TECHNICAL PANEL
Varner Hall - Board Room
3835 Holdrege Street
Lincoln, Nebraska
Tuesday, June 8, 2021
9:00 a.m. CT

AGENDA

I. ROLL CALL; MEETING NOTICE; OPEN MEETINGS ACT INFORMATION

II. PUBLIC COMMENT

III. APPROVAL OF APRIL 13, 2021 MEETING MINUTES * *(Attachment III)*

IV. ENDORSE AMENDMENT TO THE TECHNOLOGY ACCESS CLAUSE * *(Attachment IV)*

V. REGULAR BUSINESS

A. PROJECTS
1. Enterprise project status dashboard. Andy Weekly. *(Attachment V-A-1)*

B. TECHNICAL STANDARDS AND GUIDELINES
1. Proposal 19. Amend the minimum server configuration standard. [Motion to recommend approval.] * *(Attachment V-B-1)*
2. Proposal 20. Amend the remote access standard. [Motion to post for 30-day comment period.] * *(Attachment V-B-2)*

C. WORKGROUP UPDATES
1. Intergovernmental Data Communications Workgroup. NASCIO 2021 State IT Recognition Awards nomination submission. *(Attachment V-C-1)*

VI. OTHER BUSINESS

VII. ADJOURN

* Action item.

The Technical Panel will attempt to adhere to the sequence of the published agenda but reserves the right to adjust the order and timing of items and may elect to take action on any of the items listed. If you need interpreter services or other reasonable accommodations, please contact the Technical Panel at 402-471-3560 at least five days prior to the meeting to coordinate arrangements. Meeting notice was posted to the NITC website and the Nebraska Public Meeting Calendar on May 26, 2021. The agenda and meeting documents were posted to the NITC website on June 4, 2021.

Nebraska Open Meetings Act | Technical Panel Meeting Documents

Attachment III

TECHNICAL PANEL
Virtual Meeting
Tuesday, April 13, 2021, 9:00 a.m. CT
MINUTES

MEMBERS PRESENT:
Kirk Langer, Chair, Lincoln Public Schools
Ed Toner, Chief Information Officer, State of Nebraska
Ling Ling Sun, Nebraska Educational Telecommunications
Jeremy Sydik, University of Nebraska
Bret Blackman, University of Nebraska, ITS

ROLL CALL; MEETING NOTICE; OPEN MEETINGS ACT INFORMATION

Mr. Langer called the meeting to order at 9:00 a.m. The meeting was being conducted using videoconferencing. Instructions for public access were included with the published agenda. Roll call was taken. A quorum was present. The meeting notice was posted to the NITC website and the Nebraska Public Meeting Calendar on April 1, 2021. The agenda was posted to the NITC website on April 1, 2021. A link to of the Nebraska Open Meetings Act was provided in the meeting materials and in the chat section of the videoconferencing application.

APPROVAL OF FEBRUARY 9, 2021 MEETING MINUTES

Mr. Toner moved to approve the February 9, 2021 meeting minutes as presented. Ms. Sun seconded. Roll call vote: Toner-Yes, Sydik-Yes, Langer-Yes, Blackman-Yes, and Sun-Yes. Results: Yes-5, No-0, Abstained-0. Motion carried.

PUBLIC HEARING - TECHNOLOGY ACCESS CLAUSE

Mr. Langer called the public hearing on the technology access clause to order.

Mr. Sydik introduced the revised clause. Mr. Carlos Servan, Executive Director of the Nebraska Commission for the Blind and Visually Impaired, and Mr. Toner provided additional comments and background information. Mr. Servan stated that the clause will be included on the agenda at the April 24 meeting of the Nebraska Commission for Blind and Visually Impaired.

Written comments were received from:
- Amy Buresh, President, National Federation of the Blind of Nebraska.

There were no prior requests to comment at the hearing. The Chair opened the hearing to comments from anyone attending the virtual meeting. Comments were provided by:
- Bob Burns,
- Christine Boone, and
- Sandy Alvarado.

With no one else wishing to address the panel, the public hearing was closed at 9:30 a.m.

Mr. Toner moved to endorse the revised technology access clause. Mr. Sydik seconded. Roll call vote: Sun-Yes, Blackman-Yes, Langer-Yes, Sydik-Yes, and Toner-Yes. Results: Yes-5, No-0, Abstained-0. Motion carried.

REGULAR BUSINESS

PROJECTS
Andy Weekly, OCIO Project Manager

Enterprise project status dashboard. Mr. Weekly provided an update on the status of the enterprise projects.

