

# Johnson County Community College Information Services

## FY2013 – 2015 Roadmap Administrative Computing & Technology Fund

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### Information Services Vision and Mission

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#### Vision

JCCC's Information Services Branch will be a higher education standard setting technology organization this is aligned with the institution and focused on making technology invisible for students, faculty, and staff. Through this alignment and focus the branch will deliver customer-driven improvements while implementing and maintain the infrastructure of a stable information technology department.

#### Mission

Information Services will partner to provide and support technologies to enhance learning and increase the efficiency of academic and administrative processes

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## Guiding Principles for Technology Investments

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Support JCCC's mission that learning comes first through student success, supporting the college's innovative spirit, community leadership and continuous improvement by focusing technology resources on:

- Creating an environment to promote technology competency
- Expanding our network of support services to engage students more actively in the JCCC learning experience
- Improving instructional and support activities, utilizing appropriate data and evidence
- Employing technology to improve and deliver quality learning experiences

Enable the greater use of technology to enhance the educational experiences of students, supporting and improving teaching and learning

Provide innovative, reliable, secure, flexible for future growth, and cost effective technologies and services

Maintain and improve JCCC's position as one of the top digitally-savvy community colleges in the country

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## Technology Investment Framework

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### Maintenance of underlying infrastructure and systems

- Re-engineering network infrastructure improvements capable of supporting next-generation campus communications and technologies.
- Optimizing network performance to address network traffic and data growth
- Standardize on devices to support redundant design and mobility strategy
- Protecting and leveraging current technology investments to avoid obsolescence
- Strengthening network and system security; implementing necessary policies and technology to promote a safe and secure network environment
- Aligning with disaster recovery and business contingency planning efforts

### Enhancement of existing technology, systems and applications

- Replacing outdated telephone system/lines with IP telephony (voice over IP) in support of call center activities and unified communications
- Expanding campus wireless coverage
- Extending remote user access to JCCC systems, applications and databases
- Increasing delivery of applications over the web, reducing deployment and maintenance
- Consolidating and managing storage of digital content

### Innovation of new technologies to advance educational opportunities and improve business processes

- Enabling mobile user support for college functions/applications
- Implementing virtual wide and local (campus) network and application environments for management and support simplicity
- Improving workforce effectiveness
- Supporting expanded collaboration technologies and interactive learning environments

# Administrative Computing Services and Technology Fund Prioritization

## Maintenance of underlying infrastructure and systems

- **Quality of Service:** the JCCC wired network was originally designed and built to facilitate the transfer of data and access to the internet. With voice, video, and wireless traffic now accounting for a major portion of the traffic due to cloud-based applications and social media, the network infrastructure is being re-engineered to be capable of supporting next-generation campus communications and technologies. The college's commitment to the Technology Fund has provided the flexibility needed to move beyond the replacement cycle associated with of a previous era of data network design and implement a cost-efficient, coherent, futuristic, strategy for our college community.
- **Network Performance:** The mission of the organization is highly dependent on high-speed, high availability access to network and internet resources. In order to deliver the level of service today's students demand, virtualization is needed at all layers of the campus network (border, core, and distribution layers). Virtual resources are dynamically applied to meet business needs, containing any excess capacity, improving efficiency and availability of the resources. Continued investment in high-performance network technologies that leverage virtualization and vendor-delivered consolidation. For example, Cisco, NetApp, and VMWare have teamed up to provide an integrated, standardized approach to delivering a fully virtualized network and storage solution. 3-year contracts such as these where partnerships are formed provide the college significant cost savings both in hardware and staffing.

