



COMPUTING & NETWORKING
INFRASTRUCTURE CONSOLIDATION

Oregon CNIC Project Update: *Moving Forward*

May 2006

WHAT'S INSIDE

- Project Manager Update
- Data Center Launches Job Recruitment
- The Process of Migrating to the Data Center
- Agencies Report On Migration
- The Technology of the State Data Center
- Resources

CNIC PARTICIPATING AGENCIES

- Administrative Services
- Consumer & Business Services
- Corrections
- Education
- Employment
- Forestry
- Housing & Community Services
- Human Services
- Revenue
- State Police
- Transportation
- Veterans' Affairs



THE BALL IS IN OUR COURT . . .

Mark Reyer, State Data Center Administrator

In early April, the Legislative Emergency Board approved a new budget for the State Data Center (SDC). Our budgeted staffing model is now 149 personnel. I would like to publicly thank the agency directors, the finance committee, the CIOs, and all who worked tirelessly to make this happen. I would especially like to thank DAS Director Lindsay Ball for his personal support and confidence in us to make the SDC a success. Now the ball is in our court to succeed and not let them down.

With the new budget, we committed to even greater savings from our consolidation of 12 agency data centers. Achieving these savings targets will require innovation, commitment and a new way of approaching our work. It's not acceptable to spend money just because we have a customer willing to pay, or because it's in the budget. Our mission is to seek every opportunity to save money and dramatically reduce what the state spends on information technology. This doesn't mean cutting corners on quality. It means asking if there is a better, more efficient way to operate. And it's up to each and every one of us.

How will the State Data Center achieve savings? A few of the key ideas for savings include:

- Consolidating multiple software licenses
 - Standardizing system images toward a common architecture
 - Implementing 100 percent managed storage on our Storage Area Network
 - Consolidating server workloads
 - Standardizing and streamlining our procedures
 - Eliminating unnecessary hardware and software assets
 - Automation of system and network monitoring, maintenance, and provisioning
 - Better negotiation and subsequent management of vendor contracts.
- This list doesn't include every project, but it gives you a good idea of the work ahead to accomplish our mission. Needless to say, we have to do this while providing excellent customer service. It's a monumental mission. I've heard that this is the most challenging and complicated endeavor the state has undertaken. But I am confident that we will be successful. We have an outstanding technical team. We have the support and encouragement of the CIOs and agency directors. Finally, we have a management team with the vision to achieve these ambitious goals.
- So, the ball is in our court and I can't wait to get the team together and get started! ■
- Consolidating networks and migrating to more cost effective transport

PROJECT MANAGER UPDATE

Julie Bozzi, PMP, State Data Center Plans & Controls Manager

The first quarter of 2006 has been filled with milestones for the CNIC Project as two years of planning and preparation to move agency servers and operations into the State Data Center becomes a reality. Several agencies are currently moving their operations and more are engaged in pre-move activities with technical staff (*see migration article on page 3*). The data center is filled with agency staff working on job-rotation, assisting agencies in provisioning and receiving agency equipment and workload.

Achievements and progress since our last project update in February:

- Consolidation/re-homing of Wide Area Network remote locations
- Contracts for mover services finalized (for use by agencies as needed)
- Automated tape library delivered and installed
- Storage migration begun and tape library production launched with DAS, DHS and ODOT
- Disk storage and Wintel servers delivered
- Mainframe contract finalized and mainframe delivered; installation and migration to the new mainframe will begin in late April
- Migration planning for DAS, DHS, ODOT and OHCS completed
- Pilot server moves completed for DAS, DHS and ODOT (full migration in process through June 30)
- Migration kick-off meetings were launched with agencies scheduled to move by the end of the year
- Asset transfer strategy developed and communicated
- Technical position descriptions, job announcements and organization chart completed
- Recruitment process launched
- Survey of organizational culture traits within the CNIC agencies completed and analyzed; plan to enable a dynamic culture at the State Data Center developed and communicated with State Data Center management team. ■

Data center launches job recruitments

The CNIC Project-State Data Center reached a significant milestone Friday, April 14 as recruitment announcements for data center technical positions were distributed to the in-scope staff of the 12 CNIC agencies. These announcements address all technical job functions to be supported by the center.

According to the terms of a Letter of Agreement*with SEIU, in-scope staff has an opportunity to apply for data center positions in an exclusive first round of hiring. If the data center is unable to fill all positions in that first round, recruitment will open up to a broader pool – any employee of the 12 CNIC agencies. If there are still open positions, recruiting will

go to a third round – open-competitive – in which there are no restrictions on the applicant pool. A third round will be communicated using the State of Oregon Jobs Page*.

