Technology Exploration Forum

SDN's Push Toward Big Data

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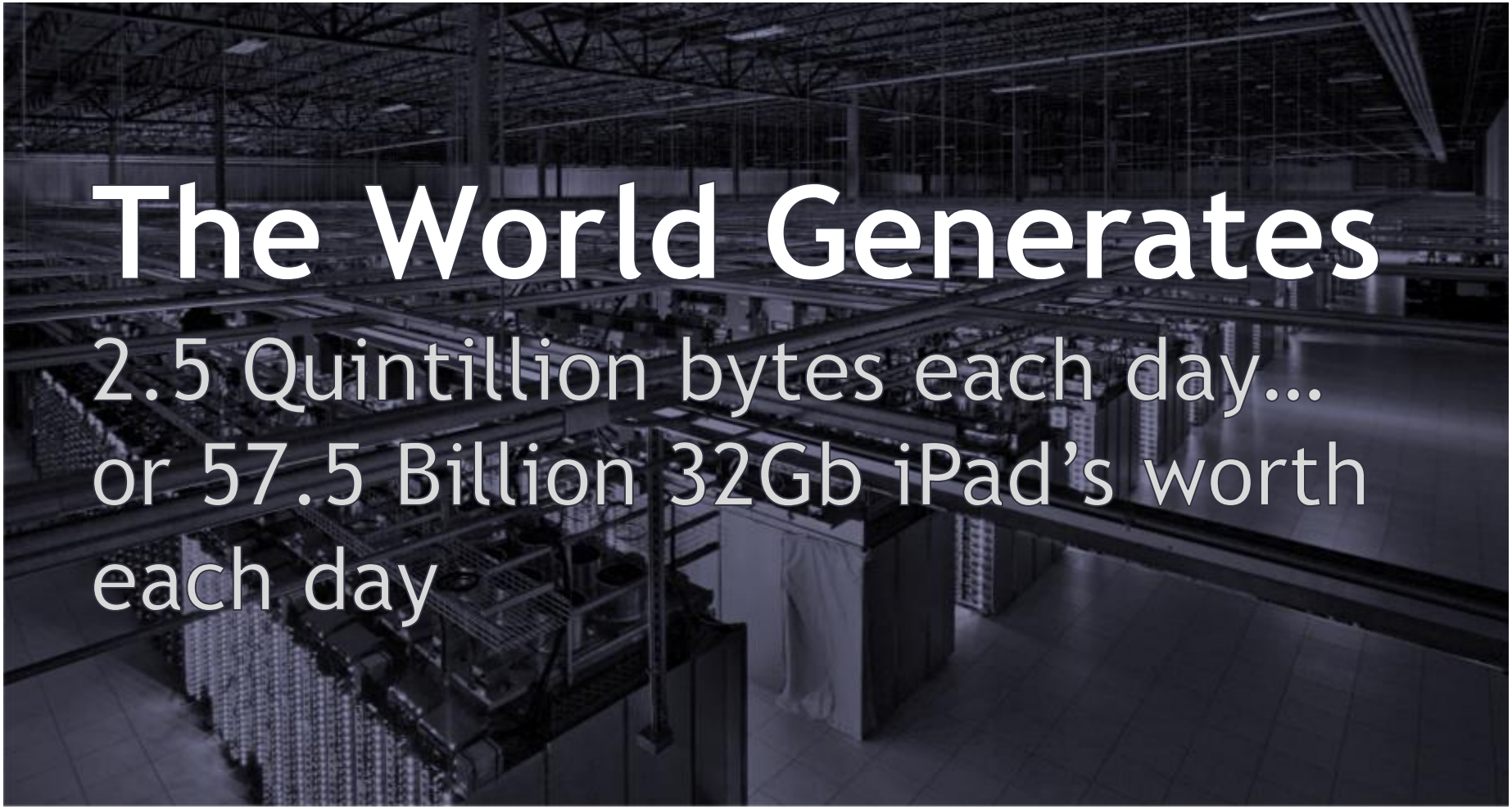
Extreme Networks

The Growth of Big Data

Image: NCSA's Blue Waters sustained petascale supercomputing facility

How much Data?



Video – dense data… and fast

Every minute…

YouTube - 48 hours of video

Google - 2 million queries

Websites - 571 new

Facebook - 34,722 likes…

Source: The Big Data Insight Group

Data Sets – Structured & Unstructured

Structured Data

- Anything that fits neatly into traditional database schemas
  - Email
  - Spreadsheets
- Can be easily:
  - Stored
  - Queried
  - Analyzed

Unstructured Data

- Everything else…
  - May contain patterns
  - Also it might not!
    - Video
    - This Presentation!
- Doesn't fit in fixed length fields

Unstructured Data

Source: Gigapixel

So What?

