

A newsletter of the Bureau of Communication and Computer Services

## BCCS Holds Illinois Century Network (ICN) Regional Meetings

During October and November 2007 BCCS once again held a series of nine regional ICN informational meetings. These meetings achieved two objectives. First, they provided the chance to share information about what is new with the ICN with our constituents. Second, they provided users with the opportunity to pose questions and provide feedback to CMS BCCS, Network and Field Operations management, and staff responsible for supporting the ICN backbone and our customers. The meetings also provided a synopsis of improvements achieved in the twelve months since last year's regional meetings and a preview of future upgrades.



ICN cited as a major contributing factor in Illinois being tied for #1 in the 2001 Digital States Survey.

ICN Network technician Frank Walters (left) discusses constituent needs with RTC 8 & 9 Manager (l to r) Dave Mollet, Network Services Manager Kirk Mulvany, and a constituent at the regional meeting in Belleville on November 14, 2007.

### What has the ICN accomplished this year and where is it going?

- Progress in exploration and planning of the next generation ICN backbone upgrade to Dark Fiber in select locations. The migration to this technology will allow for more flexibility and scalability in terms of available bandwidth on the ICN backbone.
- Expansion of the availability of metro Ethernet as a last mile connection option thereby improving speeds.
- Improvements in quality of service via “traffic shaping” – a technique which enables the user to prioritize the packet transmission process. This technique allows for web traffic or video to be handled first based on constituent’s needs.  
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## “Virtualization” - Phase 1

Virtualization is a proven software technology that is rapidly transforming the IT landscape and fundamentally changing the way that people compute. *Why Virtualize?* The top four reasons to adopt Virtualization software are: 1) Virtualization makes it possible to achieve significantly higher resource utilization by pooling common infrastructure resources and breaking the legacy “one application to one server” model. 2) With virtualization, you can reduce the number of servers and related IT hardware in the data center. This leads to reductions in real estate, power and cooling requirements, resulting in significantly lower IT costs. 3) Virtualization offers a new way of managing IT infrastructure and can help IT administrators spend less time on repetitive tasks such as provisioning, configuration, monitoring and maintenance. 4) Eliminate planned downtime and recover quickly from unplanned outages with the ability to securely backup and migrate entire virtual environments with no interruption in service.



### What is the status of the BCCS Data Center moving to VMware?

- Water cooled racks and blade technology are up and running.
- In January 2008 we will start Virtualizing 250 servers to roll into the new environment. Servers will be “virtualized” based on the order that was recommended by the VMware assessment, which was done last fall.

### What are the advantages of implementing VMware?

- Physical servers are mounted in racks, which are 6.5 feet tall and 3.3 feet wide. Each Rack can hold between 3 - 22 physical servers, depending on the size of each server. Approximately 300 virtual servers can be installed on physical equipment that would only take up about half of one rack.

There are an estimated 1,200 servers in the data center. Replacing the older servers with Virtual servers will reduce space, power, and cooling requirements and provide high availability to these servers. *(continued on page 3)*

## IT Governance Refresh

Deputy Director Doug Kasamis committed to streamlining the IT Governance process to help Agencies more easily navigate the process and to provide BCCS with earlier visibility into Agency initiatives.

The result was a refresh that:

- simplified the templates
- renamed the Functional Requirements to Business Requirements
- renamed the Non-Functional Requirements to Technical Requirements
- removed the Financial template
- changed Gate 1 to include only the Charter
- changed Gate 2 to include both the Business and Technical Requirements, and
- clarified the Gate 3 requirement

A Governance Refresh presentation was provided to the Consolidated Agencies on October 25, 2007. The presentation provided more detailed information on the changes made. A copy of the presentation, the new templates and FAQs are available on the IT Governance website at <http://www.illinois.gov/governance/>.

 Two McAfee Products are approved as Standards for anti-virus software for PCs:

- GroupShield for email server
- Virus Scan for all Windows platforms

Upon request, BCCS Agency Relations will meet with agencies to provide training on the Governance process. Please contact your Agency Relations Representative if you are interested in training. To find out who your representative is, please visit the BCCS website and check out the 'About Us' section under Agency Relations and you will find an Agency Assignment Report you may download. This report identifies all agencies/boards/commissions and their respective Agency Relations Representative. ●

## Integrated Tax Project

BCCS staff has been working with the Department of Revenue over the past six months in an effort to prepare and support the infrastructure required by the 45 million dollar Integrated Tax Project. Over the next five years, teams from both agencies, as well as, the vendor FAST Enterprises will continue to work closely to meet many project milestones. The first of these significant milestones was December 11<sup>th</sup>, when the system went live at the BCCS Data Center.

Talks began in 2006, when Revenue approached management from BCCS and BOSSAP in an effort to provide an early awareness of the many significant details of the project. It was agreed that Revenue would support the application, BCCS would host the infrastructure and FAST would implement the initial customization of the system to accommodate the software.

