Consumer Cloud Demand
A Connected Life Market Watch Perspective

Cisco Internet Business Solutions Group
March 2012
### Connected Life Market Watch Program

**Service Delivery & Cloud Experiences**

#### Scope
- United States
- Canada
- France
- Italy

#### Approach

**Market Watch Program**
- Cisco IBSG’s recurring primary research program
- Monitors changing consumer behavior to identify key market transitions

**Methodology**
- Broadband consumers
- 20-minute online survey
- 1,000 total respondents
- April 2011

**Segmentation**
- Used proprietary scoring methodologies to identify consumer “technology” segments

Source: Cisco IBSG Connected Life Market Watch, 2011
### Key Findings

<table>
<thead>
<tr>
<th>Positive Impact</th>
<th>Better Together</th>
<th>Certain Features</th>
<th>Certain Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud enhancements positively impact consumers’ reaction to Connected Life services, and cloud demand is expected to increase</td>
<td>Cloud is more powerful as a suite of enhancements vs. a single enhancement</td>
<td>Different cloud-based enhancements have stronger consumer interest and impact than others</td>
<td>The level of consumer cloud interest (overall and types) differs by customer segments</td>
</tr>
</tbody>
</table>

- To increase adoption potential for Connected Life services, service providers should **strategically include cloud enhancements** with their offerings.
- Prioritize the enhancements to balance between coverage / impact and cost (optimization) by **aligning the enhancements to company strategy**

Source: Cisco IBSG Connected Life Market Watch, 2011
Agenda

- Connected Life and cloud services
- Assessing impact of cloud services on buyer behavior
- Developing a service provider strategy for consumer cloud services
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Connected Life and Cloud Services
Connected Life Experiences

An expanding collection of services that enables consumers to connect from anywhere in order to work, live, play, and learn.

Connected Life services can give consumers easier control and better quality in their service experience.

- **Communication**
  - Family communication
  - Television programming

- **Entertainment**
  - Gaming
  - Social networking

- **Collaboration**
  - Work applications
  - Healthcare
  - Automotive maintenance
  - Roadside assistance
  - Education
  - Childcare
  - Travel

- **Monitor & Control**
  - Home appliances
  - Energy management

Source: Cisco IBSG, 2012
Consumers Regularly Engage in Connected Life Activities

**Connected Life Activities by Frequency**

Percentage of respondents

- **Listen to songs from personal music library**
  - Once a day: 24%
  - Once a week: 25%
  - Once a month: 14%
  - Total: 63%

- **Share digital photos**
  - Once a day: 6%
  - Once a week: 21%
  - Once a month: 28%
  - Total: 55%

- **Use portable device to check map/directions**
  - Once a day: 9%
  - Once a week: 19%
  - Once a month: 19%
  - Total: 47%

**Question:** How often do you ……?

Source: Cisco IBSG Connected Life Market Watch, 2011

Base: U.S. broadband consumers
Consumers’ Hierarchy of Needs Leads to Connected Life Activities

One-to-Many Sharing of Personal Content: Photos, personal updates, social communities, etc. Facebook has more than 840 million active monthly users (2012), and over half log in daily.

Content Digitization: From kilobytes of digital text to terabytes of digital media. On average, 133 GB of storage is needed for each U.S. household, expected to grow at 54% CAGR.

Online Service Adoption: Hulu Plus has more than 1.5 million paying subscribers (Jan. 2012). Netflix.com has attracted 26.6 million unique visitors (Nov. 2011).

Increased Connectivity: 240 million U.S. Internet users in 2011. Average broadband speed will grow by 3.7 times from 2010 to 2015, from 7.5 Mbps to 27 Mbps.

Device Proliferation: From one PC to many personal devices. Over 60 million units of connected personal devices were sold in U.S. in 2010—tablets, netbooks, notebooks, and e-books.

