UNIVERSITY OF NORTHERN COLORADO

BOARD OF TRUSTEES AGENDA ITEM

Meeting Date: Nov 15th, 2019	
☐ Action Item ☒ Discussion Item ☐ Information Item	
Name of Item:	**Information Management & Technology - Five-Year Plan Overview**

Responsible Staff Member: Michelle Quinn

Summary of Issue:

The purpose of this document is to provide a high-level summary of the ongoing fiscal planning activities related to Information Technology.

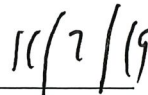| Recommended Action by BOT:	☐ Approval ☒ No Action Needed	
Change to Board Policy Manual:	☐ Approval ☒ No Action Needed	
	If yes, Section:	

Administrative Recommendation (Motion):

_____ 11/7/19
Signature of Vice President   Date

_____ 11/8/19
Signature of President   Date

UNIVERSITY OF NORTHERN COLORADO

Information Management & Technology - Five-Year Plan Overview

The purpose of this document is to provide a high-level summary of the ongoing fiscal planning activities related to Information Technology. The areas of focus are Staffing, Academic Needs, Enterprise Systems, Security, and Infrastructure. As we look at upcoming capital needs, we are shifting to an OpEx model to fund infrastructure over time and stabilize expenditures over any given fiscal year. This will require leases to purchase equipment, as well as ongoing maintenance.

The current budget for IM&T is roughly $13 million. Nearly half of the IM&T budget is staffing. Increases in benefits, mandatory salary increases, banding activities, and attempts to stay competitive in the technology market lead to ongoing increases in the IM&T budget.

Table 1

	Actual					Projected Budget			
	FY16	**FY17**	**FY18**	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**
Total Spending	$11.4	$12.7	$12.7	$13.0	$13.5	$13.8	$14.0	$14.7	$15.0
Personnel	$6.0	$6.5	$6.6	$6.7	$6.9	$7.1	$7.3	$7.5	$7.7
# of Staff	73	74	74	75	73	73	73	73	73

We are anticipating a shift toward business analysts who can assist with efficiencies and automation. In 2017, IM&T created a new business unit named Business Analysis & Application Support (BAAS) to fulfill the University's need to improve business processes and automations. The goal of this unit is to increase process improvement and become strategic partners with functional units. We are also seeing a greater demand for Security roles within our teams.

