Program Summary

DoIT supports NIU’s campus telephony service, delivered by a 30+ year-old legacy Nortel/Avaya telephone switch with approximately 6,000 phone lines. Advanced call features, including voicemail, are add-ons to the basic service.

DoIT staff and an external vendor consultant provide 24x7x365 support for the entire telephony infrastructure which includes all provisioning, installations, troubleshooting and incident resolution.

Criterion 1: Importance to University Mission / Operations

Importance to Mission

Over the past 15 years, NIU’s campus phone service has diminished in its support of NIU’s academic mission. The existing voice system was designed for high capacity requirements and originally provided 16,000 stations. Between 2011 and 2013, student phone lines were removed from NIU’s residence halls. As of 2015, there are just over 6,000 phone lines remaining. Along with the reduction of actual phone lines, phone usage is declining along with the upsurge in cell phone usage, online chats, and collaboration software. Now nearly 60% of NIU’s phones (approximately 3,500 lines) make or receive less than one call per day, and the top 10% of NIU’s phones (approximately 600 lines) account for nearly 95% of all calls and talk-time.

These 600 lines represent some key constituent groups that still rely on phones to engage with prospective students, parents, call centers, help and service desks, and vendors/suppliers.

<table>
<thead>
<tr>
<th></th>
<th>Time Period</th>
<th>Calls Offered</th>
<th>Calls Answered</th>
<th>Busy Signals</th>
<th>Hang Ups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bursar</td>
<td>Sep 2015</td>
<td>4,799</td>
<td>2,782 (58%)</td>
<td>1,428 (30%)</td>
<td>589 (12%)</td>
</tr>
<tr>
<td>DoIT Service Desk</td>
<td>Sep 2015</td>
<td>4,529</td>
<td>4,189 (92%)</td>
<td>1 (.02%)</td>
<td>340 (7.5%)</td>
</tr>
<tr>
<td>Financial Aid</td>
<td>Sep 2015</td>
<td>4,539</td>
<td>2,529 (56%)</td>
<td>709 (16%)</td>
<td>1,296 (29%)</td>
</tr>
<tr>
<td>Human Resources</td>
<td>Sep 2015</td>
<td>1,338</td>
<td>1,271 (95%)</td>
<td>1 (.07%)</td>
<td>67 (5%)</td>
</tr>
<tr>
<td>Records and Registration</td>
<td>Aug 2015</td>
<td>1,397</td>
<td>1,247 (89%)</td>
<td>24 (1.7%)</td>
<td>126 (9%)</td>
</tr>
</tbody>
</table>

Importance to Operations

In addition to the university offices that still make heavy use of phone services, there are several NIU call centers that provide business-specific support to external and internal customers as part of their core mission. For example, NIU is one of four DeKalb County 911 Public Safety Answering Points (PSAPs), which mean that all 911 calls that originate from NIU’s 752/753-XXXX phone numbers or cellphone calls from NIU’s DeKalb campus are directed immediately to NIU’s Police Department. Additionally, NIU has the ability to partner with the City of DeKalb and other DeKalb County PSAPs for redundant 911 service, allowing one PSAP to support another in cases of emergencies, outages, or high traffic volume.

Program Portfolio

Telephony is still a core communication technology for several NIU programs. As part of a total communication package composed of email, phone, and chat, there are times when a phone call is the preferred or appropriate option for both incoming and outgoing communications.
So while telephony service at NIU is important to the overall operation, the platform itself is in need of modernization. Considering that the consumption of the service has changed, a hardware and software replacement need not be as large in terms of footprint, recurring costs, and line count. DoIT has the opportunity to appropriately size the infrastructure to optimize costs, leverage the campus data network to provide Voice over IP (VOIP) service, and implement better fault tolerance – all while still providing the service and enhanced functionality to those who need it.

Program Synergy

Similar to other core technology infrastructure, telephony service is consumed by units all across campus in support of teaching and learning, public surveying, and administrative activities. This program should modernize its infrastructure to reduce cost and more efficiently deliver modern phone services to the campus.

