End User Computing/MiWorkspace Steering Group
Recommendations for the Academic and Research Environment
August 22, 2013
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Introduction

In 2011 the University of Michigan embarked on a new approach to provide computing services common to all individuals at the University of Michigan—faculty, students, and staff. These common commodity services include printing, network connectivity, storage, security, hardware, software, and desktop support. The goals of the approach are to operate commodity services more efficiently and effectively through shared services around core technologies, and ultimately allow units to focus on technology solutions that enable innovation and advance the teaching, learning, research, or medical missions of their units. This shared service, provided by ITS, is MiWorkspace.

This report presents the work and recommendations of the End User Computing/MiWorkspace Steering Group. The recommendations are presented to the MiWorkspace Project Team identifying changes necessary to adapt the current iteration of MiWorkspace for the Central Administrative Units and create a new MiWorkspace applicable and successful in the Academic and Research Environment. While the report and recommendations are directed to the MiWorkspace Project Team, the document is also meant to initiate discussion among the Academic and Research Units on campus.

I. EUC/MiWorkspace Steering Group

The End User Computing/MiWorkspace Steering Group was formed in June 2011 to guide the End User Computing (EUC) Project (now MiWorkspace) through two phases:

- Phase 1--Consolidate and Rationalize IT for Central Administration Units
- Phase 2--Enhance Desktop Support and Classroom Support for Academic and Research Units.

(See Appendix 1 for Charges for Phase 1 and Phase 2)

The goal of the EUC/MiWorkspace Steering Group for both phases was to incorporate the perspective and needs of the end users in the design, creation, and implementation of the Next Gen Michigan MiWorkspace Service. The inclusion of representatives of Academic and Research Units in the Phase 1 design for the Central Administrative Units was purposeful. Not only did it ensure the Central Administration iteration of MiWorkspace would be an appropriate starting point for later versions of MiWorkspace for the Academic and Research Environment, but it also created an important community of engaged representatives from across the University of Michigan who are committed to the success of the MiWorkspace initiative. The participants in Phase 1 and Phase 1 can be found in Appendix 2.

The EUC/MiWorkspace Steering Group met weekly throughout Phase 1 and Phase 2. In Phase 1, the steering group explored the benefits of shared service and provided initial design input to the project team. In Phase 2 for the academic redesign, the steering group focused on the evaluation of the deliverables most appropriate for the academic teaching and research environment and gathered feedback from the diverse end user communities targeted for service delivery. While initially there were considerable apprehensions and concerns (see Appendix 3), the open discussion and frank dialogue revealed enduring commitment and dedication among the participants to ensure the campus community would continue mission-critical work and would receive excellent service and support from MiWorkspace.

Through these discussions the steering group came to understand that in order to achieve the levels of efficiency that would allow Academic and Research Units to focus solely on technology solutions to enable innovation and advance the teaching, learning, research, and medical missions of their units, as many of the faculty, staff and students as possible in the schools and colleges in University of Michigan Academic and Research Environment would need to participate in the commodity services provided by the MiWorkspace
shared service. Therefore, while the MiWorkspace Project Team’s initial expectations for participation across the Academic and Research were conservative (40% faculty participation and 60% staff participation in the Academic and Research Units), the EUC/MiWorkspace Steering Group approached its charge with the ultimate goal to make ambitious and aggressive recommendations for the academic redesign to create a service that would be most broadly applicable to academic and research units across campus. For the more faculty, students, and staff who take advantage of the service, the greater the efficiencies and financial reductions will be and the greater impact on the institution.

The steering group for Phase 2 therefore undertook a detailed and comprehensive examination of the MiWorkspace services for the Central Administrative Units, in order to best understand the services and identify how MiWorkspace could best be crafted to meet the IT needs of the Academic and Research Units.

II. Process for Academic and Research Redesign

The EUC/MiWorkspace Steering Group took the following approach to the second phase of the MiWorkspace project:

Phase 2: Academic and Research Units
- Review initial products/processes/services and initial round of continuous improvement
- Identify gaps, recommend enhancements
- Focus on academic use cases

As the Academic and Research Units at the University of Michigan include 19 schools and colleges and many other additional centers and institutes, the members of the steering group wished to provide recommendations that would provide a successful implementation of MiWorkspace applicable to a broad spectrum of the University of Michigan Academic and Research Environment. The steering group therefore established the following process to gather as much information and to include as many perspectives as possible:

1. **Open Presentations to the Campus IT Community** to gain a thorough understanding of the existing state for each aspect of the MiWorkspace Service being deployed to Central Administrative Units. (See Appendix 4 for a list of the participants from across campus).
2. **Discussion and Evaluation** in which members of the steering group and participants in the open presentations discussed the needs of faculty, staff, and students in academic teaching and research environments and compared those of staff in Central Administrative Units
3. **Identify Gaps and Craft Recommendations**: Members of the steering group identified the gaps in which the central administration iteration of the MiWorkspace Service does not meet the requirements of faculty, staff, and students in the Academic and Research Units, and then crafted recommendations for changes which would meet the needs of the Academic and Research Environment and which would promote broader adoption
4. **Prioritization**: As part of a collaborative process, the steering group prioritized recommendations into two categories – Priority 1: Must Have (critical for success within the Academic and Research Environment) and Priority 2: Nice to Have (beneficial for the Academic and Research Environment, but not critical for success.

The structure of the recommendations below follows a process the EUC/MiWorkspace Steering Group used to identify the requirements of the Academic and Research Units and the changes necessary for MiWorkspace to be successful in those units. Each recommendation is composed of three points – a triplet:

- Existing Service/Component Description
- Service, Technology, or Process Gap
- New Service Requirement/Proposal to Fill the Gap
III. Visions of IT: Vignettes Illustrating MiWorkspace in the Academic Environment

In order to set the context for the academic and research requirements and for the steering group’s recommendations for additions and changes for the Academic and Research Redesign, it is crucial to understand the culture of University of Michigan Academic and Research Units and the environment in which faculty and students would depend upon MiWorkspace in University of Michigan Academic and Research Units to accomplish research, teaching, and learning. The EUC/MiWorkspace Steering Group, therefore, offers the following vignettes of technology needs in the academic environment. These vignettes are examples of how we imagine the future could be and how faculty, staff, and students would benefit from a successful MiWorkspace Service.¹