Sources: Yankee Group, 2011; Cisco VNI; Cisco IBSG Connected Life Market Watch, 2011
Adoption of Connected Life Activities Has Created New Challenges

Challenges

- **Social and sharing behavior becomes complex to manage**
  Consumers’ sharing behavior becomes more sophisticated, outpacing their ability to manage activities. Also introduces privacy implications.

- **Large collections are hard to manage and require backup**
  Consolidating content collection on one physical device massively multiplies the risk of losing all of the collection.

- **Disjointed experience among online services**
  Online service activities require opening new windows and managing across them, as services have not been integrated into a seamless user experience.

- **Devices with connectivity are disconnected from each other**
  Access connectivity alone does not provide a connected experience among devices.

- **Multiple devices add to the complexity**
  Each device comes with its own platform and management software, and managing multiple devices is difficult and time-consuming.

Sources: Yankee Group, 2011; Cisco IBSG, 2012
Cloud-Based Features Enhance the Consumer Experience

Before: Without Cloud

Manual and disjointed experiences

Source: Cisco IBSG, 2012

After: With Cloud

Automated and unified experiences

Source: Cisco IBSG, 2012
Key Cloud Enhancements

Cloud Enhancements*

Social
- Advanced Sharing
- See Peer Recommendations

Content
- Unified Data Management
- Automatic Back Up
- Automatic Data Sync

Services
- One-Time Payment
- Single-Menu Access
- Immediate Access

Connectivity
- Any Device / Location
- Seamless Switching

Devices
- Add New Capabilities Automatically
- Remote Monitor / Auto Fix

Automatically share certain online files and information only with friends and contacts you specify.

Data back-up and sync among devices from cloud automatically; view, access, and manage data from any Internet-enabled device.

Single interface from multiple sources; pay once regardless of device or vendor.

Access files from any Internet-enabled device and from any location; switch seamlessly from one device to another.

Call or click to enable new capability immediately; problems are monitored and fixed remotely and automatically.

Sources: Yankee Group, 2011; Cisco IBSG, 2011 *Select enhancements and may not cover complete cloud capability.
### Key Cloud Enhancements: How They Work

<table>
<thead>
<tr>
<th>Before: Without Cloud</th>
<th>After: With Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social</strong></td>
<td></td>
</tr>
<tr>
<td>Manually, directly, and individually send files and information</td>
<td>Automatically share certain online files and information only with friends and contacts you specify</td>
</tr>
<tr>
<td>Contents are stored and managed by individual devices. Backup and sync require manual connection and operation.</td>
<td>All contents are stored / backed up in cloud. View, access, and manage data from any Internet-enabled device. Backup and sync happen automatically.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
</tr>
<tr>
<td>Multiple interfaces and payments for content based on device and source (VoD on TV, iTunes, Hulu, Amazon.com)</td>
<td>Single interface from multiple sources; pay once regardless of devices used</td>
</tr>
<tr>
<td>Files can be accessed only on the device where they reside, and a session cannot be continued on another device</td>
<td>Access files from any Internet-enabled device, and from any location. Switch services seamlessly from one device to another.</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
</tr>
<tr>
<td>Device-driven experience. Troubleshooting and addition of new capabilities happen physically at the device level.</td>
<td>Call or click to enable new capability immediately. Problems are monitored and fixed remotely and automatically.</td>
</tr>
<tr>
<td><strong>Connectivity</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Devices</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Cisco IBSG, 2012
### Social and Content-Based Cloud Enhancements: A More Detailed Look

