King County
Information Technology Governance
Strategic Advisory Council

Agenda Item 3. Technology Roadmap – Unified Communications

Background: The County will replace old telephony systems and the dated Centrex service with a state-of-the-art Unified Communications (UC) solution based on Microsoft's Lync 2010 platform. This strategic decision to leverage the existing licenses owned by King County as a part of the Microsoft Enterprise Architecture Agreement was made in April, 2011. Based on new transport technology, the Lync product will align telephony functions with other information technology components like Exchange 2010 and other Microsoft products. This "convergence" produces new dynamics between IT systems, creating the ability to link computer functions like presence and audio conferencing with traditional voice calls. All departments will be on a common core platform with similar voice devices, but with the ability to customize the systems to meet the individualized requirements of each department. In addition, the new system design will greatly enhance business continuity by eliminating many single points-of-failure.

The complete solution covers telephones, voice messaging, mobile device support, call queuing (ACD) systems, automated service tools (IVR), enhanced reporting for the business users and system management tools.

Exhibits: The following exhibits provide more detail information on the county's IT efforts in replacing the county's phone system with Lync/Unified Communications, and more detailed materials addressing strategic approach and tactical initiatives.

- **Exhibit 1: Architecture and Design Overview for Lync Server 2010 Deployment,** *an excerpt*
- **Exhibit 2: KCIT IP Telephony Project Plan Overview,** *- an excerpt*
- **Exhibit 3: Deployment Schedule - as of March 2012**
- **Exhibit 4: Unified Communications Solution Recommendations,** *- an excerpt*

Meeting Content: At the meeting, the County's CIO will briefly introduce the topic and a short live demo of Lync and unified communications. The panel discussion will be focused on the County's roadmap to unified communications, and the external members advice about benefits of UC and their experiences with UC. The panel discussion will be followed by a Question/Answer session for the SAC members to further discuss and provide their advice.

Expected Meeting Outcome

- Understanding that the County has made significant progress on the technology roadmap which is driven by the customers' needs.
    - SAC Members understand what has been done up to date

- Discussion of SAC members' experiences with Unified Communications including how their organizations have benefited in these areas, and what other governments are doing in these areas

- Feedback/advice for the County in moving forward on the roadmap.

1 Executive Summary

The diverse nature of King County services and locations and the unique operational complexity of some of the County's agencies present an ongoing challenge to the Office of Information Resource Management and in particular the Telephony team. This has been due to a number of factors not least of which was the merger of King County and the Municipality of Seattle Metropolitan in 1996. As a result King County currently has four major telephony systems serving various agencies and departments throughout the County. These telephony systems include a Centrex service provided by Qwest, a Cisco Call Manager implementation in the Chinook building, an NEC deployment, various Nortel systems and an AVST CallXpress Voicemail system. At present both the NEC and Nortel systems are reaching or at end of life. Moreover the Cisco Call Manager infrastructure which is provided to King County as a Managed Service by Verizon is currently under contract only until January 2012. As a result of these circumstances the King County Office of Information Resource Management has to replace or renew many critical elements of their Telephony environment in order to continue to meet the needs of the County's agencies and residents

Communications are a critical element of all County agencies and departments and perhaps more importantly the County has an obligation to all residents to provide reliable communications for all County services including mission critical services such as Public Health, Transit, Law Enforcement and Emergency Operations. However, given the current aging infrastructure and the increasing risks and costs associated with this infrastructure the ability to maintain a cost effective and efficient infrastructure continues to diminish.

Given these circumstances King County has decided to implement a countywide telephone system that will provide a unified approach to communications and streamline operational management of the entire telephony environment. In addition King County wishes to take advantage of the additional opportunities offered by a unified communications infrastructure. To this end King County will deploy a unified communications platform based on Microsoft Lync Server 2010 to add business value and enhance the ability of the County to conduct business for and on behalf of its residents.

The objective of this project is to design, build, and deploy Lync Server 2010 in King County's production environment using a reference architecture that provides high availability and site resiliency for core functionality. The solution provides a platform that can support up to 16,000 users per central site and can scale to 80,000 just by adding Front End servers. Each central site will be limited to 8,000 users under normal operating conditions so that either central site can handle the full 16,000 users in the event of a site failover.