Recommend designating the Financial Systems Modernization Project as an enterprise project. This project has been a partnership between Nebraska Department of Transportation (NDOT), the Department of Administrative Services (DAS) & the Office of the Chief Information Officer (OCIO). Cody Lucero and Devin Townsend, from NDOT, provided a presentation.

Mr. Blackman moved to recommend to the NITC that the Financial Systems Modernization Project be designated as an enterprise project. Mr. Toner seconded. Roll call vote: Blackman-Yes, Langer-Yes, Sydik-Yes, Toner-Yes, and Sun-Yes. Results: Yes-5, No-0, Abstained-0. Motion carried.

TECHNICAL STANDARDS AND GUIDELINES
Patrick Wright, State Information Security Officer, Office of the CIO

Proposal 18. Change provisions of the Information Security Policy. Mr. Wright stated that Proposal 18 was posted for the 30-day comment period. No comments were received.

Ms. Sun moved to recommend approval of Proposal 18. Mr. Blackman seconded. Roll call vote: Sydik-Yes, Langer-Yes, Blackman-Yes, Sun-Yes, and Toner-Yes. Results: Yes-5, No-0, Abstained-0. Motion carried.

Proposal 19. Amend the minimum server configuration standard. Mr. Wright introduced the proposal.

Mr. Blackman moved to post Proposal 19 for the 30-day comment period. Ms. Sun seconded. Roll call vote: Toner-Yes, Sydik-Yes, Langer-Yes, Blackman-Yes, and Sun-Yes. Results: Yes-5, No-0, Abstained-0. Motion carried.

Work group updates; other business.

There was no other business.

Ms. Sun requested that the panel members receive copies of any presentations prior to the meeting. The presentation from the Department of Transportation was informative and helpful.

ADJOURNMENT

With no further business, Chair Langer adjourned the meeting at 10:31 a.m.

Meeting minutes were taken by Lori Lopez Urdiales and reviewed by Rick Becker.

Attachment IV

Technology Access Assurances:

1.) Commitment: The State of Nebraska is committed to ensuring that all information and communication technology (ICT), developed, leased, or owned by the State of Nebraska, affords equivalent access to employees, program participants and members of the public with disabilities, as it affords to employees, program participants and members of the public who are not persons with disabilities.

2.) Understanding and warrantee: By entering into this Contract, Contractor understands and agrees that if the Contractor is providing a product or service that contains ICT, as defined in (subsection XX), and such ICT is intended to be directly interacted with by the user or is public-facing, such ICT must provide equivalent access, or be modified during implementation to afford equivalent access, to employees, program participants, and members of the public who have and who do not have disabilities. The Contractor may comply with this section by complying with Section 508 of the Rehabilitation Act of 1973, as amended, and its implementing standards adopted and promulgated by the U.S. Access Board.

3.) Scope of ICT: ICT means information technology and other equipment, systems, technologies, or processes, for which the principal function is the creation, manipulation, storage, display, receipt, or transmission of electronic data and information, as well as any associated content. Contractor hereby agrees ICT includes computers and peripheral equipment, information kiosks and transaction machines, telecommunications equipment, customer premises equipment, multifunction office machines, software; applications, web sites, videos, and electronic documents. For the purposes of these assurances, ICT does not include ICT that is used exclusively by a contractor.

Attachment V-A-1

Projects Status Dashboard

June 2021

Enterprise Projects - Current

Agency/Entity	Project	NITC Designated
Nebraska Council of Regions	Nebraska Regional Interoperability Network	03/15/2010
Office of the CIO	Centrex Replacement	07/12/2018
Department of Health and Human Services	iServe Nebraska	11/12/2020

Note: Status is self-reported by the agency

Project Storyboard: Centrex Conversion

Project Manager	Kortus, Julie	Status Report Date	6/2/21
Project Type	Major Project	Status	Approved
Stage	Build	Progress	Started
Total Estimated Cost	$2,800,000.00	Estimate to Complete	
Actual Cost To Date			

Project Dates

	Start	Finish
Plan	10/10/17	12/31/22
Baseline	10/10/17	12/31/22
Days Late	0	0

Status Report Indicators

Overall	
Schedule	
Scope	
Cost and Effort	

Project Description

To secure the most cost efficient Hosted Voice Over Internet Protocol Telephony (VOIP) Services. This solution will replace the State's Centrex service throughout the State of Nebraska. The purpose of the project is to provide phone service that includes the most up-to-date VOIP features and functionality as a hosted service with equipment ownership, maintenance and service remaining with the Contractor.

Key Accomplishments

Status Report Update

As of 6/2/2021:
6865 lines have been removed from Windstream and CenturyLink.
400 lines belong to agencies that will not be converting
591 lines were moved off of the Centrex contract and onto a new B1 contract.