### 3-Year Contracts

- |  |                        |
|--|------------------------|
| • VoIP Infrastructure and Managed Services | CDW-G                  |
| • Network Infrastructure                   | CDW-G                  |
| • SmartNet Coverage                        | Datalink               |
| • Network Storage                          | Datalink/NetApp        |
| • Adhoc Wire Pulls                         | R.F. Fisher            |
| • Adhoc Fiber Pulls                        | Data Link              |
| • SIP Trunking                             | Level 3 Communications |
| • Redundant Connectivity to Main Campus    | KanREN                 |
| • Remote Site Connectivity                 | KanREN                 |

- **Replacement Schedule:** Protect and leverage current technology investments to avoid obsolescence (see JCCC Network Infrastructure Inventory document)

**FY13-16 Network Border, Core, and Distribution Equipment Replacement Schedule**

	<b>Buildings / Location</b>	<b>Current Investment</b>
FY13	CLB, CSB, GYM, HCDC, HCS, Library, Warehouse, WLB	\$391,860.52*
FY14	ITC, Nerman, RC	\$1,218,740.63*
FY15	GEB, RC 3 <sup>rd</sup> Floor and Data Center, Westpark, OCB 3 <sup>rd</sup> Floor and Data Center, Police Academy	\$658,966.35*
FY16	ATB, CC, COM, CSB, OHEC, SC, SCI, WLB	\$725,636.35*

*\*These figures do not yet include the campus-wide wireless network investment or associated maintenance costs for existing network(s)*

- **Network and Systems Security:** Information Services works directly with Administrative Services to ensure PCI compliance remains a top priority. Business and technology audits are conducted on a regular basis to ensure compliance and track progress. With the PCI compliance checklist as our guide, major improvements have been made to modernize the approach to network and systems security this past year. Traffic is now being separated to provide boundaries, or defense in depth, to protect student and employee data - minimizing risk to the organization. Wireless network security was revamped this past year with the implementation of Identity Services Engine (ISE), providing an opportunity to collapse the existing wireless networks into one, simplifying management while improving security.
- **Aligning with disaster recovery and business continuity planning efforts:** The needs of higher education today require 24x7 network services. A multi-prong approach is needed in order to inventory and address the network, systems, and application layer services needed to accomplish this goal. Applications are being moved to a hosted or private cloud-based solution, depending on the needs of the organization. As a result, an even greater emphasis is placed on network availability and survivability. In response to the college's changing needs, efforts are under way to assess the current state of the college's fiber plant and develop a scheduled replacement cycle to proactively address any issues and prepare the college for future growth. Primary objectives for the JCCC fiber build-out include:
  - Redundant conduit and dual fiber paths from each building, where possible, to each data center
  - High-availability network services to the JCCC campus community with increased capacity and survivability of the campus network infrastructure, resulting in a highly flexible and responsive network
  - Improved remote sites connectivity to main campus

## Enhancement of existing technologies, systems and applications

- **Scalable, Redundant Bandwidth:** A second connection to the internet was implemented this past year to provide redundancy in the event of an outage or disruption to our internet service. Bandwidth utilization has continued to increase as students, employees, and the community use mobile devices across campus.
- **Campus-wide Secure Wireless:** Information Services worked this past year to implement wireless throughout the campus and remote locations, providing students, employees, board members, and visitors access to the internet from any classroom, office, or meeting room. This effort was followed up by implementing network access control to provide ubiquitous coverage while adding a layer of protection to the campus network.

JCCC's new wireless control system allows support staff to centrally manage over three hundred access points throughout campus, providing staff with maps and the ability to drilldown to building floors to monitor access points, coverage areas and number of devices connected. Another advantage to the new system is that it is very dynamic and intelligent, automatically adjusting configurations to maintain optimal performance. So if an access point in one area becomes saturated or fails, traffic can be shifted to other areas. Since completing the new system, there has been a 50 percent increase in the number of devices connecting to the wireless network, providing students, faculty and staff the mobility they want and need.