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## "Illinois.gov" Achieves Uniformity

In FY08, the Personal Information Management (PIM) group within BCCS will complete its work in standardizing the "Illinois.gov" naming convention for all state agencies, boards and commissions under the Governor's jurisdiction. To date, 95% of these gubernatorial entities have been converted to the "Illinois.gov" naming standard through the PIM Alias project. The PIM group will convert the remaining agency, the Department of Corrections, in January 2008. At this time, the Illinois State Police has been determined to be out of scope for this project.

This project provides the ability to achieve a uniform "Illinois.gov" naming convention even though an agency may still possess its own naming convention. For instance, John Doe at agency ABC has an e-mail address of "John\_Doe@abc.state.il.us". After the alias address conversion, his public email address is "John.Doe@illinois.gov". From a technology standpoint a translation is performed to convert this standard address to the original address in order to ensure mail arrives in Mr. Doe's mailbox. This translation happens in the background and is transparent to the user and the public.

The overall benefit to this change is to allow state employees to keep their existing email address if they move to another state agency. It also provides a common email naming convention for all state employees.

A true technical conversion to the 'Illinois.gov' standard is also being accomplished through the PIM Native project. This involves converting the agency's existing email system to the Enterprise MS Exchange platform. Benefits of this conversion include a common calendar platform for ease of scheduling across agencies, the ability to use common distribution lists and sharing of contact lists, and the ability to use an enterprise content filtering solution. In addition, this conversion will simplify on-going support and maintenance with the elimination of disparate email systems.

In FY08, the PIM team plans to complete the migration of both the Department of Employment Security (DES) and the Environment Protection Agency (EPA) to the Enterprise MS Exchange platform. Once completed, 10.4% of gubernatorial entities will reside on the Enterprise MS Exchange system.

Questions on this project may be directed to Rebecca Morgan, BCCS Enterprise Email Manager at 217-558-2108 or email [Rebecca at rebecca.morgan@illinois.gov](mailto:rebecca.morgan@illinois.gov). ●

 In October 2007, the Consolidated agencies received a total of 10,447,852 pieces of email. Of these, nearly 7,500,000 were spam. In other words, BCCS blocks near a 3:1 ratio!

In the first quarter of FY08, 526 GroupWise accounts were migrated to Exchange with 23,771 more accounts targeted.

## ICN Regional Meetings (continued from page 1)

- Overview of ICN Connectivity to Internet2. The overview included a look at the path that customer traffic takes to get to Internet2 via the ICN, as well as a look at some examples of specific content that is available to Internet2 eligible constituents. Examples include, but are not limited to the following:
  - The Library of Congress
  - The National Science Foundation
  - The San Diego Super Computing Center where a relatively new process of “Telemedicine” enables doctors to obtain real time input of specialists in distant locations
- Improvements to intrusion detection systems enable ICN staff to detect earlier when constituents are under attack. This is important as it helps provide precious time to fight the attack. Frequently, the ICN is able to defeat an attack at the edge before a user ever experiences a degradation in service.

The success of the ICN continues to grow as evidenced by the amazing increase in usage. For example, there has been a 100% increase in internet access via the ICN in the previous 12 months and, if current trends continue, there will be another 100% increase by the end of calendar year 2007! ●

## Green IT

Actions taken in information technology to conserve energy and reduce toxic waste created by computer resources are commonly referred to as “Green IT.” In 2006, Governor Blagojevich issued two Executive Orders addressing environmental issues. Executive Order 11 creates the Illinois Climate Change Advisory Group. This advisory group is to provide recommendations to reduce emissions from governmental activities by 6% by 2010. Executive Order 12 directs the Department of Central Management Services to develop a responsible policy for managing the end-of-life for computers and other electronic equipment. Efforts to comply with these gubernatorial mandates include the following initiatives:

### Blade Server Technology:

According to IBM, for an average 25,000 square foot data center (ours is 30,000), potential energy savings from Blade server technology could be as much as 42 %. Based on the energy mix in the US, this savings equates to 7,439 tons of carbon emissions saved per year.

### VMware (virtualization technology):

- Virtual infrastructure reduces energy consumption by allowing applications to run on fewer physical servers, which in turn reduces power and cooling requirements.
- Cost savings can be significant, approximately \$300-600 per server per year.
- CMS expects to reduce the number of physical servers by more than 50 %. This is a reduction of over 1,000 physical servers. *(continued on next column)*

- According to International Data Corporation (IDC), for every 50 servers eliminated, it reduces the following emissions over 3 years:

Carbon Dioxide (CO <sub>2</sub> )	1,790,982 Lbs or 895 Tons
Methane (CH <sub>4</sub> )	37 Lbs
Nitrous oxide (N <sub>2</sub> O)	25 Lbs
Sulfur dioxide (SO <sub>2</sub> )	7,143 Lbs or 3.57 Tons
Nitrogen oxide (NO <sub>x</sub> )	2,239 Lbs or 1.11 Tons

The above total greenhouse gas reduction is 900 tons of Carbon Dioxide equivalent. This equates to one of the following:

- 177 passenger cars not driven for one year
- 92,974 gallons of gasoline
- Electricity used by 105 households for one year
- Four railcars of burned coal. ●

## Virtualization (continued from page 1)

The impact of implementing VMware will be transparent to our customers.

