EMBRACING THE CLOUD:
Why the Time Is Now

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For as long as mankind has been huddling together around a communal fire, we have feared the unknown. The darkness just outside the cave mouth conceals things that are, quite frankly, terrifying. Only a fool would venture out without an exceptionally good reason.

The level and nature of competition in today's business environment can sometimes make spending a moonless night in a cave listening to the hungry cries of a predator sound positively peaceful by comparison. Perhaps that's why it is no surprise that there are still some SMBs huddling around the fire of their legacy telecommunications and computing systems.

The rapidly changing, relatively new world of distributed cloud computing and Everything as a Service is unfamiliar, confusing, and, quite frankly, terrifying.

But we only fear what we don't understand.

The goal of this whitepaper is to peel back the darkness and make the unfamiliar aspects of cloud computing services familiar, to clarify the confusing elements of modern telecommunications and data processing services, and to therefore enable SMBs to let go of fear and take advantage of the opportunities that cloud technology has already brought to many of their competitors.

WHICH CLOUD ARE WE TALKING ABOUT?

Although we often talk about "the cloud" or "cloud services," we are really talking about a group of three different varieties of cloud: public, private, and hybrid. They share many of the same characteristics (they all involve keeping much or all of the data processing

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hardware and software off premises, for example), but they differ in some important ways.

Public Cloud

Public cloud services are public in the sense that they use the public internet to transmit data. This means that SMBs gain the most benefit in terms of cost and scalability. They use encrypted data, of course, but because the public internet public, this type of cloud service is less secure than private cloud services.

Private Cloud

A private cloud is one that uses a business's own infrastructure, or one in which a single enterprise has sole use of the hardware involved. Because data never touches a publicly accessible network, that data is more secure than when using a public cloud solution. Private clouds are more expensive, though, and don't scale nearly as well.

Hybrid Cloud

More and more frequently companies that require enhanced data security, whether for business needs or for regulatory compliance, are turning to hybrid cloud solutions. As the name implies, a hybrid cloud uses a mixture of public and private clouds for various applications. Data that is more sensitive, or that is required to be handled a specific way, is kept on private cloud systems, while other traffic that is less sensitive is kept on public cloud systems.

The advantage of a hybrid solution is that it efficiently accommodates the varied data security needs across an enterprise. The downside is that it can be difficult to keep track of the different systems and security protocols.

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The most common choice, in particular for smaller businesses and companies without special data handling needs, is public cloud. The lower cost and easy scalability are an unbeatable combination. Companies in industries with specific data handling requirements are increasingly moving to the hybrid cloud in order to maintain compliance without sacrificing too many of the advantages of public cloud computing.

WHERE THE CLOUD COMES FROM

Although cloud computing and its several varieties might seem like an IT newcomer, it has actually been around, in one form or another, for quite a long time.

The seeds of modern cloud computing were planted much earlier than most people think – as early as the 1950s. This was the era of the first mainframe computers, and sharing centralized resources amongst the many groups and organizations that needed them made sense when those resources cost as much as a small country's GDP and took up enough space to require a separate zip code.

The development of the desktop computer and its power and speed made sharing mainframe resources not only unnecessary, but less convenient as well. The mainframe required a business to wait until there were enough system resources to execute tasks, and turns had to be taken with other organizations to access those resources. Desktop computing meant no delays in accessing computing power.

Then companies started seeing the benefits that came from connecting those desktop computers together. Internal corporate networks and long-

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distance connections via telephone lines and modems allowed computers all over the corporate structure to communicate with each other. Then along came the internet, making that communication even easier.

The advent of cloud computing brings the story full circle, and to its logical current state. The enormous capacity of current internet infrastructure to carry unprecedented bandwidth makes it possible to transmit vast quantities of data at reasonable speeds. This makes it possible to pool computing power centrally and process data remotely. The fluctuating processing needs of most modern businesses is what makes doing so desirable.

Rather than investing in enough hardware to accommodate peak usage and then letting it sit largely unused the rest of the time, cloud providers invest in more hardware capacity than any single business would ever need, and come closer to utilizing it fully by accommodating the needs of multiple businesses with that hardware.

THE "AS A SERVICE" ADDITION

More recently we've seen the rise of Infrastructure as a Service (IaaS), Software as a Service (SaaS), and even Platform as a Service (PaaS) offerings.

IaaS is the most basic of the aaS models. It involves providing a company with hardware only. Businesses using IaaS are responsible for licensing and maintaining their own software, apps, and operating systems on their cloud servers.

PaaS is similar to IaaS with the exception that the cloud provider also maintains the operating systems, leaving

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the business responsible for installing and maintaining their software only. While the company does not have direct control over the hardware and OS, they do sometimes have certain configuration options available to them.

SaaS is a system in which the cloud services provider is responsible for maintaining almost everything. This includes the hardware, operating system(s), and applications. Businesses may have some control over application settings. A SaaS environment is generally considered the most scalable and efficient of the models, because it is very simple to add or remove users as needed. It also requires the least amount of investment in maintenance and support. This flexibility and reduced maintenance requirement does come at the price of likewise reduced control over the system.

These service models are the logical result of the ability to compute at a distance over a distributed network in real time. The reduced costs come because the network isn't just distributed in the sense that the hardware components are not all in the same place; it is also distributed in the sense that the capital investment in that hardware is also distributed.

Because the hardware is shared across multiple companies, the costs of buying and maintaining that hardware are also shared across multiple companies. This puts data processing capabilities that used to be out of the reach of all but the largest companies into the hands of all businesses, no matter what size. This is the true power of cloud services.

