext should be concerning for those who’ve drunk the System Center Kool-Aid. Considering the scope of what won’t be around in this next release, smart IT shops might start preparing now for a reasonable amount of management platform retooling.

First on the chopping block is App Controller. This tiny Silverlight application has always seemed to be more promise than delivery throughout its short lifecycle. I’ve often suggested, only partially in jest, “Pay careful attention to App Controller, because there’s less there than you’d think.”

With App Controller, I found myself routinely seeking self-service functionality that simply didn’t exist. It could indeed deploy System Center Virtual Machine Manager Service Templates and manage Microsoft Azure virtual machines (VMs), but I rarely found the advanced functionality I desired to elevate that experience into real-world applicability.

App Controller in the System Center vNext Technical Preview is replaced by Windows Azure Pack, which is at the same time more fully featured and far more complex in both installation and management. I suspect my old buddies Yung Chou (bit.ly/1whvFxN) and Keith Mayer (bit.ly/1nTZvqh), both Microsoft evangelists on this technology, have their work cut out for them in socializing the impending preeminence of Azure Pack.

Also eliminated is a technology I’ve routinely referred to as “The Worst-Named Product in Microsoft History”: Server App-V.

Server App-V is and was tough to get excited about. Imagine an app virtualization solution—without any app virtualization—that required a different packager and only delivered its goods through Virtual Machine Manager Service Template deployments. As a trainer I’ve had a hard time convincing people to use Virtual Machine Manager Service Templates. I’ve rarely succeeded in adding Server App-V packages over the top.

Server App-V suffered also from a bit of naming schizophrenia. Just try entering the string “server app-v” in your favorite search engine. You’ll find thousands of near-misses related to App-V: similar name, similar functionality, but a functionally dissimilar product. It can make you want to bang your head on a table.

One bit of good news, if I understood the Microsoft “Features Removed” document (bit.ly/1lwhwaYE), is that Microsoft has replaced Server App-V with something called “Migrate workloads to virtualized platforms using templates.” I believe (hope) this refers to improvements in the creation and use of Virtual Machine Manager Service Templates.

The Virtual Machine Manager Service Template Designer and Application Profile wizards get better with each release, but they still suffer from much-needed functionality. I can only hope this release investment goes into plugging those holes, because just a little work here can make the Virtual Machine Manager Service Template experience truly outstanding.

For the other retired products, I breathe a sigh of relief. I’d feared their previous inclusion signaled Microsoft investment in areas best left for third parties. These are things such as management pack creation with Microsoft Visio, governance support in Service Manager, and the Cloud Services Process Pack, the last of these being a ridiculously complex System Center overlay that few people implemented, yet somehow became part of Microsoft Official Curriculum.

Most notable among the missing, however, is a System Center Configuration Manager Technical Preview. The next Configuration Manager update is currently scheduled for early 2015 and, according to the System Center Configuration Manager Team Blog, “will deliver full support for client deployment, upgrade, and management of Windows 10 and associated updates.” That same blog further reports Configuration Manager vNext, “will also support the evolving servicing model covered [in the next] Windows Server.”

The good news is that Configuration Manager appears to stay for another release wave. Its extra time in the oven suggests some possible grander changes over the longer term. I’ll be keeping an eye on it, and most particularly how it and Microsoft InTune are positioned. You should, too.

Greg Shields is an author evangelist with Pluralsight. Follow him on Twitter: @ConcentrateGreg.
Extend Active Directory to the Cloud with Okta

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For most companies, Microsoft Active Directory (AD) plays the central role in coordinating identity and access management policies. AD typically serves as a "source of truth" for user identities, and it provides access control to on-premises resources such as networks, file servers, and web applications. A byproduct of the transition to cloud applications is the proliferation of separate user stores as each cloud application typically is rolled out independently and therefore has its own unique database of user credentials.

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Visit Okta.com/Free for Okta Cloud Connect
As the end of 2014 approaches, choosing the most impactful changes at Microsoft this year was perhaps the most difficult to compile in the many decades I’ve followed the software giant. The reason: There were so many big twists and turns in Redmond this year, ranging from the appointment of Satya Nadella as CEO and the resignation of Steve Ballmer from the Microsoft board, to the company’s biggest layoff in its history.

But it’s the less-obvious changes—the ones that are the result of slowly percolating, less-notable-at-the-time launches and releases—that end up becoming major forces.

In compiling my top-five list for 2014, I was most struck by events on the Microsoft timeline that were the culminations of months or years of previous work. That said, here’s what I consider the five Microsoft watershed moments of 2014:

1. Microsoft is now officially a “productivity and platforms” company. While many of my Microsoft-watching colleagues considered CEO Nadella’s rebranding of Microsoft from a devices and services company to a productivity and platforms company nothing but spin, I disagree. Nadella made clear that while Microsoft will continue to make some hardware, the company is done trying to be Apple. Instead, the company will focus on its core strengths, specifically software and services. And it will release those software and services for all leading platforms, not just Windows.

2. It’s back to the future for Windows. Windows 8 was too much of a change too soon for the majority of Microsoft hardware partners and customers. This year, the unified Operating Systems Group at the company showed they understood this and took corrective steps to do what’s best for the 1.5 billion Windows users. With Windows 8.1, and even more so with the Windows 10 Technical Preview, touch is still supported, but the mouse and keyboard are no longer second-class citizens. The OS team has further welcomed tweaks up its sleeve.

3. Subscriptions are the way forward. When Microsoft launched Office 365 for consumers in the form of Office 365 Home Premium in 2013, many were skeptical as to whether users would find “renting” software rather than buying it outright plausible. At last count, Microsoft says there are 7 million Office 365 Home and Personal subscribers across all mobile platforms—Windows, iOS and Android. And along with Microsoft Azure and CRM Online, the other two pieces described as the Microsoft “cloud” platform, subscriptions are an inseparable part of the package.

4. Bing-related back-end services get exposed publicly. Last year, Microsoft execs trumpeted Bing as more than just a distant-second-place Web search engine. It’s a development platform, too. This year, without the trumpets, Microsoft began to expose to its customers and developers a number of new cloud services with Bing connections. This includes the Azure machine-learning service, available in preview; the Office Graph service powering Delve search; the Intelligent Systems Internet of Things service, also in preview; and the recently released Microsoft Health service for use with the new Microsoft fitness band. Nadella’s claim that Microsoft can’t sell off Bing because it’s integrated into more and more of its core products finally has teeth.

5. Voice is the next big frontier for Microsoft. Despite the lukewarm reception received by the touch-first Windows 8 OS, Microsoft is still racing to be first to find alternatives to the mouse and keyboard that might take hold. Voice input is that next big bet. The growing list of Microsoft voice-input investments include Cortana, its personal assistant built into Windows Phone 8.1 (and, soon, Windows 10); Kinect for Windows; the new Skype Qik video chat app/service; and the Skype Translator real-time-language translation technology set to go to preview this month.

That’s my top-five list of changes at Microsoft in 2014. What’s yours?

Mary Jo Foley is editor of the ZDNet All About Microsoft blog and has covered Microsoft for more than two decades. She’s the author of “Microsoft 2.0” (John Wiley & Sons, 2008), which examines what’s next for Microsoft in the post-Gates era.
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