<table>
<thead>
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<th>Social</th>
<th>Content</th>
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<tr>
<td><strong>Before: Without Cloud</strong></td>
<td><strong>After: With Cloud</strong></td>
</tr>
<tr>
<td>Manually send files to friends individually via email or post files online for wide audience</td>
<td>Automatically share certain online files only with friends and contacts you specify</td>
</tr>
<tr>
<td>Ask friends directly and individually for their recommendations (e.g., calling, texting, email)</td>
<td>View friends' highest-rated shows and comments stored and posted from cloud (e.g., Facebook)</td>
</tr>
<tr>
<td>Separate data management by device (e.g., separate photo album on PC, phone, tablet, etc.)</td>
<td>View, access, and manage your data from any Internet-enabled device, regardless of where files are stored</td>
</tr>
<tr>
<td>Connect storage device and save data manually for backup (e.g., PC data saved on external hard drive)</td>
<td>Data on any Internet-enabled device is stored in cloud automatically (e.g., music files on phone kept in cloud)</td>
</tr>
<tr>
<td>Connect and manually sync across two devices (e.g., connect MP3 to PC and run music application to sync)</td>
<td>Sync automatically happens from cloud (e.g., photos taken on phone can be saved on PC automatically)</td>
</tr>
</tbody>
</table>

Source: Cisco IBSG, 2012
### Cloud Enhancements for Services: A More Detailed Look

<table>
<thead>
<tr>
<th>Before: Without Cloud</th>
<th>After: With Cloud</th>
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<tbody>
<tr>
<td>Pay multiple times for content based on device used (for example, cable TV show purchased to download on PC)</td>
<td>Pay once for content regardless of how many devices you use to access that content (e.g., a song purchased online can be transferred to multiple devices)</td>
</tr>
<tr>
<td>Each source requires separate individual interaction with own interface (VoD menu on TV, iTunes store for purchase, Hulu site for TV show)</td>
<td>Access movies, TV shows, and music from multiple sources through a single portal or user interface (e.g., use TV remote control to browse VoD list, movies saved on PC, and Hulu list on TV screen)</td>
</tr>
<tr>
<td>Content in physical form (e.g., Netflix DVD mail delivery, books shipped from Amazon.com)</td>
<td>Immediate access to movies, TV shows, songs, or electronic books you purchase or rent</td>
</tr>
</tbody>
</table>

Source: Cisco IBSG, 2012
# Cloud Enhancements for Connectivity and Devices: A More Detailed Look

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<th><strong>Before: Without Cloud</strong></th>
<th><strong>After: With Cloud</strong></th>
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<tr>
<td><strong>Connectivity</strong></td>
<td></td>
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<tr>
<td>Files can be accessed only on the device where they are stored (movie on DVR can be viewed only on TV directly connected to DVR)</td>
<td>Access files from any Internet-enabled device and from any location (movie saved on DVR at home can be watched on laptop while traveling)</td>
</tr>
<tr>
<td>A session cannot be continued on another device (watching a movie on laptop and then continuing on a smartphone requires transferring file and starting the movie again)</td>
<td>Switch services seamlessly from one device to another (IM exchange on PC can continue on smartphone without re-starting the session or losing messages)</td>
</tr>
<tr>
<td><strong>Devices</strong></td>
<td></td>
</tr>
<tr>
<td>Order new device, wait for delivery, and go through setup process (for example, getting new STB for DVR capability)</td>
<td>Call or click to enable new capability immediately (e.g., DVR capability from cloud activated using TV remote)</td>
</tr>
<tr>
<td>When service is down (for example, an STB malfunction), user calls customer care and coordinates with SP to fix the problem</td>
<td>SP remotely monitors for problems and automatically fixes problems when they occur (fault on STB detected and reset overnight)</td>
</tr>
</tbody>
</table>

Source: Cisco IBSG, 2012
The Market Is Already Using Cloud To Help Resolve Consumers’ Needs

<table>
<thead>
<tr>
<th>Unified Data Management</th>
<th>In June 2011, Apple unveiled iCloud, a cloud-computing service that stores music, photos, and documents remotely, as well as eliminating the need to sync devices to a PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Backup</td>
<td>Comcast announced initiatives in extending and integrating IP technology to improve the customer experience, accelerate new-product launches, and expand cross-platform experiences</td>
</tr>
<tr>
<td>Automatic Data Sync</td>
<td>55 members across industries form digital entertainment content ecosystem called Ultra Violet, developing an open “common file format” standard. Designed to play on any service or device, enabling “buy once, play anywhere.”</td>
</tr>
</tbody>
</table>

