REAL TRANSFORMATION
Dell IT: The Dell Digital Way

Accelerating our Digital Transformation

Mariely Franzetti, VP, Dell Digital
IT as a Back-Office Player
IT as a Catalyst

DRIVING BUSINESS TRANSFORMATION
# Running Dell Digital

<table>
<thead>
<tr>
<th>22 Datacenters</th>
<th>78K+ Virtual Machines</th>
<th>87% Server Virtualization</th>
</tr>
</thead>
<tbody>
<tr>
<td>160PB+ Storage</td>
<td>2,800+ Applications</td>
<td>70K+ Mobile phones WS1 MDM managed</td>
</tr>
<tr>
<td>24M orders</td>
<td>3,300+ Dell Digital Way conversations</td>
<td></td>
</tr>
<tr>
<td>84K shipments each day</td>
<td>172 Ecosystems supported</td>
<td></td>
</tr>
<tr>
<td>Online</td>
<td>26 languages in every country in the world</td>
<td></td>
</tr>
<tr>
<td>26 languages in every country in the world</td>
<td>172 Ecosystems supported</td>
<td></td>
</tr>
</tbody>
</table>
The Digital Blind Spot

Disruptors in mirror are closer than they appear.
The way businesses engage is changing

Customers are Digital
Channels are Digital
Competitors are Digital
Products are Digital
Employees are Digital
Business Operations are Digital
CIO CHALLENGE

Cost & Efficiency

Innovation
Culture change is very important
The Dell Digital Way

PEOPLE
Simple, streamlined, balanced and direct

PROCESS
Product-focused, fast, continuous delivery

TECHNOLOGY
Modernized network, architecture and applications

CULTURE
The Dell Digital Way is a cultural shift in how we partner with the business using a direct, simplified and streamlined approach to quickly design, develop, iterate and deliver new products and capabilities.
Dell Digital: Operating Model

Enables direct relationships with business partners and customers to collaborate and enable continuous business delivery

**Business Prioritization, Iterative Planning with Business Leaders, and IT Leaders**

- Sales
- Marketing
- Services
- Finance, HR
- Manufacturing, Supply Chain

- Infrastructure Platform Engineering & Operations
- Digital / Application Transformation, Enterprise Architecture
- IT Business Operations

- Balanced Teams (IT, Business)
  - Pair Programming
  - Test Driven Development
  - Digital & IT Security

- Continuous Integration / Continuous Deployment (CI/CD)
Building a digital foundation for the business

ANY DEVICE

ANY APPLICATION

ANY CLOUD

Private Clouds

Public Clouds

Cloud-native

SaaS

Traditional

SaaS

SaaS

SaaS

Edge Computing

IoT

Telco Networks
Dell Digital’s transformation journey

THE DELL DIGITAL WAY

People | Process | Technologies

IT Transformation
Workforce Transformation
Security Transformation
Application Transformation
We need to think and act like a software company

TRADITIONAL
Monolithic architecture
Move to IaaS
Automation
Achieve efficiency

CLOUD-NATIVE
Micro-services architecture
Cloud-native platform – PaaS/CaaS/FaaS
Continuous integration / delivery

Lines of Business
Agile Development
Hybrid Cloud Platforms
Service Delivery

DevOps

Private
Public
Managed Cloud

Users / Consumers
Dell Digital Labs
What are the ingredients?

Balanced teams blend three techniques to deliver products to their users.

LEAN STARTUP + USER-CENTERED DESIGN + XP
Platform services

Self-Service
- On-Boarding
- Dashboard
- Billing & Metering
- Marketplace Add-On

Operation
- Pivotal Application Service
- Pivotal Container Service
- Pivotal Function Service
- Zero Downtime
- Failover & Recovery
- Auto Scaling
- Security
- Platform Upgrade

Marketplace Add on (As-a-Service)
Built on (CaaS/IaaS)

