PRESENTATION ABOUT CLOUD COMPUTING AND SDN

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SECTION : 2

Cyber appetizer

AGENDA

- What is Cloud ?
- What is Cloud Computing?
- History
- Top Benefits of Cloud Computing
- Simple Examples of Cloud Computing
- Essential Characteristics
- Cloud Computing Architecture
- Cloud Models
- Pros and Cons
- What is Microsoft Azure?
- Conclusion

What is Cloud?

- In Cloud Computing, the word cloud is used as a metaphor for " the Internet." In other words, we can say cloud is something, which is present at remote location. Well it is an abstraction of underlying infrastructures involved.

What is Cloud Computing?

- Simply put, cloud computing is the delivery of computing services – servers, storage, databases, networking, software, and analytics and more- over the Internet(Cloud).

- Cloud Computing consists of hardware and software resources made available on the internet as they are managed by the third party services. These services typically provides access to advanced software applications, high end networks of server computers.

"You don't generate your own electricity. Why generate your own computing?" **-Jeff Bezos, Amazon.**

History

- It was a gradual evolution that started in the 1950s with mainframe computing
- After some time, around 1970, the concept of virtual machines (VMs) was created.
- In 1999, **Salesforce.com** started delivering of applications to users using a simple website.
- In 2002 Amazon provided First public cloud AWS (Amazon Web Service) , providing services like storage, computation.
- In 2009, **Google Apps** also started to provide cloud computing enterprise applications.
- In 2009, **Microsoft** launched Windows Azure, and companies like Oracle and HP have all joined the game. This proves that today, cloud computing has become mainstream.

Benefits of cloud computing

- Drive down costs
- Accessibility
- Productivity
- Scalability
- Access to automatic updates
- Business Continuity (Back up & Recovery)
- Pay structure

