

## CHAPTER 1



# Office 365: Moving to the Cloud

We plan and design for change. After it happens, we plan for the next change. What drives change? With information technology there are many factors—lower cost of equipment, better computing power, greater bandwidth, new software, and so on.

Office 365 is a cloud solution that is having a significant impact on information technology and its role in business. Office 365 represents change—change from the way we used to work to a new way of working. Its proven benefits include lowering the cost of IT services and enabling higher user productivity. Most of us would agree that Office 365 and cloud computing are helping to make our organizations more efficient and more profitable.

The profit factor is a universal driving force for business. Profit generation also drives the information technology function to become more efficient. When times are good, organizations have more resources and there is less pressure on the IT function to become more efficient. However, when a downturn in business happens, IT is frequently the first to suffer budgets cut. The only option is to become more efficient in the use of resources. IT people, whether staff or contractors, are often viewed as “the first to be cut, and the last ones around to turn off the lights.”

Small businesses are particularly sensitive to change. Most do not have the capital to handle long downturns, and many look at IT as an “optional” expense. To combat this perception, many IT partner programs (like the Microsoft Partner network made up of hundreds of independent IT service providers) encourage their partners to become trusted business advisors as well as IT experts. The clear objective is to change the business owner’s view of IT from an optional expenditure to an essential investment.

The challenge for IT professionals, whether they are staff or contractors, is to evaluate the business processes and technologies available and apply those that improve business efficiency. Cloud computing is one technology that can make a big difference quickly. Why Office 365? There are three reasons why Office 365 is the choice for businesses.

1. You do not assign your intellectual property rights to a third party to use their cloud service.
2. It is what you know—Microsoft Office.
3. Microsoft cloud services reduce operating costs and increase worker productivity.

This book addresses these issues. It also outlines a host of business efficiency opportunities that are to be realized with cloud computing and demonstrates how to make this happen. This book is a collection of our Best Known Methods (BKM) and processes. We want to provide you with the knowledge and tools necessary so you can move your business to the cloud using Microsoft Office 365.

## Office 365: The New Cloud Challenge

When commercial cloud services were introduced more than 10 years ago, initial prices were high. Products were, admittedly, not mature and robust. This is the case with most innovations. Customer feedback was mixed and there were issues with how services were delivered and what customers really needed or wanted. In the early days of cloud services, internet connections were slow (~56Kbits to 1.2Mbits); today, internet connections are extremely fast

(100Mbps), which leads to a better user experience. Looking at today’s environment, there is a lot of opportunity to fine-tune product services to meet the needs of small businesses in particular. The opportunities for small businesses include the ability to improve worker productivity and reduce (and control) IT operations costs. With this in mind, this book will use examples of integrated cloud migration solutions that we at KAMIND (IT cloud consultants and provider of services for Office 365) have engaged for this tier of user.

Like other companies, over the years Microsoft<sup>†</sup> has developed an increasingly more complete set of services for businesses—from small (less than 250) to large enterprises with a scalable solution offering. The current Microsoft cloud solutions have evolved from the Microsoft on-premises offerings for the 2007–2013 class of server and application products and Hotmail cloud services offering. Microsoft’s first commercial service was Microsoft’s Online Services (2007–2010), known as the Business Productivity Online Services (BPOS) which included Exchange<sup>†</sup>, SharePoint<sup>†</sup>, Office Communicator<sup>†</sup>, and Live Meeting<sup>†</sup>.

In February 2013, Microsoft deployed Office 365 Wave 15, the third generation of online services. This generation of Office 365 supports client desktop software for PC (Office Professional Plus) and Macs (Mac Office 2011 and later). It also allows installation of desktop software on five devices per user. This is the New Office 365<sup>†</sup> (see Figure 1-1).

**Office 365 Feature Comparison**

	Exchange Online Plans			Office 365 Plans							
	Kiosk	Plan 1	Plan 2	Small Businesses (P)	Midsize Businesses (M1)	Enterprise Businesses (E1, E3, E4)		Kiosk (K1, K2)			
	\$2 (per user/ per month)	\$4 (per user/ per month)	\$8 (per user/ per month)	\$6 (per user/ per month)	\$15 (per user/ per month)	\$8 (per user/ per month)	\$20 (per user/ per month)	\$22 (per user/ per month)	\$4 (per user/ per month)	\$8 (per user/ per month)	
Anywhere Access, Compatibility, & Security	Each user receives an email account, individual calendar, and contact list	●	●	●	●	●	●	●	●	●	
	Send and receive email from a custom domain	●	●	●	●	●	●	●	●	●	
	Web browser access to Outlook Web App for email, calendar and contacts	●	●	●	●	●	●	●	●	●	
	Access to email, calendar, and contacts from phones capable of receiving email	●	●	●	●	●	●	●	●	●	
	Connect to Microsoft Outlook 2007 and newer versions of Outlook		●	●	●	●	●	●	●		
	25 MB maximum attachment size	●	●	●	●	●	●	●	●	●	
	Premium anti-spam and antivirus filtering	●	●	●	●	●	●	●	●	●	
Storage & Support	Configurable anti-spam filtering	●	●	●	●	●	●	●	●	●	
	Legal hold capabilities for deleted and edited mail			●			●	●			
	Email storage per user	1 GB	25 GB	unlimited	25 GB	25 GB	25 GB	unlimited	unlimited	1 GB	1 GB
	Microsoft community support (online)	●	●	●	●	●	●	●	●	●	●
Live 24 x 7 IT customer phone support	●	●	●		●	●	●	●	●	●	





Figure 1-1. Office 365 feature set (courtesy of Microsoft)

## Customer Segments

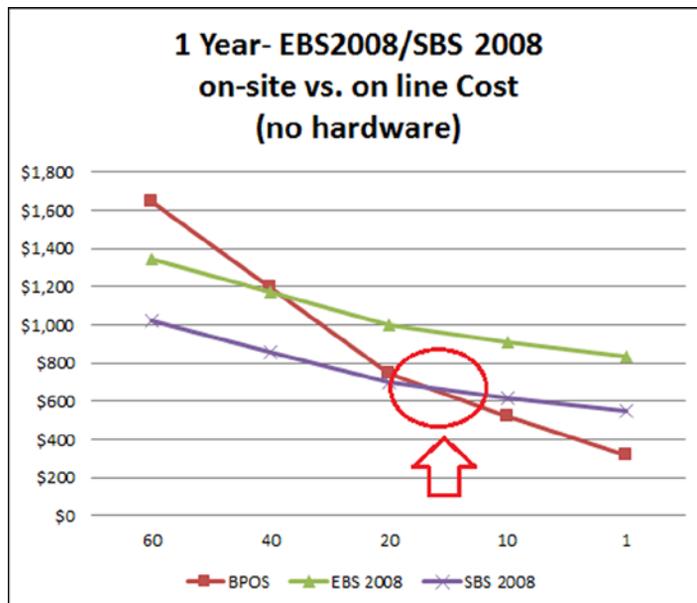
When KAMIND migrates customers with fewer than 250 users, our approach differs based on workforce size. We have developed distinct service packages for businesses smaller than 25 end users (be they employees, contractors, or others in the network), 26–75 end users, and 75–250 end users. This helps maintain focus on one of the main deciding

factors for small business—cost. It also accommodates growth trajectory, allowing small companies to start small and invest more in cloud IT services only when the return on investment justifies it. These are considerations that KAMIND customers tell us are key to their decision making. Enterprise customers, those with more than 250 users, have different requirements than the smaller clusters, but the needs are very much the same—to reduce ongoing operation costs.

Developing affordable, flexible, powerful cloud solutions has involved a number of interim approaches. Knowing the evolution of today's IT landscape provides some insight into the current tools available from the major suppliers. For example, prior to 2013, Microsoft served the less-than-75-end-users market with Microsoft Small Business server. Enterprises with more than 75 end users tended to use Microsoft traditional server products such as Windows Server<sup>†</sup> 2008R2 and 2012. For a short period between 2008 and 2010 Microsoft offered the Essential Business Server<sup>†</sup> (EBS) product family, which was not a good fit for the 75-350 end user market. EBS was designed to provide a graceful path between Small Business Servers (SBS) and traditional Microsoft server products. An EBS Version 2 was under development until it was canceled on March 4, 2010.