A. Faculty Member in Research Vignette
   A faculty member is in the hallway outside her lab talking with a colleague about his article in the e-journal she was reading on her iPad, when the Neighborhood IT staff member, Sara, and Unit IT staff member, Vijay, walk by on their way to a campus meeting. The faculty member stops Sara and Vijay with a quick question: She has a problem with a device in her lab. The graduate student who had made custom adaptations to a vendor-supplied device in her lab left for a new job three months ago. Now she needs a new version of the software installed for a simulation she wants to run; she also wants to collaborate with colleagues across several UM schools and colleges and needs the colleagues to access data from the device in her lab. She wants to connect the device directly to M+Box or, if M+Box isn’t appropriate, to find some other way to share the data. Vijay, the Unit IT staff member, makes arrangements to come by later in the day to update the software on the proprietary vendor equipment by using the MiWorkspace software tools available to Unit IT staff across campus. Vijay also enters a ticket in to have someone from Sara’s MiWorkspace Neighborhood IT group evaluate the data situation and find the best way to share the data from the equipment remotely. Sara was just reading on the MiWorkspace Neighborhood IT social media site about a similar situation in another UM School and pulls up that information from the site to share with Vijay and her Neighborhood IT colleagues. The staff members are happy because they are able to collaborate to get the work done faster and are able share important information across campus. The faculty member is happy, because she will have the work completed quickly and correctly, and, more importantly, she knows her collaborators across campus will be able to continue their work with her seamlessly.

B. Faculty Member in Travel Vignette
   A faculty member is planning to take a group of five post-docs and three graduate students to Ghana for a four-week research and presentation trip. The faculty member is able to arrange for loan equipment from the local unit’s equipment check-out center. In addition to professional grade audio recorders and video kits the group will borrow from the unit check-out center, the unit check-out center staff coordinate easily through common information tracking/service request tools with the MiWorkspace staff to borrow six laptop computers and three tablet PCs for the faculty member and eight travel companions. The MiWorkspace staff fills the request for computers and tablets and includes the appropriate power adapters for travel to Ghana and appropriate proof of ownership documentation they will need when passing through customs. The MiWorkspace staff also make sure the correct software is on all of the computers, that the travelers are all able to print to the portable printer they are taking with them on their trip, and they make sure the computers are able to connect back to University servers when they are able. The unit check-out center staff and the Neighborhood IT staff also coordinate to invite all of the travelers to a pre-trip tech-check during which the staff from the two units collaborate to go over all of the equipment (computers, tablets, audio recorders, and video kits) packed into rugged travel cases, and the MiWorkspace staff make sure all of the travelers’ BYOD devices are correctly prepared for international travel. The faculty member, post-docs, and graduate students are all

¹ As the vignettes illustrate a possible future, they do include MiWorkspace-specific terminology. The terms will be defined and discussed later in this report.
happy, because they are able to focus on their preparations for the research and presentations and don’t have to waste time tracking down laptops and tablets for the post-docs and grad students from multiple units. They also find it immensely reassuring to know they have everything they need for success as they travel and cross multiple borders.

C. Faculty Member in Teaching Vignette

A faculty member from Central Campus has been invited to present a guest lecture to a class on North Campus. The faculty member has embraced all of the features of Google and has all of the materials for his lecture in the cloud. He will be cutting it close in arriving at the lecture hall on North Campus because he is coming from a campus committee meeting at the Fleming Building. He arrives at the lecture hall with 5 minutes to spare. He is able to quickly login to the installed classroom computer and calls up his presentation on Google Drive. He also connects his laptop to access the local network so he can reach his data and custom-built software running on equipment in his lab, which he will demonstrate remotely. All aspects of the lecture are recorded by the local lecture capture system and everything is captured from both the local machine and from his own computer. Students in the class, including five students on study abroad in Brazil who are watching the live stream online, participate actively in the lecture through Twitter and LectureTools communicating with their project team members, their regular faculty member, and the guest speaker. With the robust wireless in the room, students and guests have no issues connecting and staying connected to the various tools throughout the class. The two faculty members are so pleased with the outcome and with how much easier it is to teach in another School’s classroom than before MiWorkspace, they decide to offer more of these cross-campus lectures and discuss the possibility of greater collaboration on courses and programs.

D. GSI and Student Vignette

A Graduate Student in the College of Engineering is appointed to be a GSI in the Ross School of Business for the Fall Semester. The GSI is able to login to any computer in any of the locations and access course specific software and is able to hold video based office hours from her lab space on North Campus. She is also able to get to her research data so that she can continue analysis between discussion sessions and while she is down on the Ross campus. One day while leading her sections, her research-funded laptop goes down. She doesn’t panic. She knows she can use the MiWorkspace app on her phone to find the nearest MiWorkspace depot and works with the staff in the Ross MiWorkspace Depot to transfer the data from her laptop to a loan laptop. That way she doesn’t have to cancel any of her sections and she can continue to teach for the next several hours. After she’s done teaching, she works with her faculty advisor and lab manager to get the correct shortcode from their research account to replace the laptop. The MiWorkspace office builds the new laptop together and restores all of the settings and software she had on her dead laptop. She is able to pick up the new laptop the next morning on her way up to North Campus. The grad student is thrilled, because a situation, which would have been disastrous, anxiety-ridden, and extremely time consuming several years ago, is now relatively painless and easy to go through. As she rides the bus to North Campus, she thinks once more how happy she is to have chosen to come to the University of Michigan for her graduate work. The recruiting information was right—UofM is a great place.

E. Faculty Work Group Connecting to Printing

Faculty members from the School of Public Health and from the College of LSA are working with several researchers from ISR on a significant research project funded through multiple sources. The project team members from all of the schools and units are meeting in the LSA Building to review findings reports on their research. At some point in the discussion, they decide they need to print the reports on a D Size plotter. In the past, they would have had to delay the discussion until they were able to return to their home units to print out the correct size pages. Since they all participate in the MiWorkspace Service with print capabilities, they are able to go to the MiWorkspace app on their iPads and find the nearest MiWorkspace D Size printer. There is one two floors below them. They send their reports from their laptops to the plotter in the LSA building and print their materials, easily charging the different print jobs to three different research grants. They extremely pleased, as they are able to continue on with their discussion without any significant delay.

F. Faculty Equipment Failure

A world-renowned faculty member prefers to store all of his documents on the Windows machine in his office because he feels it is too time consuming to access his departmental network file share, and he freely admits he doesn’t pay attention to details of IT. He’s never had any problems before and trusts his desktop machine.
Unfortunately, one morning his hard drive fails on his local machine and he fears he has lost all of his files—all of his students’ grades, all of his manuscripts, all of his interviews, all of his ideas for future articles, and the only copy of the Festschrift he is editing in honor of a retiring colleague. He thinks he has some of the work on thumb drives, but knows he hasn’t had any consistent way to back up his work. His departmental secretary calls Lucy, the Neighborhood IT staff member in the MiWorkspace office just upstairs from the faculty member’s office. Lucy is able to provide the faculty member with a new desktop machine. She then pulls his synchronized files back down to the new machine and he is able to access all of his files as if he were using his old machine with the hardware failure. While she is helping the faculty member with the new machine, she takes the time to show him how easy and secure it is to store files on the network file share and leaves a simple 1-2-3 guide to help him when he has to do it on his own. She also takes the time to answer his questions about duplex-printing and puts in a ticket to have someone come out to meet with him about Google mail. The faculty member is ecstatic and promises to not live so dangerously with his files.