10,000 lines were in the RFP to be taken off of the Centrex contract from Windstream and CenturyLink territory.

Project is 78.6% complete.

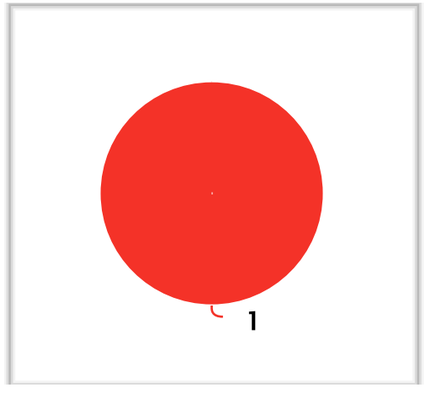
The OCIO Voice Team met with the Public Service Commission to seek help with porting issues between Lumens and ALLO.

In parallel with this project, over 800 softphones have been deployed using the same resources assigned to this project.

Upcoming Activities

Issues by Priority

Risks by Priority



Current Risks

More Risks...

Risk	Probability	Impact	Priority	Status	Target Resolution	Owner
Bandwidth at Sites				Work in Progress	6/30/20	Kortus, Julie

Project Storyboard: iServe Nebraska

Project Manager	Agarwal, Ankush	Status Report Date	5/26/21
Project Type	Major Project	Status	Approved
Stage	Design	Progress	Started
Total Estimated Cost	$11,200,000.00	Estimate to Complete	16.96%
Actual Cost To Date	$1,900,000.00		

Project Dates

	Start	Finish
Plan	4/6/20	12/31/21
Baseline	4/6/20	9/30/21
Days Late	92	92

Status Report Indicators

Overall	
Schedule	
Scope	
Cost and Effort	

Project Description

IHHS - Clarity Plan for IS&T Contractors Timesheets JC 266171 WO 266110 April 2020 thru Sept 30 2021.
7/28/2020 Project Name & Timesheets Change to iServe JC/WO number remained same.
10/21/20 PM name from Annette Pilcher to Ankush Agarwal

Key Accomplishments

Work Order 1 (Planning Review & Refinement) kicked off.
Work Order 2 (User Experience Design) kicked off.
Work Order 3 (Core Portal Development) let to vendor pool.

Status Report Update

Key Activities on Track. Work Orders 1 and 2 for the Portal project have kicked off and the foundational infrastructure and cloud environment stand-up are nearing completion.

Upcoming Activities

Select Work Order 3 Vendor and plan for kick off.
Complete Cloud Environment Build out.
Secure vendor for Work Order 4 Identity and Access Management development.

Issues by Priority

Risks by Priority

Current Issues

No matching records were found

Project Storyboard: Nebraska Regional Interoperability Network (NRIN)

Project Manager	Krogman, Sue	Status Report Date	5/27/21
Project Type	Major Project	Status	Approved
Stage	Build	Progress	Started
Total Estimated Cost	$12,500,000.00	Estimate to Complete	83.24%
Actual Cost To Date	$10,405,204.00		

Project Dates

	Start	Finish
Plan	10/1/10	8/31/21
Baseline	10/1/10	8/31/21
Days Late	0	0

Status Report Indicators

Overall	
Schedule	
Scope	
Cost and Effort	

Project Description

The Nebraska Regional Interoperability Network (NRIN) is a project that will connect a majority of the Public Safety Access Points (PSAP) across the State by means of a point to point microwave system. The network will be a true, secure means of transferring data, video and voice. Speed and stability are major expectations; therefore there is a required redundant technology base of no less than 100 mbps with 99.999% availability for each site. It is hoped that the network will be used as the main transfer mechanism for currently in-place items, thus imposing a cost-saving to local government. All equipment purchased for this project is compatible with the networking equipment of the OCIO.

Key Accomplishments

Investment Justifications have been created and submitted for grant dollars to continue the build-out.

Status Report Update

UPDATE FOR MAY 2021 – Work priority has shifted to the far SE corner of the state. Requests have been made to finish up the Pawnee City to Falls City path in order to enable the City of Beatrice to dispatch for them. Line of sights have been driven and the Path Analysis are being completed. In the NC Region of the state, fiber is being added to the network and four major paths across the sandhills are in the process of being installed. This will enable a greater portion of the NC Region to have great coverage for the network.

UPDATE FOR APRIL 2021 – There have been no installations done since the last NITC report due to the weather. Pre-work to ready equipment and materials are being done in the warehouse as well as requests for path designs and structural analysis. Having these ready to go will allow the installations to go smoother and faster.

Upcoming Activities

The project work has shifted to the southeast corner of the State.