- **Internet Telephony (Voice over IP):** A migration from the Nortel phone system to the new Cisco VoIP phone solution is nearing completion. Features available in this new system include "soft" phone and "follow-me" capability, providing a graceful mobility solution for JCCC employees. With the implementation of SIP technology, JCCC can take advantage of Internet telephony on existing data networks, for the benefit of adding available phone lines or call paths during days where the college is experiencing heavy call volumes, providing better tools for staff and improved services to students.
- **Web Conferencing:** The college implemented web conferencing for the classroom several years ago and are now implementing a solution for administrative staff to facilitate communication with peers at high schools, colleges and universities, as well as vendor partners.
- **Faxing:** The college implemented RightFax in a few office locations where heavy fax volumes are an issue. The RightFax implementation will help streamline processes, improve security, and reduce print costs by delivering faxes via email. RightFax is one of the most recognized fax server platforms on the market for nearly 25 years. A strategy for campus-wide rollout is currently being developed.

## **Innovation of new technologies to advance educational opportunities and improve business processes**

### Sourcing Strategy

*Supplementing staff with service provider or managed services relationships in order to support 24x7 campus communications and services.*

### Today's Challenges:

- Network and data center systems are mission critical and require an array of specialized technology skill sets
- Converging technologies and capabilities
- Increased complexity has changed the way we work
- Limited resources (financial and human)
- High expectations of IT from constituents
- Staffing considerations – partner with KanREN to supplement operations support, skillsets, and monitoring, and serve as a liaison to service providers

### Managed Services / Cloud Benefits:

- Risk reduction
  - Address skill gaps
  - Provides contingencies for the college
  - Faster learning curve avoids common pitfalls/resolves faster
- Speed to value of technology
  - Improved availability & productivity for campus community
  - Optimization of network resources
- Enable IT to move from “transactional” to “transformational” activities
  - Improved service level and morale

### Managed Services:

- KanREN
  - Consortium Pricing / Negotiation
  - Internet Bandwidth
  - Member Support Liaison w/ Service Providers
  - Remote Site Connectivity
- Level 3
  - Call paths using Internet Telephony
  - Bursted call paths to dynamically allocate resources during peak usage

## Cloud Strategy

*Taking advantage of hosted or “cloud” services to facilitate the migration to next-generation technologies and interactive learning environments.*

### Today's Challenges:

- ERP and associated systems are mission critical and require an array of specialized technology skill sets
- Difficulty keeping pace with evolving technologies and capabilities
- Limited resources (financial and human)
- Moving away from trying to do everything in-house: focus on value to JCCC
- High expectations of IT from constituents
- Staffing considerations /contingencies

### Hosted / Cloud Services Benefits:

- Risk reduction
  - Address skill gaps
  - Faster learning curve avoids common pitfalls/resolves faster
  - Customer driven rather than person-dependent
- Speed to value of software
  - Faster upgrades
  - Optimization of application & database
  - Improved availability & productivity for business users
- Enable IT to move from “transactional” to “transformational” activities
  - Migrate staffing structure to align with customer-facing / technical approach

### Hosted Services / Cloud Migrations:

- Benefits Administration (CoolCreek – replaced in-house developed application)
- Code repository / versioning system (GitHub Enterprise)
- Course and Event Scheduling (Astra)
- Curriculum Approval and Course Catalog (Courseleaf – replaced CORS)
- Email Retention and eDiscovery (Gaggle – supports litigation hold process)
- FY15: Microsoft Exchange – see Sourcing Strategy document
- eMarketing Tools (Constant Contact)
- Emergency Notification System (RAVE)
- Google Apps for Education
- Hiring Approval Processes (PeopleAdmin)
- Payment Gateway and Marketplace (TouchNet)
- Public Videos (YouTube)

## Network Design Strategy

The Technology Planning Team has served in an advisory capacity as the Infrastructure Technical Team has worked to take steps toward building and maintaining a secure, high performance, self-healing network.