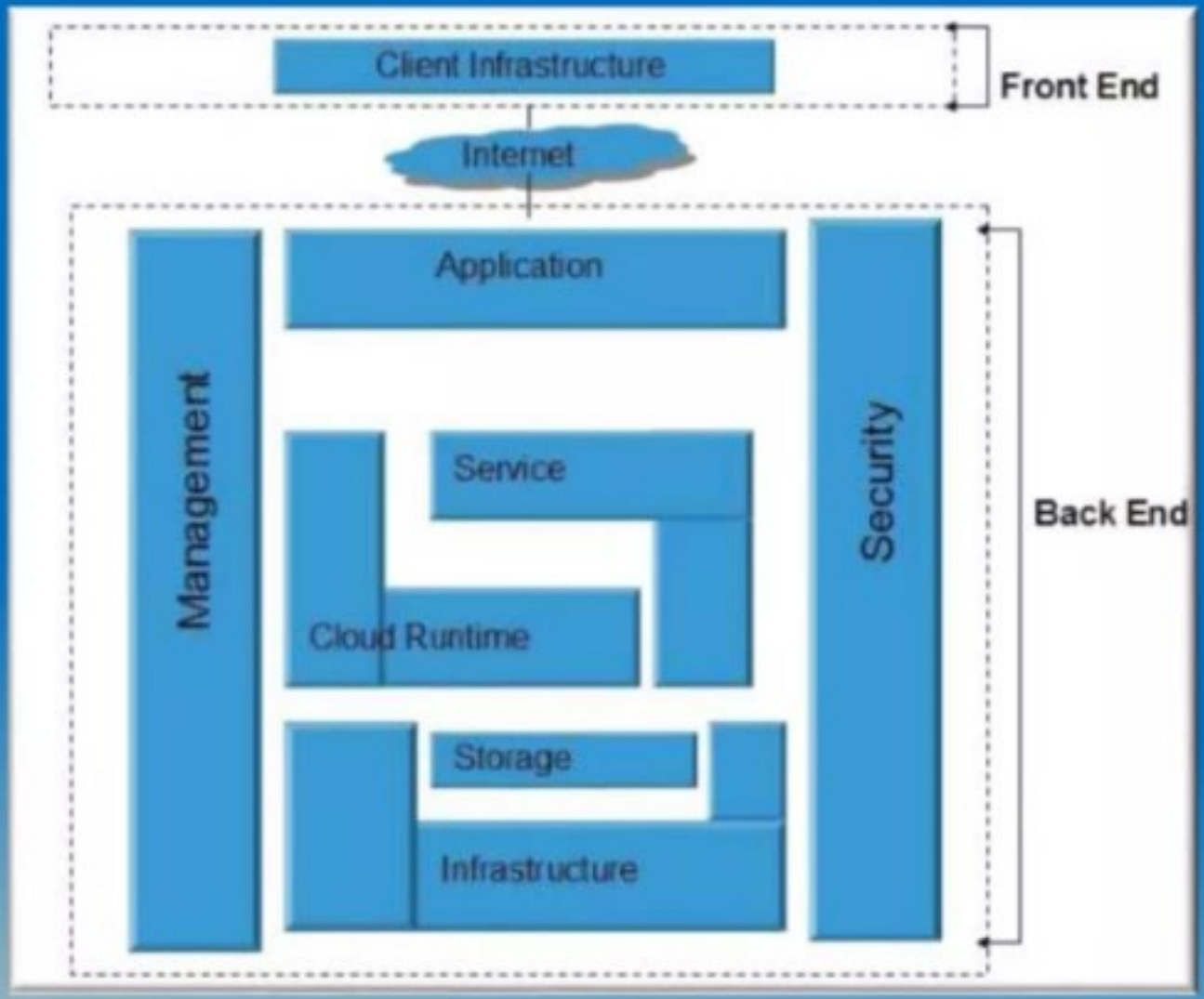
Simple Examples of cloud computing

- Email: Web-based email services like Gmail and Hotmail deliver a cloud computing service: users can access their email "in the cloud" from any computer with a browser and Internet connection, regardless of what kind of hardware is on that particular computer. The emails are hosted on Google's and Microsoft's servers, rather than being stored locally on the client computer.
- Office Productivity Software: Office 365, Google docs and Zoho office. This software allow you to keep and edit your documents online. By doing so, the documents will be accessible anywhere, and you can share the documents and collaborate on them. Multiple people can work in the same document simultaneously.
- Storage: One Drive, Google Drive, iCloud and Drop Box.

Common Cloud Characteristics

- On Demand Self Service
- Broad network access
- Multi-Tenancy (Resource Pooling)
- Rapid Elasticity
- Measured service

Cloud Architecture



Cloud Models

- Deployment Models
- Service Models

Deployment Models

- A cloud deployment model represents a specific type of cloud environment, primarily distinguished by ownership, size, and access.
- There are three common cloud deployment models:

Deployment Models

- Public Cloud: Public clouds are owned and operated by a third party cloud service provider, which deliver their computing resources like servers and storage over the internet. As the name suggests, **Public cloud** is open to public. Anyone can access and use it by paying accordingly

Deployment Models

- Private Cloud: The private cloud, in contrast to its public counterpart, isn't available to the public but is built specifically for a single organization to fit its needs. It may be managed internally or by a third-party and be hosted internally or externally.

- Hybrid Cloud: A hybrid cloud is a combination of a private cloud combined with the use of public cloud services allowing data and applications to move between private and public clouds. This model gives business greater flexibility and more deployment options

Service Models

In the world of cloud computing, there are three different approaches to cloud-based services:

- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)

Service Models

- Infrastructure as a service (IaaS):is a cloud computing offering in which a vendor provides users access to computing resources such as servers, storage, and networking. Organizations use their own platforms and applications within a service provider's infrastructure.

Key features

- Instead of purchasing hardware outright, users pay for IaaS on demand.
- Infrastructure is scalable depending on processing and storage needs.
- Saves enterprises the costs of buying and maintaining their own hardware.
- Because data is on the cloud, there is no single point of failure.