Figure 1
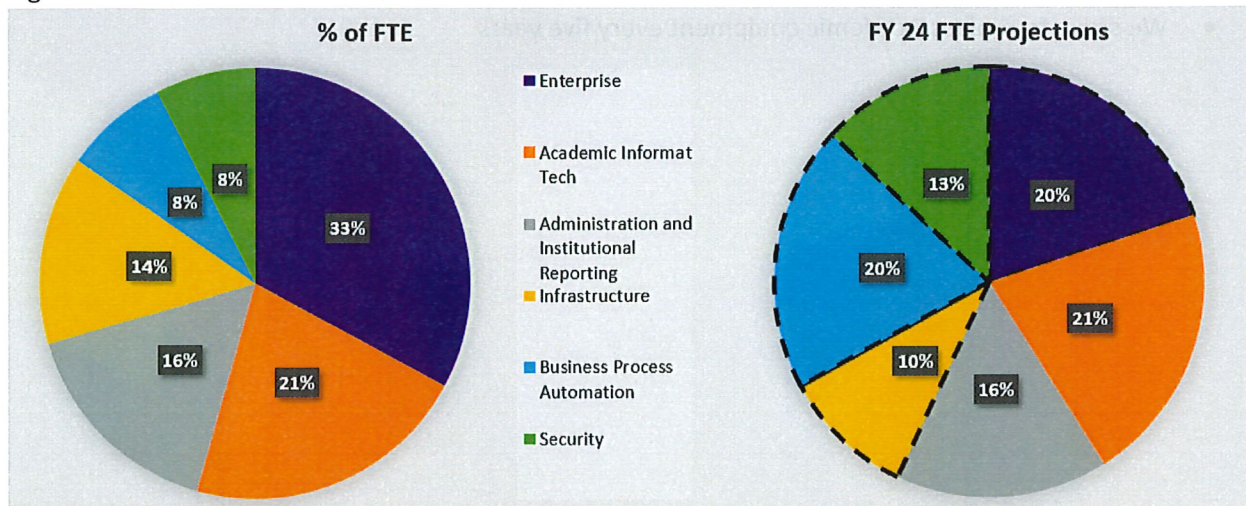
Academic Expenditures

There is a continued challenge to control Academic expenditures. Over the last five years, there has been a slight reduction in the amount of funding dedicated to Academic need. However, the overall demand changes from year to year. Utilization of the university wide governance structure is important for adapting to changes while providing vital functions. Last year governance helped identify nearly $100k in reductions. We need to identify the central institutional needs separately from specific academic program needs. This applies to specialized labs as well. In order to continue to reduce costs we need to consolidate more labs and look for opportunities to virtualize labs.

Figure 2
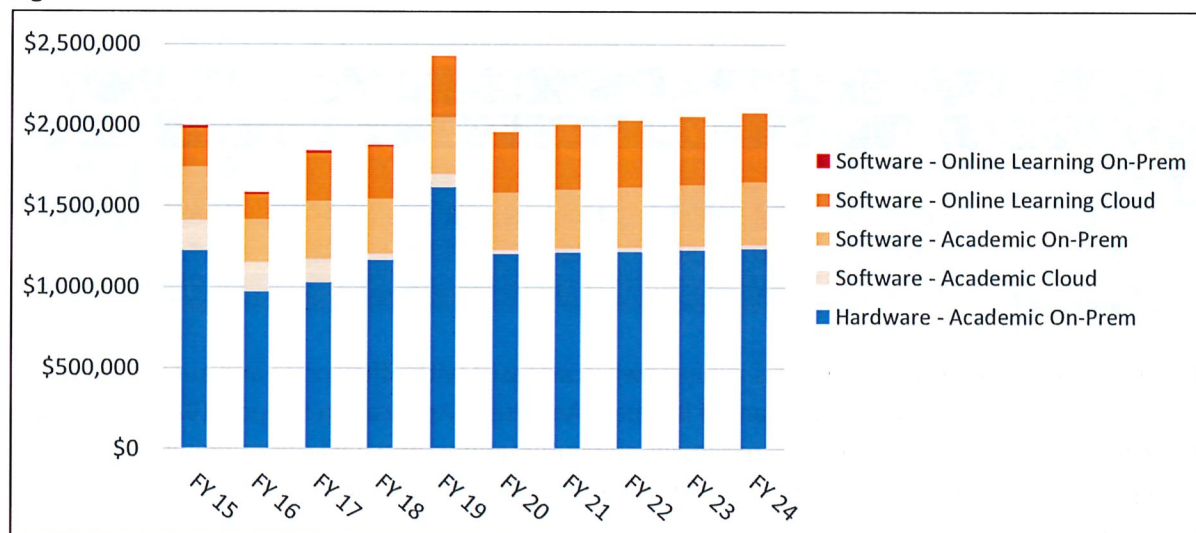
- Academic On-Premise includes hardware in classrooms and faculty workstations
- We strive to replace Academic equipment every five years

![University of Northern Colorado logo]

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Enterprise Shifts

We continue to see an increase in our annual maintenance costs related to major long-term software maintenance contracts. We weigh out the savings from long-term agreements versus the flexibility in short-term contracts. Short-term contracts allow us to remove licenses or functionality when no longer needed. Below are examples of increases in annual licensing. Uplifts in annual maintenance are based on the number of years we commit to with a vendor; five or more years results in lower increases from year to year.