The EBS server product offering was one of the first solutions that addressed both on-premises and cloud integration of cloud computing. Its cancellation was a precursor to a change that would be introduced by Office 365. The EBS solution was a three-server solution. It was designed for virtualization and integration of all SBS product features, with remote access and the management tools of System Center essentials. When EBS was aborted, Microsoft lost their leading integrated solution for the 75-plus end user market. This left the traditional Microsoft server products and the Microsoft Online Services to do the job.

The less-than-75 user market has a large set of solutions including Microsoft Home Server<sup>†</sup>, Foundation Server<sup>†</sup>, Windows Server and Small Business Server<sup>†</sup>. In July 2009, KAMIND made a comparison of SBS, EBS, and Microsoft Online Services to determine the return on investment (see Figure 1-2). The crossover point was identified at about 15 users. In other words, with fewer than 15 users, it appeared to be less expensive to deploy Microsoft Online Services than it is to use on-premises services.

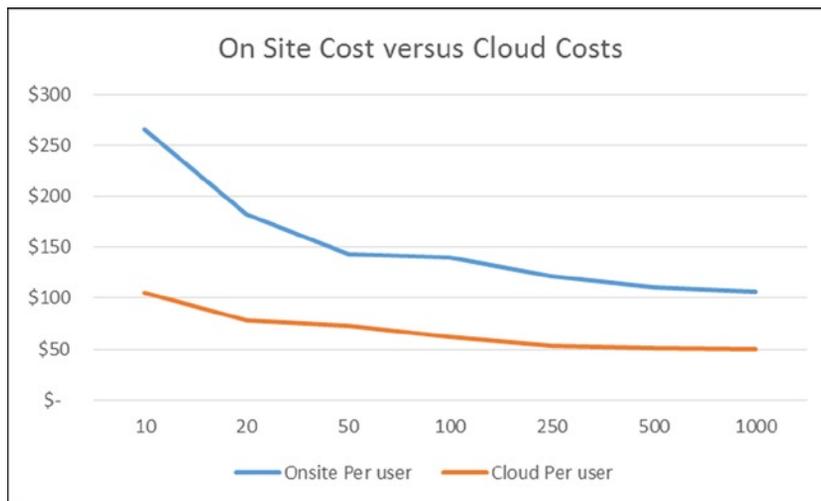


**Figure 1-2.** 2009/2010 on-site vs. online (cloud) comparison (Intel Case Study, Wimaxforum)

As we moved into 2010 and incorporated March 2010 pricing of \$10 per user for Microsoft Online Services, the crossover point shifted to between 100 and 150 users. Microsoft Online Services' price was at \$22.50 per user at this time. The corresponding Office 365 subscription E1 is \$8 per user today, demonstrating a 65 percent cost reduction.

So, in March 2010, KAMIND changed its managed services offering to address the new Microsoft Online Services pricing model. We found SBS to be our only option, and it tops out at 75 users. We found that other on-premises solutions were even more expensive.

If we look at the pricing and features of Office 365 today (Figure 1-3), there is no longer a business case to stay on-premises. The cloud-based Office 365 solution is currently the most cost-effective one for any size business. Office 365 today adapts to small one-site enterprises as well as global operations, and it has been growing in size every day. As of late 2013, a reported 69 percent of companies with 20 or fewer employees were using some type of cloud-based IT solution. At the upper end, for example, costs for an enterprise with an on-premises server supporting 1000 users are reduced by 52 percent with deployment of an Enterprise E3 license (\$20 per user per month).



**Figure 1-3.** 2013 Cost comparison of on-site vs. the cloud (no cloud deployment costs included)

Unless there is a compelling reason to use an on-premises solution, currently available IT resources make it more cost-effective to use a cloud service. There are advantages and disadvantages to whichever solution you use, and you need to understand your business requirements and how well a particular IT approach integrates with your business strategy.

Microsoft defines small business as an enterprise with fewer than 250 end users. A few other definitions will be useful at this point. The following terms will aid further understanding cloud migration and how it applies to business:

- **On-premises:** Software and hardware devices located at a user's physical location. As an example, you may have an on-premises Exchange server handling mail services.
- **Off-premises:** Often used as a synonym for the cloud, this actually denotes software and hardware devices that are located off-site for which the user of the cloud services has contracted out the physical hardware and software maintenance. As an example, with Microsoft Online Services, the user owns and is responsible for the data, but not the software or the physical server. Microsoft is responsible for backups and server maintenance.
- **Cloud:** Any cloud service that is maintained by a third party. Examples are Hotmail and Microsoft Online Services called Office 365.

- *Office 365*: The Microsoft cloud services suite solution supporting collaboration site, dynamic document synchronization, enterprise voice, compliance, Office software subscriptions (Word, Excel, PowerPoint, etc.) for PC and Mac as well as Office productivity subscriptions for Project and Visio.
- *Intel Server*: The next-generation high-density compute server that supports an integrated SAN and switch control modules. These servers handle virtualization of line of business applications. These servers may be the physical hardware on premises or off premises.
- *Hosted*: Any cloud service owned by the user but maintained by a third party. As an example, the user may host web servers on either third-party equipment or customer-owned equipment.
- *Virtualization*: A server or desktop operating system running on a virtual host. The server or desktop operating systems are run in a hardware-agnostic mode, since the hardware services are supplied by the virtual host.
- *Virtual Host*: The hosted operating environment that allow virtualization of the operating systems. Microsoft Azure services are examples of a cloud-based virtual host.

All of us who own or run a business would like to increase efficiency and reduce operational costs. It does not matter the business size. What matters is what customers want. Most customers want the businesses they use for services to be competitive in terms of services and price. In order to be competitive, owners want capability at the lowest possible price. As business owners, we make investments and want our businesses to scale, so we can grow the business and generate resources for expansion.

Table 1-1 details an example of the on-premises cost of a business that has 50–250 users. It includes a set of core functions that all businesses have: mail, document storage, web conferencing, and line of business (LOB) applications (such as a payroll application or accounting packages). In this example, the IT costs for a small business with 50 end users are about \$269 per user per month. The IT cost for a business with 250 end users is about \$67 per user per month. The infrastructure required to support the business is roughly the same. Cloud migration clearly enables IT infrastructure cost reduction. Table 1-2 shows the expected cost for a 50-user company with an on-premises and a cloud comparison.

**Table 1-1.** On-Premises Infrastructure Costs for 50 and 250 Users (Courtesy of Microsoft)

	50 Users Cost (USD)	250 Users Cost (USD)
<b>Hardware and Maintenance</b>	\$70,413	73,123
<b>Software</b>	107,738	128,078
<b>Operations</b>	207,297	298,827
<b>Deployment</b>	98,951	101,802
	484,399	601,830
	\$269	67
<b>Cost per user</b>		\$

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■ **Note** Core services costs are provided by Microsoft Online Services.

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**Table 1-2.** *On-Premises vs. Cloud Comparison for a 50-User Company*

	On Premises 50 Users Cost (USD)	Cloud 50 Users Cost (USD)
<b>Hardware and Maintenance</b>	70,413	0
<b>Software</b>	107,738	36,270
<b>Operations</b>	207,297	100,456
<b>Deployment</b>	98,951	28,886
	484,399	165,612
	269	92
<b>Cost per user</b>		

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■ **Note** The 250-user company on-premises cost is \$67 per user and the cost for the cloud is \$30 per user.

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When a business moves to Office 365, there are three driving factors.

- The business retains ownership of its intellectual property.
- It is what they know (Microsoft Office).
- Business productivity increases, and operating costs decreases.