Service Models

- Platform as a service (PaaS): is a cloud computing offering that provides users a cloud environment in which they can develop, manage, and deliver applications. In addition to storage and other computing resources, users are able to use a suite of prebuilt tools to develop, customize and test their own applications.

Key features

- PaaS provides a platform with tools to test, develop, and host applications in the same environment.
- Enables organizations to focus on development without having to worry about underlying infrastructure.
- Providers manage security, operating systems, server software, and backups.
- Facilitates collaborative work even if teams work remotely.

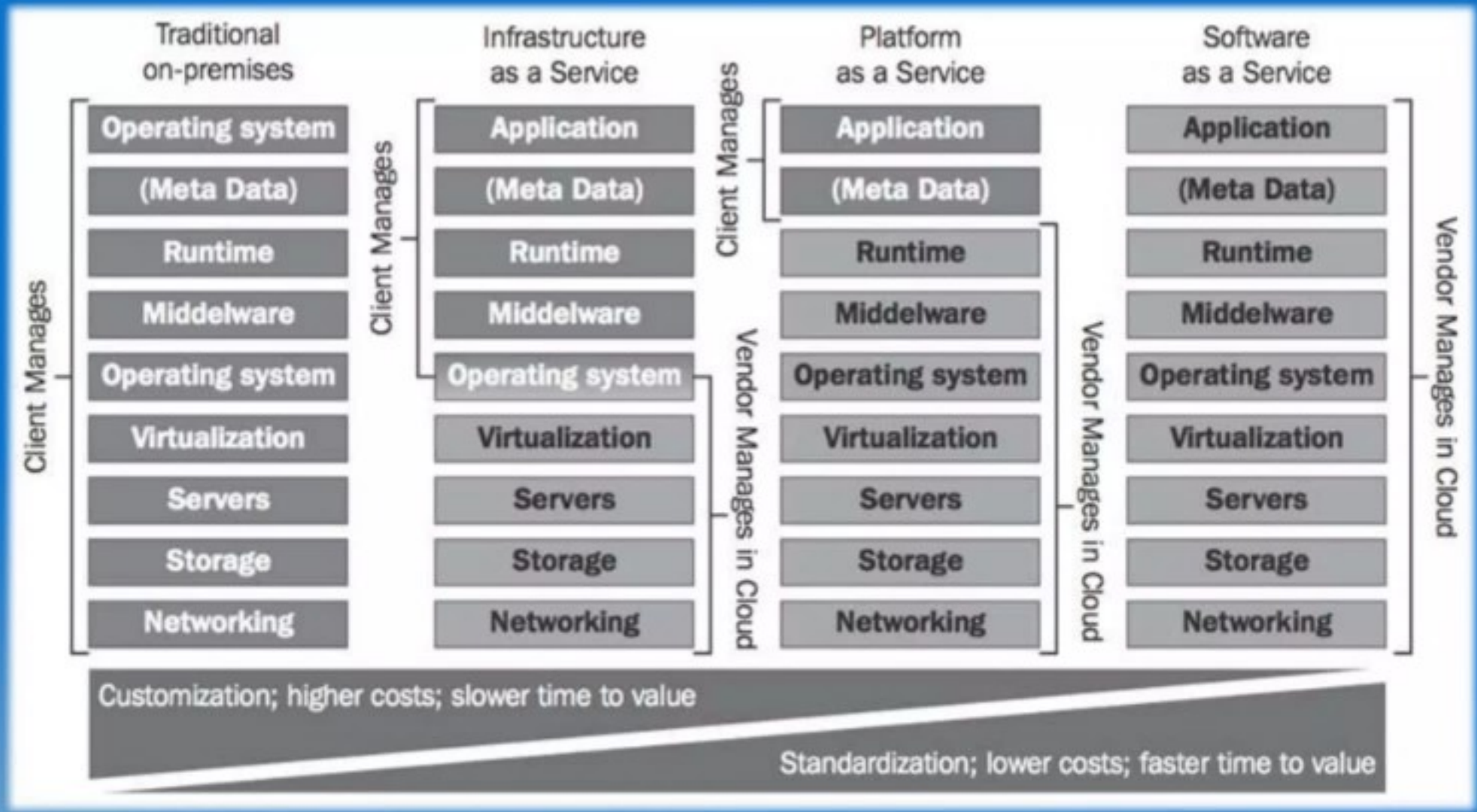
Service Models

- Software as a service (SaaS): is a cloud computing offering that provides users with access to a vendor's cloud-based software. Users do not install applications on their local devices. Instead, the applications reside on a remote cloud network accessed through the web or an API. Through the application, users can store and analyze data and collaborate on projects.