Sources: Company websites, DECE, 2011; Cisco IBSG, 2012
Cloud Enhancements Positively Impact Connected Life Service Buying Behavior

Impact of Cloud Enhancement on Consumer Purchase Likelihood (Average)
Percentage of respondents

- Much more likely: 13%
- More likely: 19%
- Somewhat more likely: 37%
- Somewhat less likely: 15%
- Less likely: 6%
- Much less likely: 10%

On average, 68% of respondents are more likely to buy a Connected Life service if it has even **a single cloud enhancement**

Source: Cisco IBSG Connected Life Market Watch, 2011

Base: U.S. broadband consumers
Impact of Cloud Services on Buyer Behavior
### How Each Cloud Enhancement Influences Consumers’ Assessment of a Connected Life Service

<table>
<thead>
<tr>
<th>Consumer Attitude Toward a Particular Cloud Enhancement</th>
<th>Critical</th>
<th>Differentiating</th>
<th>Mandatory</th>
<th>Neutral</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers are happy when it's present and dissatisfied when it's not</td>
<td>Consumers don’t expect it to be included, but thrilled when it is included</td>
<td>Consumer expect it to be there. Not thrilled when it is, but very displeased when it is not included</td>
<td>Consumers are indifferent to its presence</td>
<td>Consumers are displeased when this enhancement is present</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enhancement included with your service?</th>
<th>Positive</th>
<th>Positive</th>
<th>Neutral</th>
<th>Neutral</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancement NOT included with your service?</td>
<td>Negative</td>
<td>Neutral</td>
<td>Negative</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
</tbody>
</table>

Source: ASQ, 2005; Cisco IBSG, 2012
Cloud Enhancements Impact Consumers’ Reaction to Connected Life

- Each cloud enhancement positively impacts **one out of three** respondents’ reaction to Connected Life services

  33% is based on average per single cloud enhancement

- Different people value different enhancements; more impact when enhancements combined

- Some enhancements have stronger consumer interest than others

### Average Response to Individual Cloud Enhancements

- **Critical**: 8%
- **Mandatory**: 4%
- **Differentiating**: 21%
- **Neutral**: 59%
- **Uncertain**: 3%
- **Negative**: 5%

**Source**: Cisco IBSG, based on Kano methodology, 2011

**Base**: U.S. broadband consumers
Demand for Cloud Enhancements Is Expected To Increase

Average Cloud Enhancement Impact on Connected Life Services
Percentage of respondents

Source: Cisco IBSG Connected Life Market Watch, 2011
Base: U.S. broadband consumers
Cloud Is More Powerful as Complete Experience vs. Single Enhancement

**Consumer Response Across All Consumer Cloud Enhancements**
- **Positive Cloud Impact**: 75%
- **No Cloud Impact**: 25%

**Consumer Segmentation Based on Extensiveness of Cloud Reaction**
- **No Cloud Interest**: 25%
- **Some Cloud Interest**: 36%
- **Significant Cloud Interest**: 19%
- **Complete Cloud Interest**: 20%
- **8 or more individual cloud enhancements** positively impact these consumers’ reactions
- **5 to 7 cloud enhancements** positively impact these consumers’ reactions

75% of consumers see at least one cloud enhancement as **critical, mandatory, or differentiating** to Connected Life services.

Most consumers are influenced by more than one cloud enhancement. For **1 out of 5 respondents**, a **complete cloud experience** is key to meeting their Connected Life needs.

