IT Transformation

“Effective use of cloud-based IT should support enterprise process improvement, better product development and accelerated execution on initiatives”

“Current time-to-market is insufficient and caused by the complexity of the IT infrastructure”

“As telcos transform virtually every component of their business, they must start by embracing radical simplification”
Top Strategic Priorities of Top Global CSPs

**Digital Transformation**
- Improved IT Systems & Processes
- Cost Controls and Business Efficiencies
- Network Upgrades & Modernization
- Digital Business Models & Services
- Improve Customer Experience

**Operational Inefficiencies**
- Operational & Organizational Challenges
- Technical Debt on Legacy Systems and Platforms
- Capex & OpeX Constraints
- Lack of Business Agility

**Evolving Network Realities**
- Crushing Traffic Demand
- Regulatory & Spectrum Issues
- Vendor Lock-in & HW Centric Approach
- Asset Heavy Operating Model

**Competitive Pressures**
- Rapidly Changing Consumer Markets
- Industry Consolidation
- Disruptive Competition

Source: Top 5 Strategic Imperatives with top 100 Carriers; E&Y - Telco Industry Study 2020

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## Digital Transformation - IT

### Plan, Deliver & Operate

<table>
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<th>IT Transformation Program Delivery</th>
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<td>Commercial &amp; Consumption Models</td>
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<td>Software Defined &amp; Open Networking</td>
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### People & Process

<table>
<thead>
<tr>
<th>Applications &amp; Data</th>
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<tbody>
<tr>
<td>+</td>
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### Dell Technologies

Global Transformation Office

### Results You Can Expect

- Competitive Edge
- A Clear MultiCloud Roadmap
- Guaranteed Results
- Committed Time-To-Value
- Flexible, Automated Operations

### Telecom Industry Use Cases

- Private and Multi-Cloud
- BSS/OSS Modernization
- Modern Application Development
- 5G Evolved Packet Core / NFVI
- Software Defined Infrastructure and Networking
- Automation

### IT Transformation Experience

- Comcast
- Orange
- Thales
- Pfizer
- GE
- BT
- Walmart

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Perspective on IT Transformation

Any Device

Any Application

Any Cloud

Consistent Application Platform

Consistent Infrastructure Management

Consistent Infrastructure Abstraction

Traditional

Cloud Native

SaaS

Private Clouds

Public Clouds

Telco Networks

Edge Computing

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# Perspective: Consistent Platform Delivery

## Consistent Services
Controlled Cloud Services • Value Added Services

## Consistent Developer Model
App Modernization

## Consistent Operations
Automation and Operations • Across Clouds • Managed Services

## Consistent Infrastructure
VM Infrastructure • Container Infrastructure • Systems Infrastructure • End-User Infrastructure

### EUC Operation and Automation
- **EUC Devices**
  - Thin Client
  - Mobile Devices
  - DT Validated Compute/Networking/Storage
  - PowerSwitch
  - VxRail

### Cloud Operations and Automation
- **EUC Devices**
  - Thin Client
  - Mobile Devices
  - DT Validated Compute/Networking/Storage
  - PowerSwitch
  - VxRail

- **Private Cloud**
  - DT Validated Compute/Networking/Storage
  - PowerSwitch

- **Public Cloud**
  - Microsoft Azure
  - Google Cloud
  - VMWare Cloud Provider Program

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Our Approach to IT Transformation

Transformations MUST Incorporate a Comprehensive Approach

- Applications and Data drive Multi-Cloud Platforms
- Multi-Cloud Platforms drive New Operating Models
- Applications and Data Services drive Cloud Placement
- Implementation of Multi-Cloud Platform & Infrastructure to Support Multi-Cloud Services
- Operational Focus on Multi-Cloud Services Experience

Integrated Program Delivery

- Multi-Cloud Technology
  - IaaS / CaaS / PaaS / XaaS

- OPERATING MODEL
  - Cloud Native
  - Agile, DevOps & CI/CD
  - Cloud Operating Model
  - Site Reliability Engineering

- APPLICATIONS
  - Traditional
    - WEB
    - APP
    - DB
  - Cloud Native
    - Microservices

- GOVERNANCE
  - Assess
  - Plan
  - Deliver

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Cloud Agility & Cloud Experience

BEFORE

Application Owner Needs Hosting Environment

Infrastructure Architect Design Solution

Project Manager Assembles Components

Server Team Configures Server
Storage Team Allocates Storage
Backup Team Enables Server Backup
System Team Installs OS
Network Team Configures Network
Authentication Team Accesses Account
Operations Team Monitors

5+ Days

AFTER

Application Owner Needs Hosting Environment

SERVICE PORTAL

Select SLA, Dev vs Prod, DR, Data Protection...