Criterion 2: Quality / Effectiveness

Functions and Services

Features of this program include:

- traditional analog and Voice over IP (VOIP) telephone lines for approximately 158,000 calls during any given week of the academic year;
- approximately 5,900 single and multi-line phone sets and “soft” clients that run on desktops and laptops;
- basic and safety features such as automatic callback and redial, customer-originated trace, call forwarding, name display, three-way and conference calling, simultaneous ringing and voicemail; and
- advanced voice services for approximately 20 automatic call distribution groups with 250 agents on campus that handle mostly inbound calls.

In 2014, DoIT conducted several needs-assessment sessions with different campus groups. Their stated requirements included multi-channel processing of all customer contacts, whether they come from instant messages, email, or phone calls.

Measures of Quality

1. System availability is measured against both planned and unplanned downtime.
2. Mean Time to Resolve (MTTR) measured by the time between the reporting and the resolution of an incident
3. Mean time to fulfill requests

Evidence of Quality

1. System availability is 99.999% with less than 3 minutes of downtime each year since the April 2013 extended service outage due to a lightning strike on the main phone switch.
2. The program resolves an average of 226 incidents every month during the academic year and 79.6% are resolved within target based on priority.
3. The program fulfills approximately 302 requests every month during the academic year and 82.2% of work orders are fulfilled within the time requested by each customer.
Quality Improvement

DoIT has written a business case to propose a telephony system upgrade for the campus that would address several problems with the current state:

- NIU’s current voice switch has been in operation for more than 30 years, is no longer being manufactured and the hardware warranty has expired.
- The switch software platform can only be supported by a small and shrinking number of vendors who will drop support in 2016. Moreover, maintenance costs are increasing and replacement parts are difficult to source and knowledgeable engineers on this obsolete system are aging and retiring.
- Manufacturer support for the voicemail system ended in March 2013.
- Annual operating expenses for a switch sized for 16,000 users but just over 35% of that capacity could be reduced with a more optimized configuration.
- DoIT has increased support staff time to manage three separate software platforms put in place as stopgaps to deal with the aging equipment.
- The phone switch is located on the DeKalb campus and has no geographical redundancy; current solutions offer geo-redundant or distributed configurations to allow for more effective fault-tolerance.

The business case was denied due to cost with a decision to accept the risk of the current system for casual voice users and instruction to find a solution for the top 10% of highly active phone users.

Criterion 3: Productivity / Efficiency

Scope of Program

This program’s core duties include:

- long- and short-term planning and management of infrastructure;
- infrastructure enhancements to increase reliability, availability and serviceability;
- request fulfillment for service moves/adds/changes;
- incident response and resolution for individual/campus-wide phone service;
- billing to all campus departments for phone service;
- vendor management for hardware and software maintenance, telephone trunking and billing oversight;
- integration with Microsoft Office365 for telephone number and location information, including the management of NIU’s online directory (directory.niu.edu);
- management of telephony trunk capacities to ensure cost efficiency while maintaining adequate capacity; and
- 911 Public Safety Answering Point (PSAP) integration with local exchange carriers to maintain database accuracy.

Productivity Comparison

<table>
<thead>
<tr>
<th></th>
<th>Average Work Orders per Month</th>
<th>Average Incidents per Month</th>
<th>Support Staff FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIU</td>
<td>61</td>
<td>114 (includes cellphones)</td>
<td>8.7</td>
</tr>
<tr>
<td>EIU</td>
<td>43</td>
<td>16 (no cellphones)</td>
<td>10.45</td>
</tr>
<tr>
<td>WIU</td>
<td>12</td>
<td>13 (no cellphones)</td>
<td>8.7</td>
</tr>
<tr>
<td>UIUC</td>
<td>153</td>
<td>89 (no cellphones)</td>
<td>12.2</td>
</tr>
</tbody>
</table>
**Resource Comparison**