Issues by Priority

Risks by Priority

Current Issues

No matching records were found

Attachment V-B-1

State of Nebraska
Nebraska Information Technology Commission
Technical Standards and Guidelines

Proposal 19

A PROPOSAL relating to the Information Security Policy; to amend sections 8-503; and to repeal the original section.

Section 1. Section 8-503 is amended to read:

8-503. Minimum server configuration.

The state recognizes the National Institute of Standards and Technology (NIST) along with Center for Internet Security (CIS) Controls and Benchmarks as ~~a~~ sources for recommended security requirements that provide minimum baselines of security for servers.

NIST and CIS provide~~s~~ instructions, recommendations, and considerations to assist readers in deploying servers in a secure method. All state system administrators should examine NIST and CIS Control documents when installing or configuring servers. The documents are not all inclusive, but rather meant as a means of prompting and guiding administrators through the installation process.

Agencies must comply with the following NIST standards, guidelines, and checklists: NIST SP 800-53, Security and Privacy Controls for Information Systems and Organizations; NIST SP 800-70, National Checklist Program for IT Products; and NIST SP 800-44, Guidelines on Securing Public Web Servers. Agencies should also strive to implement the highest tier possible for the CIS Controls and Benchmarks.

Server Hardening. All State of Nebraska servers ~~that store, process, or have access to CONFIDENTIAL or RESTRICTED data~~ are required to be hardened according to these standards. In addition, these servers must have a published configuration management plan as

defined below and approved by the ~~state information security officer~~Office of the CIO. The following are server hardening standards:

(1) Servers may not be connected to the state network until approved by the Office of the CIO. This approval will not be granted for ~~sensitive~~ servers until these hardening standards have been met or risk levels have been accepted by agency management;

(2) The operating system must be installed by ~~IT~~ authorized IT personnel only, and all vendor supplied patches must be applied. All software and hardware components ~~should~~ must be currently supported by the vendor. All unsupported hardware and software components must be identified and have a management plan for replacement that is approved by the ~~state information security officer~~Office of the CIO;

(3) All unnecessary software, system services, system and admin accounts, and drivers must be removed or disabled unless doing so would have a negative impact on the server;

(4) Logging of auditable events, as defined in NIST SP 800-53 control objectives, will be enabled. Audit logs will be secured and only accessible to accounts with privileged access and retained for a minimum of one year or be retained in accordance with federal and state guidance;

(5) Security parameters and file protection settings must be established, reviewed, and approved by the ~~state information security officer~~Office of the CIO;

(6) All system software must have security updates and patches applied when made available from the vendor. Priority setting of vulnerabilities will be based on impact to the agency and as referenced in the National Vulnerability Database (https://nvd.nist.gov);

(7) ~~Hardened s~~Servers will be scanned monthly for unauthorized software or unauthorized changes to the configuration baselines;

(8) ~~Hardened s~~Servers will be monitored with active intrusion detection, intrusion protection, ~~or~~ and end-point security monitoring that has been approved by the state information security

officer. This monitoring must have the capability to alert IT administrative personnel within 1 hour;

(9) Servers must be loaded from standardized processes and software. These processes and software shall be appropriately configured and protected, with integrity controls to ensure only authorized and documented changes are possible;

(10) All significant changes to ~~hardened~~ servers must go through a formal change management and testing process to ensure the integrity and operability of all security and configuration settings. Significant changes must have a documented security impact assessment included with the change; ~~and~~

(11) Remote management of ~~hardened~~ servers must be performed over secured channels only. Protocols ~~such as telnet, VNC, RDP, or others~~ that do not actively support approved encryption, such as telnet, VNC, and RDP, should only be used if they are performed over a secondary encryption channel, such as ~~SSL or IPSEC~~TLS; and

~~(11)~~(12) Agencies must implement prevention techniques to protect against unauthorized data mining of information from public facing systems (e.g. Captcha).

Sec. 2. Original sections 8-503 is repealed.

Sec. 3. This proposal takes effect when approved by the commission.

Attachment V-B-2

State of Nebraska
Nebraska Information Technology Commission
Technical Standards and Guidelines

Proposal 20

A PROPOSAL relating to the Information Security Policy; to amend subsection (134) of section 1-101 and section 8-301; and to repeal the original sections.

Section 1. Subsection (134) of section 1-101 is amended to read:

(134) "State network" ~~has the same meaning as communications system~~means the public or private IP space that is owned, registered to, or managed by the State of Nebraska wherein restrictions are established to promote a secured environment.

Sec. 2. Section 8-301 is amended to read:

8-301. Remote access.

It is the responsibility of all agencies to strictly control remote access from any device that connects from outside of the state network to a desktop, server or network device inside the state network and ensure that employees, contractors, vendors and any other agent granted remote access privileges to any state network utilize only approved secure remote access tools and procedures.