### Today's Challenges:

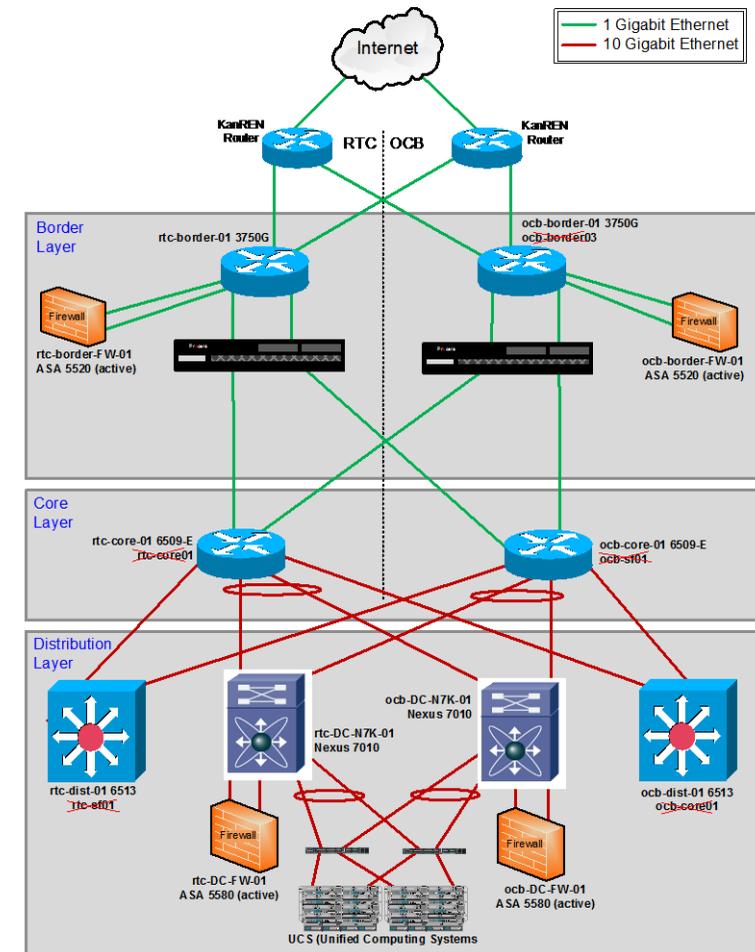
- Aging plant / network infrastructure
- Changes in technology and security requirements
- Increased demand for technology resources
- Limited resources (financial and human)
- High expectations of IT from constituents
- Staffing considerations – hired network architect to improve quality of both design and operations

### Benefits:

- Reliability
  - 24x7 service to the campus community as appropriate
  - secure network and systems environment for student, faculty, and staff
  - trusted network to provide for cloud and mobility strategies
- Resilience
  - Supports peak periods of utilization
  - Redundant network core
  - Redundant border firewalls and border routers
  - Redundant KanREN nodes which leverage the college's diverse fiber paths to campus
- Interoperability
  - Standardized environment for network and systems administrators to manage
  - Leverages ever-converging technologies and changing marketplace
  - Consistent experience for end-user

### Examples:

- Unified Communications
  - Incorporates VoIP, email, chat, web/video conference, to create “presence” and increased productivity
    - Outlook provides status indicator, sharing whether recipient is in / out of the office
    - Voice mail message is retrievable from inbox
    - Move seamlessly from desktop or desk phone to mobile device



## Identity Management Strategy

JCCC has implemented Forefront Identity Manager 2010r2 (FIM) to manage identity authentication and account provisioning for the college. The primary objective of this initiative is to transition from a decentralized application approach to a centralized administration approach.

