

# Campus Computing Infrastructure (CCI)

MTAG

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# CCI Elements & Critical Mass

- CCI Consumable Service Elements
  - Virtualization
  - Storage
  - Backup / Archive
  - Facilities co-location
- Take advantage of 5-year equipment refresh cycles to engage with CCI service

# CCI Virtualization

- Pilot testing now – 13 participants
- First production release: Self-provisioning
- Second production release: Bulk import
- Rates:
  - \$180 / CPU/YR
  - \$50 / GB RAM/YR
  - \$1 / GB auto-tier storage / YR
  - Reference configuration: 2 CPU/4 GB RAM/40 GB HD = \$600/YR
- Critical mass is 3000 servers

School/College	Dept/Group	Campus OU Name
Department of International Boat Studies	CCIV Demo Group	DIBS
School of Business	ITS	WSB
Law School	IT	LAW
Letters & Sciences (L&S)	Journalism	SJMC
Wisconsin Institutes for Discovery (WID)	IT	WID
VC For Research and Graduate Education (VCRGE)	Grad	Grad
VC For Research and Graduate Education (VCRGE)	Waisman	WCS
VC For Research and Graduate Education (VCRGE)	Primate Research Center	WNPRC
Letters & Sciences (L&S)	Social Science Computing Cooperative	SSCC
College of Engineering	Civil & Environmental Engineering (CEE) - TOPS Lab	TOPS
School of Medicine & Public Health (SMPH)	Information Technology	SMPH
Wisconsin Institutes for Discovery (WID)	IT	WID
General Library System (GLS)	Library Technology Group (LTG)	GLS

# CCI Storage

- CCI prices:
  - \$1 /GB/YR for auto-tier storage
  - .30 /GB/YR for network attached storage
- Storage service overview:
  - Total 1,111,492 GB
    - Tier 1: 86,772 GB; \$14/GB/year mirrored
    - Tier 2: 206,334 GB; \$10/GB/year mirrored
    - Tier 3: 41,793 GB; \$3.00/GB/year mirrored
    - Tier 4: 196,727 GB; \$0.30/GB/year unmirrored
    - Other: 580,000 GB
- CCI Virtualization storage
  - 24,000 GB for customer workload. \$1 / GB/YR, auto-tier

# CCI Backup / Archive

- Backup / Archive: 517.6 TB primary back-ups
  - Bucky Backup. 333 TB. 3.93/GB/YR
  - Bucky Backup Lite. 183 TB. .45/GB/YR
  - Bucky Archive (warm). 1 TB. Planning for 150-200 TB. .30/GB/YR
  - Research Archive (cold). Pilot. .03/GB/YR

# Facilities Co-location

- Very limited space, power and cooling
- Network and other infrastructure elements
- Looking at options including research park space, DOA's data primary and DR data centers, commercial data centers, collaborative relationships with other institutions

## CCI: What's included in the costs?

Below are some of the key features included in the costs for CCI Virtualization and Storage

<b>Security</b>	<ul style="list-style-type: none"><li>▪ Partnering with Cybersecurity to protect the environment through managed security controls</li><li>▪ Cybersecurity will provide assessments and audits</li></ul>
<b>Consulting</b>	<ul style="list-style-type: none"><li>▪ Service consulting to ensure best fit and smooth transition</li><li>▪ Sharing best practices from previous engagements</li></ul>
<b>Billing &amp; Reporting</b>	<ul style="list-style-type: none"><li>▪ Monthly billing statements</li><li>▪ Reporting capabilities to assist with right-sizing</li></ul>
<b>Design, Planning &amp; Management</b>	<ul style="list-style-type: none"><li>▪ Virtualization architecture that meets UW's guidelines</li><li>▪ Planning future upgrades to meet future needs</li></ul>
<b>Communications</b>	<ul style="list-style-type: none"><li>▪ How-to documentation that is accurate &amp; up to date</li><li>▪ Portal provides service information &amp; a way to get support</li></ul>
<b>Identity &amp; Access Management</b>	<ul style="list-style-type: none"><li>▪ Integration with Campus Active Directory and Manifest</li></ul>
<b>Service Management &amp; Operations</b>	<ul style="list-style-type: none"><li>▪ 24x7 Network Operations Center and services tracked using IT Service Management</li><li>▪ Integration into the Disaster Recovery Plan</li></ul>
<b>Data Management</b>	<ul style="list-style-type: none"><li>▪ Data mirroring for service disaster recovery</li><li>▪ Ability to take snapshots and there is performance &amp; security monitoring</li></ul>
<b>Platform</b>	<ul style="list-style-type: none"><li>▪ Automated self-provisioning</li><li>▪ Hypervisor/Firmware updates taken care of and licensing managed (Note: OS Licenses are billed back)</li></ul>
<b>Infrastructure</b>	<ul style="list-style-type: none"><li>▪ Life cycle management of all hardware and hardware repairs and issues are all managed</li><li>▪ High speed networking</li></ul>
<b>Facilities</b>	<ul style="list-style-type: none"><li>▪ Data center management to provide redundant power &amp; cooling</li><li>▪ Physical security through video monitoring and card access</li></ul>