Turn Raw Data into Information Capital for Business

To do this we must:

Achieve Speed and Efficiency by Parallelizing speed and efficiency across hundreds of thousands of servers connected via high speed servers

The Three Steps

1. Split the data across multiple servers
2. Analyze the data blocks in parallel
3. Merge Results

Rinse and repeat until the job is complete

Highly Efficient

Networks

- Low latency
- Resilient
- Low power
- Converged

Servers

- High density
- Virtualized
- Clustered
- More powerful

Storage

- Shared (SAN)
- Highly Available
- Data Protection
- Legacy and new

Server Virtualization and Clustered Applications Demand High Performance from the Network

SDN: Evolution to Network Simplicity

Mainframe Computing

- Specialized Applications
- Specialized OS
- Specialized Hardware

Then Computing Evolved

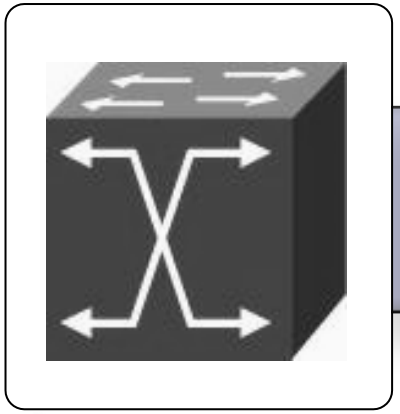
Distributed Computing

- Commercial Apps Open Interfaces
- Commercial OS Open Interfaces
- X86 Architecture Open Interfaces

Proprietary / Closed / Slow Innovation

Standards Based / Open/Rapid Innovation

Legacy Networks



- Specialized Features
- Specialized Control Plane
- Specialized Hardware

Now Networking Evolves

SDN

- Programmable/ Scriptable Features
- Open Control Plane
- Merchant Silicon

Emergence of New Open Standards

Two notable examples – Software Defined Networking:

OpenFlow

- Remote control of network devices & traffic management
- www.openflow.org

openstack™ CLOUD SOFTWARE

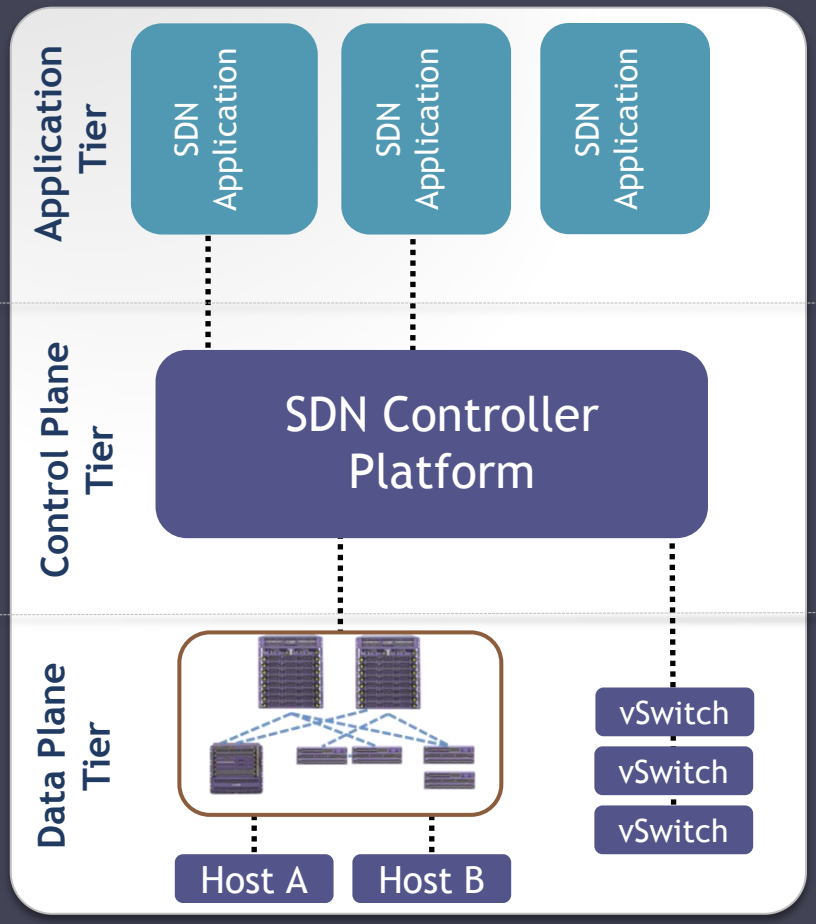
- Open source software for building public & private clouds
- www.openstack.org