Figure 3
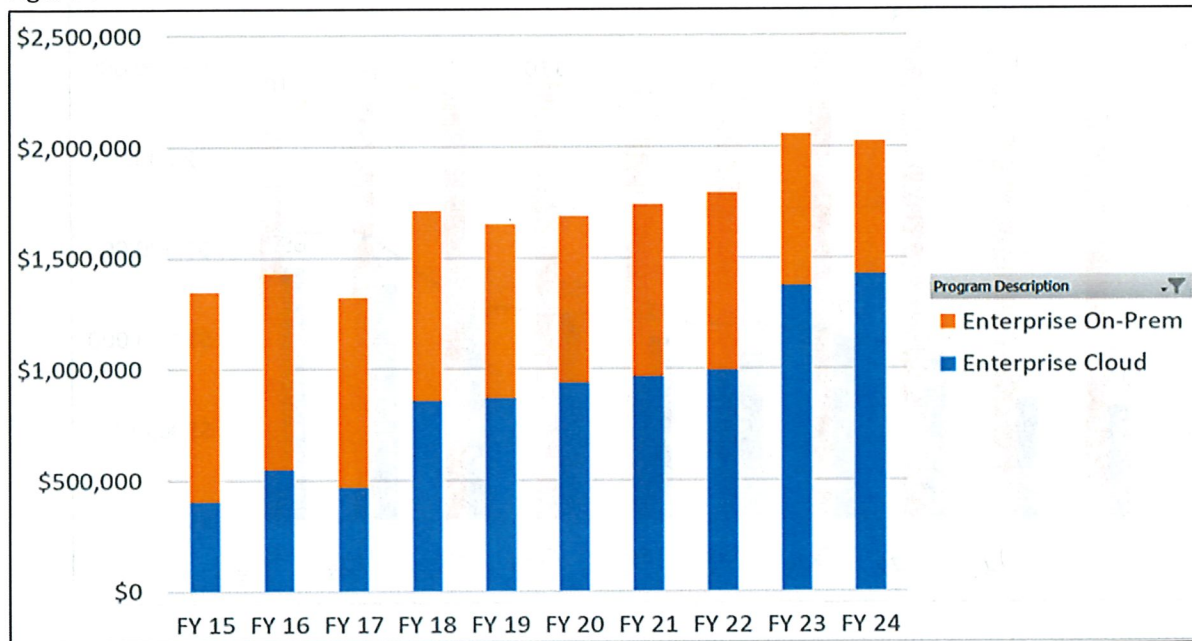
- We are currently monitoring several institutions' progress in moving to cloud platforms like Workday for their ERP systems.

- We are working with other state Banner ERP institutions to push Ellucian (Our Banner Environment) to provide a cost-effective and reliable solution in the cloud.

  - Currently, Ellucian has 400 clients in their ERP cloud with 200 in progress.
  - UNC has a very low number of modifications to the Banner environment making us a great candidate for moving to the cloud.
  - FY23/FY24 Ramp-up investments in the Cloud, primary involving the ERP
  - If this shift to the cloud does occur, it changes demands for backups, storage, security, and overall support.

Cloud Software Trends

There is a continued shift to the Cloud. Many of the key applications have moved to the Cloud. Many of the program specific academic applications are provided on premise for students. We are looking into providing more software for labs remotely.