In Table 1-2, note that the cost for a 50-user company drops from \$269 per user per month to \$92 per user per month. Expand this to a 250-user company and the cost per user per month drops from \$67 per user/month to \$30 per user per month. This is a cost savings of more than 50 percent. The reasons for this are the following:

- Elimination of in-house maintenance and upgrades to new server software.
- Shortening the time and expense for rollouts of new features.
- Gaining the efficiency of IT services and software features that are usable anywhere.
- Reduction in IT operation costs for energy consumption and hardware updates.

Once Microsoft reduced the entry prices for online services to as low as \$2 per user per month, it became more expensive to deploy on-premises equipment in virtually every enterprise. The challenge for the IT professional is how to help businesses adapt to change while balancing on-premises and cloud requirements. Our approach with all businesses is to examine the business processes of the company to understand the balance. Once the business processes are known, we examine the steps required to deploy a cloud solution to meet the business needs. This is why the approach to the cloud as a solution is so different than a traditional IT solution. The cloud solution for a business is a business process change that reduces the operating costs of the business and improves productivity.

To assist you in your understanding, we have created a small company called Ready Design Custom Cupcakes (RDCC). We will look at RDCC business requirements and how these requirements compare to on-premises and cloud needs for cloud services.

# Ready Design Custom Cupcakes IT Requirements

RDCC has a unique business model as compared to other cupcake bakers. Years ago, RDCC discovered that they could simulate the cupcake design and place the simulated cupcakes of various designs into a virtual environment to gauge consumer reactions. They discovered that cupcakes that were simulated and later baked enjoyed four times the sales of “regular” cupcakes.

RDCC corporate headquarters supports 20 retail cupcake outlets. The IT organization has deployed Microsoft Exchange Server<sup>†</sup> 2007 with Live Meeting. The remote locations use Microsoft Outlook<sup>†</sup> web access, and documents are e-mailed to all franchise owners. To meet the demands of the cupcake design team, the IT organization deploys LOB applications with a clustered SQL Server 2005 to support the cupcake simulation. The RDCC IT infrastructure consists of seven servers: three support the LOB simulation application and four support core operations. The deployment is as follows:

- One server for the LOB with Access Simulation database
- One server for Microsoft Exchange Server 2007 with 18 local users and 150 remote web mail accounts
- One server for Microsoft Systems Management Server<sup>†</sup> for application deployment and management
- One Microsoft SharePoint<sup>†</sup> 2003 server
- One server running Threat Management Gateway (TMG)
- Support of 150 remote mail users with iPhone<sup>†</sup> and Phone 7
- 30 WebEx<sup>†</sup> accounts and 25 GoToMeeting<sup>†</sup> accounts

## Strategic Overview

RDCC management wants an IT system focused on supporting the LOB applications rather than supporting commodity software. The IT staff at RDCC has submitted a capital expenditure (CAPEX) spending request to upgrade the aging RDCC servers. RDCC management is seeking alternatives to reduce both CAPEX and operational expenses (OPEX).

RDCC’s corporate objective is to make the organization more agile and increase productivity. Management evaluated one of the online alternatives, Microsoft Office 365, to host their core software. RDCC management summarizes their priorities as follows:

- 100% ownership if the companies intellectual property (IP); no IP rights assignments to use third party services.
- Reduce capital equipment expenditures (CAPEX).
- Reduce operational expenditures with predictable IT costs.
- Work on the business with a focus on market differentiation.
- Reduce energy consumption; become more energy-efficient.
- Access latest software versions with no server upgrade.
- Achieve the ability to share cupcake recipes with the franchises from the internal document storage site.

The following is a summary of RDCC’s IT management requirements with a focus on determining potential commodity products plus a comparison of them with the various business needs to design a solution addressing both on-premises and cloud needs.

## On-Premises and Cloud Resource Requirements

Many different arguments are made to justify keeping servers on-premise vs. moving them into the cloud. They range from control over the data (intellectual property rights) to reducing costs. The secret is to look at the problem from a service level, to differentiate services that provide a competitive advantage from those that are a commodity. In other words, identify the business processes, and look at those processes from an IT services point of view that promotes business growth. Differentiate those capabilities from those that are core to the business, but have no strategic value. Commodity services (those that are not core to the business) move to the cloud.

If a cloud migration is approached correctly, you can achieve both objectives—promoting business and reducing cost for core commodity services. This seems like a simple problem, but it is actually very complex. To help address this, we look at the business from a capability point of view, and we will use that point of view to help us in our decision process.

The following core IT considerations are common to all businesses when viewed from the perspective of an IT solution. When looking at cloud solutions, it helps to look at each distinctive business unit and business processes before deciding what is best for the whole enterprise.

- Core business software
- LOB solutions
- Requirements for on-premises and cloud data
- E-mail utilization and retention
- Network infrastructure
- Desktop support and upgrade
- Information security
- Monitoring
- Budget: CAPEX versus Operational Expenditure (OPEX)
- Hosted web site

What IT elements will help sustain competitive advantage? That is the overriding question in each of these categories. Each business is different, depending on its needs. An obvious example is the e-mail capabilities for business. A few years ago, a business needed to place on-site servers to have ownership and control of their e-mail (intellectual property). This need drove the Microsoft Small Business Server market. Today, e-mail is a commodity, so unless there is a different business need for an on-site mail server, it no longer makes business sense (see Figure 1-3) to manage.

In all cases, it is wise to seriously look at the cloud and the impact on the business. At KAMIND we looked at our customers, from the small five-person law firm to the larger 2,000-employee business. We looked at the impact from a commodity services perspective, and in all cases, we found that the cloud cost at least 50 percent less than on-premises equipment. The only caveat was bandwidth (the ability to transfer large amounts of data at fast speeds to cloud services). If the bandwidth was not available, then it did not make sense to migrate to the cloud.

## Core Business Software

What is core software? Core software has many different meanings depending on the business. As an example, in retail businesses, the core software helps manage point of sale and inventory control. In a marketing company, it is e-mail and web conferencing software. An insurance company's core software will include e-mail and an application for managing the insurance offerings.

Core software products are usually word processing, spreadsheet, and e-mail software. If you add other application software stacks like web conferencing and presentation software, the core can expand, but this can limit an organization's ability to exchange information with other organizations.

For example, how many of us have e-mailed a Microsoft Word document or a PowerPoint presentation and just assumed that the other party could read the file? The simplest definition you can use for core software is to define it as “those software programs and services that facilitate information exchange.”

## Information Exchange

Information exchange refers to the action of exchanging information between multiple parties. Examples include e-mail, web conferencing, document storage/retrieval, and instant messaging. Software that assists the user in handling information exchange includes Microsoft Office, Google Apps, and OpenOffice. The specific tools engaged are a word processing application (such as Microsoft Word), presentation software (such as Microsoft PowerPoint), spreadsheet software (such as Microsoft Excel), and an instant messaging application. The business segment does not matter. The core software product is the standard tool for that segment when information is exchanged. As an example, with RDCC, the simulation tool is not applicable to the marketing segments, but web conference and e-mail are. The core products are the commodity products that are used to conduct business. Core products are drivers for efficiency and cost reduction.

## More Ready Design Cup Cakes (RDCC) IT Issues

As noted earlier, RDCC was running on Exchange Server 2007 using ISA Server 2004 as a security server. They were deployed on older Dell servers. In this configuration, RDCC did not have Microsoft software assurance, so all software licenses for the upgrades would need to be purchased. Figure 1-3 shows the current service level breakdown and Table 1-3 shows the deployment cost breakdown for the on-premises and cloud options. The support costs are not shown, but the IT professionals who handled on-premises equipment support know that management of that equipment would require at least half of an IT professional’s time. Both options are listed in Table 1-3.