Key features

- SaaS vendors provide users with software and applications on a subscription model.
- Users do not have to manage, install, or upgrade software; SaaS providers manage this.
- Data is secure in the cloud; equipment failure does not result in loss of data.
- Use of resources can be scaled depending on service needs.

Service Models



Service Models

- **IaaS Providers**

Service Model

- **PaaS Providers**

Service Models

- **SaaS Providers**

Pros and Cons

Pros:

- Reduced hardware equipment for end-users
- Improved performance
- Lower H/W and S/W maintenance
- Instant software updates
- Accessibility
- Metered services
- Less expensive
- Improved Disaster Recovery

Cons:

- Requires good internet speed with good bandwidth
- Security
- Limited control on Infrastructure

What is Microsoft Azure?

- Azure is a flexible cloud platform (PaaS) that enables you to quickly build, deploy and manage applications across a global network of Microsoft – managed datacenters.
- You can build applications using any language, tool or framework.

Microsoft Azure

- **Virtual Machines:**

  Azure gives you the ability to create VMs by simply specifying the size and virtual hard disks (VHD) you want to use. Azure provides access to both Windows and Linux VHDs, so the developers has a freedom to choose what they want to work. Developers can use VMs to build and test applications quickly at low cost.

- **Web Sites:**

  You can use Azure as a platform for creating and hosting websites and web applications

Microsoft Azure

- **Mobile Services:**

  Azure's Mobile services give you the tools to create and deploy applications. The information that gets accessed by the app running on your device is stored in what's called a back-end database, and so Mobile services are reffered to as mobile Back-end as a service (mBaaS). With Azure , you can build apps for Android, iOS, HTML / JavaScript and Windows Phone.

Microsoft Azure

- Azure supports the broadest selection of operating systems, programming languages, frameworks, tools, databases and devices. Build apps with JavaScript, Python, .NET, PHP, Java and Node.js; build back-ends for iOS, Android and Windows devices. Azure cloud service supports the same technologies millions of developers and IT professionals already rely on and trust.

Conclusion

- Cloud computing has quickly become one of the most prominent buzzwords in the IT world due to its revolutionary model of computing as a utility. It promises increased flexibility, scalability, and reliability, while promising decreased operational and support costs

- Despite the potential gains achieved from the cloud computing, the organizations are slow in accepting it due to security issues and challenges associated with it. Security is one of the major issues which hamper the growth of cloud. The idea of handing over important data to another company is worrisome; such that the consumers need to be vigilant in understanding the risks of data breaches in this new environment.