A significant factor in the timing of recruitment announcements was approval of an increased staffing level by the Emergency Board. This increase was the recommendation of CNIC agency directors and chief information officers as a risk-mitigation strategy due to increased project scope and equipment inventory. The new model* includes 138 positions for data center operations and 11 positions for network security. The current recruitment effort is based on this new model.

(continued on page 3)

The process of migrating to the State Data Center

Sarah Miller, Agency Migration Coordinator, CNIC Project Office

Being a relatively new employee with the DAS Project Management Office, things got very exciting very quickly with my assignment to serve as the coordinator of agency migration to the State Data Center (SDC).

Our process is to work closely with agencies to complete what we call “prepare and assess.” This is work we have been doing since January-February with DAS, DHS, ODOT and OED (*see their articles on pages 4-5*). The prepare and assess stage focuses on defining the agency project team, identifying the inventory to be relocated, and setting strategies around how migration work will be performed. Then we work on detailed “wave” planning. This stage is designed to do the specific planning required to move specific pieces of equipment at a specific time. Similar to the steady rhythm of ocean waves, inventory is relocated to the State Data Center in segments based on an agency’s needs and priorities, and the master schedule.

As of April 14, 166 servers have been relocated to the SDC in addition to network equipment that was relocated previously. For each agency, this represents: DAS 98 servers; DHS 51 servers; and ODOT 17 servers. These moves have

accomplished a couple of things: 1) Proven that the concept of extending agency server networks to the SDC works, and with very few exceptions does not require IP re-addressing; 2) Allowed the SDC to adjust its provisioning processes to make moves smoother for agencies; and 3) Shown some early successes. Now, other agencies that were either scheduled to migrate later, or that are outside the 12 CNIC agencies, are contacting us about moving into the SDC (*see Housing article below*).

In the month of May, we expect to move four servers from DHS, 93 servers from DAS, 46 servers from ODOT, and 18 servers from OHCS. In addition, we’ll conclude our schedule of kickoff meetings with the remaining CNIC agencies.

Our commitment to each agency will continue to be bringing all parties to the table for issue resolution so we can all support the outcome. ■

JOB RECRUITMENTS *(continued from page 2)*

*Resources

Letter of Agreement:

http://www.das.state.or.us/DAS/IRMD/docs/pdf/cnic/bargaining_LOA.pdf

State of Oregon Jobs Page:

<http://www.oregonjobs.org/>

SDC organizational chart:

http://www.das.state.or.us/DAS/IRMD/docs/pdf/cnic/sdc_tech_orgchart.pdf ■

Oregon Housing and Community Services (OHCS) is ahead of schedule for its move to the State Data Center. We plan to complete the move on April 29. While no major impact is anticipated, we will be testing over that weekend to ensure that our applications, especially those used by our partners throughout the state, continue to perform well.

In preparation for the move, OHCS staff have completed an upgrade of our Oracle database and related software, and made the network changes needed for the move. We have been particularly careful to ensure that the network changes do not disrupt the networks of the agencies with whom OHCS shares the North Mall Office Building.

I would like to acknowledge the special contributions of OHCS staff Ronald Toub, DBA, and Tim Marshall, Network Administrator, for their work in preparing for this transition. In addition, we have received uniformly fine support from all SDC staff; Sarah Miller’s work to accommodate our early move is especially appreciated.

OHCS looks forward to being the first agency to complete its transition to the SDC! ■ *-Bill Carpenter, CIO, OHCS*

Agencies report on migration activities

ODOT continues to make good progress toward the goal of completing migration to the State Data Center (SDC) by June 30. An Agency Transition plan has been completed and approved. Work is now focusing on the careful movement of over 320 ODOT servers from the Revenue building to the SDC. The project team is dividing the work into multiple waves to occur in the months of April, May and June.

Processes for preparing the environment ahead of time ensure that outages are kept to a minimum, usually during hours that servers are not in use.

In early June, the ODOT mainframe image will be temporarily relocated to the new z990 mainframe at the SDC. ODOT's mainframe work will be done on this device for approximately one week while its z890 mainframe in the Revenue building is packed and moved to the SDC.

Once the z890 mainframe is settled in, ODOT will return to this device. Outages for these moves will be scheduled to cause the least possible disruption.