**Table 1-3.** *Ready Design Cup Cakes Deployment Comparison*

Microsoft Online Services: Office 365						
Description	Users	Service	Cost per User (USD)	Deployment Costs (USD)	One Time Cost (USD)	Monthly Cost (USD)
<b>Franchise Owner</b>	100	E2	\$16	\$10 per user	\$1,000	\$1,600
<b>Users</b>	50	E3	24	100 per user	5,000	1,200
					\$6,000	\$2,800
-						
Onsite Server						
Description	Users			Deployment Costs (USD)	One Time Cost (USD)	Monthly Average Cost (USD)
<b>Users</b>	150			200 per user	\$30,000	\$2,500
<b>Server Installation</b>					15,000	1,250
<b>Server Hardware (Intel® Modular Server + three compute modules)</b>					29,392	2,449
<b>Microsoft Software (Exchange + TMG + Enterprise + CAL)</b>					49,309	4,109
					\$123,701	\$10,308

The RDCC IT manager reviewed the support requested and proposed a budget of \$123,000, approximately \$10,000 per month. The IT manager expects this will consume half of the on-staff IT professional time at a cost of about \$70,000. RDCC management looked at the cost and requested the IT manager do a comparison against the monthly costs using a subscription (cloud) model.

The IT manager reviewed the information and was shocked to see that the on-premises solution costs \$7,000 per month more than the Microsoft Office 365 solution. He also became aware that he could free up half of his time not having to manage an on-premises server. RDCC's management reviewed the financials and chose the Microsoft Office 365 solution, saving \$150,000 in a one-year period. RDCC management also committed to having all of their franchise users use Microsoft Office applications as the office standard and decided to deploy two distinct offerings for franchises. At the franchise level, they specified the E1 service with Office Web applications. This allowed the franchise owner to use either the web applications or purchase the retail version of the Office software. At RDCC corporate offices, they can either use the Office subscription service (E3) or deploy the Office 2013 software through a volume license.

RDCC's decision to use Microsoft Online Services reduced the CAPEX and OPEX for the fiscal year. RDCC IT staff estimated that the deployment costs were between \$50 and \$100 per person in one-time fees, for a total of \$6,000. The \$6,000 migration cost for the RDCC deployment was one-fifth the estimated cost of the Exchange 2010 deployment. RDCC management realized that the selection of online services significantly reduced the cash outlay for the organization.

## Line of Business Applications

LOB applications are unique to a business or a business segment. A good example of a LOB application is an insurance documentation archive system designed to handle insurance agency data. This LOB application is not relevant to, for example, a retail segment that does not handle insurance agency documents. Likewise, an LOB application of a point-of-sale (POS) system would not be a relevant application for a RDCC cupcake simulation.

RDCC's LOB application consists of the simulation application and the Microsoft Access database that is used in the simulation. The Access database is known to consume network bandwidth. However, with Office 365, the Access database can be shared from the cloud SharePoint service, so the database that is used locally is cached, and changes are replicated to the cloud. The Access database can also be linked to Windows Azure (an extension of Office 365 cloud services) and integrated with Office 365. Thus, the user accesses the database locally, and transaction change records are replicated to the cloud. This allows multiple users to have access to the information in real time without over-using available bandwidth. This is possible because updates are driven to client desktops only as they are "cached."

RDCC IT staff concluded that the LOB application no longer needed a server to support the application. The IT manager reviewed SharePoint online services and decided that this software only needed minor customization to make it useful. This decision allows the IT management to reduce the server "farm" by one more server, with a savings of about \$20,000 on top of the budget savings of \$90,000—all made possible by not deploying on-premises equipment.

## Requirements for On-Premises and Cloud Data

The final concern for RDCC was how to address backup data issues. RDCC has a business requirement under Sarbanes-Oxley (SOX) that all financial data needs to be recoverable. RDCC has also been involved in much litigation, so they are well aware of the e-discovery impact to the business. In recent litigation RDCC was required to process all of the e-mails on their Exchange server and turn over the e-mail data as part of the litigation. Because RDCC did not have an archive retention policy, they received a federal court order that mandated a freeze in the deletion of data and placed all RDCC hardware on a legal hold. The IT staff had to recall all laptops from the field and copy the users' personal archives to the server so the data could be processed for electronic discovery. This was extremely expensive.

## E-Mail Utilization and Retention

RDCC management sought to avoid this type of expense in the future and to make any discovery process more automated and less labor intensive. RDCC policy is to have a 10-year compliance archive segmented into different groups: the factory workers archive is one year, middle managers are two years, and sales and management are 10 years.

■ **Note** Microsoft views an archive as a duplicate mailbox where data is copied from the primary mailbox. In the E1/E2 versions of Office 365, the archive is 50 GB; in versions E3/E4, it is unlimited in size.

There are three types of archives in Office 365: personal archives (local PST and cloud), shown in Figure 1-4, and compliance archives. Personal archives (local or PST) are files in which the content is controlled by the user. A compliance archive must have data immutability; the user cannot change the data. The Office 365 (versions E1 and E2) personal archives are limited to 50GB. Office 365 archives in E3 and E4 are unlimited in size and can be made immutable (for compliance requirements). The compliance archive is controlled by business policies governed by the organization business processes and federal regulation.

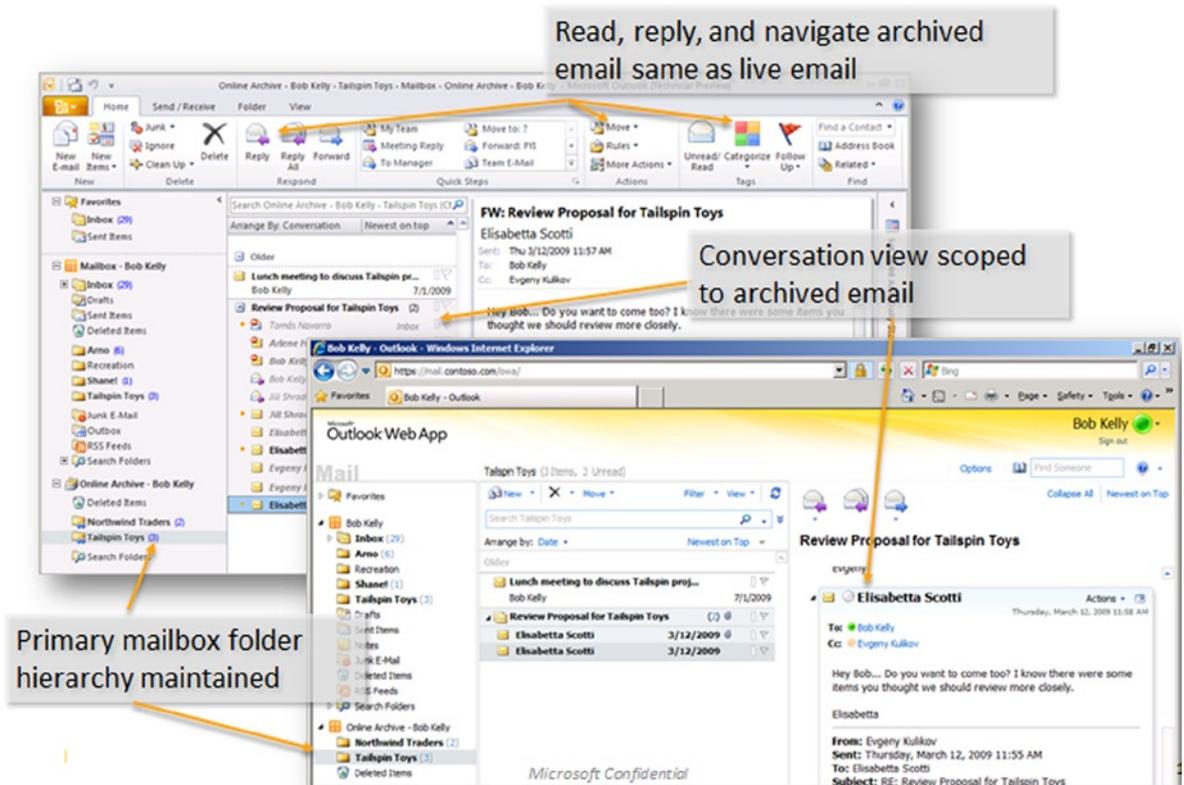


Figure 1-4. Personal Archive Office 365 Office 2010 (courtesy of Microsoft)

## Network Infrastructure

RDCC has a large, robust network infrastructure to support user requirements of 200-plus employees and franchise owners. The franchise owners' businesses run seven days a week, from 5 a.m. to 10 p.m. (Pacific Standard Time).