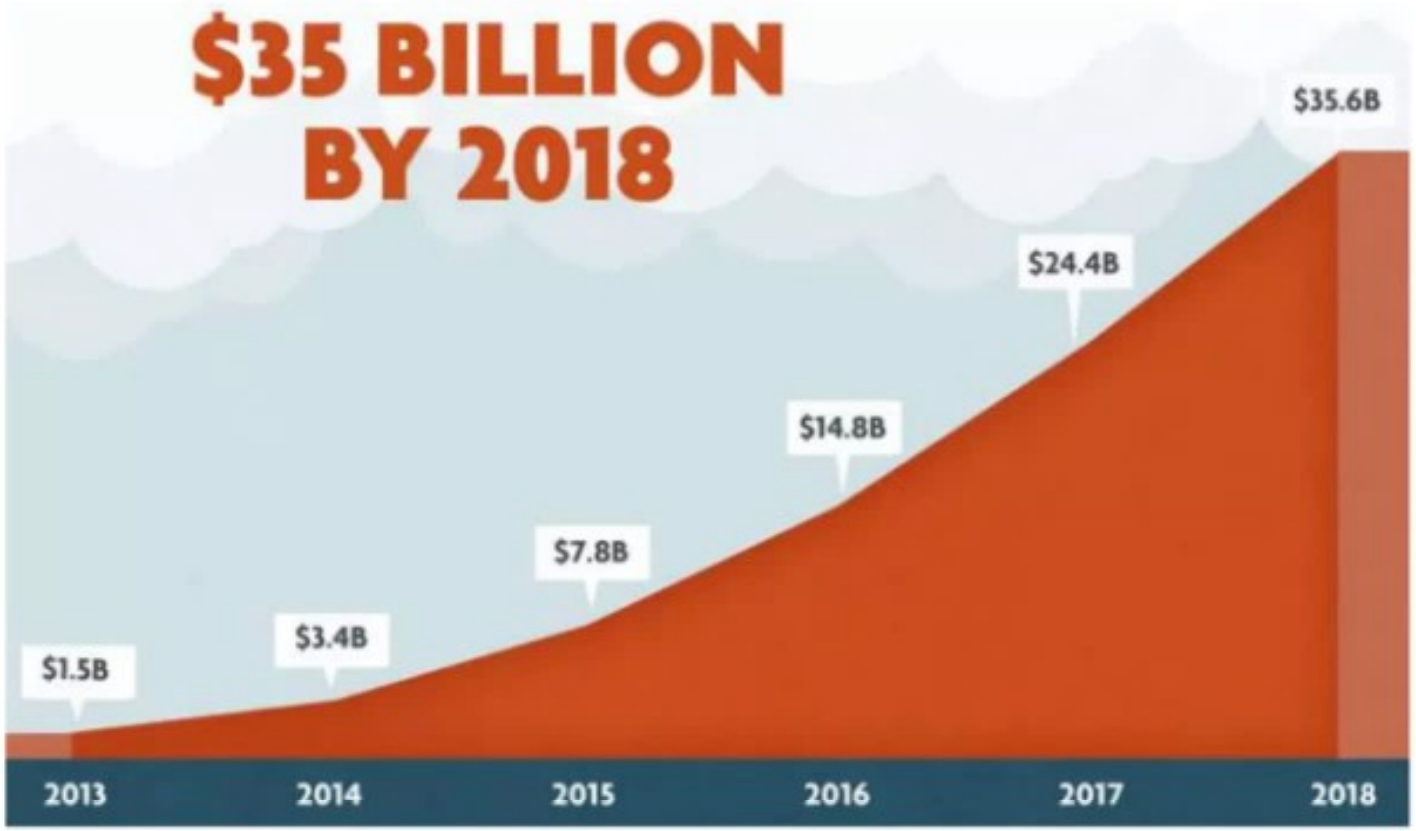
Getting Started With Software-Defined Networking (SDN)