Leveraging best-of-breed technologies

Preventing vendor lock-in

Vision: 3-Tier SDN Architecture

Next Generation Approach to Building Networks

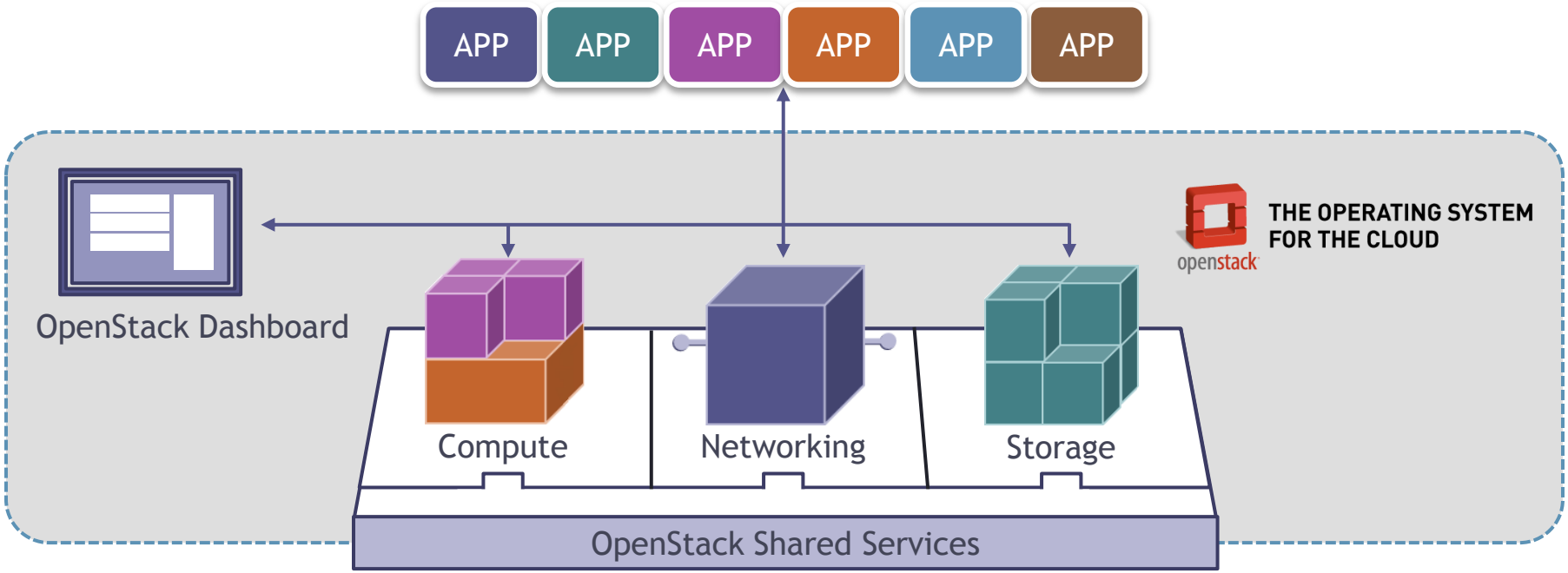


SDN Applications

SDN Controller

SDN Data Plane

OpenStack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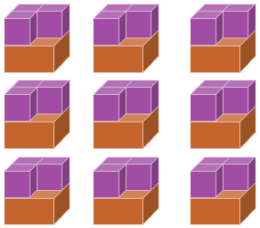
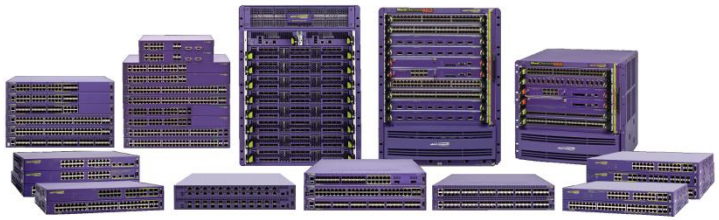
OpenStack Dashboard
Compute
Networking
Storage
OpenStack Shared Services
THE OPERATING SYSTEM
FOR THE CLOUD
openstack





Poised for Success

As the Potential of Big Data becomes clear…

- Ensure the network is prepared to scale to these emerging Standards

Any successful solutions play will leverage two key elements

- The existence of Patterns in big Data
- The programmability of the network that SDN promises

Thank you