SOME VALID CONCERNS

While there are many benefits inherent in moving to cloud services, there are also several concerns that need to be

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addressed. Most of those concerns center around data security, and most of those concerns have been very adequately addressed by the industry as a whole.

Security

This issue was one of the earliest problems corporations had with the idea of cloud computing. It is ironic, then, that security is one of the most common reasons now cited by companies switching to cloud computing for their decision to do so.

There are two reasons cloud computing platforms actually increase the level of security for most businesses. The first is that cloud services providers are specialists in providing computing services. They deal with an infinite variety of business computing needs and environments on a daily basis, so they need to be good at network security.

The second reason is, simply put, encryption. Cloud services are always run with system-wide encryption. This means that even if someone intercepts data in transit they will be unable to decode it and see what it actually is.

THE EXCEPTION

The exception to this increased security is actually a significant one, though mostly because it is still a new enough issue that solutions are only now starting to roll out. That issue is BYOD, or bring your own device.

More and more frequently employees prefer to use their personal devices to perform work duties while on the move. The decentralized nature of cloud computing makes working while mobile not only easy, but often indistinguishable from working in the office. The same apps and data are available to employees wherever they go, and no one wants to interfere with that by inconveniently

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carrying around two devices: one for work and one for personal use.

BYOD, at least in terms of security, is a problem in two parts: there is a problem in preventing a data breach in the first place, and a problem in wiping the data after a breach.

Because of the sheer variety of devices in use by employees in their personal lives, it is very difficult for IT departments to establish common protocols and support measures to ensure the security of those devices. This is further complicated by the fact that most people don't treat their personal devices with the same level of security-mindedness that they would a work device. Just think how often many people misplace their personal mobile phone or leave it unlocked.

Likewise, when a data breach does occur, or when an employee leaves the company, how can the company wipe the business related data without also wiping the user's personal data?

To deal with these issues, cloud services providers generally insist on all work–related apps and data on a user's phone residing within a virtual container. If necessary, the container can be wiped without affecting the rest of the data on the phone. As the container is encrypted and can generally only be accessed via two-factor authentication and often through use of biometric data, it is very difficult for anyone but the appropriate user to ever access the company's data or applications.

SOME SERIOUS BENEFITS

The concerns, some valid and some less so, that companies had in the earlier days of cloud computing have largely been dealt with. The capabilities and

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functionality that modern cloud computing solutions can offer a business far outstrip what is possible with modern premises-based systems.

The Cost Issue

There is no simpler way to put it: cloud is cheaper. It eliminates the need for data-processing-related capital expenditures and maintenance costs on hardware. Cloud services also eliminate much of the HR overhead that comes with operating an on-premises network. That frees up IT staff to work on developing and improving apps and services for both employees and customers.

Changing Needs

The computing needs of a business change over time. Sometimes those needs become greater, sometimes smaller. Sometimes the change happens over the course of years or months; sometimes it varies from day to day. It is an inescapable truth, however, that computing needs change. Cloud services allow computing infrastructure to change in real time to reflect those needs. They obviate the need to over-provision resources to account for high-demand spikes, thereby avoiding the time-honored tradition of having a significant portion of a business's computing capacity lying fallow much of the time.

Compatibility

Platform tie-in has always been a very real and very significant issue for premises-based systems. Once a company commits to a specific hardware and software platform, anything that gets added to the system has to be made to play nice with everything else. This isn't always possible, and it prevents companies from keeping up with the capabilities of their competitors who, because their cloud provider can invest in the best new platforms without

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negatively affecting end-user experience, do have the best and newest systems available.

Uptime

In a modern business context, nothing happens when the servers are down. Downtime is a natural consequence of running a network at the hardware level. Because cloud services run on virtualized hardware, they can swap out, repair, upgrade, or do any other maintenance necessary to the hardware without affecting the operation of the platform.

Data Access from Everywhere

One of the most compelling features of cloud services is one that is almost impossible to accurately account for in advance of switching to cloud services: the new workflows that will be possible as the result of cloud services mobile connectivity.

By abstracting the network infrastructure and data into the cloud, it becomes possible for an employee to access everything from anywhere they have a network connection. And while it's true that this has the obvious and immediate effect of boosting productivity, it is not a simple linear relationship.

Full, integrated, mobile access doesn't just enable staff to more effectively do the things they've always done; it allows them to do things they could never do before. Mobile access allows for the development of entirely new workflows, processes, and corporate functionality, which has a roll-on effect for productivity across the board. This simple change can be transformative for any business ready to embrace it.

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Security

And so we come to the biggest issue preventing many enterprises from becoming early adopters of cloud technology, which is also, ironically, one of the biggest issues currently ushering late adopters into the cloud-based fold.

For most SMBs, the level of security provided by almost any cloud services provider is much better than they would ever be able to provision for themselves. Because cloud services providers specialize in provisioning secure network infrastructure, and because they encounter significantly more attacks and security threats than any one business would ever encounter, they are much better equipped to deal with those issues than any SMB could ever realistically hope to be.

CONCLUSION

The benefits are clear, and the risks and potential problems are well understood and largely mitigated. Legacy computing and telecommunications systems simply can't compete with the affordability, stability, and functionality of cloud computing systems, and that gap will only get wider with each passing day.

There is no longer any food in the cave, and the fire is dying out, but the good news is that the sun is rising. Cloud services are no longer the new technology on the block, and can no longer be viewed as just a fad. This is a tried, tested, and trusted technology in the arsenal of many competitors. It is here to stay, and if SMBs want to become and remain competitive, they need to take advantage of it.

It is time to venture forth from the cave. The only thing to fear is being left behind.

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