Figure 4
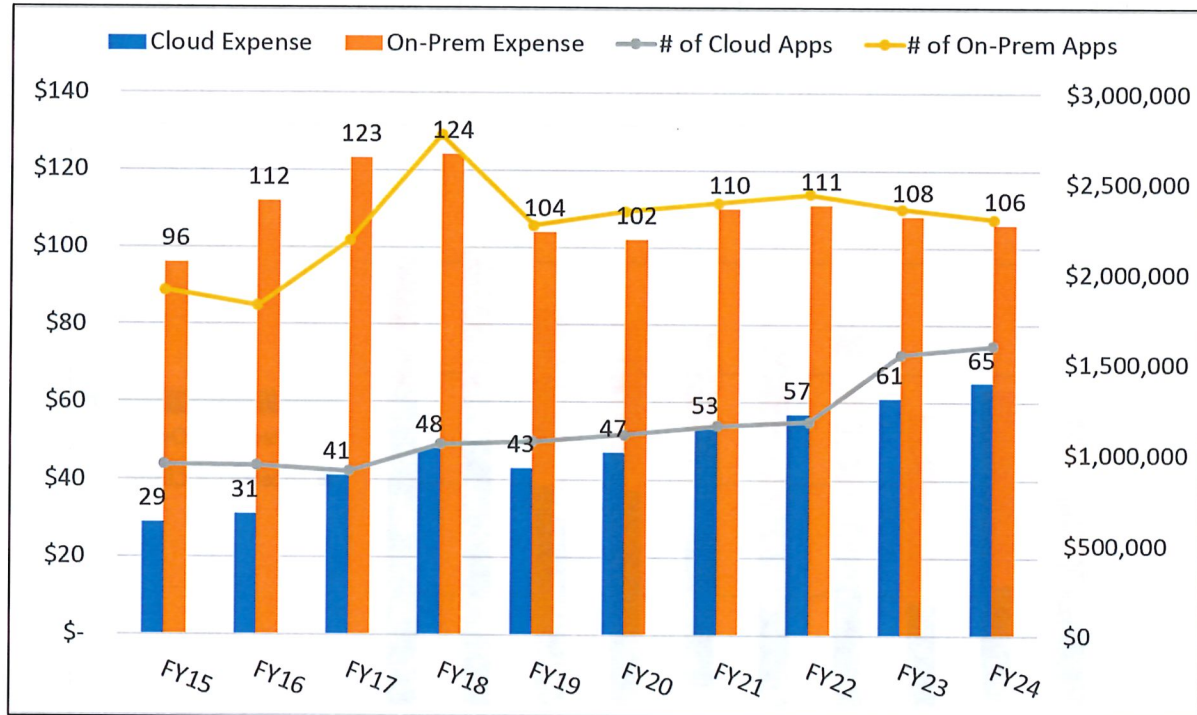
UNC takes advantage of the cloud in many ways.

- Software as a Service (SaaS) Examples
  - Learning Management System, Facilities Management System, Workflow, Faculty/Staff and Student Email, Office 365 Cloud Security
- Infrastructure as a Service (IaaS)
  - Critical System Redundant Backup Location, Cloud Intrusion Protection System (Planning Stage), Redundant DNS
- Platform as a Service (PaaS)
  - Azure Active Directory for Authentication, SharePoint, Reporting Tools, Emergency Communication Website

## Security and Infrastructure Investments

Investments in security are mostly related to network appliances that monitor and correlate event information. UNC is moving toward specialists in individual technical areas, with responsibility for security, instead of building a large security team.

Many of the previous infrastructure investments included software maintenance for five years. At the end of the five-year obligation, we must either re-invest in our equipment or pay for ongoing software maintenance.

Without this software maintenance we cannot stay on the latest versions, leaving us susceptible to security vulnerabilities as well as missing opportunities for additional functionality.

The technology budget can be split into Software, Service and Hardware. This chart illustrates how the capital investments impact the IM&T budget.