In all of these vignettes, MiWorkspace services make the use of technology for faculty, students, and staff easier, more productive, and more convenient. MiWorkspace Neighborhood IT Staff collaborate and cooperate with Unit IT and other unit staff, and faculty and students benefit from those close relationships. MiWorkspace services recognize the timelines and address needs of faculty and students, so they are able to work faster and more efficiently, and aren’t delayed by fractured or siloed technology systems. Faculty, researchers, students, and staff move seamlessly across campus and collaboration and innovation are fostered when stakeholders can access tools and information wherever they are—on campus or off. Technology facilitates the creation of information and resources, rather than creating obstacles to be overcome. From this vision of the future, the EUC/MiWorkspace Steering Group makes our recommendations.

IV. MiWorkspace Service Model and Support Levels

With the understanding that MiWorkspace is to be a public good, which delivers fundamental commodity services to as much of the campus as possible, thus creating savings and efficiencies that benefit the entire institution, the EUC/MiWorkspace Steering Group sees MiWorkspace services as the foundation on which Academic and Research activities take place. Certain communities within the Academic and Research Units, such as some administrative offices within some schools and colleges, are better suited to the service model as currently defined in the Central Administrative iteration of MiWorkspace. Other communities in Academic and Research Units expect very different levels of service and support. In the sections below, we outline the needs of the various constituencies in Academic and Research Units and the necessary support levels needed to maintain the academic and research missions at the University of Michigan.

A. The Service Customers: Who has access to MiWorkspace services?

In the Academic and Research Environment, service customers include all regular faculty, staff, graduate students, and undergraduate students. However, IT services are not limited to these primary constituencies. Services customers in Academic and Research Units also include online students, visiting faculty, adjuncts, GSIs, guest lecturers, clinical faculty, visiting scholars, emeritus faculty, executives (Deans, Chairs, Directors, etc.), special degree students (Executive MBA, Part-time/Weekend Masters Students, etc.), recruiters & speakers, continuing education participants, hotel guests, off-site researchers, official campus guests (speakers, board members, review boards, conference participants, special visitors, etc.), and members of the public which includes guests to special events, such as lectures and performances, but also visitors to museums, medical facilities, camps, etc. Moreover, identification of customers is complicated in the Academic and Research Environment as many of the individuals above often have multiple simultaneous roles crossing multiple departments or units across the University. In order to facilitate more seamless integration and cross-unit collaboration and creative cross-pollination, MiWorkspace services should be available to everyone who
participates in the academic and research missions of University of Michigan schools and colleges. This includes everyone who is part of the vibrant life of the University of Michigan. A summary can be found in Table 1 (below).

Individual units may have specific missions which call them to offer services and support to members of the greater public (library guests, guests to special events, such as lectures and performances), but also visitors to museums, medical facilities, camps, etc. One would not expect MiWorkspace to be responsible for services to the public and visitors as part of MiWorkspace Core Services. In those cases, units would be expected to offer those special services themselves or negotiate with MiWorkspace to offer those services at additional cost negotiated on a case-by-case basis.

<table>
<thead>
<tr>
<th>Table 1: Service Customers</th>
<th>Access to Services Provided by MiWorkspace</th>
<th>Services Provided Primarily by the Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>All regular faculty, staff, graduate students, and undergraduates</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Online students</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Visiting faculty and adjuncts</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>GSIs</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Guest lecturers and visiting scholars</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clinical faculty</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Emeritus faculty</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Executives (Deans, area chairs, etc.)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Special degree students (EMBA, Part-time/Weekend MBA, etc.)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Recruiters &amp; speakers</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Continuing Education participants</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hotel guests</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Off-site researchers</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Official Campus Guests (speakers, board members, review boards, conference participants, special visitors, etc.)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>All regular faculty, PhD, staff and students</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Members of the greater public (library guests, guests to special events to lectures and performances, but also visitors to museums, medical facilities, camps, etc.)</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

B. Locations of Service Customers: Where are Academic and Research Customers located?

In the Academic and Research Environment, service customers (faculty, staff, students, and all of the other customers to be served and supported by MiWorkspace) are not solely located on the UM Ann Arbor Campus. University of Michigan academic and research activities take place across the globe. The EUC/MiWorkspace Steering Group realizes, however, that MiWorkspace services may not realistically be expanded to every member of the UM Community wherever she or he may be located. The steering group, therefore, recommends the following breakdown in Table 2 below.

<table>
<thead>
<tr>
<th>Table 2: Service Locations</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann Arbor Campus</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off-Campus Centers, Offices, and Teaching Locations (local to Southeast Michigan; e.g., Detroit Center)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 MiWorkspace Core Services are the basic suite of shared services performed exclusively by MiWorkspace.
<table>
<thead>
<tr>
<th>Area Clinics</th>
<th>X</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Homes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>US Domestic Centers, Offices, and Teaching Locations (not local to Southwest Michigan)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>International Centers, Offices, and Teaching Locations</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Remote Research Stations</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hotels</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Student Project Teams Around the World</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Off Campus Events</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Distance Learning Students (e.g., Coursera &amp; other online programs)</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

The EUC/MiWorkspace Steering Group recommends MiWorkspace services be available to the UM community on the Ann Arbor Campus, as well as Off-Campus Centers, Offices, and Teaching Locations in Southeast Michigan (e.g., Detroit Center) and Area Clinics. These locations are easily reached within a relatively short drive and integration of IT systems across these locations will increase the greater sense of connectedness and community, not to mention ensure easy access to MiWorkspace services for faculty, staff, and students moving among these various offices in Southeast Michigan. As a Core Service, MiWorkspace services would be available to units and individuals in these locations as part of the basic MiWorkspace package.

In discussions of needs unique to the Academic and Research Environment, the EUC/MiWorkspace Steering Group identified that many faculty in Academic and Research Units currently expect and receive technical support from Unit IT staff in their home offices—whether sanctioned or not. As this varies unit to unit and would not be applicable to the broader needs of the campus, the EUC/MiWorkspace Steering Group recommends MiWorkspace services be available to UM faculty in their homes as a Premium Service for which the unit would pay additional fees.