To keep the network capability as it is, RDCC IT staff was faced with upgrading an aging on-premises data center with the latest Intel® processor-based servers from Intel, Dell, or IBM. The IT design staff proposed replacing the data center in Figure 1-5 with an Intel Server. The RDCC IT staff felt that this approach would provide the most comprehensive set of features for the cupcake virtualization and would accommodate growth. The unresolved issue was how much to deploy on the Intel Server vs. the cloud.

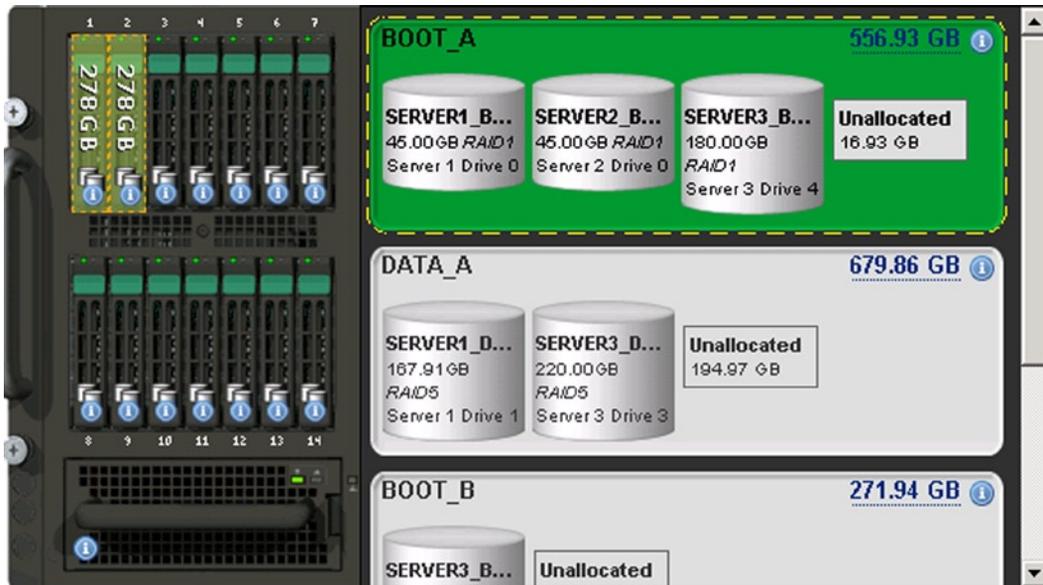


**Figure 1-5.** RDCC private data center (courtesy of Microsoft)

The Intel Server is 6U in size and allows up to 14 high-speed SAS drives to be arranged in a data storage pool. RDCC IT staff is planning to use the 1TB SAS drives, which allows a storage pool size of 14,366GB, with an online hot spare. As far as RDCC IT staff is concerned, this allows them to reduce the size of the data center (Figure 1-5) to a single 82-inch rack. RDCC IT staff selects the Intel Server over other vendors' products based on the following considerations:

- Lower power consumption
- More flexibility in adding computing capacity
- Intel Xeon 6-core processors will enable support up to 12-24 virtual machines with a combined memory size of over 256GB
- Fault-tolerant compute module support with auto failover
- Fault-tolerant storage module with external SAN support

To help them in their decision process RDCC IT staff modeled storage pool consumption on the Intel Server test drive site (see [www.intelmodularserver.com](http://www.intelmodularserver.com)). This site allows them to try different configurations and out-of-band management systems to develop the best solution. Figure 1-6 shows a storage pool view of the Intel Server with a modular server with a RAID 1 and a RAID 5 subsystem.



**Figure 1-6.** Storage pool organization and allocation

The Intel Server allows for organizing the Storage Access Network (SAN) or the attached SAN into a set of storage pools. The storage pools are then allocated to the individual *compute module*. In Figure 1-6, they added two SAS drives to the storage pool. However, when they built their virtual drives, they decided to organize the data in a RAID 1 configuration. KAMIND recommends that the RDCC IT staff deploys the Intel Server storage with a global hot spare.

## Desktop Support and Upgrade

The RDCC IT staff needs to complete not only a data center upgrade, but also a software upgrade. In the past, they purchased a Microsoft Open License that did not include software assurance, so they had a group of deployed desktops using Office 2003 software under Windows XP. Some of the newer software uses Windows 8, so RDCC is faced with replacing all XP systems before the end of support from Microsoft, which is less than a year away.

RDCC IT examined the different pricing options for the new software. The software deployment cost is the same in all cases except for the retail product. The retail product requires that the IT staff physically enter a different serial number for each version of Office 365 software installed.

Office 2013 prices ranged from \$432 to \$699 (see Table 1-4) for Office 2013 software. The software that cost the most was the retail version. The cost was higher since it required an IT professional to install the software on every desktop and deploy a unique serial number key; RDCC IT staff could not do an automated “push” install for mass deployment of the software and upgrades.

**Table 1-4.** Office 2013 Professional Plus License Prices (as of Publication Date, Prices Subject to Change)

Office 2013 Professional Plus			
Option	Cost (USD)	Yearly Costs (USD)	Notes
Full Retail Product	\$399	\$399	No upgrade, limited installs
Volume License (L/SA)	699	233	Three-year agreement, either spread payment option
Volume License (SA)	444	148	Agreement exists for License portion
Volume License Subscription	432	144	Three-year subscription, upgrades included
Office 365 Subscription	+12 per user/month	144	Microsoft Online one-year agreement, requires Suite

## Information Security

RDCC's information security requirements are similar to those of most companies. RDCC wants to make sure their data is kept private. They want to control access to their data and the computing resources. These are their business needs. RDCC doesn't want to use any cloud service that required an intellectual property transfer. Some cloud services companies use IP rights assignment as a way to sell additional product and services to the companies' employees.

All of us have heard of reports of credit card numbers being stolen from retail store point-of-sale computers. How about a government employee leaving a laptop that contains thousands of social security numbers in a car and that laptop is stolen? There are countless stories of identity theft. The stories all come down to this: How safe is your data? The safety of your data is what information security is all about, and the crux of the problem is data access and control.

Realistically, it does not matter where your data is located. It can be safe anywhere—with the right precautions. The processes and security around your data and how it is controlled is what matters. As an example, does the network administrator have access to your e-mail? What password policies are in place to ensure that your data is under control? What is the physical security like? Who picks up the trash in the evening in your data center? Who has access after-hours to the information? All that matters is how data is managed. Data loss prevention is critical for RDCC's business to ensure confidential information stays inside the company and there is no IP rights assignment to use the Office 365 cloud service.

There are many aspects of physical data security. Figure 1-7 is a picture of a Microsoft data center. All server access is controlled and limited to a few select individuals. Microsoft also has controls on who accesses the data. This is a critical aspect of data security that is often overlooked.



**Figure 1-7.** Microsoft version 4 data center (courtesy of Microsoft)

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■ **Note** Microsoft's policy is that the customer owns the data, not Microsoft.

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Microsoft believes that the data is owned by the customer, and the customer has 100 percent control over the data. To put this in perspective, the customer must grant Microsoft permission to access the data. This philosophy limits data access and establishes the controls necessary for data security.

The next part of data security is built around the standards necessary for access and control of the data. The Microsoft software design philosophy is built from an idea of secure code design. Secure code design means that the software is designed using best practices from the ground up. To put this in perspective, the code in the data centers is built from a best practice software design known as *code secure*. Michael Howard and David LeBlanc wrote the Microsoft book *Writing Secure Code*. This is a must-read book if you are doing any software development.