Database
- MongoDB
- PostgreSQL
- MySQL
- Cassandra
- Neo4j

Messaging / Streaming / Search
- Kafka
- RabbitMQ
- Elastic

Registry & Repository
- HARBOR
- Artifactory
- GitLab

Security
- SSO
- Vault
- Cyberark

Application & Security Monitoring
- New Relic
- Twistlock
- Wavefront
- Riverbed

Business / Developer Community

Dell DC

Pivotal Container Service

Pivotal Function Service

Pivotal Application Service

Dell DC

virtustream
Cloud native example: **MyService360™**

A cloud-based dashboard modernizing our customer service experience

Implemented with Pivotal Cloud Foundry on Dell EMC Data Lake

<table>
<thead>
<tr>
<th>4 months</th>
<th>Release cycle</th>
<th>2 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 hours</td>
<td>Deployment</td>
<td>Zero</td>
</tr>
<tr>
<td>External</td>
<td>Testing</td>
<td>DevOps SME</td>
</tr>
<tr>
<td>On deployment resources</td>
<td>Dependency</td>
<td>On demand with Pivotal Cloud Foundry</td>
</tr>
<tr>
<td>No continuous – 4 weeks</td>
<td>Delivery</td>
<td>Selective on demand</td>
</tr>
</tbody>
</table>
MySales Mobile App: Built on Pivotal Cloud Foundry

- **Attainment**
- **Contacts (Internal & External)**
- **Create Trip Reports**
- **Opportunity Pipeline Views**
- **Order/Shipping / Service Request data**
- **Mapping of Nearby Accounts**

**Account Info**

- Account Owner: VMware Business Development Manager
- Account Team: Account System Engineer
- Alen Rosen: B&I Technical Sales Rep
- Marcus Mathis: Dell Data Protection Systems Engineer
- Juliet Mills: SVP, APJ S&O Inside Sales Rep
- Kevin Dobros: Imaging Technical Sales Rep
- Barry Spre: Data Center Sales Specialist

**Trip Reports**

- Trip Report: CVR Info
- Goal/Objective: Business Ten
- Related Opportunity: Dec 22, 2017
- UOB (Unpaid)
- Type: On-Site Customer Visit
- On-Site Notes: 
- Competition: New vs. Dell
- Summary: Need an email discussion with Peter. Co-presenter was helpful. Need to reach out to senior executives for further discussions.

**Opportunity Pipeline**

- Opportunity Pipeline: NA
- Stage: NA
- Probability: NA
- Comments: NA

**Order Info**

- Order: N/A
- Product: N/A
- Quantity: N/A
- Description: N/A
- Total: $23.6K
- Estimated Delivery Date: N/A
- Product Description: N/A

**Mapping of Nearby Accounts**

- Accounts Map View
- Customer: N/A
- Company: N/A
- Address: N/A

**MySales**

- © Copyright 2019 Dell Inc.
Dell Digital global footprint

- **22 Data Centers**
  - Santa Clara, CA
  - Austin, TX
  - Austin, TX
  - Franklin, MA
  - Durham, NC
  - RTP, NC
  - Limerick, Ireland
  - Cork, Ireland
  - Lodz, Poland
  - Chengdu, China
  - Xiamen, China
  - Xiamen, China
  - Bangalore, India
  - Chennai, India
  - Penang, Malaysia
  - Penang, Malaysia
  - KL, Malaysia
  - Hortolandia, Brazil

- **78K+ VMs**
- **145K Users**
- **160PB+ Storage**
- **219K Devices managed by Workspace ONE**
- **22 Data Centers**
- **172 Ecosystems supported**
- **145K Users**
- **2800+ Applications**
- **24M Orders each week**

- **22 Data Centers**
  - Santa Clara, CA
  - Austin, TX
  - Austin, TX
  - Franklin, MA
  - Durham, NC
  - RTP, NC
  - Limerick, Ireland
  - Cork, Ireland
  - Lodz, Poland
  - Chengdu, China
  - Xiamen, China
  - Xiamen, China
  - Bangalore, India
  - Chennai, India
  - Penang, Malaysia
  - Penang, Malaysia
  - KL, Malaysia
  - Hortolandia, Brazil

- **78K+ VMs**
- **145K Users**
- **160PB+ Storage**
- **219K Devices managed by Workspace ONE**
- **22 Data Centers**
  - Santa Clara, CA
  - Austin, TX
  - Austin, TX
  - Franklin, MA
  - Durham, NC
  - RTP, NC
  - Limerick, Ireland
  - Cork, Ireland
  - Lodz, Poland
  - Chengdu, China
  - Xiamen, China
  - Xiamen, China
  - Bangalore, India
  - Chennai, India
  - Penang, Malaysia
  - Penang, Malaysia
  - KL, Malaysia
  - Hortolandia, Brazil