Academic and Research Units maintain a number of locations outside of Southeast Michigan. These include centers, offices, and teaching locations both in the US and international locations, as well as remote research stations. Currently, some Academic and Research Units maintain IT staff in locations outside Ann Arbor. Other units have IT staff with split appointments, spending part of the year in Ann Arbor and the rest of the year in the remote location. Other units still send IT staff to the remote location when needed. While some units may be able to include these distant locations in the local iteration of MiWorkspace (that would need to be identified during the Discovery Process), MiWorkspace may not be able to accommodate the wide variety of the needs of the distant centers, offices, teaching and research locations. Those units, however, would still benefit from certain aspects of the MiWorkspace commodity services. In these cases, the EUC/MiWorkspace Steering Group recommends a blended approach in which the Unit IT staff collaborates with MiWorkspace Neighborhood IT staff to provide MiWorkspace services. This would allow Unit IT staff in the distant location to build machines and install software with MiWorkspace tools, while they complete other non-MiWorkspace IT tasks for the distant location. (See below for greater discussion of the Blended Approach.)

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3 The steering group originally limited this to faculty who teach seminars from home and not full desktop support in faculty homes. The exact level of expected/desired support in faculty homes would be most appropriate to discuss school-by-school during the Discovery Process.
Certain IT support and services currently provided in the Academic and Research Units take place in locations, which are outside the scope of MiWorkspace. These locations include the unit-run hotels and individual students and their project teams around the world. For services in these locations, there is no expectation of MiWorkspace accommodating those needs. Those unit-specific services should continue to be provided by the unit’s own IT staff.

IT services for special off-campus events and for distance learning students (e.g., Coursera or other online learning programs), where location varies significantly, may have certain aspects of the MiWorkspace Service applicable. The EUC/MiWorkspace Steering Group recommends these be considered for possible Addendum Service and Support where each unit requires a slightly different level of support that could significantly alter the price or support level.

C. Service Levels: What is included in MiWorkspace?

As a public good service, units are financially responsible for the MiWorkspace Service whether they choose to adopt the service or not. The EUC/MiWorkspace Steering Group therefore spent considerable time evaluating the services currently included in the MiWorkspace shared IT services for Central Administration Units. (See Appendix 4 or http://miworkspace.it.umich.edu/learn/for-unit-leadership/IT-Tasks-Included-in-Shared-IT-Services.pdf). The service levels are identified as follows:

- **Core:** services performed exclusively by MiWorkspace
- **Premium:** services originally performed by the unit that are taken on by MiWorkspace after transition, but which are not applicable to the broader needs of the campus
- **Addendum:** services originally performed by the unit, now performed by MiWorkspace; each unit may require a slightly different level of support, which in turn does not significantly alter the price of support.
- **Unit:** services performed exclusively by the unit.

These service levels are appropriate for the Central Administrative iteration of MiWorkspace. These levels are also applicable to most Academic and Research Units. Many Academic and Research Units, however, currently have areas within their schools or colleges, which require Unit IT staff with highly specialized knowledge and skills working in these areas. Under the current division of service levels, the unique and specialized would not likely become part of Core, Premium, or Addendum services. Members of the EUC/MiWorkspace Steering Group felt strongly, the Academic and Research Units still would benefit significantly from the efficiencies and the financial savings provided through MiWorkspace, even though the units cannot sacrifice support for mission critical and research critical activities. For this reason, members of the EUC/MiWorkspace Steering Group have come to see the need for an additional level of service: Blended Service.

A Blended Service approach would allow Unit IT staff to collaborate with and work closely with MiWorkspace staff to provide MiWorkspace services to the academic specific service groups/center listed below in Table 3. Unit IT staff would be able to take advantage of commodity services and apply them as appropriate within a unique academic-specific environment, thus allowing the Unit IT staff to work more efficiently and effectively with core technologies. They could build machines and install software with MiWorkspace tools, while they complete field-specific non-MiWorkspace IT tasks for the lab, clinic, or studio.
Table 3: Academic Specific Service Groups/Centers

<table>
<thead>
<tr>
<th>Service Groups/Centers</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Lab w/ specialized software and data sets</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Restricted lab</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human/Animal Subject Lab</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching Lab w/specific Academic Purpose</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clinics w/ confidentiality and security</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special degree programs</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Library</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studios</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance spaces</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outreach programs</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutes/centers and non-degree granting education</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

While the Unit IT staff are able to utilize MiWorkspace tools, the Blended Service support remains primarily within the unit because the unit’s IT staff are academically aligned, specially trained, and able to provide field-specific support in the research lab or performance space.

In particular, research labs require computers to be connected to specialty equipment or to use special software, which only highly specialized and specially trained lab staff are able to do. Those labs would still benefit from MiWorkspace machines loadsets and software delivery. A blended approach in which staff from the lab work closely with MiWorkspace staff on certain aspects of the services would allow the lab to maintain research/mission-critical activities that are clearly not in scope of MiWorkspace, but they are still able to benefit from basic commodity services.

Similarly, there may be times when the unit staff members are able to do something quickly and easily on a MiWorkspace machine, which would speed resolution of a problem and keep the faculty member on track with her work. Training and sharing information with Unit IT staff will improve efficiency, improve relationships and benefit the users in the Academic and Research Units. While a blended approach will require clarification and on-going work to maintain relationships, the investment in cooperation and collaboration will reduce conflict and territorialism in the long run.

D. General Availability of Services

In MiWorkspace for Central Administrative Units services are available during general business hours: ITS Service Center (4HELP) support representatives available Monday to Friday 7:00 am until 6:00 pm and technicians available Monday to Friday between 7:00 am until 5:00 pm. Additional details can be found in Appendix 5 or at [http://services.it.umich.edu/miworkspace](http://services.it.umich.edu/miworkspace)
Teaching, learning, research and service activities in Academic and Research Units extend much more broadly throughout the week and throughout the day, as faculty, staff, and students actively pursue their work in labs, classrooms, clinics, performance spaces, and offices on-site and off. Table 4, below, illustrates the level of services currently provided to schools and colleges by their current support staff. Faculty, staff and students will expect the same or better levels of service in the future, if their work is not to be hampered. The EUC/MiWorkspace Steering Group recommends that the Core Service of MiWorkspace for the Academic and Research Units include onsite staff available for assistance seven days per week from 7am to 10pm, and phone support for faculty and network monitoring/support both 24/7.