~~The following standards apply to all staff that connect to the state network through the Internet. This includes all approved work-from-home arrangements requiring access to state systems and agency office locations that use the Internet to access the state network. Each state agency will be responsible for ensuring that remote access to state resources is secured and compliant with this policy.~~

~~(1)~~ The following are the ~~general~~ requirements for remote access:

(1) Requests for remote access must be reviewed and approved by the ~~state information security officer and the agency information security officer prior to access being granted~~agency and the Office of the CIO;

(2) All remote sessions must use access control credentials and an OCIO-approved form of multi-factor authentication;

(3) All remote sessions must utilize OCIO-approved cryptographic mechanisms as defined by NIST 800-140 to protect the confidentiality and integrity of remote access sessions;

(4) All remote sessions over open public networks must use a VPN when connecting to the state network;

~~(a)~~

~~(b) Staff approved for remote connectivity are required to comply with all policies and standards;~~

(5) All devices connecting to the network must have up-to-date anti-virus protection, active firewalls, and appropriate security patch levels equivalent to those provided for state equipment;

~~(c)~~(6) All remote state owned or managed devices must be password protected and full-disk encrypted using OCIO-approved technology;

~~(d)~~(7) All remote access sessions must be logged. The Office of the CIO or the agency will perform periodic monitoring of remote access sessions with random inspections of the user security settings and protocols to ensure compliance with this policy;

~~(e)~~(8) Remote access logon failures must be logged. Credentials must be disabled after three (3) consecutive failed login attempts;

(9) Remote sessions must be locked after no more than 15 minutes of inactivity until the user re-establishes access with the appropriate credentials and authentication procedures; ~~and~~

(10) Mechanisms must be employed to ensure personally identifiable information, or other sensitive information (e.g. SSA, FTI, PII, PHI) cannot be downloaded or remotely stored; and

~~(f)~~(11) Restricted data types cannot be accessed by agency employees, agents, representatives, or contractors located offshore—outside of the United States territories, embassies or military installations.

~~(g) Staff with remote access privileges must ensure that their computer which is remotely connected to the state network, is not connected to any other network at the same time, except for personal networks that are under the complete control of the user.~~

~~(2) The following are additional requirements for remote access to data classified as CONFIDENTIAL or RESTRICTED:~~

~~(a) Requests for remoted access must indicate if CONFIDENTIAL or RESTICTED data may be accessed;~~

~~(b) Mechanisms must be employed to ensure personally identifiable information, or other sensitive information cannot be downloaded or remotely stored;~~

~~(c) All state owned or managed devices must be password protected and full-disk encrypted using approved technology. Encryption technology must be provided or approved by the Office of the CIO; and~~

~~(d) Remote sessions that store, process, or access CONFIDENTIAL or RESTRICTED information or systems must use access control credentials and an approved form of multi-factor authentication before connecting to the state network. Remote sessions must employ Office of the CIO approved cryptography during the entire session when connected to the state network.~~

Sec. 3. Original sections 1-101 and 8-301 are repealed.

Sec. 4. This proposal takes effect when approved by the commission.

Attachment V-C-1

BOTTLING LIGHTNING: "IT" HAPPENED IN NEBRASKA

Submitted by Ed Toner, CIO State of Nebraska
Prepared by Tim Cao and Holly West
Project Completed: March 2021

NEBRASKA
Good Life. Great Vision.
OFFICE OF THE CIO

501 S 14th Street, Lincoln, NE 68509-5045 · cio.nebraska.gov · networknebraska.ne.gov

INTRODUCTION

Thunderous clouds brood lowly over the rolling Nebraska plains. Wind picks up waving the fields of grain in the birthplace of ideas like the only State Unicameral and the invention of the strobe light, and Kool-Aid to go with our famous corn-fed beef Runza sandwiches. Lightning sparks like giant nerve synapses, communicating ethereal ideas across the panorama. *To have accomplished success in an unlikely way -- Nebraskans have bottled so much lightning in this Great American Desert.*

Nebraska's AS/400 hosting service transcends technology. Like bottling lightning, to have accomplished it was unlikely. It was unlikely that a State technology service provider could earn buy-in from hundreds of county stakeholders (and steak lovers) to become a trusted partner. The following chapters describe how they did it, all with a State-architected hosting solution, a solution that improved security, service reliability, and saved taxpayers millions of dollars.

In Q1, 2021, Nebraska migrated the 88th and final county-owned IBM AS/400 server to the State's virtual hosting environment. The total effort involved cooperation from nearly every level of State and County governments. This unique project is being nominated by the State CIO for NASCIO recognition in the category of Cross-Boundary Collaboration & Partnerships.