A Quick Look at the Market and the Steps You Can Take to Jump in…

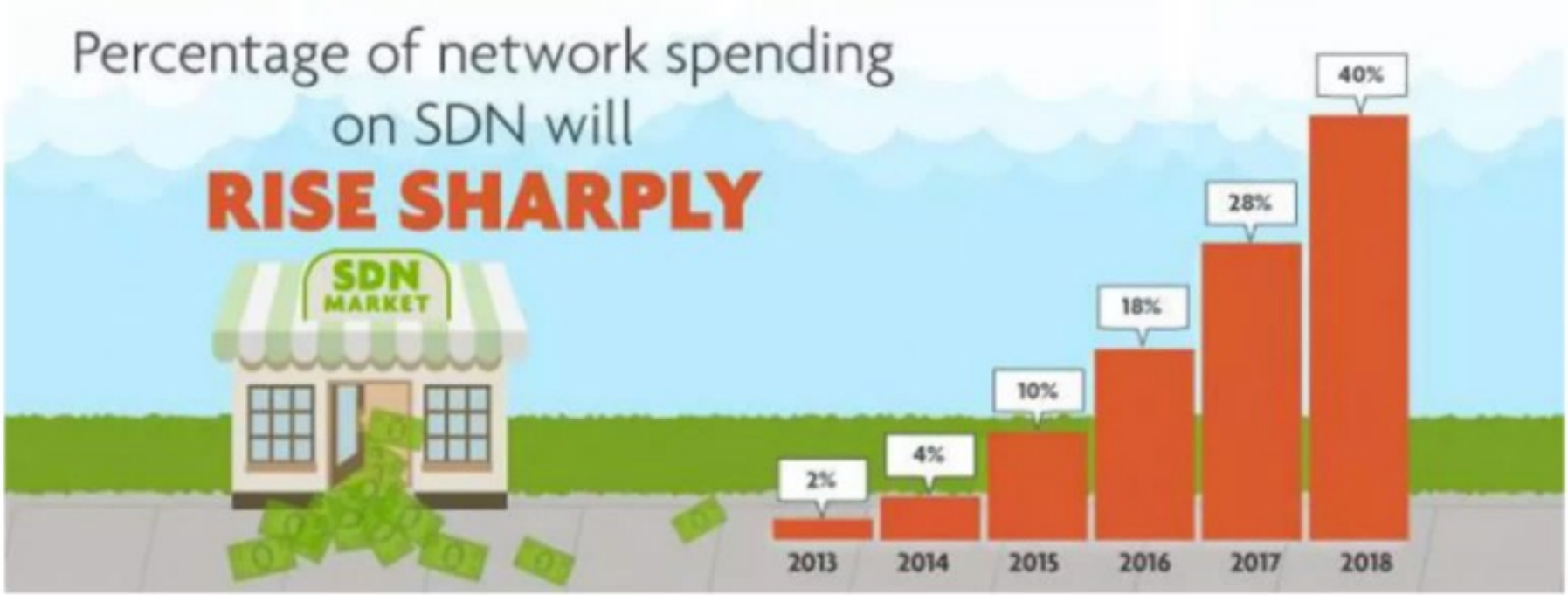
You're Interested in SDN – You're Not Alone

Let's Look at a Few Numbers

How Big is the SDN Market?