<table>
<thead>
<tr>
<th>Table 4: Service Availability</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours of Operation: Seven days; 7am-10pm for physical onsite support for Faculty, Staff, &amp; Students*</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24x7 support for labs, classrooms, clinics, etc.*</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evening/weekend support for events, performances, etc.*</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Network infrastructure, LAN and local services support 24/7*</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24/7 phone support for faculty</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Actual availability will vary slightly by unit—all in person

E. Response Times for MiWorkspace Services

Currently within the Central Administrative Units, MiWorkspace support response time expectations for the participating Central Administrative Units are as follows:

- **Service Center Support** – service center answers support calls in the order received with a target average hold time of no more than 3 minutes.
- **Local Support** – service center refers issues to local support within 1 hour of initial contact. After referral to local support, a technician will respond to issues within 4 hours during designated support hours.
- **Failed hardware** will be replaced within 24 weekday hours of reporting the issue.
- **Equipment and IT orientation** for a new/transferred user will be delivered and installed within 72 weekday hours of time of request.

Additional details can be found in Appendix 5 or at [http://services.it.umich.edu/miworkspace](http://services.it.umich.edu/miworkspace)

Faculty and staff in Academic and Research Units currently expect and demand considerably faster response times to their technical needs. Faculty in offices and labs expect local IT staff to respond in person immediately when they are onsite and to respond to email requests throughout the week. When problems occur in classrooms and other instructional spaces, current unit staff must not only show up in the classroom within 5 minutes but also have temporary replacement solutions in place as quickly as possible so that the course interaction is not delayed or negatively impacted in any way, for lost class time is lost forever. Table 5 below, illustrates the current levels of service response provided to schools and colleges by their unit support staff. Faculty, staff, and students will expect the same or better levels of service in the future, if their work is not to be hampered. The EUC/MiWorkspace Steering Group recommends that the Core Service of MiWorkspace for the Academic and Research Units meet the current service response expectations. For more unit specific levels of service response, such as support for student projects, embedded support for programs in off-site locations, enhanced uptime with higher density network and training/assistance on unit-specific technologies and services, those would be provided by the unit or would be negotiated as either Premium or Addendum Services.
Table 5: Service Response

<table>
<thead>
<tr>
<th>Description</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begin an informed diagnosis of any problem within 15 minutes</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectively operational ASAP for supported hardware and software</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolved within 1 hour for urgent/high priority w/ supported hardware and software</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50% incidents closed within 1 day; 100% closed within 3 days*</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% service requests responded back (not an automated computer response) to requester within 4 hours*</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation of all hardware/software within 3 business days*</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network response, diagnosis, and resolution within 4 hours 24/7</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Computing response within 5 minutes (in person)</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Computing resolution with 1 hour (new room; replacement gear)</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty requests for classroom/library software loads sets up to 1 week before each semester</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom/Library Software loads sets finalized 1 week before each semester</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Academic Classroom hardware/software installation within 3 days*</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student project support ASAP</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Embedded support for programs (trips to LA) as required</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced uptime with higher density network: more switches, more fiber (video), empty ports, dual power supplies, 5ghz wireless, etc.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Training and assistance on all unit-specific technologies and services (e.g., iMpcat, Career Services, Cisco Telepresence, video production studio)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

*Unless deemed low priority by requesting unit

The EUC/MiWorkspace Steering Group also found it critical that the system in which phone calls, texts, emails, video calls, and other forms of communication are directed to the appropriate individuals as quickly as possible within the expected response time. In addition, communications from users must be easy to navigate and avoid the following problems: no long wait times with faculty, staff and students on hold; no complicated button pressing to navigate automated answering systems – faculty, staff, and students need a knowledgeable and professional person to talk to. In addition, communication will need to flow seamlessly between MiWorkspace service providers and specialized Unit IT staff (see recommendation below on location of Neighborhood IT Staff). The members of the steering group recognize the means by which such seamless communication will occur will need to be discussed and planned for during the unit’s discovery process, and the unit’s expectations made clear during that discovery process. Some Academic and Research Units are likely to want a way in which calls from a particular unit are directed to trained staff who have a deeper understanding of that unit’s special needs. ServiceLink and other means of information-intake need to accommodate these needs.
F. Services Critical to Academic Mission – often unique to Academic and Research Units

Faculty and staff in Academic and Research Units currently expect and demand a wide variety of support services, which are critical to the academic mission. The areas of services include: Traditional Desktop Support, Faculty/Research/Academic Support, Teaching and Special Events Services, Traditional Network Services, Mission Aligned Service for Design/Build Support, and Mission Aligned Service for Unit Leadership and Management. While certain aspects may be appropriate for the core services in MiWorkspace, other aspects are undoubtedly unique in purpose, design, or implementation and, therefore, most appropriately provided by the unit. Tables 6 through 10, below, illustrate services currently provided to schools and colleges by their unit support staff. Faculty, staff, and students in the Academic and Research Units will expect the same or better levels of service in these, if their teaching and research activities are not to be hampered. The EUC/MiWorkspace Steering Group recommends the following services fall into the following categories – some provided by MiWorkspace for the Academic and Research Units, others provided in a blended approach, and other services provided specifically by the unit. More detailed discussion, gaps, and recommendations on each of the particular topics in the tables below can be found in the rest of the report below.

### Table 6: Traditional Desktop Support Services

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple PCs/device; multiple OS support; multiple load sets</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bring-Your-Own-Device (BYOD) - software and sync support for Laptops/Desktops/iPads/home computers, phones, etc.</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student computing support</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office moves (physical computer equipment)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Equipment Loans (computers, etc.), tracking and training on use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Multiple types of computer load sets (kiosks, room signage, research lab computers, iPads for EMBA, etc.)</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit specific technologies (e.g., Scantron, Clickers, MediaSite)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Unit custom web applications (e.g., iMpact)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Unit unique applications (e.g., eCampusGroups, AlumniMagnet)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Unit specific licensed software</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Special and spontaneous needs of degree programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Enterprise print paper distribution &amp; device support</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Inventory and disposal of surplus equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Table 7: Faculty, Research and Academic Services

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty classroom and academic software requests/support services</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Research and academic software: Beer Game (Web based simulation created by Carnegie-Mellon), Pharmasim (developed in the 1980s), MILS (requires VB3.0), etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Faculty research direct support | X
Faculty support with high performance research computing | X
Faculty orientation | X
Development of faculty special requests and course specific applications (e.g., faculty developed modeling/simulation software) | X
On/Off-board faculty with research data, service and software needs | X
Pedagogy and Skill Training Enriching Scholarship: faculty and staff technology skill building and innovation--founding member of TTC | X