*Writing Secure Code* walks a developer through the process of software development and describes the way to prevent attacks on software. This book provides examples of how software developers must padlock their code to prevent unknown attacks. The philosophy of Microsoft security begins at the core of the product design lifecycle—the developer. If you do not put the correct processes in place, then the products built on top of those products will not be secure. This philosophy of security permeates modern Microsoft products as well as the data center.

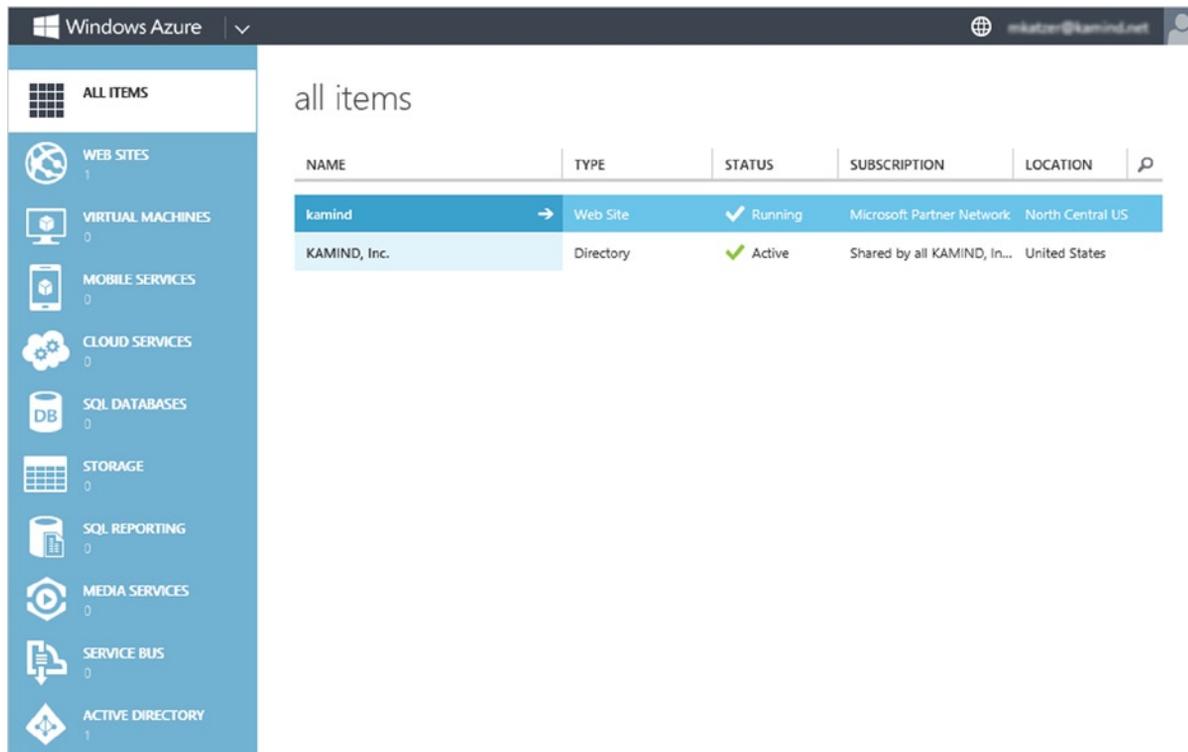
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■ **Note** Employ a risk-based, multidimensional approach to safeguarding services and data. All products must go through the secure development cycle to release code publicly. The secure development lifecycle ensures threat development management.

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Microsoft supplies a multi-tenant architecture based on Active Directory and built from secure code design. Microsoft has scaled the data security problem and discovered the weaknesses of various security products. Microsoft discovered that when a deployment is scaled beyond certain practical limits, security issues that no one else has thought of emerge. Microsoft deployment of the Exchange data infrastructure goes beyond the limits of whatever has been tested before. Microsoft has greater than 40M mailboxes that use Windows Azure Active Directory security. Microsoft augments the design with data access policies that prohibit the unauthorized access of data. To ensure compliance, these policies are monitored automatically within Microsoft Office 365 software, a feature that meets RDCC design goals.

With its security requirements met, RDCC is ready to use the Windows Azure Active Directory services (see Figure 1-8) to manage the entire business and ultimately move all on-site servers to the cloud and Office 365. The following are approaches to achieving this phased “migration.” RDCC’s long term plan is to move the database to a hosted service in Azure and add a WordPress site that will be integrated to the Office 365 environment. RDCC felt that Azure allowed the company to expand to the cloud for all commuting services in a secured manner.



**Figure 1-8.** Windows Azure Active Directory services

## Monitoring

There are two different monitoring approaches used to manage the on-site equipment and off-site equipment. These involve Microsoft Systems Center and Microsoft Windows Intune. Each has different capabilities and features depending on the needs of the client and the type of existing on-premises equipment.

### Microsoft Systems Center

There are several services available for systems monitoring. There are those available from managed service providers like Level Platforms and on-premises monitoring using Microsoft Systems Center (SCC). The objective of both is the proactive monitoring of servers and clients. Why proactive monitoring? The simplest explanation is productivity. As users become more dependent on computers for daily activity, there is an expectation that it “just works.”

SCC is a software management tool that runs on-premises equipment and provides complete monitoring and updates management. This software is typically used in environments with 50-500 client PCs. SCC’s goal is to unify the organization under one management console with the objective of reducing IT costs. From an IT perspective,

SCC provides a proactive view of the on-premises network and has the capabilities to distribute patches (temporary fixes), install software updates, and troubleshoot network issues. SCC also has the capability to manage an unlimited number of servers, either virtual or physical. Small businesses can now manage their on-premises desktops and remaining servers at a fraction of the cost per user available to larger enterprises.

## Microsoft Windows Intune—Desktop Management

The second type of monitoring product that RDCC is looking at is Microsoft Windows Intune. This is an agent (software that is installed on the device to monitor operation) product designed for small businesses. This product allows the management of updates, limited group policy control, and antivirus monitoring. The monitoring is completed at a host level. Windows Intune is integrated into Microsoft Systems Center or as a separate cloud monitoring service for small companies. Windows Intune directly controls systems updates, addresses virus issues, and manages software licenses and deployment for the business. A RDCC test confirms that all these two environments can be used simultaneously in the management of their systems.

## RDCC Cloud Solution

RDCC's IT requirements are typical: improve access to technology, enhance access to data, lower operations cost, and raise product efficiency. The RDCC IT department prepared various options for deployment ranging from 100 percent on-premises to 100 percent cloud. RDCC management directed the IT organization to focus on areas that engage commodity IT services and find the best alternatives. The following was agreed upon as a balanced solution:

- Migrate all e-mail users to Microsoft Office 365 hosted Exchange Mail Services. There are 18 local users and 150 remote mail users.
- Move the SharePoint services to SharePoint in the cloud as part of the Exchange Mail migration.
- Move the 55 web conferencing accounts (Webex/GoToMeeting) to Microsoft Lync as part of the migration.
- Eliminate the need for ISA server and replace this with local firewalls (fortinet or sonicwall) since remote users will use the cloud.

## Cloud Requirements

The commodity products that are readily available externally include Microsoft Exchange, SharePoint, web conferencing, virus management, and spam/virus filters. RDCC IT estimated that 35 percent of their IT resources could immediately be saved by moving to the cloud.

## Office 365 Business Savings for RDCC

Principal savings came from reducing the number of servers from 12 to three. This would also eliminate the corresponding three Windows 2012 upgrades, Exchange 2013, SharePoint services, 168 Exchange CALs, and SharePoint CALs. Other “hidden” costs eliminated included the expense for backup software from the Exchange and SharePoint servers and the off-site disaster recovery backup. RDCC IT management realizes that they are allocating three-quarters of the time of a full-time IT employee to managing these environments, and skipping the expenses on server refresh.

