Dynamic Virtual Client
From the Cloud to the Classroom

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Emerging Compute Laboratory
Pain Points

• Data Security
• Maintenance/Repair
• Budget/Cost Control
• License Management
• Innovation
• Agility – Mobile and @Home
• Power
• Etc....

IT and Industry Response

Drive for Centralized Control via...

New Software and Data Delivery Models

+ Improved Client Management and Security Capabilities
A Common Goal

**M.E.R.E.**
Manage Everywhere, Run Everywhere

**M.O.R.E.**
Manage Once, Run Everywhere
What Makes Sense to Centralize?

- Administration
- Critical Data
- Compute & Graphics
Technology Options

Multiple options to deliver centralized control of the desktop, applications, & data. Distinction is how much is local to client vs. remote

Client Hosted Virtual Container
- Running Virtual PC Image(s) locally on a client

Virtual Hosted Desktop (VDI)
- Server hosts multiple desktops that are accessed remotely

On-Demand OS Desktop Streaming
- Client boots from networked storage

Dedicated Remote Desktop (Blade PC)
- PC is relocated to the data center and accessed via a display/input device

Application Virtualization & Streaming
- Apps are encapsulated and distributed to clients such that the OS is not altered
Evolution of Client Computing Stack

Old
- Presentation
- Operating System With User Profile
- Client Hardware

Engineered as an IMAGE
Delivered as an INSTALLATION
Managed at the END-POINT

Future
- Presentation
- User Profile
- App Streaming & Virtualization
- Operating System
- Client Hypervisor
- Client Hardware

Engineered as VIRTUALIZED LAYERS
Delivered ON-DEMAND
Managed in the BACK OFFICE
Emerging: Intel Dynamic Virtual Client

- **Mobile Capable Off-Network Option**
- **Network Connected Only**

**Thin Client**
- Terminal
- Server Compute
  - Centralized Management
  - Centralized Data Storage

**Dynamic Virtual Client**
- Centralized apps & data

**Managed Rich Client**
- DT & NB Clients
- Client Compute
  - Centralized Management
  - Centralized & Local Data Storage options
Dynamic Virtual Client Options

CLIENTS
- Virtualized Application
- Virtual User Environment
- Application Streaming & Virtualization

NETWORK
- OS Streaming or Remote OS Boot
- OS Image Streaming

SERVER
- Master OS With All Updates & Patches
- Master Applications With All Updates & Patches
- Streaming Server

Client-side Compute ● Centralized Management ● Data Security via Policy
The Best PCs for Education
Best PCs for Dynamic Virtual Client

Today

45 nm

Unified Desktop and Mobile Platform

2010

45/32 nm

Intel® Virtualization Technology
Intel® Trusted Execution Technology
Intel® Active Management Technology

Next Generation Embedded IT

Virtualization, Security, Manageability, and Energy Efficient Performance
What is Cloud Computing?

Source code, content and integration
Eg: Google Apps, SalesForce.com

Place to run an application
Eg: Microsoft Azure, Force.com

Computing Service
Eg: Amazon EC2, Enomaly

Core SW Tech
Eg: Xen, vSphere

Software as a Service

Platform as a Service

Infrastructure as a Service

Cloud Software

Client runtime
Eg: AIR, Flex, Flash; Google Chrome, Microsoft Silverlight

Client runtime
Eg: AIR, Flex, Flash; Google Chrome, Microsoft Silverlight

Developer

Administrator

Infrastructure
Does The Client Device Matter Here?

App Launch Time*

- Wyse Thin Client
- Atom™ Netbook
- Dual Core® vPro™ Notebook

Source: Intel, 2009

App Execution Time*

- Intel® Dual Core® vPro™ Notebook
- Intel® Atom™ Netbook
- Wyse® R-Series Thin Client

Source: Intel, 2009

* Test of salesbuilder.com cloud application. Results subject to change.
Future – the Client Aware Cloud

Private Cloud  
Public Cloud

Location aware  
Connectivity aware  
Form factor aware

Secure and Manageable from Class Room to Home
Summary

DVC offers no compromise approach to cost-effectiveness, improved productivity, and reduced complexity.

Intel vPRO™ technology enhancements offer delivery, manageability, and security.

Delivering a balance of:
- Best Student Experience
- Data Security, Manageability
- Total-Cost-of-Ownership

A balance between IT and Student needs.