Figure 5
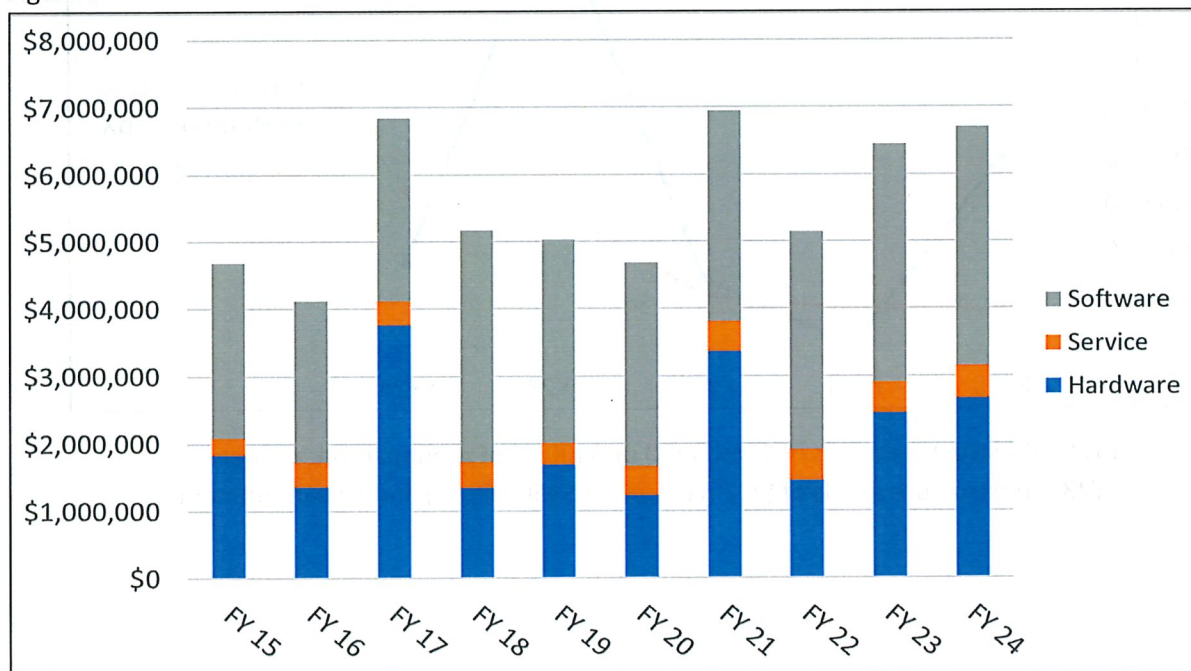
- FY17 - $3.2 million for wireless infrastructure from the State
- FY23 and FY24 assume a lease to offset large capital investments needed

Leasing Equipment

IM&T is proposing a lease to fund a major core network equipment upgrades in FY20. Investments in this equipment will cost $2.0 million. We are proposing a lease that will equate to payments of roughly $400k annually for five years.

- Capital Expense ("CapX") investments are where the expense of infrastructure is realized in the year they are needed. Moving to OpEx spreads the expense out over multiple years, decreasing the needs in any one particular year.

UNC needs to shift to an OpEx model to reduce the large investments in current and future years.