- Due to the organic progression of the JCCC systems and the natural progression of security constraints, there is currently a very cumbersome and manual interaction to maintain system security and provisioning. When processing requests for a hire, termination, or rehire; the process has not always been clear or fully defined. The idea of automation for account creation and provisioning helps us completely define the steps required at a business unit level and a organization level.
- FIM provides not only the technological advances needed to maintain information about each individual that enters and leaves the college, but it also over reaching architecture to interface with a variety of industry standard technologies. With the implementation of FIM we will now be able to proliferate accounts appropriately through each sub system of the college with appropriate rights.
- Development and deployment of FIM will be a continued effort to refine and change with the growing needs of security and JCCC. Instead of managing these requirements on a per system basis we will now have a centralized system to manage the life cycle of accounts for each individual.
- **Password Portal for students and employees:** The FIM password portal will reduce the need for students to call for help when logging into the portal. Finishing touches are being installed to complete the implementation of a self-service portal for students, faculty, and staff to change their passwords entirely online. In addition to providing a more graceful end-user experience when changing passwords, this portal will also provide the tools needed to improve the management and administration of access to college technology resources. Examples include, providing students personalized access to the college network, similar to employees, and also help extend the employee 90-day password rotation process to students. Testing is currently in progress.
- **Role-based Portal Experience:** Human Resources has completed an RFP for an integrated talent management suite which includes an online applicant tracking system, onboarding solution, online learning management solution, and an online performance evaluation system. Meanwhile, the Student Experience Team is working to modernize the MyJCCC portal experience for credit and continuing education students enrolling in JCCC courses.
- **Single Sign-On:** With a central repository now in place for identities, Central Authentication Service (CAS) is being implemented to create a one-time authentication experience for JCCC employees and students. This implementation will improve the experience associated with mobile, enterprise, and departmental applications.
- **Rebranding Initiative:** The college's rebranding initiative represents a progression built upon 40+ years of tradition. This effort has provided an opportunity to not only revisit business cards and signage, but also the entire web and systems environments. Information Services has partnered with Marketing and Communications to modernize the college's web / internet environments. A complete website content organization / restructure is planned to begin in FY13 and will help facilitate a pervasive sweep across all web platforms.

Rebranding means more than updating the logo, it represents the opportunity to revisit and incorporate the associated user experience from a web, mobile web, and mobile app perspective. Embracing a responsive design approach provides the user an experience relevant and most appropriate for the device(s) they are using real time. This modernized and flexible approach reinforces the college's mission.

## Mobility Strategy

*The Student Experience Team has been meeting this past year to guide the development of a mobile and mobility strategy here at JCCC. This team has worked to find a balanced approach that the college can afford to sustain. Here are a few of the highlights of the transformation that has occurred this past year:*

- **Campus-wide Secure Wireless:** Information Services worked this past fall to implement wireless throughout the campus. This effort was followed up by implementing network access control to provide ubiquitous coverage while adding a layer of protection to the campus network. Coverage for courtyards and athletic spaces is currently in progress.
  - ✓ Bring Your Own Device (BYOD) Pilot
  - ✓ Wireless / Bluetooth devices to help serve the student where they are, translating into shorter lines and wait times for students
  - ✓ Teaching and learning outside the classroom (i.e.: hallways, courtyards, athletic spaces)
  - ✓ Wireless labs and associated equipment, improved manageability, lab scheduling has become flexible,
- **Mobile Web Site:** Information Services Partnered with the Web Systems team to implement a mobile web site presence for the college web site (m.jccc.edu). Administrative Services has been involved throughout the discussion and is now working with IS and TouchNet to implement payment capability via the mobile web site.
- **Mobile Application Platform:** Efforts are under way to hire a part-time employee to develop and maintain applications for JCCC's mobile application platform. Providing applications that integrate with the college's Banner ERP system is a top priority.
- **CBT View:** The Center for Business (CBT) is now utilizing the VMWare View virtual desktop environment for courses in JAVA and Pharmacy Tech. View provides remote desktop capabilities in a virtual environment and is currently in use in SMART classrooms and select labs. Virtual desktop technology is fast becoming the accepted standard.
- **Laptops for Continuing Education:** The Pharmacology and HiTech programs obtained new classroom laptops. The Pharmacology program received two floating laptops for instructors, and the HiTech program received 18 laptops plus a storage cart for a mobile classroom.
- **Rave Mobile Implementation:** Emergency Preparedness partnered with Information Services to implement the Rave Mobile emergency notification system. Included in the rollout was a welcome email and access to a web-based portal that was distributed to credit students and active employees. Continuing Education students were also included in this rollout although the implementation is transparent to them, bringing the number of actively enrolled individuals in this emergency notification system up to more than 20,000 and increasing. Notifications will be received via email, text, Facebook, Twitter, and desktop alert.
- **TouchNet Mobile and International Wire Transfers:** The Business Office, in partnership with Information Services and TouchNet Information Systems, Inc., unveiled the ability for students, employees, and patrons to make payments more gracefully via their mobile device(s). Payment services benefiting from this functionality include: tuition, associated fees, and products available through "Shop JCCC" ([https://secure.touchnet.com/C20110\\_ustores/web/index.jsp](https://secure.touchnet.com/C20110_ustores/web/index.jsp)). A 'make payments' option on the JCCC mobile web site (<http://m.jccc.edu/>) to access these services was made available in December. The capability is delivered via a responsive design approach, which provides the user an experience relevant and most appropriate for the device(s) they are using real time.