## Summary of RDCC On-Premises Requirements

Moving RDCC's core IT services to the cloud frees up budget for additional development. RDCC IT wants to migrate the cupcake simulation tool from an access database to SQL Server, and implement some other management and consolidation projects. RDCC's IT needs for on-premises services are summarized as follows:

- Use Active directory (password synchronization) for on-site security integration to Microsoft Online Services (they only have to manage 19 users; the 150 users are franchise owners).
- Use Microsoft Windows Intune for antivirus and update management.
- Deploy a blade server with two virtual machines to support the LOB application.
- Contract with a third-party managed service provider to provide a monitoring solution and hosted backup.

With the savings realized by the proposed cloud solution, RDCC is able to significantly restructure the business process and focus the organization on business productivity gains. They will be able to realize two big priorities: upgrading their servers to the new Intel Server and cleaning up their data center. RDCC will be able to dispose of two of the three computer racks and reduce all servers to one 6U unit with an integrated SAN.

RDCC IT presents the comprehensive plan. RDCC management is thrilled with the direction reallocated IT resources to improve the cupcake design simulation by moving it from an Access/SQL Server Express to SQL Azure and Windows Azure.

## Migration Cost and Approaches

Granted, Table 1-4 (covered earlier in the “Desktop Support and Upgrade” section) makes many assumptions about hardware and software costs and support. However, it provides a good illustration that the total cost of ownership is quite different if the costs of server upgrades and software upgrades are considered. That is, when one compares apples with apples.

If it takes at least three years to receive a payoff from an on-premise solution, it is worthwhile to look at the cost tradeoffs and other business and technical assumptions. As an example, Table 1-2 illustrates cloud deployment costs to be less than 30 percent of the deployment costs for an equivalent on-premises solution for 50 people.

It is possible to overlook the deployment costs associated with hardware, software, infrastructure, and security required for a server-based solution. The other factor for migration to the cloud depends on employees. Small business migration can be greatly aided by IT skillsets among employees—and on whether they have accepted the migration as a positive thing. It is good practice to involve end users in the planning and transition, and to thoroughly communicate its benefits at key points in the process.

The cloud migration cost for small organizations will vary depending upon the organization skills. Office 365 migrations are about business process changes. In organizations that tend to have well-known business process, migration is quick. Organizations that change the business process experience longer cloud migration.

The business process change for a 20-user business may involve creating a program to train administrative assistants in handling the day-to-day issues like password changes, spam issues, and Outlook configurations. In this specific case, there was an initial cost in setting up the training, but rapidly dropped as soon as trained administrators took over.

Contrast this 20-user migration with an international organization that was more end-user literate with computers and technology. This was a 35-person company that was migrated to online services in three days across four different countries. The users were migrated from an on-premises solution to Microsoft Online Services.

Larger companies are business process driven. As an example, the migration of a 400-person public library in Denver Colorado had two business goals: to reduce operation costs and to retrain IT staff on new technologies. The technical migration was simple; move mail from server x to the cloud. However, the business process change was complex. In this case, a program was designed to grow grass roots support in the company and build a peer user support network. The migration, which was originally forecasted for four months, reduced the schedule by one month. Office 365 is about business process changes and how to empower and organization to embrace the change.

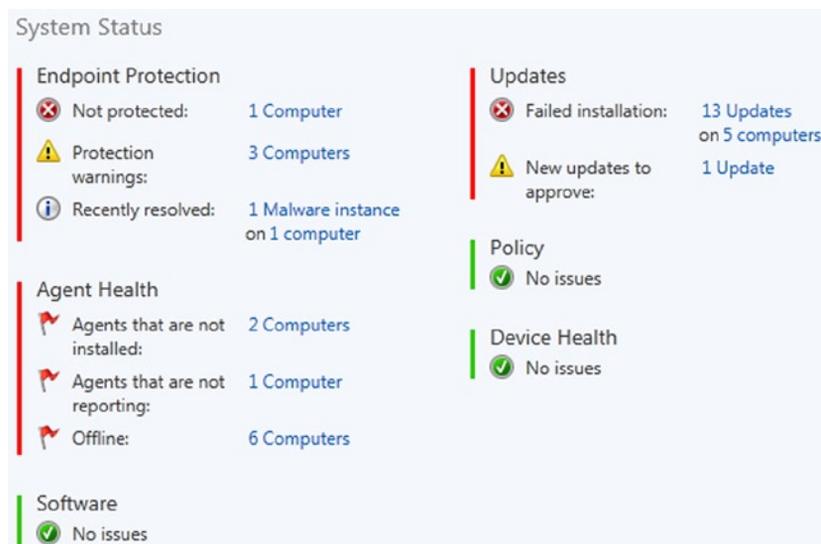
These are just some examples. There are different costs associated with all migration. You need to look at the business processes of the organization. This book is designed to address components in each of these costs areas. Looking at migrations, they fall into three categories: low, medium, and high. The migration costs are directly related to the organization's skills.

- *Low.* This is a do-it-yourself (DIY) migration. The IT professional (or business owner) provides the basic configuration and setup, and acts as backup support if needed. Usually the mail is uploaded using PST (since the source environment is usually POP mail).
- *Medium.* The IT professional partners with the customer for the migration. The IT professional directs customer resources remotely to complete the migration. The IT professional trains the local IT staff. The organization may need password synchronization and has a local LOB server resource.
- *High.* The IT professional handles the migration from start to finish. The cost depends on the configuration of the on-site mail server and SharePoint usage as well as the security requirements. As an example (discussed later), there may be a need for tightly integrated security; in this case a federation security server is installed.

The migration environment differs depending on the business. Some businesses are running under the Microsoft Active Domain architecture, such as SBS or equivalent. In some cases where there is a non-Microsoft OS, the mail migration cost depends on the OS where the mail and documents reside. There are other factors in the migration costs, and the solution comes down to the business processes.

## Remote Monitoring with Windows Intune and Systems Center

Remote monitoring and management allows a group of computers to be managed and controlled from a central location. The rationale for remote management and monitoring is to contain operations costs. As organizations' computing infrastructure becomes more complex, we are always looking for ways to reduce the complexity of the environment. There are many different sets of remote management and monitoring tools. Typically, remote monitoring is looking for a way to aggregate data to allow a proactive analysis of the work environment. Figure 1-9 replicates the Windows Intune Monitoring dashboard for a typical small business.



**Figure 1-9.** Windows Intune Monitoring dashboard

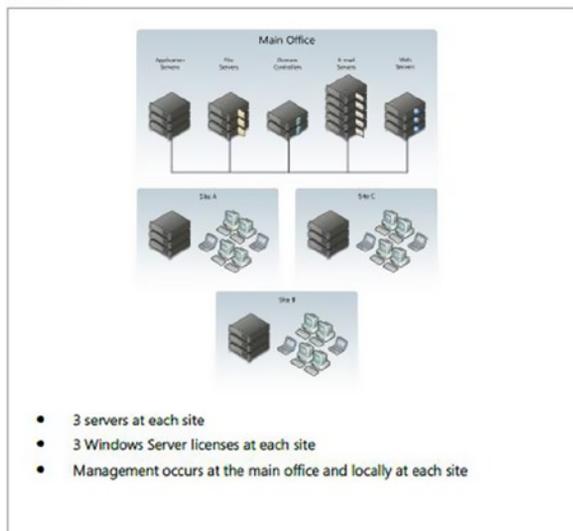
Microsoft recently introduced Windows Intune†, a desktop management tool for inventory, updates, and security policies, which can be purchased by end users through Microsoft Online Services. The Office 365 user accounts are linked into Windows Intune, providing better desktop management. It is highly recommended to deploy some type of tool to determine systems health. Office 365 requires that the desktop user systems be up to date and patched with the latest security patches. These desktop management tools are used to identify problems so proactive action may be taken to resolve issues before they become serious problems and affect business continuity.