2 Introduction

The project will replace the existing telephony environment with a state-of-the-art unified communications solution. The new system will align the telephony functions with other information technology components. This convergence will produce new dynamics between IT systems and communications, including the ability to link computer functions with communications tasks. All departments will be on a common core platform with similar devices, but with the ability to customize the systems to meet the individualized requirements of each user. In addition, the new system design will greatly enhance business continuity by eliminating single-points-of-failure.

Specifically, King County will deploy Microsoft Lync Server 2010 that will give end users secure access to communications resources regardless of location and combine instant messaging (IM) and presence capabilities with web, audio conferencing and voice capabilities.

2.1 Background

King County has engaged Microsoft Consulting Services to assist with the preparation of a design for a Microsoft Lync Server 2010 solution that addresses their business requirements including:

- Consistent service levels for agencies and departments
- Resiliency of services between and within sites
- Predictable scalability
- Integrated user experience
- Programmatic extensibility
- Leverages existing IT skill sets and infrastructure
- Increased user productivity
- Improved customer service and satisfaction
- Reduced risk associated with legacy hardware
- Cost savings or cost avoidance

The Lync design provides a platform for multiple end-user unified communications experiences, including:

- Presence and instant messaging including multiparty
- Web conferencing
- Audio/video conferencing
- Enterprise Voice
- PC-to-PC communication

Content in this document includes excerpts from the CTSR Project Plan.

Countywide Telephone System Replacement (CTSR) Project Plan Summary

October 2011

Project Summary

King County has a disparate mix of telephony systems that provide voice services to over 14,000 phones / users at about 235 sites throughout the County. Qwest Centrex is at the core, acting as the central "switch" providing most of the County's dial tone and 5-digit dialing plus basic functionality to approximately 200 sites. Nortel and NEC PBX systems support a significant group of users including a critical Call Center, and operate with hardware and software that is nearly 20 years old. A leased Cisco VoIP system with an older software release supports users at three sites. Many sites have a mix of services that do not interconnect, even within a department.

The Nortel and NEC Systems have long passed their "end of life", and are becoming increasingly difficult to support. Combined with the limited feature set of the Centrex and the outdated Cisco, the systems no longer meet all of the business needs of the departments they serve. These nearly obsolete systems do not provide access to modern features and applications that can improve communications, increase job efficiencies, and provide usable business metrics for better management.

Project Scope

Telecommunications provides services to a large and complex organization consisting of approximately 14,000 telephone lines at about 235 locations within King County. Agencies served by Telecom are:

Executive Branch

- Executive Office
- Department of Information Technology (KCIT)
- Department of Development & Environmental Services (DDES)
- Department of Natural Resources & Parks (DNRP)
- Department of Community Health Services (DCHS)
- Department of Adult & Juvenile Detention (DAJD)
- Department of Executive Services (DES)
- Department of Transportation (DOT)
- Department of Public Health (DPH)

Separately Elected

- Sheriff's Office
- Department of Judicial Administration (DJA)
- Superior Court
- District Court
- Assessments
- Elections
- Council
- Prosecuting Attorney

Locations are categorized as follows:

Category	Number of users	Approximate number of sites by category
Small Sites	1 - 25 users	@ 170 Sites
Medium Sites	26 - 150 users	@ 42 Sites
Large Sites	151 - 2300 users	@ 22 Sites

The new system will provide basic voice services such as integrated voice response (IVR), call center features, and voice mail using Exchange 2010 as a unified messaging system combining voice mail and emails. New enhanced features like advanced conferencing features, Mobility and E-911 Identification (the ability to automatically associate a physical address with a calling party's telephone number) will also be implemented.

Project Approach

The traditional IP PBX model will be replaced by a Unified Communications system. Microsoft's Lync 2010 platform merges multiple functions into a seamless solution requiring extensive planning. Exchange will become the new voicemail platform, Lync clients will be installed for instant messaging, audio and web conferencing and Presence. Once Lync is installed and rolled out to end users, enterprise voice will be implemented as the final piece of the converged solution.

The first step will be the build out of the core infrastructure. KC IT staff located in Chinook on the 6th and 7th floors will be the "early adopters" of Lync's enterprise voice solution. Lessons learned from this migration will be applied to the implementation for the remaining users who are currently using the Cisco CallManager system as well as early adopters for the other three systems currently in use (PBX, NEC and Centrex). After these users are converted, additional lessons learned will be applied to the project and the schedule will begin in earnest.

PBX sites that have been identified as high risk will be at the top of the schedule for conversion in 2012. The majority of PBX sites will be converted in the first two years of the schedule. Remaining sites will be converted where it makes financial sense to do so.