# UW-Madison Campus Computing Infrastructure (CCI) Initiative

## CIC Universities Virtual Server Rates Comparison

CIC Universities*	CPU	RAM	Storage	Rate Per Year
University of Iowa	2	4	40	\$1,161.60
University of Chicago	2	4	15	\$1,059.96
University of Michigan	2	4	50	\$776.16
Michigan State University	2	4	40	\$775.00
University of Nebraska-Lincoln	2	4	40	\$750.00
University of Maryland	2	4	45	\$720.00
Pennsylvania State University	2	4	40	\$696.00
<b>University of Wisconsin-Madison</b>	<b>2</b>	<b>4</b>	<b>40</b>	<b>\$600.00</b>
Ohio State University	2	4	40	\$552.00
Indiana University	2	4	40	\$550.00
University of Illinois	2	4	50	\$546.00
Purdue University		4	40	\$140.00
<b>Average Price Per Year**:</b>				<b>\$693.89</b>

\* Each university lists their information a little differently. Focus was on unmanaged virtual server costs.

\*\* Information not found for: University of Minnesota, Northwestern, and Rutgers University.

## Amazon Virtual Server

Amazon Virtual Server*	CPU	RAM	Storage	Rate Per Year**
On-Demand (rates are market variable)	2	4	40	\$678.72
Reserved	2	4	40	\$591.12

\* Reserved is for a 1-year term and On-Demand is a per hour rate. Calculations were done using the public rates as of July 2015.

\*\* Data Transfer Fees not applicable due to use with Internet2

# Security Policy & Procedure

- Allen Monette – Cybersecurity liaison to CCI
- Nature of the data drives infrastructure elements
- Handout: CCI Virtualization – Provisioning Process

# Who has committed to date

- 75+ engagements with our customer engagement team (Luke Bluma, Mike Layde)
- Not whole service / entire facility engagements – trying-out specific services and technologies
- In queue to try service:
  - AIMS
  - College of Engineering – Wisconsin Center for Applied Microelectronics
  - Dept of African Languages and Literature
  - Letters & Science Learning Support Services
  - School of Business
  - School of Education – Epistemic Games Group
  - School of Journalism
  - School of Nursing
  - Urban and Regional Planning
  - WI National Primate Research Center
  - WI Union
  - Waisman Center
- Concurrent vs. serial engagements

# Governance – Administrative

Meets quarterly

- Melissa Amos-Landgraf, Associate Dean for Administration, School of Education
- Jan Cheetham, CIO Research Cyberinfrastructure Liaison
- Peg Eusch, University Records Officer
- Rick Gibbs, Director, Risk Management
- Laura Grady, Communications, DoIT and CIO
- Alice Gustafson, Director, Administrative Process Redesign (APR)
- Andy Taylor, Director of Financial Services, DoIT
- Rick Konopacki, HIPAA Security Coordinator, Manager SMPH Networking & Security
- Lee Konrad, Associate University Librarian
- John Krogman, Chief Operating Officer, DoIT
- Steve Krogull, Director, Systems Engineering & Operations, DoIT
- Rob Lamppa, Executive Director, Physical Plant
- Dennis Lange, Manager, Campus Networking, DoIT Network Services
- Meloney Linder, Associate Dean of Communications, Facilities and Technology, School of Business
- Bruce Maas, Vice Provost for Information Technology and CIO
- Bob Turner, Chief Information Security Officer
- David Null, Director, University Archives and Records Management
- David Towers, Director of Information Technology, SMPH
- Stefan Wahe, Associate Chief Information Security Officer
- Paul Wilson, Professor, Engineering Physics; Faculty Director, Advanced Computing Infrastructure (ACI)

# Governance – Operational

Forming now – aligned with virtualization deployment.  
Will meet quarterly. Invited participants:

- Sterling Anderson, Journalism
- Andrew Arnold, SCCC
- James Babb, CS
- Jeff Ballard, CAE
- Phil Barak, CALS
- Kelly Bauman, AIMS
- Pete Boguszewski, GLS LTG
- Bruno Browning, L&S LSS
- Kevin Cherek, AIMS
- Derek Cooper, Morgridge
- Tim Czerwonka, CS
- John DeMuth, Pharmacy
- Eric Dieckman, CALS
- Jeremy Foley, Univ Health Services
- Eric Giefer, Law
- Brendan Giese, GLS LTG
- James Grandt, Aquatic Sciences Center
- Ben Huebner, Morgridge
- Carl Karcher, Waisman
- Rob Kohlhepp, CAE
- Rick Konopacki, SMPH
- Lee Konrad, GLS LTG
- Jeff Korab, SMPH
- Tom Lynch, Primate Center
- Mitch Lundquist, GLS LTG
- Tim Maahs, State Historical Society
- Lauren Michael, ACI
- Tom Mish, SMPH
- Rob Olson, Waisman
- Dave Parter, CS
- Michael Pitterle, Pharmacy
- Jason Pursian, CALS
- Griffith Randel, L&S Admin
- Steve Rau, CEE/TOPS
- Theresa Regge, Univ Health Services
- Tyler Schultz, L&S Admin
- Curt Shomberg, L&S Admin
- Alan Silver, Chemistry
- Daniel Simanek, VC for Research and Grad Ed
- Brenda Spychalla, School of Education
- Nick Tincher, VC for Research and Grad Ed
- Dave Towers, SMPH
- Steve Van Der Weide, WSB
- John Weltin, WSB
- Beth Wiebusch, WSB
- Dean Winger, School of Education