The Basic Story

- NC School Connectivity Initiative (SCI) provides fiber connectivity and big pipe Internet to all schools.
- The SCI plan includes the notion of moving to a *shared services* model once we achieve connectivity steady state.
- *Cloud* sounds much cooler than shared services.
- NC’s Race to the Top award includes provisions for the development of the NC Education Cloud.
- The NC Education Cloud is a *program* – not an infrastructure.
• The School Connectivity Initiative has delivered to NC LEAs
  • Over $60M in new technology funding...so far
  • Substantially increased network capacity
  • Connectivity to the NC Research and Education Network (a.k.a. the university backbone)
  • Access to network engineering experts
  • Future-ready Internet access
  • Equity of access
Act II – Shared Services

- Collaborative procurement
- Aggregating demand
- *Buy* services versus *build* infrastructure
- Pay for use infrastructure models
- Statewide licensing – perhaps across K20
- Sustainable, shared support models
- *Cloud-ey-ish*
The (or perhaps ‘A’) Cloud Model
The NC Education Cloud

Shared Infrastructure Services

Shared Service Delivery Platforms

NC Education Cloud
Where “X” is Infrastructure or Software or Desktop or …
### A Platform for All RttT Initiatives

<table>
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<th>Learning Management System</th>
<th>Instructional Improvement System</th>
<th>State Data Use</th>
<th>Standards &amp; Assessment</th>
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NC RttT Technology Snapshot

End Users (Students, Teachers, Staff)

- NCVPS $6M
- IIS $24M
- Admin Apps
- User Devices $25.5M
- LEA Network $48.5M
- LMS/CMS $10.8M
- Learning Objects Repository $1.7M
- Collaborative Tools $4.4M
- Identity Management $1.2M
- Shared Infrastructure $11.2M

Hosting Provider Data Centers

- Cloud Infrastructure
- Cloud Platform
- LEA Infrastructure
LEA RttT Technology Spending Summary
Cloud-Enabled LEA

- Mobile Devices
- Desksots & Lab PC's
- Network Appliances

LEA Local Services
- Enterprise Class Wireless AP's
- PoE Switch
- School Router
- Other Schools
- Administrative Sites

Directory Structure determines access privileges

Services Available TODAY Through The Cloud
- Directory Structure
- Storage Pools
- Media & Content
- Firewalls & Filters
- Web servers
- LMS
- Email & Collaboration
- VoIP Call Managers
- Application Delivery
- Wireless Controllers/Network Mgmt
Identity and Access Management

Local users log into devices and authenticate against Local LEA Directory System as normal.

Local LEA Directory System can sync to Central Directory System for global user accounts.

Central Directory System gets provisioned from NCWISE and HRMS data.
Logging into the Cloud

1. User logs into a cloud service
2. Cloud service passes user request to IAM for authentication
3. IAM passes user authorization information back to cloud service
4. User granted access to cloud service
• LEAs pay substantially less as part of a buyers’ consortium
• A shift in emphasis from technology support to instructional support
• Increased IT efficiency – fewer more highly utilized servers and other resources
• Increased service reliability – servers hosted in professional data centers with backup, DR, and service level guarantees
Total Cost of Ownership

Cloud

Capital Investment
One-time migrate

E-Rate Eligible Services
Collaborative Procurement
Cost Avoidance
Cost Reduction
Flexible Funding Models

Build/Migrate

Operate
Organization & Collaboration

DPI Leadership Team

Program Director

- Project Management
- Application workload testing
- Site surveys and inventory
- RFP - vendor specifications
- E-rate and CIPA
- Planning & Design

NC State Board of Education & Governor’s Education Transformation Commission

RttT Education Cloud Advisory Committee

LEA Working Groups

- Identity and Access Management
- Content Management
- Infrastructure Services Blueprint
The RttT Technology Project Team

DPI
- Peter Asmar

Program Director
- Phil Emer

Cloud Services
- Ed Chase

Data Systems
- Julien AlHour

Instructional Tech
- Neill Kimrey

PM Office
- Jerry Bunn

Cloud Team
- The Friday Institute
  - Sammie Carter, Systems Architect
  - James Robinson, Systems Architect
  - Larry Creglow, Project Facilitator
  - Lee Sartain, Policy Specialist

- MCNC
  - Dave Furiness, Director CNE
  - Steve Thorpe, Systems Analyst

- NCSU ITng Lab

- NC ITS
  - Bob Giannuzzi, Project Management

- NCVPS
  - Chanin Rivenbark, CTO
  - Nathan Thanos, LMS Admin
Timeline

- Gather resources.................1/15/2011
- Initial **Site interviews**........4/18/2011
- DRAFT plan........................5/1/2011
- Approved Plan......................6/1/2011
- Complete site interviews..7/1/2011
- RFPs........................................2\textsuperscript{nd} half 2011
- Deploy services...................4Q2011-1Q2012
- Migrate and operate.........4Q2011-4thQ2014
Site Interviews

- **Objectives**
  - Communications/community education
  - Data collection to support NC Education Cloud plan development
  - Community buy-in

- **Process Summary**
  - Develop on-line data collection survey/form – leverage previously conducted surveys
  - DPI Regional Instructional Consultants schedule site interviews
  - Pre-populate survey with known information where appropriate
  - Distribute link to survey to LEAs
  - LEAs review the survey prior to the site interview
  - Conduct site interviews – complete data collection
    - Interview team typically - Dave Furiness, DPI Instructional Consultant, Contractor - Systems Consultant
    - LEA participants – CTO/Technology Director and designated staff, Media & Instructional Technology leadership, and CFO
    - Ed Chase, Neill Kimrey, and/or Phil Emer will participate in five largest LEA site interviews - Wake, Charlotte-Mecklenburg, Guilford, Cumberland, Winston-Salem/Forsyth
Some Really Important Things

- Cloud is all about migrating to services
- Migrating to services:
  - Is not free
  - Is not always easy
  - Is not always hard
  - Requires a well-thought-out contract
  - Must include a service level agreement with teeth
- LEAs are not all the same so the benefits of cloud accrue differently
- Business intelligence and analytics tools will be important to the sustainability of broad cloud deployments
Links and Things

• Web site—place for FAQ, Guidelines, Presentations, Organization, Team members, news, links to NCDPI & others:
  
  http://cloud.fi.ncsu.edu

• The speaker: paemer@ncsu.edu
SHAPE THE FUTURE

WHY: Innovation in education technology creates jobs, drives economic growth and increases competitiveness

HOW: By reducing digital exclusion for all students to tackle some of the state’s most pressing challenges

WHAT: A public/private partnership to deliver broadband, PC, training and new opportunities to digitally excluded NC students
I hired a consultant to help us evolve our products to cloud computing.


It's as if you're a technologist and a philosopher all in one!

Blah blah platform.