Expanding the Cloud: Highlights from a Three-prong Cloud Computing Program

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Outline

• Introduction
• VENTURE
• VICTORY
• VOICE
• Next Steps
• Questions
Introduction

• Three interdependent research streams that take a holistic approach and deploying cloud computing to engage and strengthen STEM students, faculty and community.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>VENTURE</th>
<th>VICTORY</th>
<th>VOICE</th>
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<tbody>
<tr>
<td>Number of Images</td>
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<td>3</td>
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<tr>
<td>Number of User</td>
<td>5,482</td>
<td>596</td>
<td>108</td>
</tr>
<tr>
<td>Image Reservation</td>
<td>31,779</td>
<td>5,492</td>
<td>688</td>
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<tr>
<td>Total Hours of Image Usage</td>
<td>42,711</td>
<td>5,630</td>
<td>1,203</td>
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VENTURE

Virtualization – Enabling New Technologies to Unify Research and Education
VENTURE

- Focus is on fortifying the Cloud Computing initiative at North Carolina Central University (NCCU).

- Broaden the breadth and depth of Cloud Computing, specifically VCL, at NCCU for students and researchers or campus wide adoption and usage

- To expand VCL’s usage at NCCU while engaging STEM students and researchers in need of HPC (High Performance Computing).

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VENTURE

• **Proof of Concept:**
  - From April 2007 – August 2010 Cloud Computing was managed by School of Business faculty/students
  - In **2007**, there were **6** images, **14** faculty and student users in the School of Business, **70-75** concurrent user capability

• **Analysis:**
  - “The adoption rate of use by students matched with the relative low cost of entry helped in determining it was time to move forward with the initiative.”
  - Additional infrastructure purchased and increase campus-wide use
  - Computer Labs and Student Access to Resources 24/7/365
  - Microsoft Licenses

• **Communications:**
  - In **2013**, there where **28** images, **1,046** VCL users (faculty and students) across the entire NCCU campus, **400+** concurrent user capability
VICTORY

Virtualization – Information Communication Technology Outreach to Re-energize Youth
VICTORY

• Focus is to engage and emerge elementary and secondary schools (K-12) into a technology rich environment where students have access to software applications and tools that support and expand the classroom environment to the home.

• Enables the learning environment to continue without any limitations that may have been caused by limited technical support, lack of access, and/or ability to properly configure the software required for the class curriculum

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VICTORY PILOT

• **Proof of Concept:**
  - Partnership with Hillside New Tech High School (HSNT) in Durham, NC
  - Three courses - Digital Media, English, and Principles of Business

• **Analysis:**
  - Children Internet Protection Act
  - District Broadband Service (slow or down) vs VCL
  - Support after hours for students on VCL
  - Get NCCU students more involved in VCL and high school students

• **Communication:**
  - Principal - wanted VCL but this was not a high priority for him
  - Teachers - wanted us to teach the software
  - District Administration - test our images for CIPA compliance
  - NCCU ITS - user names and passwords
  - Students - reservation response time and after hour support
Virtualization Outreach to Increase Community Equity
• Focus on education and training of communities through the use of technology.

• Expose students to opportunities to solve community problems by developing their computer, Internet and technology skills.
  - BDPA Triangle SITES Training Program
  - Technically Aspiring Global Students (T.A.G.S.) Technology Camp
  - Youth Digital Studio

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• **Proof of Concept:**
  - Partnered with BDPA Triangle’s SITES/HSCC for two years to inspire youth to embrace technology
  - VCL image included Apache, ASP.NET, C#, Java, JDK, JRE, MyPHP Admin, MySQL
  - Impacted 65 Students/Instructors, from 12 cities in NC and 20 high schools

• **Analysis:**
  - Image was independent of location and computer lab software. Allowed participants to utilize same image inside and outside training
  - Ensure training of all instructors, user guides and technical support
  - Licensing issues and community use beyond state

• **Communication:**
  - Cloud Conference Evangelist – presented at National BDPA Conferences and seven (7) additional BDPA Chapter’s SITES/HSCC wanted to use VCL Image
Next Steps

• **Scale:**
  - Develop the Cloud NCCU Ambassadors and build images
    - Implementation of VCL into multiple high school with faculty advisor
    - VCL Boot Camp Training
    - Provision and maintenance of the VCL images
    - Analyzing usage data and surveys to ensure that their VCL implementation is successful and their respective principal, teachers and students are satisfied with their VCL images and performance.
    - Train and mentor high school students
Next Steps

• Design templates and processes to document all of the tasks necessary to implement VCL in their respective high school
  ➢ Develop presentation to the high school principal
  ➢ Ordering software
  ➢ Coordinating the user names & password
  ➢ CIPA compliance and testing
  ➢ Creating user specific manuals
  ➢ Ongoing maintenance through documenting trouble reports and working with the NCCU Information Technology Services (ITS) department to resolve any problems
Questions

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Virtualization Outreach for NCCU, K-12, and Our Community