### Phase One Assessment

- The VMware representatives looked at 385 servers at the Data Center. BCCS did not pick the cream of the crop—they chose difficult servers for testing and only four were considered bad candidates for this project. Out of the 385, it was recommended to “virtualize” 381 of the servers tested.
- It is important to mention that testing revealed on an average we are using approximately 1% utilization of the CPU. The national average has been found to be at 3% utilization of the CPU.

As of the 1st quarter of FY08, 1,098 servers in the Springfield area of an estimated 1,288 have been consolidated.

The mainframe continues to provide availability at or near 100% of the time. Of the 99,601,260 transactions processed in October, 97,998,084, or 98% are processed in less than one second!



The photograph above shows an HP server blade being installed into an enclosure. Each enclosure can have up to 16 server blades installed. The water cooled racks hold four enclosures, for a total of 64 server blades into one rack. Each blade can have between 8-16 Window servers installed depending on the server functionality. To get a sense of scale and the space savings achieved with virtualization, turn back to the photograph on the right hand side of page one and make a point of noticing the telephone at the top of the photograph! ●



## PKI Ensures Secure Confidential Data Sharing

Public Key Infrastructure (PKI) is a combination of hardware, software, encryption/digital signature technologies, and policies and procedures that enable an enterprise or individual to secure critical business communications and business transactions while using the public network. PKI is used to secure a wide variety of internet and e-commerce applications including email, virtual private networks (VPNs), web access, file encryption, digital signatures and custom applications.

As stated in a recent CMS newsletter article, Illinois leads the nation in the use of digital signature technology. The article stated that, in March 2003, the State had issued 5,600 certificates for both individuals and other entities to use this technology to encrypt the filing of pollution reports, criminal background checks, and other critical data. This number has now grown to 111,000 digital certificates. Clearly, the demand for this security service has increased significantly and continues to grow.

Current applications of PKI certificates issued by the State of Illinois fall into several large categories of securing confidential data such as:

- Social Security Number, credit card or financial information for individuals applying for state services.
- Future teachers use PKI to apply for financial aid through an Illinois Student Assistance Commission web application.
- Securing access for third-party vendors contracting with the State of Illinois to provide confidential transaction information.
- Healthcare and Family Services currently uses PKI to allow Medicaid service providers to locate client benefit and eligibility information on-line.
- Securing information to be shared among public entities.
- The Illinois State Police uses PKI to enable secure access for local public safety entities in its Terrorism Information Center.
- The Chicago Department of Public Health uses PKI to provide medical facilities access to its Health Alert Network.
- Citizens can use PKI to submit comments or complaints to the Pollution Control Board website.
- Judges in Kane County are employing PKI along with biometric protection (e.g., fingerprint as passwords) to secure data in court cases being argued before them.

The above are just a few examples of current uses of PKI as a means to secure and share confidential information.

The expanded use of PKI by the State of Illinois complies with a gubernatorial mandate directing CMS to leverage technology to increase the efficiency and cost effectiveness of state operations. If you are interested in using PKI, or have questions regarding its applicability to your agency's business operations, please contact Mark Anderson with BCCS Risk Management at 217-558-4859 or [mark.anderson@illinois.gov](mailto:mark.anderson@illinois.gov). ●

## Integrated Tax Project (continued from page 2)

As far as the infrastructure is concerned, the Data Center utilizes Blade technology and houses and supports the required 20 SQL production servers that provide a redundant application and a web front-end. The Data Center procured a Storage Area Network (SAN) to meet the system's initial 30 terabyte requirement. Revenue has recently phased in 1,500 new PCs to run the application on the end-user side. SAN performance, database loading and Blade tests have all been completed successfully. Hardware residing at the Data Center has enabled the project team to take advantage of additional power and data paths supported by N+1 redundancy. BCCS endeavors to remain flexible as necessary access rights are granted to project development staff residing at Revenue.

The project's success to date can be attributed to a project team comprised of both agencies and a vendor who are all dedicated to the business needs of the Department of Revenue and the behind-the-scenes functioning of the supporting hardware and software.

If you have a major initiative in the near term, please be sure to engage BCCS early in the process so we can work with you to develop a solution and timeline that meets your business needs. ●

## Verizon Wireless Cellular Coverage Expanded to Petersburg Area

If you use a state cell phone and live in, or travel through, the Petersburg area as part of your job, you will be glad to know that the hole in cell coverage in that region has been addressed by one of the carriers.

Verizon Wireless now has coverage in the Menard County area as a result of an upgrade completed on August 7, 2007. If you currently use a different carrier ask your Telecom coordinator to contact the CSC for information on the current competitive prices being offered. The number of the CSC is 217-524-4784 or 800-366-8768.

Additionally, if you are a state employee and a Verizon customer, check with Verizon to ensure that you are receiving the state employee discount they offer. ●