### Table 8: Teaching and Events Services

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom computer support</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom A/V support</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom support/sit in (as needed and as backup)</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event support</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event video streaming support</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evening/weekend classroom/event support - regular</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evening/weekend classroom/event space shutdown procedures</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Design, Installation of AV and IT Hardware, Classroom Analytics, Control System (e.g., Extron or Crestron) programming</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly Classroom Service and Checks</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily/Multiple Times per Day: furniture re-set and Facilities support</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16mm and 35mm Projection; and other specialty projection (long throw; theatrical; outdoor events; outdoor artistic display)</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 mm digitization; VHS/16mm digitized</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Videoconferencing Support Polycom/Lifesize/Cloud: maintenance, in-class support, course planning, and pedagogical assistance</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video streaming, on-demand, transcoding, encryption, security, storage, etc.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

### Table 9: Traditional Network and Other Services

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network data, video and voice traffic management</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network server management/admin for Unit specific services: WOWZA, SharePoint, MediaSite, ACT!, AlumniMagnet, Equitrac, Drupal, Unix/Windows/Mac administration, etc.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Recommendations for the Academic and Research Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Network liaison to ITS and ITCom for project work
- **X**

### Network administrative rights for local:

<table>
<thead>
<tr>
<th>Service</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firewall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>VLANs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>VPN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>DHCP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>LDF (main switch closets)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Windows administrative rights for local:

<table>
<thead>
<tr>
<th>Service</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>User account creation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>File permissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>File space allocations (individual)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>File space allocations (group/department)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oracle enterprise database</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Network infrastructure support for mission specific goals: VC, Streaming, etc.
- **X**

### Backup/Restore
- **X**

### Enterprise Virtual Printing Environment
- **X**

### Cisco Telepresence and global videoconference connection in cooperating with ITCom, Merit, Tata and other carriers.
- **X**

### Unit specific IP service administration: VOIP phones, building lighting controls, Aramark hotel cash registers, etc.
- **X**

### IIA security services for unit, institutes, centers, research labs/areas, etc.
- **X**

### Network off-campus building support (Maynard, Southfield and LA)
- **X**

---

**Table 10: Support for Mission Specific Design/Build and R&D**

<table>
<thead>
<tr>
<th>Service</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty IT research and design for teaching/research: work directly with faculty to make unique, custom, and emerging technologies work for their teaching, research interests and student team projects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Unit IT research and design for new mission aligned services and advancement: analyze, research, test and recommend new technologies, A/V for classrooms, and services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Unit IT research and design to support evolving globalization of degree programs: EMBA, Global Initiatives, Prahalad Institute, etc.</td>
<td></td>
<td></td>
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</table>
Meet with vendors, attend technical conferences (Technical/Pedagogical conference and trade shows) and meet with counterparts at peer schools to track emerging technologies that may impact business education

Training on unit specific hardware and software

<table>
<thead>
<tr>
<th>Mission Specific Services for Unit Leadership and Management</th>
<th>Core</th>
<th>Premium</th>
<th>Addendum</th>
<th>Blended</th>
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<td>Developing policy</td>
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<td>Budget Development, Management and Forecasting</td>
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<td>Managing IT projects and implementations</td>
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<td>IT and Facilities coordination and management</td>
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V. Technical Topics: Triplets and Recommendations

Much of the work has already been completed in the current iteration of MiWorkspace for Central Administrative Units. The current service description for MiWorkspace can be found at the MiWorkspace website [http://miworkspace.it.umich.edu/learn/about/service-description.pdf](http://miworkspace.it.umich.edu/learn/about/service-description.pdf) (Also available in Appendix 6). A number of features were guided by academic interests during Phase 1 of the EUC/MiWorkspace Steering Group and thus already incorporated in the current version for Central Administrative Units. These include:

- Admin Rights on PCs
- Get Help Icons
- Configured Box Sync Client
- Executive Support
- Managed Mac and PC
- Ability to Automatically Deploy Software
- Better Operational Tools (Remedy replacement project and move to ServiceLink underway now)
- Automatic VPN Client for Windows Machines (making connection simple no matter where the user is)

The following sections present discussion of individual technical details in the Central Administrative iteration of the MiWorkspace Service, the gaps between the current version of MiWorkspace for Central Administrative Units and the needs of the Academic and Research Units, and the recommendations for changes to make MiWorkspace successful in the Academic and Research Environment. Each recommendation follows the triplet structure:

- Existing Service/Component Description
- Service, Technology, or Process Gap
- New Service Requirement/Proposal to Fill the Gap

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Gaps and recommendations in this report are based on MiWorkspace Service Definition as of June 2013. Service Definition will evolve over time and change due to the iterative process within MiWorkspace Project.
The EUC/MiWorkspace Steering Group recommends these changes and new requirements from the technical expertise and considerable experience in direct support of the faculty, students, and staff in schools and colleges across the University of Michigan. The recommendations focus solely on what is necessary in order to make the initiative successful. They do not take into consideration any potential cost savings or the possibility of any additional cost. Financial analysis was not part of the steering group’s charge.

Each technical requirement and ensuing recommendation reflects the steering group’s collective prioritization. Through the collaborative process of presentation and lengthy discussion, the steering group prioritized recommendations into the following categories:

- Priority 1 (Must Have) -- critical for success within the Academic and Research Environment
- Priority 2 (Nice to Have) -- beneficial for the Academic and Research Environment, but not critical for success

A. MiWorkspace Printing

The MiWorkspace Printing Service expands access to managed printing and allows faculty, students, and staff to print to more printing locations across campus via “follow-me” printing and MCard swipe, while maintaining the security of individuals’ documents.

1. Follow-Me Printing: Priority 1 (Must Have)

   **Existing Service/Component Description:**
   Within MiWorkspace for Central Administrative Units, the user prints to a generic queue. The print job is held until the user swipes her or his MCard at a MiWorkspace printer to release the job to that printer.

   **Service, Technology, or Process Gap:**
   If a user prints to the “follow-me” queue and then releases the job at a Campus Computing Sites printer, the user will be subject to the normal Sites print-charges model. Faculty and staff are not accustomed to the Sites print-charge model and do not typically expect to be charged per imprint. Similarly, other units may see an increase in printing costs if large numbers of faculty and staff from an outside unit use “follow-me” to print to a MiWorkspace printer in another unit.

   **New Service Requirement/Proposal to Fill Gap:**
   The EUC/MiWorkspace Steering Group recommends the following:
   a. The MiWorkspace Project Team create a communication plan to help faculty and staff understand the Sites print-charge model, the implications for being charged for printing at Sites through “follow-me” printing, and how the charge is not from “follow-me” printing per se, but rather due to the location where the print job was retrieved.

   b. The MiWorkspace Project Team create a communication plan to help unit leadership and unit administrative staff understand the implications for non-unit faculty, students, and staff incurring cost for the local unit when non-unit faculty and students use “follow-me” printing, and how the charge is not from “follow-me” printing per se, but rather due to the location where the print job was retrieved.

   c. In the future, MiWorkspace engage ITS leadership and the rest of campus in a discussion around a unified campus print environment where faculty, staff, and students can move fluidly between Unit and Campus Computing Sites printers.
2. **Scan-to-Email: Priority 1 (Must Have)**

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, a user can scan a document from a managed multi-function device and send it to her/his email using only an MCard for identification. No local address book management is required on the device.

