APEX: THE TRANSFORMATIVE PATH AHEAD

Siva Shankari Chandrasekaran
Site Reliability Engineer
IBM
Sivashankari.chandra@dell.com

The Dell Technologies Proven Professional Certification program validates a wide range of skills and competencies across multiple technologies and products.

From Associate, entry-level courses to Expert-level, experience-based exams, all professionals in or looking to begin a career in IT benefit from industry-leading training and certification paths from one of the world's most trusted technology partners.

Proven Professional certifications include:

- Cloud
- Converged/Hyperconverged Infrastructure
- Data Protection
- Data Science
- Networking
- Security
- Servers
- Storage
- Enterprise Architect

Courses are offered to meet different learning styles and schedules, including self-paced On Demand, remote-based Virtual Instructor-Led and in-person Classrooms.

Whether you are an experienced IT professional or just getting started, Dell Technologies Proven Professional certifications are designed to clearly signal proficiency to colleagues and employers.

Table of Contents

Abstract

Digital Transformation is prevalent in all industries around the world and is the key going forward. Understanding and adapting to it becomes crucial. Cloud Computing is one such technology that has been growing tremendously over the past many years. There are different models and service types delivered by multiple vendors. One of these is Dell's 'as a Service' solution - APEX.

So, how do we start with Cloud Adoption? What are the different models available? What is APEX? How does it work? How is it going to be a 'Game Changer'?

APEX is an innovative, agile Cloud Portfolio that simplifies Cloud Transformation for any business. Users get the advantage of better control, security, performance, and governance. This article will provide answers to these questions and delve more into APEX technical details. It will be helpful to the technologists who are looking to start their cloud journey and are interested to understand how APEX is playing a key role in the Cloud Transformation business.

Introduction

Overview

Traditional data handling is overly complex and results in huge processing efforts. Digital transformation helps to reduce the efforts along with providing a lot of advantages such as

1. Achieving better customer satisfaction
2. Agility
3. Better resource utilization
4. Generating huge revenue
5. Appropriate usage of data to generate in-depth insights

What is Digital Transformation?

Digital transformation is no longer a buzzword specific to a particular industry. It is fast-growing and expands its horizon across a wide range of industries such as manufacturing, banking & finance sectors, health care, and telecom to name a few. The latest innovative technologies like Artificial Intelligence, Big Data, Internet of Things, Cloud computing, etc. work in tandem to make the outcome more meaningful and effective. Technologies such as Artificial Intelligence, Big Data, and Internet of Things (IoT) deal with several intricate layers that result in blasts of data generation. There are a lot of advanced tools that equip to research Natural Language Processing (NLP), understanding biometrics, facial recognition, pattern observation, etc. Handling such a magnitude of data storage and processing demands huge IT Infrastructures whose administration and maintenance would be challenging.

Cloud Computing Basics

What is Cloud Computing?

Digital transformation also involves exploring various possibilities that may be new and unpredictable. This would demand huge investments in research, testing, etc. which may or may not provide desired outcomes. Cloud computing comes to the rescue as it can deliver anything 'as-a-service.'

The user need not

1. Own the infrastructure
2. Bear the cost associated with its administration and maintenance
3. Be concerned about the scalability, availability, and security

How Does Cloud Computing Work?

Cloud computing eliminates the pain points associated with Infrastructure administration such as capital and operating expenses. Customers can concentrate on innovation and growth instead of constantly worrying about infrastructure related costs and efforts. Cloud computing has become very mature in that it can instantly equip the user with the required configuration, tools, and software with minimal responsibility burden on the user.

The cloud service provider takes the ownership of an initial investment, scaling the resources up and down as needed, securing the infrastructure physically and by providing guidelines and features for logical infrastructure security, high availability solutions, and a user-friendly User Interface/Dashboard that gives a complete overview to the user. The billing of the services is also very granular and strictly driven by 'pay as per usage' model.

Cloud Deployment Models

As there could be a variety of end-user scenarios and requirements, there are different cloud deployment models to cater to the demands. Customers who have legal restrictions and cannot compromise this for cost can opt for **Private Cloud,** wherein the infrastructure would be made available as per the customer's preferences. Customers who do not move sensitive data to the cloud can opt for **Public Cloud** for less cost. Customers who can segregate their environment across these two factors can distribute their infrastructure by utilizing **Hybrid Cloud**.

Cloud Implementation Models

There are 3 core cloud implementation models based on the cloud layers that map to the physical infrastructure layer, platform layer and the software layer.

Infrastructure as a Service (IaaS)

In a datacenter, we have 3 primary core pillars which are Storage, Networking and Compute. These pillars comprise of Storage Arrays (for File, Block and Object data), Switches (SAN and

LAN), and Servers. This includes both Production and Disaster Recovery environment. Backup components are also an integral part of this.

Infrastructure as a Service (IaaS) models provide these hardware components access over an internet connection and the user can pay as per the usage. Responsibilities/Overheads such as managing the data center (cooling, power supply, footprint, capacity consideration, expansion to name a few) are taken care of by the Cloud Service Provider while the user can concentrate on their business needs.

Examples: AWS (Amazon Web Services) EC2, Google Compute Engine, Rackspace etc.

Platform as a Service (PaaS)

While IaaS deals with the core hardware infrastructure, on top of it we have many necessary software components. These include, but not limited to Operating Systems, Databases, Middleware tools, device drivers, code development/testing tools/platforms etc. These are called as platform that helps the development, testing and maintenance of web-based applications, database applications etc. In the Platform as a Service (PaaS) model, these logical layers are managed by the Cloud vendor while the user needs to take care of the building/managing the software they would need for their actual development/implementation.