Once migration to the SDC is complete, ODOT will continue to operate and manage the server and mainframe infrastructure in its new environment during a stabilization period. During stabilization, project work will focus on setting up Service Level Agreements with the SDC and relinquishing direct control. ■

*Contact: Claudia Light, ODOT
CNIC Transition
Project Manager*

CNIC is a key topic at the Oregon Employment Department (**OED**) these days. Project teams are working toward completing the print transition to Publishing & Distribution in early May, transitioning the mainframe at the end of May, and moving the iMatchSkills systems in June. Teams are also planning the move of over 40 servers this summer. A new project team is starting to examine processes needed to interface with the new State Data Center (SDC) and Print Plant. Each team meets weekly to plan and track efforts and issues. Our affected staff are deeply involved with the print transition and the SDC network setup. Over 28 OED IT staff are directly involved with the planning and preparation of the move to the SDC with many more contributing input and support.

Effective communication and top down support has been vital to the continuing success of OED's CNIC project. Along with internal meetings and regular status updates, the OED teams meet and collaborate with DHS Production Services, DHS Operations, DHS system engineers, DHS applications, Print Plant management, the CNIC Project Office, and SDC management. Together the agencies support each other and will make the transition successful. ■

*Contact: Lisa Renner, OED CNIC Transition
Project Manager*

DAS General Government Data Center (GGDC) staff members are continuing their move of equipment and operations into the State Data Center (SDC). As of April 22, we surpassed the 50 percent mark for DAS server moves (now more than 100 servers). We're happy to report that these moves have gone as planned without significant problems or issues. This is due to the diligent efforts of the SDC and GGDC staff.

Our Microsoft hosting environment is expected to complete its final move by April 27; completion of moves for the DAS Technology Support Center (help desk) is expected around May 21; the UNIX environment is planned to move by June 18; and the date for mainframe move completion is June 30. In all, DAS is executing 17 individual wave plans.

Customers are asking what they can do to help with this transition. We'd like customers to remember the following:

- The Technology Support Center remains your first point of contact (503.378.2135)
- The change management process remains the same

- Rates are not expected to change this biennium
- Burns backup services are not being affected by the consolidation
- Stay up-to-date by watching your e-mail closely for change requests and weekly summaries of the move process. ■

*Contact: Phyllis Michael, Acting Manager,
DAS General Government
Data Center*

DHS has completed three of its nine system migrations—waves to the new State Data Center (SDC). Wave two was by far the largest migration with approximately 36 computer servers moved in a single day. Better yet, all the systems we have moved to date began operating perfectly on the first try in their new home. The secret to our success is no secret. It is rooted in the phenomenal professionalism, effort and spirit demonstrated by DHS Office of Information Systems team members and business units with incredible guidance provided by the team at the State Data Center.

The migration is not just about the consolidation of systems and hardware. There is also a renewed appreciation for the talent and energy of all those who serve Oregon state government and ultimately Oregonians. While issues will always arise, it is comforting to know we have the dedication of highly qualified people to overcome any obstacles that lie ahead. ■

*Contact: William Conner, Deputy AMS Manager,
DHS Office of Information Services*

The Technology of the State Data Center

Dave Howard, State Data Center Service Delivery Manager

The first time I visited the newly constructed State Data Center (SDC), there was nothing but an empty computer room floor and a bunch of empty cubicles. Today it is quite different! For several years now, the state has been planning, plotting and preparing for the data center consolidation that is now actively underway. I'd like to share about *some* of the technology being put in place to support statewide operations.

The Facility

The State Data Center facility is one of the finest data center buildings in the state. The facility design was certified as Tier III compliant by the Uptime Institute (see www.uptimeinstitute.com for more information). The Uptime Institute defines a Tier III data center as: "... composed of multiple active power and cooling distribution paths, but only one path active, has redundant components, and is concurrently maintainable, providing 99.982% availability." In any data center, the two primary facility concerns are power and cooling. The SDC building was designed with fully redundant power and cooling systems. Generators run automatically when "street" power is lost and will continue to run until a stable supply resumes. For cooling, redundant chillers provide ample cooling capacity which is just now beginning to be exercised. Up to this time, there has not been enough equipment installed to push cooling requirements. The longer I work in the State Data Center building, the more impressed I am in its design and overall quality.

New Equipment and Technology

As part of the consolidation effort, several large equipment purchases were

planned. This equipment is now active or in the process of being installed. It includes a new tape library, disk array, mainframe, and large UNIX servers. I'd like to give you some details about this equipment as it represents the future of the computing environment for the state of Oregon. But first, I want to thank all the technicians who worked on the design, specification and procurement of this equipment. Without your expertise, planning, vision and talent, it would only be silicon and iron.