## The Big Decision: On-Premises or Cloud Solutions?

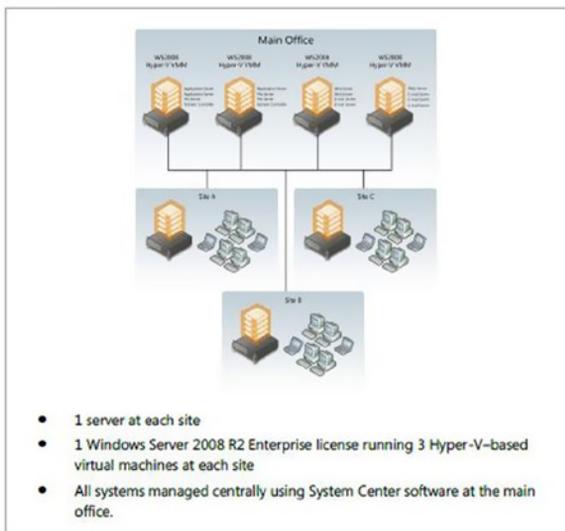
The line in the sand for IT change is whether to keep data on-site or off-site. The most frequent motivator for data migration to the cloud is cost. Whether it is savings realized through reduced labor, more efficient equipment, or general “operations” expenses, cost is king. Still, the best solution sometimes straddles the line, because there can be a case for equipment and services that are both on-premises and hosted by the cloud. The decision process is known as resource optimization. Resource optimization consists of the following:

- *Server Consolidation*: Reducing the number of servers to improve overall operations costs (see Figure 1-10).

Before:



After:



**Figure 1-10.** Virtualization and branch office design (courtesy of Microsoft)

- *Hardware Consolidation*: Optimizing the server hardware to reduce overall systems cost.
- *Core Services Consolidation*: Removing core services that can be purchased in the cloud at a lower rate than keeping those services on-premises.

As part of this process, illustrated in Figure 1-10, the server was optimized, enabling it to handle a more integrated workload. In this case, the server is a high density blade server such as the Intel Server platform. Many different types of servers can be used for hardware consolidation. Dell, HP, and Lenovo offer other choices. The driving factor in the optimization decision should be the integration cost.

The branch office design (Figure 1-10) demonstrates a reduction of the on-premise servers from three to one Intel Server, with six compute modules hosting the virtual machines. The Intel Server (see Figure 1-11) allows the addition of an integrated SAN with 14 SAS (1TB) drives in a RAID 10 configuration (providing a raw space of 14TB). A second integrated networked switch is also added.



**Figure 1-11.** High Density Modular Server (courtesy of Intel)

The server also supports six compute modules with 32GB to 256GB memory and dual Intel® Xeon® processors. Each compute module host OS is Windows 2008R2 Enterprise or Microsoft Windows Server 2012. The Microsoft Hyper-V software can support up to 15 additional virtual machines, with the appropriate licenses, or three additional licensed Windows Enterprise VMs. The redesign reduces the number of servers to one device and adds capabilities to support disaster recovery and business continuity.

## Optimizing Core Services with the Cloud

Core services are those basic services that all businesses require including e-mail, file and print services, and document storage/management. Internal web sites, web/video conferencing, and instant messages are core cloud services that are also used in day-to-day business. All other services used to conduct business can be best described as LOB applications or services on-premises. When we look at the core services, we are looking for ways to optimize the business for productivity and operating efficiency.

## Business Efficiency

Optimizing business efficiency involves looking at the core services that make businesses work and making them work as well as possible (see Figure 1-12). Supporting core IT services on-premises involves hiring information technology workers, ordering new server software, and planning migration of users on workstation software to support the new software releases. This is an ongoing struggle in all businesses, and it costs resources to perform it adequately.

View history for past 30 days

SERVICE	TODAY	JUN 29	JUN 28	JUN 27	JUN 26	JUN 25	JUN 24
Dynamics CRM Online	✓	✓	✓	i	✓	✓	✓
Exchange Online	✓	i	✓	✓	✓	✓	i
Identity Service	✓	✓	✓	✓	✓	✓	✓
Lync Online	✓	✓	✓	✓	✓	✓	i
Office 365 Portal	✓	✓	✓	✓	✓	✓	✓
Office Subscription	✓	✓	✓	✓	✓	✓	✓
Rights Management Service	✓	✓	✓	✓	✓	✓	✓
SharePoint Online	✓	✓	i	i	i	i	✓

✓ Normal service      ✗ False positive      ? Investigating      ⚠ Service interruption      ⚡ Service degradation  
 🔄 Restoring service      ⏸ Extended recovery      🟢 Service restored      ⓘ Additional information      ☐ PIR published

[Learn more about service health status](#)

**Figure 1-12.** Service Health, Office 365 services

A complete cloud services migration involves moving the on-premises infrastructure to the cloud. As noted earlier, moving to the cloud can allow businesses to either reduce the IT support staff necessary to maintain the on-premises solution or reallocate the resources for different IT projects. Operational costs can be reduced for additional services such as business continuity and disaster recovery. These services are standard with all cloud services partners. Microsoft Online Services offers 30-day mailbox content and SharePoint recoverability and 14-day recoverability on a mailbox deletion. Additional Microsoft Online Services include e-mail point-to-point encryption and immutable compliance archive (such as legal hold and the Finra – Financial Industry Regulatory Authority ([www.finra.org](http://www.finra.org))).

Typical migrations involve removing on-premises e-mail (the internal SharePoint web site) to Microsoft Online Services and centralizing conferencing from a third-party supplier to Microsoft Live Meeting. There are sometimes differences in the user interface, but the Microsoft Online Services Business Productivity Online Suite helps resolve them. Services that are left on-site are designed around existing LOB applications using CRM systems and SQL LOB applications, as well as the traditional file/print services.

## Next Steps for RDCC

Before RDCC migrates their business to the cloud and Office 365, there is planning to be done. To help plan for the migration, the management team attended a demonstration event as participants in the Microsoft Experience Center (MEC). The MEC demo walks the user through the experience using different persona to fully understand the capabilities of Office 365. This is a key step in the planning cycle for Office 365 migration. As RDCC looks at their business in detail, they will go through a typical planning and evaluation process. Office 365 migration is smooth, but it is essential to plan and test. The next few chapters will detail RDCC's experience.

## Summary

This chapter focused on why businesses move to Office 365. It included a review of the business reasons and provided a cost comparison of different approaches. Like any business change, the objective is to reduce operating costs and improve productivity to build a competitive advantage. The conclusion is that Office 365 solutions can provide that competitive advantage.

## Next Steps

The next chapter will cover using Office 365 and Windows Intune, starting with a day in the life of an Office 365 user and a follow-on section that helps you set up your computer to use Office 365.

Here is a list of chapters you may want to read next:

- *Chapter 2: Using Office 365 and Windows Intune*

We explore the Office 365 capabilities in the demonstration site with a focus on how this helps your business productivity. The best way to understand is to experience Office 365. We use a day in the life of a user to demonstrate the capabilities that you have with Office 365. We close the chapter with a reference section on the most common end user configurations when you use Office 365.

- *Chapter 3: Office 365 Planning and Purchase*

The key to a successful migration is the planning and purchase process of Office 365. There are three different categories of plans you may purchase from, but the secret to a successful migration to Office 365 is picking the correct plan that supports your business. Once you pick the plan, it is about planning the migration to Office 365 to ensure the process is seamless for your organization. This chapter describes the basic purchase information and offers more details about the choices. We close this chapter with information about pilots and e-mail migration.

- *Chapter 4: Office 365 Setup and Migration*

Once you have selected your Office 365 plan and completed the planning process, the next step is the migration process. There are different ways you can migrate to Office 365 and different migration techniques, such as using cut over migration or federation. This chapter covers the most common approach to Office 365 migration in a non-federated environment.

- *Chapter 8: Office 365 Administration*

This chapter describes the different administration centers in Office 365 and the most common tools that you will use to administrate your Office 365 company. Depending on your Office 365 services, there are five possible administration tools. This chapter focuses on the Office 365, Exchange, and Lync administration centers. The SharePoint and Windows Intune administration centers are described in their own chapters. We close the chapter with using PowerShell to manage your Office 365 environment.