- **160PB+ Storage**
- **219K Devices managed by Workspace ONE**
- **22 Data Centers**
  - Santa Clara, CA
  - Austin, TX
  - Austin, TX
  - Franklin, MA
  - Durham, NC
  - RTP, NC
  - Limerick, Ireland
  - Cork, Ireland
  - Lodz, Poland
  - Chengdu, China
  - Xiamen, China
  - Xiamen, China
  - Bangalore, India
  - Chennai, India
  - Penang, Malaysia
  - Penang, Malaysia
  - KL, Malaysia
  - Hortolandia, Brazil

- **219K Devices managed by Workspace ONE**
- **22 Data Centers**
  - Santa Clara, CA
  - Austin, TX
  - Austin, TX
  - Franklin, MA
  - Durham, NC
  - RTP, NC
  - Limerick, Ireland
  - Cork, Ireland
  - Lodz, Poland
  - Chengdu, China
  - Xiamen, China
  - Xiamen, China
  - Bangalore, India
  - Chennai, India
  - Penang, Malaysia
  - Penang, Malaysia
  - KL, Malaysia
  - Hortolandia, Brazil

- **2800+ Applications**
- **24M Orders each week**
- **22 Data Centers**
  - Santa Clara, CA
  - Austin, TX
  - Austin, TX
  - Franklin, MA
  - Durham, NC
  - RTP, NC
  - Limerick, Ireland
  - Cork, Ireland
  - Lodz, Poland
  - Chengdu, China
  - Xiamen, China
  - Xiamen, China
  - Bangalore, India
  - Chennai, India
  - Penang, Malaysia
  - Penang, Malaysia
  - KL, Malaysia
  - Hortolandia, Brazil

- **24M Orders each week**
- **22 Data Centers**
  - Santa Clara, CA
  - Austin, TX
  - Austin, TX
  - Franklin, MA
  - Durham, NC
  - RTP, NC
  - Limerick, Ireland
  - Cork, Ireland
  - Lodz, Poland
  - Chengdu, China
  - Xiamen, China
  - Xiamen, China
  - Bangalore, India
  - Chennai, India
  - Penang, Malaysia
  - Penang, Malaysia
  - KL, Malaysia
  - Hortolandia, Brazil
IT transformation enables Digital transformation

Traditional
APPLICATIONS

Cloud-native
APPLICATIONS

IT Transformation
Optimize IT for the Business

Digital Transformation
IT is the Business

2000  2015  2030
We have a variety of applications / workloads
We need an infrastructure strategy for both traditional and cloud-native workloads

**Traditional Apps (IaaS)**  
Second Platform (Client/Server)
- Systems of record
- Proprietary databases
- Client/server applications
- Require secure, highly available, reliable infrastructure

**Cloud-Native Apps (PaaS)**  
Third Platform (Cloud-Mobile-Social-Big Data)
- Web based
- Micro-services based
- Require agile, highly available, secure infrastructure
Today’s Multi-cloud landscape

HYBRID CLOUD
- Private
- Public
- Edge

NATIVE PUBLIC CLOUD
- Public Cloud

SaaS
- Public SaaS
Multi-cloud approach drives App Modernization

**Existing Workloads**
- Cost Reduction
- Security
- Reliability
- Control

**Cloud Native Workloads**
- Time to market
- Innovation
- Scale
- Differentiation

**Maintain**
Keep app as is in existing environment

**Replatform**
Keep app as is, move to new environment

**Multi-Tier Hybrid**
Shift portions of multi-tier app to public cloud

**Refactor**
Modify app, new environment, on-prem or in the cloud

**Develop for Cloud**
New cloud native app deployed on-prem & IaaS

**Replace**
Move to SaaS version of packaged app
Consolidating Multiple Environments
Consolidating Multiple Environments

Environment 1
Consolidating Multiple Environments

Dell’s Internal Private Cloud
Going all-in resulting in cost savings and management efficiencies
Our multi-cloud deployment
Creating a common operating environment across clouds

Consistent Operations

Private Cloud
VMware Cloud on AWS

Consistent Infrastructure

VMware
virtustream
Azure
VMware Cloud on AWS

salesforce
workday
SaaS
servicenow
Office 365
Dell Digital MDC Reference Architecture

