Agenda

• What is the Cloud?
• Types of Cloud Services
• Why the Cloud?
• Network Implications
What is the Cloud?
# Cloud Definition

## The "traditional" Web

<table>
<thead>
<tr>
<th>Services</th>
<th>accessed via a</th>
<th>Browser OR</th>
<th>over the</th>
<th>Internet OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>Mobile Device</td>
<td>Mobile Web</td>
<td></td>
<td>IntranetVPN</td>
</tr>
<tr>
<td>Compute</td>
<td>Applet</td>
<td>Intranet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>Thin Client</td>
<td>Extranet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platforms</td>
<td>Voice Endpoint</td>
<td>IP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middleware</td>
<td>Video Endpoint</td>
<td>MPLS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Components</td>
<td>User Device</td>
<td>Ethernet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td>Sensor</td>
<td>SONET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>Actuator</td>
<td>DWDM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objects</td>
<td>Server</td>
<td>OTN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database</td>
<td>Storage</td>
<td>Network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td>System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td>Set-Top Box</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## The mobile Web

- Mobile Web
- Mobile Device
- Intranet
- VPN
- Extranet
- IP
- MPLS
- Ethernet
- SONET
- DWDM
- OTN
- Network

## The new, cloud-enabled Web
Cloud Services Have Many Inherent Benefits

‘Cloud’ Characteristics
- Standardized IT capability
- Full on-demand customer self-service
- Automatic, dynamic scaling
- Consumption or usage billing
- Web or programmatic interface
- Broad network access

Customer Benefits
- Reduced complexity
- Increased agility and control
- Match capacity to demand
- Match what you purchase to what you need
- No upfront costs or commitments
- Tight integration with applications
- Tight integration with multiple network access methods
Types of Cloud Services
Multiple Cloud Deployment Models Support Multiple Usage Scenarios

- Public cloud
- Private cloud
- Community cloud
- Hybrid cloud
- Hybrid cloud with dedicated resources
Hybrid Cloud-Enterprise Approach

Enterprise Data Center Or Hosted

- Dedicated Resources
- Fixed Cost
- Consolidated

Cloud

- Flexible Resources
- Pay-Per-Use
- Geographically Dispersed
Virtual Private Clouds (VPC) combine the characteristics of cloud services and enterprise networking.

Enterprise IT buyers seek to combine the security and performance of private cloud with the economics and flexibility of public cloud.

**Buying experience:** user self-service under an enterprise umbrella

**Feature set:** flexibility to support diverse workloads across the enterprise

**Use cases:** complement or extend existing IT operation, not replacement

**Governance framework:** identity, access, roles, hierarchy, auditability

**Networking:** performance, security and simplicity of on-net access
Why the Cloud?
The Path to Cloud

Dedicated

Virtual

Utility

Cloud

Client #1

A

B

C

Client #2

D

E

F

Client #1

A

B

C

Client #2

D

E

F

Built to Order

Better Utilization

Dynamic Capacity

Self Service

Managed Hosting

Synaptic Hosting

Synaptic Compute as a Service

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.
...and are transforming how services are built, bought, and consumed...

Development

User Collaboration

Development Tools

Library and Image Management

Internet Protection

3rd Party Enablers

Customized Marketplace

Applications

Business Users

Self-Service

Service Catalog

HELP

Corporate Network

MPLS, VPLS, EVPN, AVPN

Role-Based Management

Flexible Payment Options

System Monitoring

Policy Management

Administration

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.
...leading to a plug-and-play service environment uniquely tailored to your needs.
Cloud Services Address Today’s User Experience and Expectation Challenges
On-Demand Usage and Charging of Cloud Services Fundamentally Changes How They Can Be Engaged

Critical success factors

Efficiency

User Experience

Quality/Value

Governance

Sign Up

Try It

Use It

Scale It

Standard offers

Transactional selling

Self service try-and-buy

Pay-per-use

No minimums

No contract term

Quality/Value

Use It

Efficiency

User Experience

Critical success factors

Try It

Sign Up

Scale It

Governance

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.
Network Implications
Independent Clusters

Users

Geographic Load Balancing

Enterprise Data Center

Cloud Services Provider

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.
Remote Data Access

Users

Geographic Load Balancing

Enterprise Data Center

Wide-Area Network

Cloud Services Provider
Dynamic Data Migration

Users

Geographic Load Balancing

Wide-Area Network

Enterprise Data Center

Cloud Services Provider
Bi-Directional Mirroring

Users

Geographic Load Balancing

Enterprise Data Center

Cloud Services Provider

Wide-Area Network
Front-End/Back-End Approach

- Web Servers, Content Servers, App Servers
- Anycast Routing
- Wired/Mobile Internet
- AT&T IDCs & Content Delivery Nodes
- Public or Private Content Delivery, VPN Multicast
- AT&T Global Network
- Legacy Environment
- Database Servers
- Enterprise Storage, Content Enterprise
- Users
The New Architecture

Converged Endpoints

Converged Networks

Web Scale Data Centers

Voice Class

Video Class

Data Class(es)

Voice App

Video App

Web App

Virtualization
Shifting Traffic Patterns

Presence, Location

Wireline, Mobile, VPN

Intercloud Optical

SaaS, IaaS

Backhaul

DWDM

Optical, OTN, MPLS, DWDM

IaaS

Cloud

Enterprise Data Center

© 2010 AT&T Intellectual Property. All rights reserved. AT&T and the AT&T logo are trademarks of AT&T Intellectual Property.
AT&T’s Global Network is the Foundation of Our Cloud Services

Colocation
Asset Efficiency
• Client Managed
• 38 Global Internet Data Centers

Managed Hosting & Applications
Operational Focus
• Managed Infrastructure
• Application Management for ERP & eCommerce

Utility Hosting
Adaptive Capacity
• Synaptic Hosting℠

On Demand
Elastic Consumption
• AT&T Synaptic Storage℠
• AT&T Synaptic Compute℠
AT&T’s Infrastructure as a Service Offers

Enterprise grade, network-resident, rapid application development and elastic delivery

AT&T Synaptic Storage & AT&T Synaptic Compute

- On Demand
- Consumption Billing
- No Term Commit
- Self Service Portal
- API Interface
- Third-Party Enablers
- Billing Options
- Network Options
Differentiating Cloud Networking

Performance
- Big bandwidth, low latency
- Globally consistent experience
- Optimization and acceleration
- Wireless/ Wireline Integration

Reliability
- Redundant, scaled architectures
- Data center availability over 99.999%
- Proven operations and support

Security
- Integrated wireless & wireline, multilayer security model
- Intrusion detection and prevention
- Network-resident DDoS protection

Control
- Diverse networking choices
- Flexible, open APIs
- Enterprise and SMB billing options
- Real-time resources

...and addressing top challenges for enterprises
Enabling the Virtual Private Cloud

AT&T allows enterprises to connect to the ‘cloud’ as an extension of their VPN, leveraging their existing IT assets and operations.

**IT resources** – on demand, self service, consumption based, dynamically scalable, logically isolated.
Thank You