Figure 6
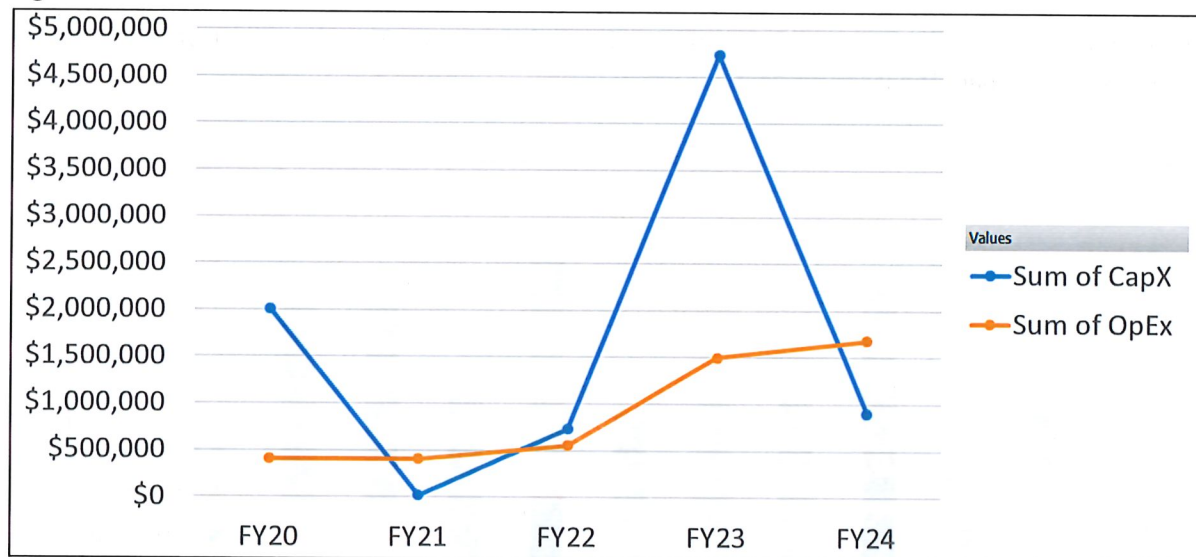
- FY20 Infrastructure needs of $2m(CapX) or $400k(OpEx) annual commitment
- FY23 Infrastructure needs of $4.7m (CapX) or $950k(OpEx) annual commitment
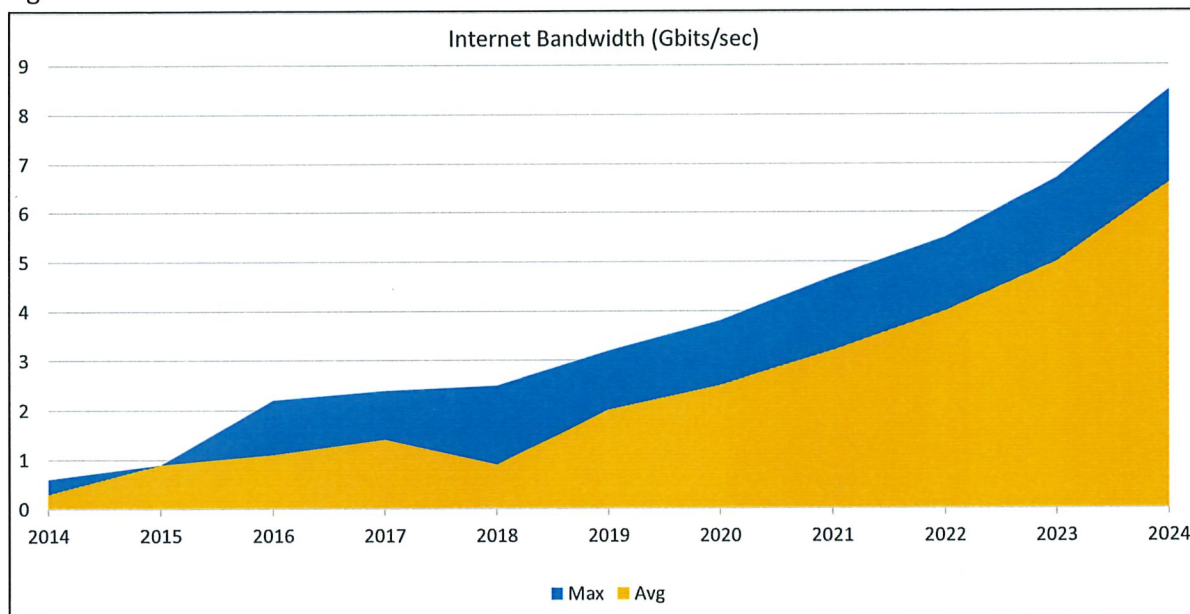
Bandwidth

Current bandwidth available on campus is 6 Gbps (gigabits per second)

- Currently, we do not exceed our available bandwidth cap
- Each device on the student network is rate-limited to 30 Mbps (megabits per second)
  - 4k Streaming requires 25 Mbps
- We have two redundant paths to ensure connectivity
- We increased from 4 Gbps to 6 Gbps in FY19

Figure 7

There is an increasing need for bandwidth. We are monitoring this very carefully. We provide a commercial service that far exceeds the local Internet Service Providers service. It is becoming more common to see 300 Mbps/1 Gbps to city residences. At this time, that is far more than an individual can consume.

- Five-year strategy includes separating residence halls from campus network to accommodate a larger consumer growth rate, without impacting the core administrative network.

Pushing larger amounts of traffic through the administrative network would be very costly

- Example – Firewall/Intrusion Prevention equipment upgrades would cost $300k upfront and $85k annually.

We are currently working with the City of Greeley on broadband initiatives to look for opportunities.

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Conclusion

The needs and expectations of a Higher Education Campus are continuously changing. This document outlines the areas that UNC is focusing on. This overview represents the next five years with incremental change. If the technology needs of the University evolve due to the delivery of instruction, research, physical configuration, these assumptions will need to be revisited.