It’s Not What You Think— Misconceptions and Realities of the Cloud Gaming Opportunity

Ron Haberman, CEO and Co-Founder

March 2013
22% of Americans admit that they’ve pretended to know what the cloud is or how it works.

54% claim to never use cloud computing. However, 95 percent of this group actually does use the cloud.

59% believe the ‘workplace of the future’ will exist entirely in the cloud.

— Wakefield Research August 2012
Overview

- Introduction
- Evolution of Cloud Gaming
- A Balanced System
- Software vs Hardware
- The Latency Debate...or is it?
- Service Level Management
- Beyond Games
- Q & A
Who is CiiNOW?

• Small team headquartered in Mountain View, CA

• Series-A funding from Alcatel-Lucent, Foundation Capital, and AMD

• Founded by executives from Alcatel-Lucent and NVIDIA

• Focused on building a high fidelity, virtualized cloud gaming platform
The Team

Ron Haberman
CEO & Co-Founder

Devendra Raut
VP Engineering & Co-Founder

Makarand Dharmapurikar
CTO & Co-Founder

Chris Donahue
VP Marketing & Publisher Relations

Shay Nahum
VP Business Development
Cloud Gaming to Date

- Lack of focus
- OTT delivery
- Poor virtualization
- Expensive
- Inflexible business models
Evolutionary Technology Dimensions

- **Closed system**
  - Too expensive to scale

- **Open system**
  - Flexible business models

- **Any hardware**
  - Any business model
  - Density and scale
  - Best end-to-end latency
  - The future of gaming, now
Efficient Value Chain

- **NETWORK**
  - Amazon, L3

- **HOSTING**
  - Level 3, Limelight

- **HARDWARE**
  - Servers (Dell, HP)

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**SOFTWARE**
- CiiNOW

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**END USER SERVICE**

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A Balanced System

- Encoder
- CPU
- GPU
CiiNOW’s Architecture

END USER

Network

Distributed POPS

Hub POP

- Smart Phone
- Tablet
- PC

Home Gateway

Broadband Network

1080p Video Stream (4 - 6 Mbps)

Game Interaction Control Traffic (50-100Kbps)

Web Server

Data Base

Load Balancer

Virtualized Game Image

Policy Data Base

Game Ingest
Service Providers

- Turnkey software solution
- Cross-platform

- Fast implementation
- Official sales channel with Alcatel-Lucent
Software vs Hardware
Considerations

• No Silver Bullet
  o Quality vs Bandwidth
  o Moore’s Law

• What’s after 1080p?
Latency Compensation and Network Location

- Recent speculation and positioning regarding latency
- What contributes to latency? (savings opportunities)

Latency is the single most important consideration when evaluating a Cloud Gaming platform.

- Pipelining architecture
## Latency – The Findings

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>GAME</th>
<th>AVERAGE LATENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaikai</td>
<td>Mass Effect 2</td>
<td>180 ms</td>
</tr>
<tr>
<td></td>
<td>Mass Effect 2</td>
<td>132 ms</td>
</tr>
<tr>
<td>Ubitus</td>
<td>Street Fighter IV Arcade</td>
<td>259.2 ms</td>
</tr>
<tr>
<td></td>
<td>Street Fighter IV Arcade</td>
<td>133.5 ms</td>
</tr>
<tr>
<td>XBOX 360</td>
<td>FEAR 3</td>
<td>120 ms</td>
</tr>
<tr>
<td></td>
<td>FEAR 3</td>
<td>100 ms</td>
</tr>
</tbody>
</table>

- **27% faster than Gaikai**
- **48% faster than Ubitus**
- **17% faster than local console (Xbox/PS3)**

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Service Level Management

• Cloud Services – a good idea?
  o Management system considerations
  o Architecting the CiiNOW system
  o Maximizing excess capacity
Beyond Games

• Define the audience – right message, right content, at the right time

• Experience Matters
  o Pause & Resume
  o Spectating / Active Spectating
  o Game Assist
Beyond Games

• Social Connection
  o Social Graph and Cross-deployment
  o FB Friends = Game Friends
  o Status and Presence
Crowning Content as King...Again

- Raising the Bar / Lowering the Friction
- Publishers: What are they waiting for?
- Quality content attracts customers
Cherski dos?

www.ciinow.com
Addendum Slides
SERVICE PROVIDER AS RETAILER

BUSINESS MODEL 1

Gaming Service

Data Centers Powered by CiiNOW

OSS/BSS INTEGRATION

WHITE LABEL RETAIL GAME PROVIDER & SERVICE PROVIDER

Delivery PoP
Regional Storage
Stream Technology

Delivery PoP
Regional Storage
Stream Technology

Delivery PoP
Regional Storage
Stream Technology

Customers
BUSINESS MODEL 2

Service Provider as GDN

3rd Party Branded Service

Data Centers Powered by CiiNOW

SERVICE PROVIDER

Customer Devices

GAME PUBLISHERS | RETAILERS | GAME SERVICES

Delivery PoP
Regional Storage
Stream Technology

Delivery PoP
Regional Storage
Stream Technology

Delivery PoP
Regional Storage
Stream Technology

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