**Service, Technology, or Process Gap:**
In order for scan-to-email to work within the Academic and Research Environment, the device will need to be configured and authorized to use the campus mail relay service or a Unit-run mail relay server. When a Unit is rolled onto the MiWorkspace Printing Service this requirement will need to be incorporated into the discovery process.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team work with each unit during the discovery process to identify any multi-function devices that the unit would like to use with scan-to-email.

The EUC/MiWorkspace Steering Group also recommends that the MiWorkspace Project Team configure and authorize the devices for a mail relay service.

3. **Non-Networked Printers: Priority 1 (Must Have)**

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, a device must be networked in order to be part of the MiWorkspace printing system. Non-networked desktop printers cannot be managed by the MiWorkspace printing system and need to be hand installed. Users can continue print to non-networked desktop printers from a MiWorkspace Mac or PC.

**Service, Technology, or Process Gap:**
While most faculty and staff will find managed printing useful and beneficial, some faculty and researchers will still require non-networked desktop printers. It is not clear who will do the hand installation and maintenance of any non-networked desktop printers in each unit, whether it is Unit IT or Neighborhood IT, or whether individual users might remain as primary if they have been granted local administrator rights.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team work with Unit IT during discovery process to identify any non-networked desktop printers that will remain in the unit, but which will not be managed by the MiWorkspace Printing System.

The EUC/MiWorkspace Steering Group also recommends that the MiWorkspace Project Team work with Unit IT during discovery process to establish procedures for how these printers will be installed and supported.

4. **Vendor Sources for Printers: Priority 1 (Must Have)**

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, MiWorkspace partners with the Managed Print Service (UM Procurement) to identify opportunities for the Unit to rationalize printing.
Service, Technology, or Process Gap:
Managed Print Service (MPS) currently includes Konica printers only. Faculty and staff within the Academic and Research Units have expressed a desire for a managed print program that includes HP and Xerox devices.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team work with MPS to pursue a managed print program for HP and Xerox devices.

5. Restricting printer access: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, MiWorkspace printers are not restricted to specific users or groups by default, beyond requiring a faculty, staff, sponsored affiliate, or temp-staff affiliation in MCommunity.

Service, Technology, or Process Gap:
Within the Academic and Research Environment, units and departments may need additional means by which to restrict access to certain printers. In some cases, students and staff may not have physical access to the printers and units will want to prevent people from mistakenly choosing the wrong printer. In other cases, it may not be practical or possible to restrict physical access to a particular printer, and yet access to print to that device would need to be restricted to particular groups of faculty, students, or staff.

New Service Requirement/Proposal to Fill Gap:
PaperCut allows for printers to be "whitelisted" so that only specific groups or users can print to them. In the short term, the EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team work with units to implement printer whitelisting when appropriate.

6. Printer Access Management Application: Priority 2 (Nice to Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, MiWorkspace printers are not restricted to specific users or groups by default, beyond requiring a faculty, staff, sponsored affiliate, or temp-staff affiliation in MCommunity.

Service, Technology, or Process Gap:
Within the Academic and Research Environment, administrative staff would prefer an easy to use way to manage different access levels to certain printers or to certain groups.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team develop an interface with which departmental administrators can manage access to their department's printers. This interface should include the ability to manage whitelist with MCommunity groups. For printers that require a whitelist, the addition of users to the whitelist should result in immediate access to printing.

7. Print access for users not in specific MCommunity groups: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, in order to print to a MiWorkspace device, a user must be a member of one of the following dynamically created MCommunity groups: AlumniAA, FacultyAA, RegularStaffAA, SponsoredAffiliateAA, and TemporaryStaffAA.
These groups correspond to a user's University affiliation. Users who are not members of any of those groups, such as students whose only affiliation with a unit is as a student, will only have access to Sites printers.

**Service, Technology, or Process Gap:**
The distinction between Sites printers and MiWorkspace printers and the MCommunity affiliations required for each may cause confusion. Some Academic and Research Units also have a need to allow GSI’s, undergraduate students in research labs, and other individuals, who have no other affiliations with the Unit, to print to MiWorkspace (non-Sites) printers.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team work with Units during the discovery process to understand the distinction between Sites and MiWorkspace printers and the affiliations needed to print to each kind of printer. Access for special users, like students, could be managed through MCommunity groups.

### 8. Charging Printing Costs to Multiple Billing Accounts: Priority 1 (Must Have)

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, printing charges for individuals or groups are associated with single accounts.

**Service, Technology, or Process Gap:**
Within the Academic and Research Environment, Units may need to associate an individual or group with multiple billing accounts for internal accounting. It is currently planned that the MiWorkspace Printing System will have an application that allows Unit staff to make these associations.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team have this application/feature available to Academic and Research Units when they roll onto the MiWorkspace service and have this application/feature ready for a Unit to use at the time of implementation of the service. Ideally, MiWorkspace would give Units access to the tool prior to the go-live date so Unit staff can begin entering accounts and associating them with individuals and groups.

The EUC/MiWorkspace Steering Group also recommends that the MiWorkspace Print Team be able to accommodate change/additions via email requests.

### 9. Guest Printing: Priority 2 (Nice to Have)

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, guest printing is facilitated by self-funded MiWorkspace Print Cards. Guests are defined as individuals without MCommunity entries or MCards.

**Service, Technology, or Process Gap:**
Within the Academic and Research Environment, guests of varying types, varying lengths of stays, and varying privileges are quite common. The MiWorkspace Print Team reports that PaperCut has an application that allows for the self-funding of guest cards. The MiWorkspace Print Team plans to work with the University Library to replace their current practice of providing "guest" print cards, with the new card system. The new guest cards are targeted for Campus Computing Sites devices only.
In the Academic and Research Environment, many departments have invited guests on a regular basis; some departments, for example, have as many as 2-3 guests per day, other departments host groups of visitors or conferences in which guests will need to print while they are on campus. For single guests, print cards may be reasonable; this would be similar to the situation in which Academic and Research Units often have generic MCards for access to external doors on the C-Cure system. Unit administrative staff members coordinate access to those cards. For larger groups or for guests with repeated visits, managing print cards could become burdensome on administrative staff.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team share best practices by which Academic and Research Units could follow other units’ best practices for management and distribution of Print Cards.