EXECUTIVE SUMMARY

In the early 1990s, before the existence of Client/Server technology, the State of Nebraska needed to install IBM AS/400 servers in every county across Nebraska. Since then, with high-speed Internet available to many of Nebraska's 93 counties, it was time to round up the servers and bring them back to the corral. Resources from the Office of the CIO (OCIO) were tapped in 2009 to perform an assessment before the next round of "server refresh" (or server replacements). 110 Aging State-owned AS/400s were sprawled across the state to provide services at the county level; the question wasn't whether to replace them, but "how?".

Counties purchased and maintained their own AS/400 servers too. Virtually all 93 Nebraska counties had two machines, each as big as an ox, residing in their courthouses. The servers sat side by side, yet without any redundancies. Since one server was owned by the State and the other owned by the county, they supported different applications to do different jobs. Even though they supported multiple critical tier apps, the servers often went without upgrades. Support was a growing burden each year as the machines outlived their lifetimes, the alternative to replacement. The locations presented persistent security risks. Servers were vulnerable to outages, powered by local electricity, a shared utility among all tenants of the building, and the spaces didn't quite meet cooling standards (let alone industry data center standards).

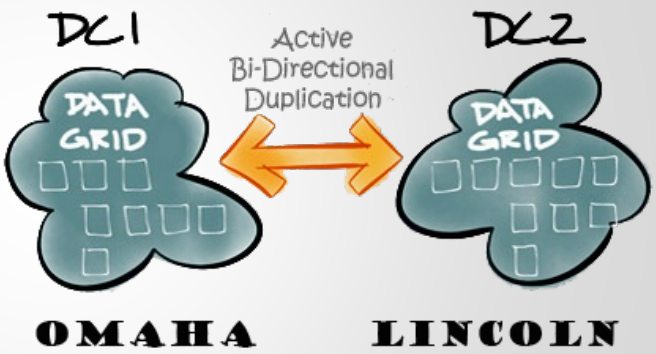
From their assessment, the OCIO found an unexpected business opportunity. The AS/400s were

being underutilized, by a long shot, particularly in rural counties where population sizes were small. A consolidated environment was feasible and would be more cost efficient for taxpayers. The State Data Centers provided the location with the infrastructure necessary to support a hosting service; they were secure, cooled, and facilitated support efficiencies and scheduled maintenance. If the State's systems could benefit from the security, space, cost, and support of hardware, they figured the county systems could benefit too, but they would first need to earn support and buy-in. Together with their vendors and strategic partners, the OCIO architected a practical environment and proposed a two-phased strategy to implement it:

Phase 1: Secure agency partnership. Consolidate all State-owned AS/400 servers into one pair, migrate installed applications. Replicate the servers across two secure data centers.

Phase 2: Gain county buy-in. Consolidate county owned AS/400 servers in a second pair, migrate all installed applications and replicate the servers across the two secure data centers.

By March 2021 Nebraska successfully eliminated a total of 198 IBM AS/400 servers from 93 county server closets. In the process, the cross-functional team migrated 398 installed applications from 198 servers, to two consolidated server pairs, fully replicated across the State's two geographically diverse data centers.



Support from State Partners

When it came to forming partnerships at the State level for an AS/400 Cloud service, the OCIO was well positioned. Some of the State's AS/400s were already prime for a refresh. Those servers supported applications for the Department of Motor Vehicles (DMV) and the Nebraska Supreme Court (NSC), such as Vehicle Title and Registration (VTR) system and the Court's Case Management (JUSTICE) system. Instead of allowing 110 servers to age out and refresh 1:1 over the next decade, the divisions would purchase a pair of servers and the OCIO would replicate them across their two data centers, then they would decommission the remaining servers that were situated in the counties.

The OCIO leveraged cost and a service level agreement with their tenants. The servers would have a logical partition for every county in the state running the JUSTICE and VTR software. The logical partitions could host the needed applications and took the burden of support, backups, and hardware costs from the counties. Tenants would save millions over the life of the servers; cost efficiency was clearly on the side of the Cornhuskers. As a requirement, the OCIO committed to refreshing the hardware keeping up with the latest technology available to ensure reliable service. The OCIO team began installing servers in the State Data Centers and started migrating State applications in 2011.

Earning County Buy-in

In the counties, Phase 1 freed up office space, provided data security, and demonstrated the reliable State-supported system. The DMV and NSC partnership had traction. Counties were aware of the State's Phase 2 plan; a second pair of servers to house the consolidated county systems. Splitting a pair of servers would be cost effective, true. The OCIO's cost recovery model would bill only for the services used and splitting infrastructure costs with the other stakeholders sounded good. Still, county officials hesitated, consolidating county servers on a State system -- it was unheard of. The consultants said it couldn't be done (the order was too tall in the teeth, they said).