1. Project Description

1.0 Project Description

1.0.1 Approach and Techniques

This project will be split into multiple phases. Phases 1 and 2a will include planning, analysis, design and build out of the core sites. Locations served by the Cisco

CallManager will convert in phase 2b of the project as the contract will be expiring in 2012. Additional sites will be selected as early adopters to test the implementation methodologies for PBX, NEC and Centrex sites. Lessons learned from these early adopter deployments will be used throughout the life of the project to ensure an accurate and streamlined implementation occurs.

Phase 3a will focus on the top 10 sites identified as most at risk. After these sites are implemented, additional sites and agencies will be converted using the process and lessons learned from previous migrations.

Phases 3b-c and 4 will focus on remaining PBX locations and begin to include outlying areas within the county that are currently served by Centrex service today. There may be sites where it is not financially beneficial to install UC so the size of the site and the potential costs savings will determine whether these locations will be converted.

1.0.2 Impacted Business Areas

Because this is a countywide initiative, all agencies represented within the Executive branch and the separately elected agencies will be impacted by this project. This will impact telephony services within the typical office environment while providing updated features for many remote workers who are in the field. The new system will allow new updated tools at the desktop to integrate with features such as the ability to receive notice of a voice mail on the computer, or to schedule a web conference from a PC. Agencies who have not been able to receive detailed reporting on their call center applications will receive new reporting capabilities to include real time stats and call queuing options with the ability to better handle daily call traffic or campaigns.

1.0.3 Project Success

The project will be deemed successful upon completion when the following have occurred:

- The risk of PBX hardware failure has been mitigated by installing a new countywide system that provides enhanced features and functionality to agencies as well as better serving the public.
- Operating costs have been reduced by the predicted amount.
- Improved call center technology and voice response integrations provided to agencies to help improve customer services.

Lync Telephony Deployment Schedule
as of March 2012

2012 Deployments

Department	Location	Current System	Deployment Date
KCIT	Chinook 6 & 7	Cisco Centrex	3/7/2012
KCIT	RCS	Centrex	3/7/2012
KCIT	Sabey	Cisco	3/7/2012
KCSO	Precinct 2 - Sammamish	Nortel	4/25/2012
DPH	Chinook 12	Cisco	5/2/2012
DPH	Chinook 13	Cisco	5/9/2012
DPH	Chinook 11	Cisco	5/16/2012
DPH	Chinook 10	Cisco	5/23/2012
DNRP	West Point Treatment Plant	NEC	5/30/2012
	West Point Arc Welding		5/30/2012
	West Point Jameson		5/30/2012
DNRP	Brightwater	Cisco	5/30/2012
Sheriff	CID - Admin 2nd Fl	Centrex	6/1/2012
DPH	Chinook 9	Cisco	6/6/2012
DES (Executive)	Chinook 8	Cisco	6/13/2012
Assessor	Admin - 7th Floor	Centrex	6/20/2012
DCHS	Chinook 4 & 5	Cisco	6/27/2012
DES (FBOD)	Chinook 2 & 3	Cisco NEC	7/11/2012
DES (DES & FMD)	Chinook 1	Cisco	7/18/2012
Assessor	Black River	Nortel	8/1/2012
Sheriff	KCCH 1 and 1A	NEC	8/8/2012
DPH	Federal Way	Nortel	8/15/2012
DPH	Columbia	Nortel	8/29/2012
DPH	East Gate	Nortel	9/5/2012
DPH	Auburn	Nortel	9/19/2012
	Renton		9/19/2012
KCSO	Yesler Building	NEC	10/3/2012
DOT	Ryerson Base	NEC	10/17/2012
DOT	North Base	NEC	10/31/2012
DOT	East Base	NEC	11/14/2012
DOT	Central Atlantic Base	NEC	11/28/2012
DOT	South Base	NEC	12/12/2012
Other			
DPH	Greenbridge	Nortel	Q3 2012
DPH	NAVOS (Burien - new clinic)	New	May/June
DDES	Snoqualmie	Nortel	August