In addition to the mobile payment functionality, the Business Office, Information Services, and TouchNet, are working to provide an option to pay via wire by the end of May. This will especially benefit JCCC's international students, in particular those students that come to us from countries with strict regulations regarding currency exchange. Once the functionality is available in production, 'wire transfer' will appear as a payment method selection within MyFinances.

## Enterprise Data Strategy

*Through the work of Ellucian and CRM Team Leaders, JCCC has made great strides in maturing enterprise systems and processes. Here are a few of the highlights of the transformation that has occurred this past year:*

**Constituent Relationship Management (CRM):** The college has made great strides beginning in 2012 to implement a series of custom applications for CE Sales, Prospects, Early Alert, and Admissions that leverage the college's Constituent Relationship Management (CRM). For example, the CRM sits beneath the application for admissions and immediately begins tracking the student's basic personal information as they create their account to initiate the application process. This new capability provides front line staff the information they need to reach out to assist students as needed. A combined team from Student Success and Engagement and Information Services performed a thorough examination to streamline the process, reducing six applications down to one. Depending on how a student answers questions, they are now presented with additional questions applicable to their circumstances. The new application for admissions can be found at: <https://crm.jccc.edu/admissions/>

**Strategy Drivers:** The previous vendor-delivered solution was dated and had limited ability to collect information based on the individual or program needs. College Now, selective admissions, and international students filled out separate applications. Asking students to pick a "flavor" of application at the front end of the application process caused confusion for the student and resulted in false starts.

### Next Steps:

- Continue to personalize the student experience through messaging and campaigns.
- Work with areas to improve integration between JCCC processes and base CRM capability

**Ellucian Banner Health Checks:** In September 2012 the college entered into a five year managed services agreement with Ellucian, the college's higher education software and services provider. Systems covered under the contract include: Banner, Imaging, Operational Data Store (ODS), Cognos, DegreeWorks, UC4, Evisions, and Workflow. Upon signing the contract, a series of health checks began that would ultimately result in a standardized approach to administering these mission critical enterprise applications. Included in that process was the need for daily, weekly, and monthly maintenance windows where work could be accomplished in shorter intervals rather than accumulating upgrades and patches that require multi-day scheduled outages. This approach has not only provided improved availability and productivity for the JCCC community; but has afforded Administrative Computing Services the opportunity to focus more attention on client support needs.

One year later, we were pleased to report that 106 upgrades were applied to the Banner environment, and iterative efforts have been made to standardize overall system configuration, processes and procedures. The Cognos pre-production and production environments have been completely restructured and upgraded, and a similar effort is currently under way for Degree Works, ODS, UC4, and Workflow. JCCCMobile, and International Student & Scholar Management (ISSM) were added to the agreement as of September 1, 2013 and the health check processes for these environments are now complete. Travel and Expense and Banner Document Retention modules were added to the agreement Spring, 2014 with the Luminis student portal being the next area of focus. While much has been accomplished, there is a great deal of effort ahead as we work toward introducing the new BannerXE extensible architecture at JCCC. BannerXE will dramatically improve the user experience and deliver the ability to integrate with the college's portfolio of vendor partner products. Recognition goes to the JCCC Ellucian Support teams, Team Leaders, and functional area Banner experts for their dedication and hard work, and to the campus community for their support as we work to prepare the JCCC Banner environment for the future.