The IBM 3584 Automated Tape Library

Our new storage tape infrastructure consists of an Automated Tape Library (IBM 3584), and a Virtual Tape Server (IBM 3494). The virtual tape server looks like 256 distinct tape drives to the systems attached. The systems think they are writing to tape when, in reality, they are writing to a disk cache. This cache is later written to tape, allowing systems to resume processing. There are five terabytes (TB) of disk cache, which is four times the combined cache of the existing DAS-DHS-ODOT systems. The tape library itself has the capacity to store 1200 tape cartridges with a total storage capacity of 360 TB uncompressed. There are 66 physical tape drives in the new tape library as opposed to a total of 32 in DAS-DHS-

ODOT. These will serve all mainframe operations as well as all other tape backup operations in the SDC. While the existing agency equipment holds a larger number of physical tapes, the new tape library utilizes tapes that each holds 15 times more data.



Two robotic arms insert and eject tapes into the library

Since being put into production, performance of the tape library has been examined. The equipment attached to the tape library utilizes fiber optic connections which are over 30 times faster than current connections in agencies. This speed is showing up in production backups. The weekly backups at DAS are now finishing nearly three hours sooner.

A new Storage Area Network (SAN) tiered infrastructure has been delivered, installed and is in the process of being configured. The SAN hardware consists of a Hitachi TagmaStore equipped with 25 TB of storage. Additionally, a subsystem is attached providing 30 TB storage. Once agency migration to the data center is complete, existing agency disk arrays will also be utilized. Together, the data center's SAN capacity will exceed 100 TB. This storage system will provide high speed, high availability storage to mainframe,

UNIX, and open systems environments. The tiered architecture allows business to utilize the most cost effective data storage.

In addition, the new "Big Iron" has been delivered. A new IBM z990 mainframe is being installed and tested for availability on April 24. The initial configuration will be 855 MIPS (Millions of Instructions Per Second) with 32 GB main memory. The z990 is the latest offering from IBM in the mainframe class processor. Some of its technology features include:

- Data transfer at two gigabits per second, maintaining a throughput of 15,000 input/outputs per second (FICON Express 2 channels).
- The ability to non-disruptively increase or decrease processing to support short-term load changes (capacity on demand).
- Support of secure transactions with Secure Sockets Layer and Transport Layer Security protocols (cryptographic co-processors).
- Advanced availability features.
- Capability to support up to 30 logical partitions (LPARS).

(continued on page 8)



Hitachi TagmaStore USP Tier-1 storage array



The State Data Center's Mission:

To enable and support the business goals and objectives of its customers by providing high quality, cost-effective computing and networking services.

Please direct questions or comments to:

Raelynn.Henson@state.or.us
 Communications Coordinator
 DAS Information Resources Management Division

TECHNOLOGY OF THE STATE DATA CENTER

(continued from page 7)

Additionally, the SDC has acquired four IBM pSeries Enterprise AIX servers (two p590s and two p550s). These enterprise servers utilize Simultaneous Multi-Threading technology providing the ability for a single processor to process two threads (data and instruction streams) at once. These processors are capable of performing almost twice the workload of their predecessors.



Yellow trays holding fiber optic cable run along the top of server racks

Efficiencies

The technology utilized in these servers is capable of micro-partitioning in which a single processor can support up to 10 logical servers for more efficient utilization of resources. They also utilize advanced virtualization in which resources (such as fiber channels, Ethernet, and SCSI* interfaces) can be shared between logical servers – the server thinks it owns the whole resource. Of significant value is the feature “uncapped processors.” This is a type of resource on demand in which a logical server is defined to have 1.5 processors. If this server has a spike in workload and needs more processing resource, it can access unused cycles from other logical servers which may not be running at 100 percent. *(Small Computer System Interface)

Individually, this is excellent technology. Together, it is some of the finest technology infrastructure available, positioning the SDC to deliver high quality, reliable service. ■

Information Sources

Consult the *What's New* section of the CNIC Web site for a listing of all new Web postings by date.

CNIC Web site:

http://www.oregon.gov/DAS/IRMD/cnic_welcome.shtml

CNIC Listserv (subscribe):

http://listsmart.osl.state.or.us/mailman/listinfo/cnic_updates

Employee-related CNIC Information:

http://www.oregon.gov/DAS/IRMD/cnic_employee_index.shtml

Work Group Summaries:

http://www.oregon.gov/DAS/IRMD/cnic_workgroup_index.shtml