2013 Deployments

Department	Location	Current System	Deployment Date
			1/9/2013
DOT	Van Distribution Center	NEC	1/16/2013
DOT	Lake Union Tank Farm	NEC	1/23/2013
DOT	Power District HQ	NEC	1/30/2013
DNRP	East Satellite Construction	NEC	2/6/2013
			2/13/2013
DPH	Downtown	Nortel	2/20/2013
DNRP	Canal Place	NEC	2/27/2013
DNRP	Environmental Lab	NEC	3/6/2013
DAJD, Sup Ct	Youth Services-Jefferson	Nortel	3/13/2013
DPH	North Shore	Nortel	3/20/2013
DPH	North	Nortel	3/27/2013
DDES	Worksource Renton	Nortel	4/3/2013
DNRP	Cedar Hills Landfill	Nortel	4/10/2013
KCSO	RCECC	Nortel	4/17/2013
Dist Ct, PAO	Burien (include Dist Ct Probation)	Centrex	4/24/2013
Dist Ct	Renton	Centrex	5/1/2013
Dist Ct	Bellevue	Nortel, Centrex	5/8/2013
Dist Ct	Issaquah	Nortel, Centrex	5/15/2013
Dist Ct	Shoreline	Centrex	5/22/2013
Dist Ct	Redmond	Nortel, Centrex	5/29/2013
Sup Ct, Counci	KCCH - 12th Floor	Centrex	6/5/2013
Sup Ct, Counci	KCCH - 10th Floor	Centrex	6/12/2013
Sup Ct	KCCH - 9th Floor	Centrex	6/19/2013
Sup Ct	KCCH - 8th Floor	Centrex	6/26/2013
Sup Ct	KCCH - 7th Floor	Centrex	7/3/2013
PAO	KCCH - 6th Floor	Centrex	7/10/2013
PAO	KCCH - 5th Floor	Centrex	7/17/2013
PAO	KCCH - 4th Floor	Centrex	7/24/2013
Sup Ct, Dist Ct	KCCH - 3rd Floor	Centrex	7/31/2013
Sup Ct	KCCH - 2nd Floor	Centrex	8/7/2013
Dist Ct	MRJC - Ground Floor	Centrex	8/14/2013
Sup Ct	MRJC - 1st Floor	Centrex	8/21/2013
Sup Ct	MRJC - 2nd Floor	Centrex	8/28/2013
Sup Ct	MRJC - 3rd Floor	Centrex	9/4/2013
Sup Ct	MRJC - 4th Floor	Centrex	9/11/2013
DOT	KSC - 1st Floor	NEC	9/18/2013
DOT	KSC - 2nd Floor	NEC	9/25/2013
DOT	KSC - 3rd Floor	NEC	10/2/2013
DOT	KSC - 4th Floor	NEC	10/9/2013
DOT	KSC - 8th Floor	NEC	10/16/2013
DNRP	KSC - 5th Floor	NEC	10/23/2013
DNRP	KSC - 6th Floor	NEC	10/30/2013

2013 Deployments			
DNRP	KSC - 7th Floor	NEC	11/6/2013
DNRP	Renton Treatment Center	Centrex	11/13/2013
DOT	Renton Roads	Nortel, Centrex	11/20/2013
DNRP, DOT	Renton Parks Office & DOT Vehicle Surplus	Nortel	12/4/2013
DES	Admin Bldg - 8th Floor	Centrex	12/11/2013
DES	Kent Animal Control Shelter	Centrex	12/18/2013