**Enterprise Data Warehouse (EDW):** JCCC is in need of an enterprise data warehouse (EDW) to store repeatable, synchronized, snapshots in time across all systems. Using an EDW would address the deficiencies in the current environment and provide an interactive, user-friendly interface for leaders across campus to interact with the data they need in order to make decisions.

Strategy Drivers: The current business intelligence (BI) environment consists of an Operational Data Store (ODS) and the Cognos report writer tool that is used for adhoc departmental reporting and data downloads. Enterprise processes such as census day and fixed asset reporting are also managed through the current set of tools by “freezing” Banner data or taking a “snapshot” in time. However, an ODS lacks the ability to provide flexible enrollment analytics, which would require daily snapshots in order to compare:

- Today vs. yesterday
- Today vs. this day last year
- Analyze by age group, program, etc.

The current BI environment also lacks the ability to provide trend information across systems – accuracy requires that system wide snapshot be taken at the same time. An EDW would help provide:

- Ability to freeze and analyze data across systems
- Improved ability to recognize patterns
- Automation – currently manual exercise to build / edit data

## Disaster Recovery Strategy

While much has been accomplished since the advent of the Tech Fund to achieve business continuity across all operations, the infrastructure is now in place to address disaster recovery. Information Services has partnered with the Technology Planning Team and Information Services Steering Committee (ISSC) to identify high priority systems environments and required recovery time objectives. These advisory groups will work together to find a balanced approach that the college can afford to sustain. Below are examples of the types of risk mitigation already in place and those planned for FY15:

Campus Infrastructure	Impact	Probability of Service Interruption	Peak Usage / Timeframes	Redundancy / Fail Over	Risk Mitigation	Planned Mitigation (In Progress)
Campus Network Wired Wireless Internet	High	Certain or Almost Certain	Business Hours	Yes	<ul style="list-style-type: none"> <li>• Dual gigaman circuits under separate providers</li> <li>• Fiber between data centers</li> <li>• UPS and monitoring in closets</li> <li>• VSS-Virtualized Switching</li> <li>• KanREN Support</li> </ul>	<ul style="list-style-type: none"> <li>• Fiber Plant Redesign – in progress</li> <li>• Fiber Plant Refresh</li> <li>• Ongoing Equipment Refresh Cycle</li> </ul>
JCCC Data Center	High	Possible	24x7	Yes	<ul style="list-style-type: none"> <li>• Generator power in RC, OCB, and RC network closets</li> <li>• Storage Area Network- redundant</li> <li>• UPS in data center</li> <li>• VM Platform-Dynamic Resource Scheduler</li> <li>• HVAC Management</li> </ul>	<ul style="list-style-type: none"> <li>• Sourcing Strategy / Leveraging JCCC and External Cloud Services</li> <li>• Secondary recovery site through consortium</li> </ul>
Banner / ERP Environment	High	Possible	Business Hours	Yes / No	<ul style="list-style-type: none"> <li>• Change Mgmt / Incident Mgmt</li> <li>• Approved Maintenance Windows</li> <li>• Ellucian Application Managed Services</li> <li>• Proactive alert monitoring</li> <li>• Oracle recovery</li> </ul>	<ul style="list-style-type: none"> <li>• Virtualization of ERP environment</li> <li>• Addition of student portal to managed services contract</li> </ul>
Messaging Environment	High	Possible	Business Hours	Yes	<ul style="list-style-type: none"> <li>• Student gmail accounts</li> <li>• Gaggle archive service</li> <li>• 3-Year retention schedule</li> <li>• Load balancing (F5) upgrade</li> <li>• Exchange 2010 migration</li> <li>• Office 365 tenant</li> </ul>	<ul style="list-style-type: none"> <li>• Planned Office 365 migration for Exchange (employee mailboxes)</li> </ul>