Source: Cisco IBSG Connected Life Market Watch, 2011

Base: U.S. broadband consumers
Some Cloud Experiences Have Stronger Impact than Others

Cloud Enhancement Impact on Connected Life Services
Percentage of respondents

- Remote Mntr / Auto Fix
- Single Payment
- Immediate Access
- Automatic Backup
- Any-Device Access
- Single Menu
- Automatically Add Svcs
- Data Sync
- Seamless Switching
- Unified Data Mgt
- Advanced Sharing
- Recommendations

Source: Cisco IBSG Connected Life Market Watch, 2011
Base: U.S. broadband consumers
Cloud Enhancements Impact Buying Behavior

Consumers More Likely To Buy When Cloud Enhancements Are Included

<table>
<thead>
<tr>
<th>Consumer Is More Likely To Buy</th>
<th>Percentage of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Demand</td>
<td></td>
</tr>
<tr>
<td>Remote Monitoring / Auto Fix</td>
<td></td>
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<tr>
<td>Single Payment</td>
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<td>Immediate Access</td>
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<td>Automatic Data Backup</td>
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<td>Any-Device Access</td>
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<td>Single Menu</td>
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<td>Automatically Add Services</td>
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<tr>
<td>Consumer Is Indifferent</td>
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<td>Advanced Sharing</td>
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<tr>
<td>Recommendations</td>
<td></td>
</tr>
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</table>

Source: Cisco IBSG Connected Life Market Watch, 2011

Base: U.S. broadband consumers
Positive Impact of Cloud Enhancements Varies by Targeted Segments

Average Cloud Enhancement Impact on Connected Life Services

Percentage of respondents

- Total Respondents
- Student
- Retired
- Channel Preference: "Don't Know"

Source: Cisco IBSG Connected Life Market Watch, 2011
Base: U.S. broadband consumers

Mandatory | Critical | Differentiating

Relatively older, lower income, and less tech savvy

Source: Cisco IBSG Connected Life Market Watch, 2011
Differences in Enhancement Priority Also Exist by Segments

Cloud Enhancement Positive Impact on Connected Life Services

Percentage of respondents

Recommendations
Advanced Sharing
Seamless Switching
Single Menu
Any-Device Access
Immediate Access
Single Payment
Unified Data Management
Data Sync
Automatically Add Services
Automatic Backup
Remote Monitoring / Auto Fix

Channel Preference: Retail
Higher importance on interoperability and non-redundancy, including payment

Channel Preference: SP
Higher importance on automatic and remote capabilities

Source: Cisco IBSG Connected Life Market Watch, 2011
Base: U.S. broadband consumers
3 Developing a Strategy for Consumer Cloud Services
Implications for Service Providers

- To increase adoption potential for Connected Life services, SPs should strategically include cloud enhancements with their offerings.

- However, different people value different enhancements. The level of consumer interest varies by enhancement, and more impact is achieved when enhancements are combined. Different enhancements have stronger impact than others.

- Therefore, prioritize the enhancements consumers are beginning to expect and strategically add enhancements that can differentiate the services.

- Then, how much is enough? How to prioritize?

Source: Cisco IBSG, 2012
Cloud Segmentation Can Help Target and Prioritize Enhancements

Consumer Segmentation Based on Number of Cloud Enhancements Seen as Critical, Mandatory, or Differentiating

Percentage of respondents

- **Laggard**: Do not find any cloud enhancements impactful
- **Late Majority**: Find 1 to 4 cloud enhancements impactful
- **Leaders, But Want It All**: Find 8 or more cloud enhancements impactful
- **Leaders: Early Indicator**: Find 5 to 7 cloud enhancements impactful

Source: Cisco IBSG Connected Life Market Watch, 2011
“Significant Cloud Interest” Segment Provides High-Priority Enhancement Prospects

Impact on Connected Life Services for Those with Significant Interest in Cloud

1. Expected

- Single Payment
- Immediate Access
- Remote Mntr / Auto Fix
- Automatic Backup
- Single Menu
- Any-Device Access
- Data Sync
- Seamless Switching
- Advanced Sharing
- Automatically Add...

2. Differentiating

- Unified Data Management
- Recommendations

Source: Cisco IBSG Connected Life Market Watch, 2011
Base: U.S. broadband consumers, “significant interest” segment
Key Strategic Considerations

- Prioritizing enhancements to balance coverage / impact and cost (optimization)
- Aligning enhancements to company strategy
  - Expected features vs. differentiation
  - Target segmentation
  - Brand alignment
  - Technology capability
  - Investment requirements