2014 Deployments

Department	Location	Current System	Deployment Date
KCSO	Precinct 4	Centrex	1/8/2014
DAJD, Sup Ct.	Youth Services-Renton Field Office	Centrex	1/15/2014
DES	HR, Safety & Claims KC Airport	Centrex	1/22/2014
DAJD, DPH	KCCF	Centrex	1/29/2014
DAJD, DPH	MRJC Detention	Centrex	2/5/2014
DNRP	Marymoor Park	Centrex	2/12/2014
DES	Graybar	Centrex	2/19/2014
DPH	Medic One	Centrex	2/26/2014
DOT	Transit CCC	Centrex	3/5/2014
Sup Ct	DYS Bellevue Office	Centrex	3/12/2014
DES	Records & Elections, Dist Warehouse	Centrex	3/19/2014
DPH	Birch Creek Public Health	Centrex	3/26/2014
DPH	Renton Dental Clinic	Centrex	4/2/2014
Elections	Elections	Centrex	4/9/2014
DDES	DDES Redmond	Centrex	4/16/2014
DDES	New Start Work Training	Centrex	4/23/2014
DES,DOT	King County International	Centrex	4/30/2014
DNRP	Evergreen Maintenance Dist & Sunset Shop	Centrex	5/7/2014
DPH	DPH Distribution Center	Centrex	5/14/2014
DAJD	Federal Way Probation	Centrex	5/21/2014
DOT	Fall City Roads	Centrex	5/28/2014
DES,DOT	King County International Aiport	Centrex	6/4/2014
KCSO	Criminal Justice Training Center ATU	Centrex	6/11/2014
DOT	Transit Tunnel Facilities	Centrex	6/18/2014
DNRP	White Center Parks (include Log Cabin)	Centrex	6/25/2014
KCSO	Ravensdale Gun Range, Firing Range	Centrex	7/2/2014
DOT	DOT Roads - Bruggers Bog	Centrex	7/9/2014
DNRP	Cottage Lake Park & Pool	Centrex	7/16/2014
DAJD	DYS, OPD Team Child	Centrex	7/23/2014
DNRP	Factoria Transfer Station	Centrex	7/30/2014
DNRP	Soos Creek Water & Sewer Dist (incl M Shop)	Centrex	8/6/2014
DOT	Roads Summit	Centrex	8/13/2014
DNRP	Shoreline Recycling & Transfer Station	Centrex	8/20/2014
DNRP	Duthie Hill Park	Centrex	8/27/2014
			9/3/2014
DNRP, DOT, KCSO	Sheriff, Roads, Park, Transfer Station	Centrex	9/10/2014
			12/17/2014

2015 Deployments			
Department	**Location**	**Current System**	**Deployment Date**
DAJD	YSC Tower/Campus		1/7/2015
Multi	Admin Bldg Floors 1, 3, 4, 5, 6 & 9		1/14/2015 6/3/2015

Unified Communications - Exhibit 4

Unified Communications Solution Recommendations

This document provides guidance to King County from a strategic point of view, enabling communication and business process across the county. This is based on the assumption that the full stack of Microsoft Lync 2010 capabilities (telephony, voice, web conferencing, instant messaging and collaboration) has been deployed at the county.

Extending the power of Microsoft Lync by creating custom applications

- **CRM Integration at King County**
  - Enable information workers to view contact information from within Lync
- **IM an Expert**
  - Instant messaging question and answer service
- **Responding to Health Emergencies**
  - Enable rapid deployment of call centers to provide a point of contact for King County residents during health emergencies such as pandemics.
- **Audio/Videoconferencing capability at Jail System and Courthouse**
  - Provide point to point video conferencing capabilities to minimize the cost and complexity of prisoner transfers. Provide the ability to streamline Courthouse operations by providing remote testimony capabilities to plaintiffs and defendants across the County.
- **Integration with Radio Systems**
  - 2 way radios, smart phones
- **Support Virtual Workforce**
  - Telecommuting strategy
- **Virtual Public or Town Hall Meetings for King County**
  - Conduct virtual public or Town Hall style meetings with King County Citizens
- **Collaborate with Assessor**
  - Leverage Lync capabilities, Geo Spatial data, Assessor's information for Mobile and collaborative solutions
- **Providing UC Services to other agencies and non-profits**
  - Provide Lync capabilities to other agencies

Implementing a custom UC privacy strategy at King County

- **Archiving**
  - Enable or disable archiving of instant messages and conference data on a user by user basis
- **Presence**
  - Users can control their own presence level
- **Enhanced Privacy Mode**
  - If enabled, allows a user to restrict presence levels to contacts they approve.

Partners Ecosystem

- **Web Chat in King County**
  - Enable visitors to view availability and start a Lync conversation from a web page.
- **Contact Center**
  - Software based/Lync Automatic Call Distribution solution for the call center
- **Managing Visitor Reception at King County**
  - Virtual receptionist /touch screen kiosk for the unattended office lobby
- **Emergency Response - Alerts and Notifications at King County**
  - Take information from many communications sources, route it instantly to automatically coordinate action, send out alerts, and provide status and response reports.

Extending the power of Microsoft Lync by creating custom applications

Microsoft Lync provides a wide range of APIs and extensibility options including the Lync client SDK, the Lync Server SDK and the Unified Communications Managed API. Together these options provide organizations the ability to leverage and extend existing functionality or seamlessly integrate unified communications into existing applications developed on the MS platform. Moreover, by intelligently integrating unified communications into existing applications and workflows, organizations can look towards increasing the ROI from a deployment of Lync as an enterprise wide communications platform.