**Business Services**
- IaaS
- PKS
- PAS
- PFS
- XaaS

**Cloud Automation Services**
- Service Broker
- Cloud Assembly
- Resiliency
- Dynamic Sizing

**Software Defined Data Center**
- ESXi
- NSX
- VSAN
- VxFlex OS

**Integrated Infrastructure**
- PowerMax SRDF
  - Vertical Scale - High Transaction
  - Minimal VMs
- VxRail
  - Primary Compute Platform
  - FSC Commerce Services
  - Search
- Isilon
  - Data Lake, AI, ML
  - Files and Blocks Storage
- VxFlex Ready Nodes
- DataDomain
  - Data Protection Solutions

**Modern Network Architecture**
- Spine/Leaf 802.3cc, 802.3cd

**Workload Driven Resources**
- Vertical Scale - High Transaction
- Minimal VMs
- Primary Compute Platform
- FSC Commerce Services
- Search
- Data Lake, AI, ML
- Files and Blocks Storage
- Data Protection Solutions

**Private Cloud**

**Public Cloud**

**SaaS**
- virtustream
- AWS
- Microsoft Azure

**Vertical Scale**
- High Transaction
- Minimal VMs
- Primary Compute Platform
- FSC Commerce Services
- Search
- Data Lake, AI, ML
- Files and Blocks Storage
- Data Protection Solutions

**Primary Compute Platform**
- FSC Commerce Services
- Search
- Data Lake, AI, ML
- Files and Blocks Storage
- Data Protection Solutions

**Dynamic Sizing**

**Modern Network Architecture**
- 802.3cc, 802.3cd

**Spine/Leaf**
- 802.3cc, 802.3cd
Dell Digital’s transformation journey

THE DELL DIGITAL WAY

IT Transformation

Workforce Transformation

Security Transformation

Application Transformation

People | Process | Technologies
A modern workforce is a connected workforce

Most team members prefer a flexible work environment

Almost half say they would quit a job with substandard technology

Most say technology influences the job they will take

Team Members
Cultivating a flexible work culture to attract and retain the best talent

Digital Experience
Enabling a highly mobile and connected workforce to be their best and do their best work

Workplace Innovation
Featuring ultra modern workspaces that foster creativity, productivity, and collaboration
Transforming our digital workforce

- **Personalize the Workforce Experience**: Create role-based personas to deliver the right apps, data and devices.
- **Enable Dynamic Teams**: Enable secure collaboration and communication anywhere, anytime on any device.
- **Simplify Workforce Service Consumption**: Deliver faster, more efficient workforce services with automation and self-service.
Technology that matches work styles & personas

CARE / SUPPORT
- Desk Based
- Non-Technical
- Collaborative
- Optiplex DT / VDI

ENGINEERING
- Desk Based
- Highly-Technical
- Collaborative
- Precision DT

BUSINESS PRO
- Flexible Work Style
- Non-Technical
- Collaborative
- Latitude

PRE SALES
- Flexible Work Style
- Technical
- Collaborative
- Precision NB

FIELD SUPPORT
- Hyper Mobile
- Highly-Technical
- Collaborative
- Precision NB

FIELD SALES
- Hyper Mobile
- Non-Technical
- Collaborative
- Latitude

Sean

Priyanka

Matthew

David

Jennifer

Corey

Sean

Priyanka

Matthew

David

Jennifer

Corey
Best-in-class experience
Office | Car | Home | On-the-go | Anywhere | Anytime

ALWAYS CONNECTED
- No VPN
- Workspace One
- VDI Horizon

MODERN COLLABORATION
- No VPN
- Any device
- Anytime / Anywhere

UNIFIED CONFERENCING
- Video, audio & web conferencing
- Any device anywhere

PRODUCTIVE ON DAY 1
- Onboarding transformation
- My HR / My IT

CONTEMPORARY SUPPORT
- Tech Central
- Self help – Got a minute video?

Connect Instantly
Unified Workspace

Best-in-class, secure, seamless experiences wherever you work.

Contemporary Tools
Seamless everything

© Copyright 2019 Dell Inc.
Dell Digital’s transformation journey

THE DELL DIGITAL WAY

IT Transformation  Workforce Transformation  Security Transformation  Application Transformation
Are you ready for the DIGITAL FUTURE?