The OCIO needed unanimous consensus from each county commission, board, clerk, treasurer, etc. So, they pulled themselves up by their bootstraps and took their lightning bottle idea to "the voice of the counties", the Nebraska Association of County Officials (NACO) in 2015. NACO, a non-profit organization, serves to represent the interests of elected and appointed county officials. The OCIO calculated if their business case could earn NACO support, the counties would buy in.

The Case for Cost Avoidance

To put it mildly (for a Nebraskan's flavor palate), the county owned AS/400 servers were outdated, oversized and amassing expense. Costs to the counties were factored in the following ways:

- Counties individually purchased AS/400 servers; typically, this cost $12,000 – $20,000, plus maintenance for the hardware and software, costs to have it installed and setup, costs for backup tapes, printers, and PC's.
- Lagging system upgrades exposed data to security and technology gaps.
- Utilization was exceptionally low. The infrastructure was not cost-efficient for single county dedicated use.
- Counties were paying expensive maintenance and support, relying on the vendor for such service.

"The transition from physical servers located in courthouses across the state to consolidated virtual servers with DR pairs has increased our overall security position as well as our reliability and uptime for staff and judges while simultaneously bringing down costs. The project has also saved the counties and local court staff from being responsible for bare metal servers kept locally in closets and having to manually back up to tape. The migration was a much-needed upgrade which has been a key component in preserving the long-term viability of our JUSTICE program."

Jennifer Rasmussen - Nebraska Supreme Court

- They were literally at the whim of the windy Great Plains; Servers solely relied on local power with no backup power. Therefore, systems went down when local power went out.
- Servers went down without redundancy or replication, and to increase the risk of productivity loss (and long lines at the DMV or disruption to Supreme Court proceedings) the only data backup was supplied by tapes.
- Calls for maintenance could be especially taxing. Nebraska is 430 miles long, driving east to west; it is ranked the 16th largest area of the 50 United States. Lincoln, the capitol, is in the southeast portion of the State. If systems went down, State support would have required up to 12 hours of IT travel time, mileage, meals and hotel cost.

The NACO Agreement

The voice of the counties was listening. They made two requirements of the hosting providers: 1) reliable system availability and 2) good customer service. The OCIO needed only refer to its Phase 1 migration to show they could satisfy the first requirement. They had security, high availability, and real-time backup with two redundant server pairs.

One of NACO's services to the Nebraska counties is writing custom software, provided from a subsidiary organization, Multi-County Information and Programming Services (MIPS). Counties use MIPS applications to manage Payroll, Accounts Payable, Retirement, Budget, Voter Registration, Personal Property Billing, Real estate, etc. Any work on the systems would need to be done by MIPS. So, in order to meet the second requirement, the OCIO worked out an agreement with MIPS to install all of the county applications on the State AS/400, define the printers to the AS/400, and setup user ID's and passwords. Additionally, MIPS personnel would have full time access to the State's severs for software support and maintenance. For extra assurance, the OCIO opened its 24x7 support desk directly to the counties for AS/400 services.

NEBRASKA BY THE NUMBERS:

- 88 of 93 Counties in Nebraska have applications on the State's consolidated servers.
- 398 Installed applications migrated to one of two completely redundant AS/400 pairs.
- 198 Servers living in the counties were decommissioned and eliminated.

Lifetime (average) Cost of an AS/400:

… $12,000 – $20,000 (Plus maintenance, installation, backup, printers, and PCs)

Annual Cost Savings average for Nebraska Counties:

… $2,850 Per county-owned server

… $1.25 Million cost collectively avoided by 88 counties over five years.