Examples: OpenShift, AWS Beanstalk, Apache Stratos etc.

Software as a Service (SaaS)

In Software as a Service model, the entire stack is managed by the cloud service provider and the user can pay only as per the usage. This is very granular as only the usage is charged and everything is managed by the cloud vendor including licenses, software, application etc. In SaaS model, third party software products and features are also available as per the user's requirement. The cloud vendor takes care of the cost of the product and its license.

Examples: Office 365, Google Apps, Salesforce, Dropbox etc.

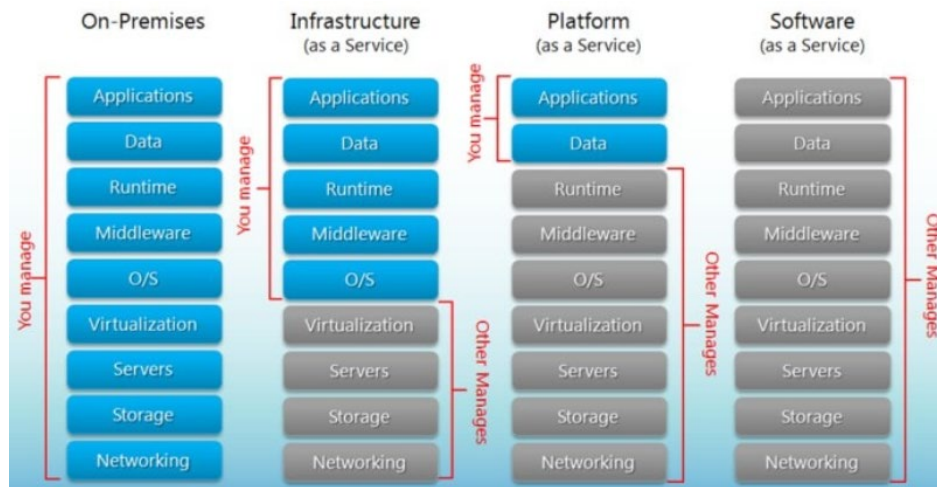The below figure clearly shows how different Cloud Implementation Models work.

Figure 1 Cloud Implementation Models

What is APEX?

APEX – An Overview

APEX, Dell's Cloud Portfolio offering, paves the pathway for digital transformation by providing cloud advantages such as simplicity, agility, and better control. The key highlight of APEX is that it allows the user to have flexibility when compared to the other cloud service providers. Though the model inherits the cloud advantages, the way it works is vastly different and hence stands different from others.

The cloud advantages may sound exciting, and customers would want to explore it. But, to start with their cloud journey, there are lot of careful decisions to be taken.

Cloud Journey

Below are the major factors to be considered while adapting to the cloud.

- Where to start my cloud migration journey?
- What do I do with my existing infrastructure?
- How do I decide on what portion of Public/Private/Hybrid cloud I would want to implement?

- Is there a possibility to leverage my existing data center?
- Who will manage my existing infrastructure if I choose to retain it?
- What happens to my ongoing costs of lease, annual maintenance charges, hardware, and logical infrastructure that I own?
- How do I manage my on-premises and cloud infrastructure seamlessly?

Additionally, there could be concerns about the customer getting locked in with a specific vendor. Also, total revamp of the workforce to support the cloud adoption is exceedingly difficult.

APEX answers most of these questions and resolves the concerns by providing a model that is suitable for any customer. The type of service provided to the customer is decided with respect to the customer's preference and is very subjective.

APEX Cloud Services

Customers who want to continue using their on-premises infrastructure but are looking for cloud-like operations can also hugely benefit from the APEX model. With the APEX model, transitioning to cloud is made easier and seamless. Dell has expanded its cloud capabilities by making the existing portfolio cloud suitable so that users can easily integrate with cloud service providers. Thus, cloud adoption can be made at the user's convenience and APEX can provide 'Everything as A Service.' APEX effectively bridges the gap between the cloud model and the on-premises infrastructure.

APEX Portfolio

The wide range of the APEX Portfolio clearly indicates the magnitude of flexibility and options that are available for cloud adoption.

- Dell APEX Cloud Services with VMware Cloud
- Dell APEX Storage Services
- Dell APEX Backup Services
- Dell APEX Private and Hybrid Clouds
- Dell APEX Multi-Cloud Data services

Let us look at the details of the three important portfolios.

DELL APEX Cloud Services with VMware Cloud

This combines the simplicity of Public Cloud and the features of private cloud such as better control, performance, and security. This is suitable for both virtualized and container-based VMware workloads. The administration and management are offloaded from the customer and the pricing is very flexible.

DELL APEX Storage Services

Dell's proprietary storage arrays that include mid-range and enterprise storage solutions have cloud capabilities. These are designed to provide 6 9's availability. Dell's partnership with Equinix provides

    i.   Quick expansion capabilities

    ii.   Highly secure multi-cloud abilities

    iii.   Simplified experience

    iv.   Reduced costs

    v.   Faster deployments

Dell APEX Backup Services

Dell APEX Backup services provide protection for end point devices such as desktops, laptops and mobile devices, SaaS applications and hybrid workloads.

Conclusion

Clearly, APEX provides customers with a wide range of choices, better control while adapting to the cloud, enables efficient usage of their existing infrastructure while delivering cloud capabilities and benefits. This helps simplify, ease, and improve the customer's cloud journey.