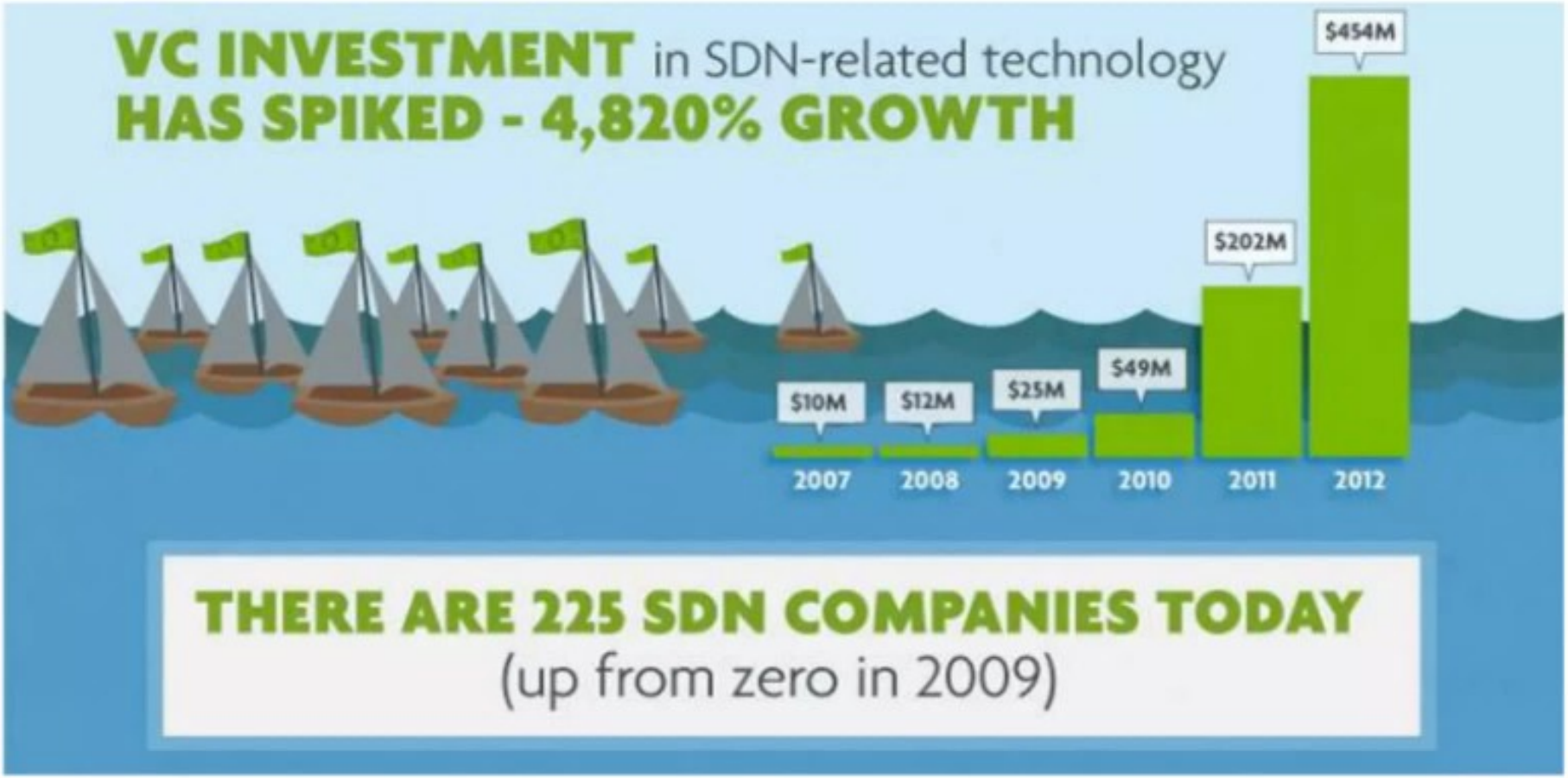


What's Driving the Growth – Cloud Computing, Big Data and Mobility



You Only Need to Look at One Network Segment to Understand the Potential Trajectory

