# Cloud Computing

## Deployment and Service Models

Author:
Lacretta Incorvaia

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## 2  ABOUT CLOUD COMPUTING

Today's businesses are tackling the challenge of solving their growing infrastructure and data demands by embracing Cloud Computing services.  Cloud Computing is helping to progressively transform every facet of the organization while reducing capital expenditure and eliminating upfront costs.  But, what exactly is Cloud Computing?

In its simplest definition, Cloud Computing is the process of delivering and sharing resources on demand, (i.e.: applications, databases, files, hardware, networks, servers, etc.,) via the Internet on a metered usage basis.

As a result of virtualization technologies, the days of local storage, multiple on-premise servers and mammoth in-house datacenters are quickly dwindling. These are especially exciting and beneficial times for the small to medium business market as resources and features that were previously only obtainable for large corporations are now instantly available to businesses of all sizes.

Yet, while there are many benefits to Cloud Computing, there are also risks.  The industry has seen substantial growth in the number of startup providers – all competing for your business.  Therefore, it is critical for you as a business owner, shareholder and/or manager to recognize which companies you can trust with your data and your intellectual property. Aligning yourself with providers and consultants working in your best interest with complete transparency and the technical know-how is crucial to the success of your Cloud implementation plan.

The first step in choosing the most suitable Cloud Service Provider for your organization is being familiar with the various Cloud Computing models and services.  In this whitepaper, we cover the four deployment models, Cloud Computing Stack and some of the most popular Cloud services available today.

## 3  CLOUD COMPUTING DEPLOYMENT MODELS

The National Institute for Science and Technology (NIST) defines four main cloud deployment models:

- ✓ **Public Cloud**: In the Public Cloud Deployment Model, all resources are owned and managed by a 3rd party provider, (i.e.: Amazon, Google, Microsoft,) via the Internet; and provides the highest degree of cost savings while reducing operational costs.

- ✓ **Private Cloud**: The Private Cloud Deployment Model shares the traits of a traditional business network environment. In this model, a business' internal IT staff takes on the role of the service provider by investing, building and managing their own infrastructure.

- ✓ **Community Cloud**: In a Community Cloud Deployment Model, resources are managed and shared by multiple organizations with similar regulations, policies, and compliance considerations.

- ✓ **Hybrid Cloud**: A Hybrid Cloud Deployment Model offers a 'best of both worlds' scenario for businesses.  This model embraces multiple Cloud model strategies, (i.e.: both private and public.)

## 4  THE CLOUD COMPUTING STACK

The diagram featured to the left represents the Cloud Computing stack with its three classifications:

1. **Software as a Service** - End User
2. **Platform as a Service** - Application Developers
3. **Infrastructure as a Service** - Network Architects and Engineers

## 4.1    Software as a Service (SaaS)

Software as a Service is defined as a delivery method that provides access to software and its functions remotely as a Web-based service. Software as a Service allows organizations to access business functionality at a cost typically less than paying for licensed applications and eliminates the need for organizations to manage the installation, set-up and regular upkeep and maintenance.[1]

Some vendor-specific examples of the SaaS delivery model include:

|  |  |
|---:|:---|
| **Accounting:** | QuickBooks Online |
| **Customer Relationship Management/CRM:** | Salesforce.com |
| **Enterprise Resource Planning/ERP:** | Microsoft Dynamics |
| **Payroll Processing:** | ADP |
| **Time and Attendance Management:** | Kronos |

## 4.2    Platform as a Service (PaaS)

Platform as a Service brings the benefits that SaaS provided for applications, but over to the software development world for developers. PaaS can be defined as a computing platform that allows the creation of web applications quickly, easily and without the complexity of buying and maintaining the software and infrastructure underneath it.[2]

## 4.3    Infrastructure as a Service (IaaS)

At its core, Infrastructure as a Service is a way for organizations to secure the hardware, storage, networking and other services they need to run their operations without worrying about buying or maintaining the equipment. With this model, enterprises "rent" equipment, paying only for the capacity and space they use.

An offsite service provider owns, manages and maintains the equipment, providing enough capacity to scale up or down to meet the needs of its customers.[3]

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# 5    *X* AS SERVICE

The Cloud is effectively flourishing with an abundance of 'as a service' models - sometimes referred to as XaaS, (Anything as a Service or Everything as a Service.)  This section highlights some of the most popular.

## 5.1    Disaster Recovery as a Service (DRaaS)

Significant data growth and regulatory compliance is forcing businesses to reconsider their storage needs and their disaster recovery and/or business continuity plans.  Data protection and the ability to recover a system at any point in time is of the highest priority.

Whether it is replicating servers offsite, "spinning up" virtual machines in the Cloud or employing the use of mobile disaster recovery units; there are wide-ranging solutions available for businesses of all sizes.