<table>
<thead>
<tr>
<th></th>
<th>Number of Lines</th>
<th>University Owned</th>
<th>Support Staff FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIU</td>
<td>~ 6,000</td>
<td>Yes</td>
<td>8.7</td>
</tr>
<tr>
<td>EIU</td>
<td>~ 4,300</td>
<td>No - Facilities Outsourced</td>
<td>10.45</td>
</tr>
<tr>
<td>WIU</td>
<td>~ 3,800</td>
<td>Yes</td>
<td>8.7</td>
</tr>
<tr>
<td>UIUC</td>
<td>~ 36K IP ~4K Centrex</td>
<td>No - Leased</td>
<td>12.2</td>
</tr>
</tbody>
</table>

**Cost and Revenues**

Telephony service revenue from NIU units has been on a steady downward trend for at least the past five years:

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>$2,723,327</td>
<td>$2,485,046</td>
<td>$2,230,716</td>
<td>$1,958,663</td>
<td>$1,905,731</td>
</tr>
</tbody>
</table>

Total annual program costs in FY15 were approximately $1,784,000:

- Telephony vendor contracts: $523,000
- Telephony service contracts: $412,000
- DoIT staff salaries: $425,000
- DoIT overhead: $172,000
- Telephony equipment refresh: $251,000

Costs will continue to decline and the contraction of telephone trunking, due to low usage, will further reduce expenditures. If DoIT is approved to upgrade the telephony infrastructure, then annual operating costs could likely be reduced by 25%, but that reduction will require a one-time capital expenditure of $2M-$3M to implement.

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**Criterion 4: Internal & External Demand**

**External Demand**

The Public Opinion Lab (POL) within the Division Outreach, Engagement and Regional Development leverages NIU’s telephony service offering to conduct external surveys. Additionally, potential tenants in NIU’s Outreach facilities could use NIU’s telephone service offering to support their mission. NIU also retains a University Information group (753-1000) that receives tens of thousands of calls each year from local and international students, parents, and visitors that inquired about a variety of programs and services offered by NIU.

**Internal Demand**

The internal demand for phone services is decreasing at a steady rate with only 10% of phone lines (600) responsible for nearly 95% of the traffic. However, NIU acts as a 911 Public Safety Answering Point (PSAP) and the ability of NIU’s police officers to respond quickly to distress calls made from emergency call boxes and other communication devices on NIU properties helps to support a safe campus environment. Finally, NIU’s call centers continue to rely on telephony as a primary method of inbound communication and require an updated telephony solution to meet their ongoing requirements.
Criterion 5: Opportunity Analysis

Cost Savings Opportunities

Because the current telephony hardware is more than thirty years old, DoIT is focused on modernizing it to reduce its footprint, power consumption, annual operating and maintenance costs, and built-in hardware refresh funding.

At the same time, DoIT would implement a geographically-redundant architecture so the service could survive a catastrophic outage to NIU’s current telephony central office. An end-state configuration would have a much smaller physical footprint, consume less power, transition all traffic onto NIU’s existing data network (e.g. a Voice Over IP service), and significantly reduce the operational line count to approximately 2,500 across campus. This would result in a total reduction of telephony costs to the institution, with targeted rate increases to groups on campus that are heavy users of advanced telephony service and features: DoIT Service Desk, Bursar, Financial, Human Resources, and Registration and Records.

Future Revenue / Resources

With a new telephony infrastructure, the opportunity to drive revenue growth through call center capabilities could increase interactions with potential students. NIU could also provide advanced Call Center service on behalf of external business entities. A current example is DoIT’s Service Desk which performs Call Center functions for NIU’s broadband networks on a 24x7x365 basis.

The potential also exists to promote telephony service to schools, libraries, municipalities, and other entities that serviced by NIU’s broadband networks, though significant regulation exists for offering telephony in the market place.

Improvement Opportunities

The major opportunity to improve this program’s products/services is through modernizing the infrastructure. This will optimize the service offering, reduce costs, and significantly enhance the capabilities of telephony service at NIU through additional features and functionality.

Opportunities in the Field

Telephony is a core service that most universities continue to provide. How that service is provided is often a balance of campus needs, required capacity, technical flexibility, cost performance, and service offerings. By performing the needed telephony upgrade, NIU has the opportunity to modernize an old technology while focusing the delivery of new and relevant services to the NIU community.