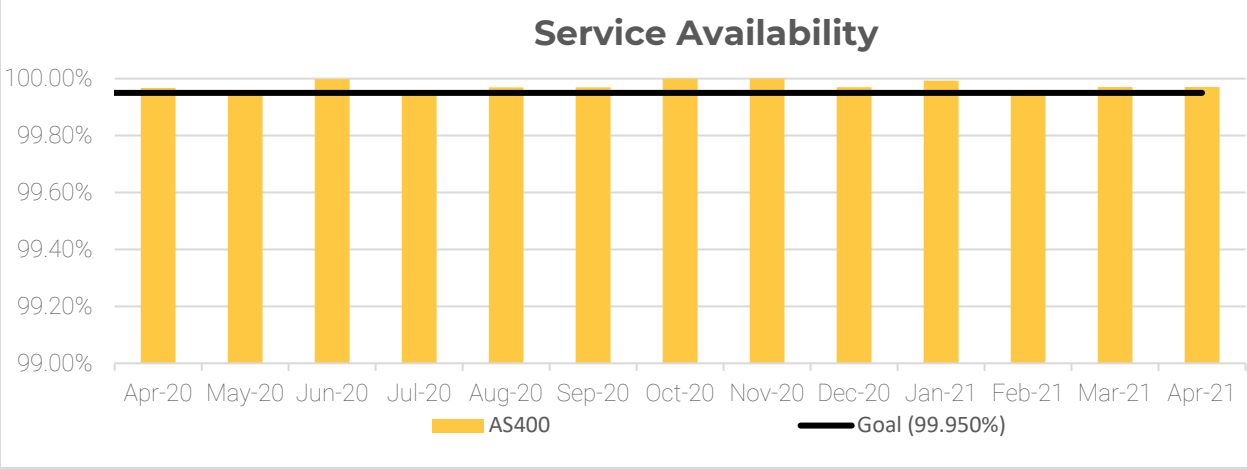
Now having formed a partnership, the State-OCIO and NACO crafted a joint message to the counties; NACO would support the State's AS/400 hosting service. The OCIO followed up, reaching out to counties. They explained the migration process and asked the counties to help plan a timeline — when could they ditch their server closets once and for all? They ensured each county's unique requirements could be met, then involved MIPS and the OCIO's Midrange team to begin the migration process.

The people process took much time. County officials discussed, voted, and sometimes circled back to revise the requirements. Once the hard work was done, the OCIO could begin the technical work; such was the process for six years. The first of the Phase 2 county migrations took place in late 2015; 69 counties had joined by July 2018; and finally, in 2021 the 88th and last apposite county joined the State's consolidated AS/400 hosting solution.

Impact

The primary reason for Nebraska's success was the State's ability to provide a competitive level of service. This can only be replicated where the infrastructure exists to support a hosting service. Success can be observed in the following ways:

1. Compared to what the counties had previously paid for hardware, software and support the State's solution reduced overall cost up to 90% for some counties (average per OCIO cost analysis). Previously, each county budgeted for fully equipped, fully supported AS/400 hardware, software licensing and ongoing support. The State consolidated those AS/400s, partitioned them and split cost 88 ways. The cost recovery model bills each county for the applications and services used. The OCIO concluded collectively the counties gained a minimum Annual Cost Avoidance of $2,850, which in five years (typical lifetime of the server) saves over one million dollars.
2. Going from a single server without any redundancies to the State's dual-located, completely redundant servers in the Lincoln and Omaha data centers far exceeded what availability that the counties were previously afforded. The State consistently achieves availability of 99.95% uptime for the virtual AS/400 environment (see graph below).



3. The OCIO refreshes data center hardware to keep the technology current, which provides faster and more reliable service. The service provider, not the county, maintains the latest software patches and updates. The OCIO staff works with MIPS to send out any application updates to the counties. Counties don't have to do anything on these tasks, and the State notifies them in advance of any planned outage.
4. After consolidation counties were able to upload Personal Identifiable Information (PII) in an approved and secured manner.
5. NACO support did two things for the State: a) established a working relationship with county partners, especially once the State showed they were able to meet the requirements; b) allowed the OCIO to prequalify as reliable, worthy partner for local municipalities with a dependable solution at a more reasonable cost.
6. All NACO and MIPS conditions were exceeded. The State continually optimizes its two fully redundant data centers. The collocated institutions each have dedicated power supply with backup generator. State and County AS/400s benefit from the redundancies between hardware, data replication and power as this has been tested in recent years.
7. Software maintenance and hardware issues are all done by the OCIO at no additional cost to the counties. The counties are no longer responsible to troubleshoot cooling, security, tapes, electric wiring, etc. The OCIO does routine maintenance, installing program temporary fixes to the operating system. These often contain security enhancements.
8. The entire process of supporting AS/400 servers became more efficient. The OCIO opened its 24x7 support desk to the counties. However, the impact to the service desk was minimal due to the efficiency and redundancy of the new environment.
9. The OCIO's cost recovery model for the project was replicated in the State Agency infrastructure consolidation (completed in 2018).
10. This project is also realizing the benefits of the infrastructure consolidation of 2018 with Statewide Site Support supporting the counties.

In conclusion, Nebraska's cross-boundary collaboration and partnership showcases that collaboration between State and local governments can improve services for taxpayers. By becoming a hosting service provider, the State of Nebraska demonstrated its leadership and commitment to their customers across the state. As the State expected it to be, this project is worthy of the investment because of the gained service reliability and cost savings. Ongoing investments will be focused on maintaining high availability, efficiencies, and improving customer service -- any of which will benefit the citizens.

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