## 5.2    Desktop as a Service (DaaS)

Some refer to it as initiative; others consider it a revolution.  Regardless of which side of the debate you have chosen to be on, BYOD (Bring Your Own Device,) has unquestionably changed the landscape of how end users perform their daily tasks.  As a consequence of the consumerization of IT, developers and vendors have developed comprehensive solutions and services that will help businesses support, manage and control BYOD.

Desktop as a Service provides a flexible, simplified solution and proposes a replacement to traditional PCs while consolidating applications and data into a single Cloud solution. The solution offers a virtual desktop within the provider's Cloud where people can access all of their apps and data from a hosted desktop on any device, (Windows, Mac, tablet or smartphone,) from any location.

## 5.3 Hardware as a Service (HaaS)

At the heart of a company's Information Technology is its fleet of servers and desktops, and for some companies it can be difficult to determine the appropriate time to consider a replacement cycle. Undoubtedly, the risk of system failure will significantly increase as hardware ages, and for an organization that relies heavily on technology, the consequences of extended downtime can be devastating.

Hardware as a Service provides businesses with the ability to lease IT equipment, (i.e.: servers, desktops, notebooks, licensing, etc.,) on a monthly recurring basis without the stresses of ongoing maintenance, replacement cycles and depreciation costs.

## 5.4 Network as a Service (NaaS)

With Network as a Service, the entire network, (firewalls, routers, servers, etc.,) exists in the Cloud and provides customers with a simple way to get a network up and running, and is becoming an alternative solution to longer MPLS implementations. Some features of NaaS include:

- ✓ Advanced traffic analysis
- ✓ Bandwidth on Demand (BoD)
- ✓ Instant deployment
- ✓ Quality of Service (QoS)
- ✓ Redundancy

## 5.5 Security as a Service (SECaaS)

Security as a Service delivers managed protection for security-based services including:

- ✓ Authentication
- ✓ Data loss prevention (DLP)
- ✓ Encryption
- ✓ Firewalls
- ✓ Identity management
- ✓ Intrusion Detection and Prevention
- ✓ Logging and event management
- ✓ Spam filtering
- ✓ Virtual Private Networks
- ✓ Virus/Malware/Spyware protection

## 5.6 Unified Communications as a Service (UCaaS)

Communication is the foundation of all successful relationships. Email, voicemail, texting, instant messaging and conferencing can improve responsiveness and encourage collaboration.

Operationally, maintaining support systems for communications can add cost and strains IT resources. Companies are taking a hard look at budgets, trying to balance expenses with a need to connect employees, suppliers, and clients in multiple time zones and collaborate in real time.

Unified Communications as a Service offers a broad range of flexible collaboration features such as instant messaging, audio/video/screen sharing, virtual whiteboards and online presentations/meetings.[4]

## 5.7 Voice as a Service (VaaS)

Most commonly known as Hosted PBX, Voice as a Service brings all of the traditional voice features, (i.e.: voicemail, automated attendant, extensions, call reporting, conferencing, etc.,) to the Cloud without the costly investment of on-premise phone systems and support.

As with all Cloud service models, VaaS offers a great number of benefits for businesses including:

- ✓ Low upfront cost
- ✓ Disaster Recovery
- ✓ Advanced features
- ✓ Greater flexibility and scalability
- ✓ User-friendly/simplistic management interface

# 6   CONCLUSION

At Reliable Solutions Group, we are committed to educating our clients and helping them make solid, strategically planned decisions that will improve productivity, lower cost and secure their valued assets. For more information on how to better streamline your Information Technology and Telecommunications processes, contact us today!

# 7   CITED REFERENCES

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Define        Design

Deploy
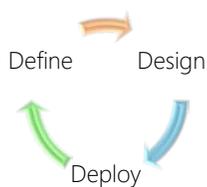
Businesses of all sizes rely heavily on technology.  The consequences of downtime, performance bottlenecks and security breaches can have a devastating impact on productivity.  At Reliable Solutions Group, LLC, we are committed to helping our clients **define**, **design**, and **deploy** Cloud, Information Technology and Telecommunications solutions and services that will help grow their business.  Let our expert team with more than 35 years of collective, hands-on experience, simplify the enterprise for you!

| Cloud Computing | Total Telecom | Worry-free IT |
|---|---|---|
| Cloud Servers/Managed Solutions | VoIP / SIP / Hosted PBX | Network & Server Management |
| Cloud Storage/Disaster Recovery | Voice Services | Desktop Support & Helpdesk |
| Hosted Exchange | Fiber / Ethernet / MPLS | Information Security & Data Protection |
| Office 365 | Data Services | Data Storage |
| Hosted PBX | Complete Telecom Management | Auditing and Strategic Planning |
| Unified Communications | | Procurement & Asset Management |

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