Select Operating System
Select Storage
App Name
Select Quantity

Automation

Virtual Server(s)
Storage
Server Backup
OS
Network
Access Account
Operations

30 Minutes

“AS IS – TO BE” Future State Vision
Create an Integrated Cloud Operating Model

**MULTI-CLOUD INFRASTRUCTURE**

- Private
- Public

**IaaS / CaaS / PaaS services and APIs**

- Define and architect IaaS/PaaS services and APIs
- Build and support services and service catalog
- Configure, upgrade, scale and operate infrastructure
- Build and expose infrastructure APIs

**SERVICE MANAGEMENT**

**AUTOMATION**

- BUILD AND RELEASE MANAGEMENT
- METRICS AND MONITORING

**CLOUD / INFRASTRUCTURE OPERATIONS**

**APPDEV PLATFORM OPERATIONS**

**Fulfill service requests**

- Automate CI/CD pipeline processes
- Monitor and measure infrastructure and applications
- Configure, upgrade, scale and operate platform
- Build and expose application APIs

**Lines of Business**

**Traditional App Developers**

**Cloud App Developers**

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Optimize the Application Portfolio

- Modernization (PaaS/CaaS)
- Replacement (SaaS)
- Cloud Migration (IaaS)
- Modern Infrastructure Migration
- Retirement/Archive
The Move to Services-Based Delivery

Traditional Silos

- Custom integration of infrastructure requests
- Network
- Security
- Tools
- Storage
- Server
- Other

Services-Based

- Virtualization services
- Messaging, App Engine services
- Database services
- Continuous Delivery Pipeline services
- Monitoring services
- Infrastructure as Code APIs
- End-user services (e.g. O365)
- IT & AppDev platform operations
- Cloud infrastructure
**The Move to Services-Based Delivery**

<table>
<thead>
<tr>
<th>Modern HW Platforms</th>
<th>IaaS / CaaS</th>
<th>CaaS / PaaS / XaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure mgmt. focus</strong></td>
<td><strong>ASSETS</strong></td>
<td><strong>SERVICES</strong></td>
</tr>
<tr>
<td><strong>Provisioning</strong></td>
<td>Manual (30-60 days)</td>
<td>Significantly automated via service catalog</td>
</tr>
<tr>
<td><strong>Service management</strong></td>
<td>ITIL based asset management</td>
<td>Management of services and application patterns</td>
</tr>
<tr>
<td><strong>Developer team connection to infrastructure</strong></td>
<td>Writes applications that often specify infrastructure</td>
<td>Develop separately from infrastructure team (agile, waterfall)</td>
</tr>
<tr>
<td><strong>Infrastructure team role</strong></td>
<td>Seek to drive standardization and reduce complexity</td>
<td>Maintains and develops IaaS/CaaS platform + application patterns/services</td>
</tr>
</tbody>
</table>
Enablement & Consumption Options

TURNKEY PLATFORMS

Hyper Converged & Converged

VALIDATED DESIGNS

VCF on VxRail / SDDC
VRA/VRO Design / Deploy
SDN / NSX Architecture and Deploy Services

FULLY MANAGED

Dell Technologies Cloud Platform
Data Center as-a-Service
Build-Operate-Transfer

Consumption Models

CAPEX / OPEX
Utility
As-A-Service
Managed Service
Business Case for Cloud

Cost analysis
- Current cost structure
- Roadmap of transformation initiatives

Benefit analysis
- IT Transformation savings matrix influenced by McKinsey/Gartner/Dell Technologies
- Target cost structure

Business Case Results
- Client Specific Analysis
## Business Case for Cloud

<table>
<thead>
<tr>
<th>Current State</th>
<th>Transformed State</th>
<th>20%-28% Savings Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Services</td>
<td>Personnel</td>
<td>Software</td>
</tr>
<tr>
<td>8</td>
<td>49</td>
<td>22</td>
</tr>
<tr>
<td>22</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

### Sources:
- Gartner, Dell Technologies analysis
- Forrester Consulting, Dell Technologies analysis

### Savings Estimate:
- 20%-28%

### Current State vs. Transformed State:
- **Cloud Services:** 8 vs. 49
- **Personnel:** 49 vs. 24
- **Software:** 22 vs. 28
- **X86 Estate:** 10 vs. 10
- **Other:** 11 vs. 9

### Key Benefits:
- **Code deployment:**
  - from 2 to 80 releases per month (40x)
- **Infrastructure provisioning:**
  - from 30-60 days to 1-2 hours
- **Time to restore service:**
  - less than one hour
- **Less than one day from code commit to production release**

### Notes:
- *Cloud Services include SaaS and Public Cloud Infrastructure Services
- **Linux and Windows Servers
- ***Non x86, Occupancy, Telco
Lessons Learned

**GOVERNANCE**
- Involve senior executives, link to a business case
- Execute in multiple, concurrent workstreams
- Establish levels of governance, including quarterly CIO meetings
- Measure and report KPIs to assure progress

**APPLICATIONS**
- Applications drive technology platforms
- Application owners expect cloud consumption models
- Modernize the entire portfolio, one chunk at a time

**INFRASTRUCTURE**
- Deploy software-defined architecture
- The network piece is often the hardest
- Design infrastructure stack for resiliency
- No snowflakes

**OPERATING MODEL**
- Multi-cloud platforms drive operating models
- IaaS processes can be a good starting point
- Define services with business consumers