This is Why Everyone is Trying to Get in the Market

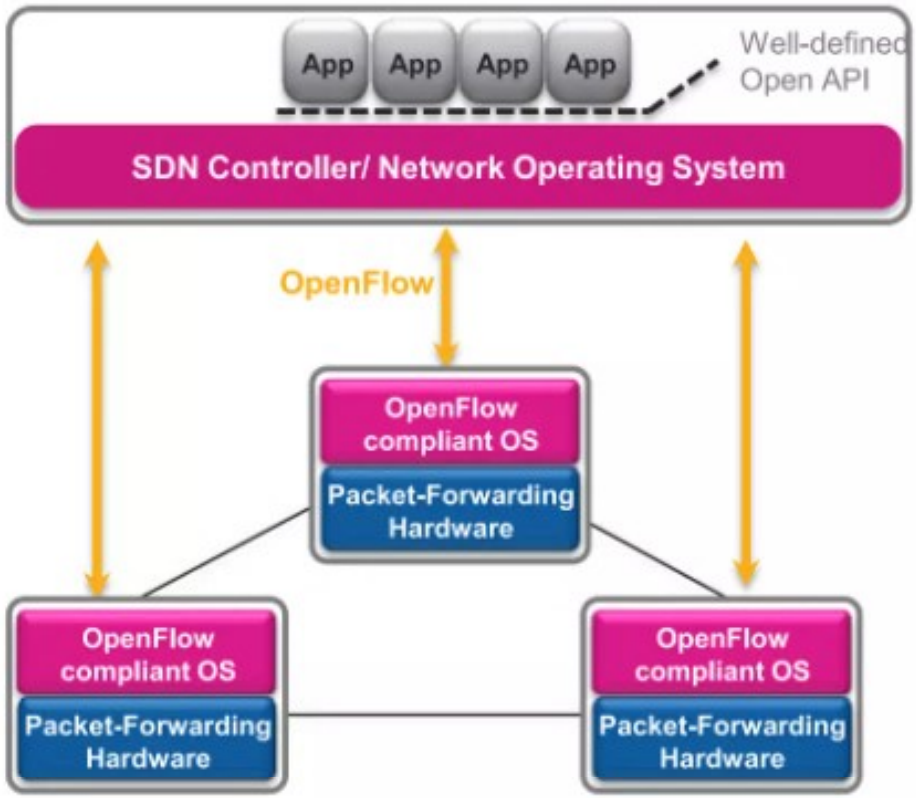


So What Exactly is It?

SDN is a New Way to Design, Build and Operate Networks

SDN Definition

1. Separates the network's control (brains) and forwarding (muscle) planes
2. Provides a centralized view of the overall network
3. Utilizes programmatic application interfaces (APIs)
4. Enables efficient orchestration and automation of network services



SDN Opens the Network Up for Innovation

It replaces static, inflexible and complex networks, with networks that are agile, scalable and innovative.

SDN Promises

Agility: enabling organizations to rapidly deploy applications, services, and infrastructure to meet needs

Scale: automate and optimize new and existing applications and services

Innovation: allowing organizations to create and deliver new types of applications, services and business models

Where Are We In the Market's Evolution?

SDN is Still in Its Early Stages…

Similar to other early-stages in enterprise software market evolutions, you will need to dedicate time and resources to customize solutions to meet your needs.

Analysts recommend that companies prepare for industry adoption of SDN by starting training IT staff in 2013 (Forrester)

So, How Should You Get Started?

Learn as Much as You Can

Familiarize Yourself with the Robust SDN Ecosystem; Understand What Technologies are Available and What People Are Doing With It…

Research & Development Organizations

Many in Research and Academia are collaborating to creating lots of new technologies or adapt old technologies

Open Source Projects

A Vibrant SDN Open Source community is actively working on Open Source Projects

225+ Organizations

Hundreds of New and Established Companies have announced SDN strategies

Figure Out Where SDN Might Make Sense for Your Organization

Identify Potential Use Cases

If You are an Enterprise,

Some Common Deployments Include Using SDN to…

- Slice Up the Network to Achieve More Flexible Configurations
- Stretch the Network Across Racks Within a Data Center or Across Data Centers in Private and Hybrid Clouds
- Automate and Orchestrate Delivery Across All Resources (Networks, Compute and Storage)
- Gain Visibility and Simply Troubleshooting Through Tap Aggregation

If You are a Service Provider

Some Common Deployments Include Using SDN for…

- Service Chaining to Configure L4-7 Functions Dynamically
- Dynamic Rerouting to Allow Large Data Flows to Bypass Bottlenecks and Create Instant Exchanges B/W Peering Networks
- Bandwidth-on-Demand to Meet End-User Requests for Instant Bandwidth
- End-to-End Service Provisioning from the Data Center to Mobile Handsets, While Adhering to SLAs and QoS Requirements

Make Sure You Are Ready

Define Your Business Case and Pick the Right Technologies and Partners to Help You Implement

There Are a Lot of Options

Make sure you understand what you need and pick the partner(s) that are best for your organization…

sdn central

225+ Organizations

Many companies have announced SDN Products and several are Shipping Solutions

Customers – Live Deployments

Check out real solutions being used by real customers at DemoFriday™

Pitfalls to Avoid

Attempting to Run Before Crawling

- Lack of clear business objective / problem statement
- Failure to manage expectations
- Failure to understand limitations of current software & hardware

Putting Your Trust in a Single Vendor

- Their focus is on selling products, not working with you to solve your problems
- Many products were designed 2–3 years back, before problems and use cases were well understood
- Don’t be forced down a path with a solution that was never designed for your use case in mind

Thank you.