The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team create a more formal process and assign the task to staff, so that Academic and Research Units could rely on a single office to handle guest printing access -- this might include considering having the MCard office manage the distribution of MiWorkspace Print Cards to guests or provide print access via temporary MCards for guests.

The EUC/MiWorkspace Steering Group also recommends the MiWorkspace Project Team create a web application that allows units or guests to load funds onto a MiWorkspace Print Card.

10. Managed Printing for Linux Machines: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, the MiWorkspace Printing System is supported on versions of the Mac and Windows operating systems, which are supported by the larger MiWorkspace project.

Service, Technology, or Process Gap:
Within the Academic and Research Environment, Linux machines are used by an important segment of the Academic and Research community. It is not clear how will printing be handled from operating systems that are not yet supported by MiWorkspace, like Linux. Linux users, or other users of unsupported operating systems, will need to be able to print to Unit printers that are managed by the MiWorkspace Printing System. It is not clear, however, if there is a Papercut client for Linux.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team work with Unit IT staff during discovery to determine the scope of operating systems that are used by users in the Unit. If a Linux installation of Papercut is not supported by MiWorkspace, work with Unit IT staff members who have expertise in supporting Linux clients to enable printing to MiWorkspace managed printers and address recharge/billing to appropriate accounts.

11. Data Collection and Reports: Priority 1 (Must Have)
Existing Service/Component Description:
Papercut already contains many preconfigured reports. Access to these reports can be granted to departmental staff via MCommunity groups. Reports can be run manually or automated.
Service, Technology, or Process Gap:
Within the Academic and Research Environment, units need the ability to generate usage reports by user, group, and account per device (e.g., who printed how much to a given device) for internal accounting purposes.

This feature is available in the MiWorkspace/Papercut solution, but was not yet available for "complex users" - those who have multiple recharge accounts associated with different individuals. It was something some units were going to pilot with the MiWorkspace print team, but was discontinued due to insufficient resources.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team extend the MiWorkspace/Papercut solution to "complex users" - those who have multiple recharge accounts associated with different individuals.

12. Full-service option that provides consumables and service: Priority 2 (Nice to Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, Central Administrative Units provide consumables and service for unit-owned or unit-leased printers, either internally or through the Managed Print Program. The MiWorkspace Printing Service does not supply consumables or service the hardware.

Service, Technology, or Process Gap:
Within the Academic and Research Environment, units already provide consumables and service for unit-owned or unit-leased printers, either internally or through the Managed Print Program. As interest grows in shared administrative services within the Academic and Research Units, there may be interest in having a full-service option that includes consumables and service.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that in the future the MiWorkspace Project Team consider providing a full-service option that includes consumables and service.

13. Assigning costs to multiple billing shortcodes: Priority 2 (Nice to Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, Papercut tracks usage and administrative staff can generate reports by user or billing code, and can charge shortcodes when printers have been assigned a cost. Out of the box, however, Papercut can only credit one financial source.

Service, Technology, or Process Gap:
Within the Academic and Research Environment, units or departments that recharge for printing would benefit if Papercut handled the debiting and crediting of user shortcodes. Departmental administrators should be able to assign a cost to their department’s printers and associate users with billing shortcodes. Reports should be available so that the department can monitor the charges.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that in the future the MiWorkspace Project develop a module that allows Papercut to credit more than one shortcode and implement an interface that departmental administrators can use to manage their department’s printer usage costs, users, and associated billing shortcodes.
14. Print Quotas: Priority 2 (Nice to Have)
Existing Service/Component Description:
The MiWorkspace Printing System in Central Administrative Units enforces quotas by assigning charges to specific printers. If a printer has no charge, it cannot count against a quota.

Service, Technology, or Process Gap:
Within the Academic and Research Environment, it is often desirable to separate print quotas from billing and recharging. Academic and Research Units or departments that do not need the billing component may still want to enforce print quotas for certain groups of people or for certain units.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team implement a way for units or departments to enforce print quotas separate from the billing and recharging component.

15. Administrative Management Tools: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, there is currently no means for departmental administrators to manage their department’s printers, whitelists, users, and billing codes.

Service, Technology, or Process Gap:
Within the Academic and Research Environment, units and departments require a method to delegate management of a department’s printers and associated information to departmental administrators. Such a process would allow for different departments to implement their own policies regarding printer access (i.e. whitelists), print costs, recharging, and quotas.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team develop a web application for departmental administrators to manage the aspects of their department’s print environment (e.g., printer access (i.e. whitelists), print costs, recharging, and quotas). This application should have the following additional features:

- Allow designated administrators, using MCommunity groups, to add/remove/change billing shortcodes for each print user in their department.
- The MCommunity group for a department’s admin access to Papercut should support subgroups.
- The web application should allow a departmental administrator to search for a print user, and if it is a complex user, all shortcodes should be displayed, together with associated quotas - the administrator should then be able to change/delete shortcodes and/or quotas and save back to the system - the changes should take effect instantaneously.
- The web application should have a batch feature for cases where many changes need to be made at once (e.g. the initial load of the system, at the start and end of semesters, or for special events like conferences or seminars).

B. MiWorkspace Windows

The MiWorkspace Windows service provides a fully managed windows environment--from machine build to software loads to security services, with ties to the MiWorkspace infrastructure for networking, storage, and printing. The current incarnation of the MiWorkspace Windows Service has fewer features and less flexibility as the Central Administrative Units for which the MiWorkspace Windows Service was designed don’t have the
same needs as the Academic and Research Units. The following recommendations aim to shape the service such that it is usable and useful to the majority of Windows users in the Academic and Research Environment.

1. **Tracking Machines with Easily Identifiable Naming Convention: Priority 1 (Must Have)**

   **Existing Service/Component Description:**
   Within MiWorkspace for Central Administrative Units, MiWorkspace Windows machines are named “m-serial#”

   **Service, Technology, or Process Gap:**
   In Active Directory, machines currently have a department-specific prefix in their name, which makes it easy to determine which department a machine belongs to. In addition, many academic departments name the machines with the user’s uniqname, making quick responses more efficient whenever the support staff receive an inquiry.

   **New Service Requirement/Proposal to Fill Gap:**
   The EUC/MiWorkspace Steering Group recommends the Project Team revisit the machine naming convention.
   a. “Standard” MiWorkspace machines (the ones in the standard OU) should keep the current naming convention
   b. Machines in the Academic and Research Environment with more specialized purposes (research labs, computing labs, classrooms) live in different OUs. For these computers, there should be a consistent and standard naming convention available to identify machines in the academic/research environment. These should be human readable names that a technician or staff member can easily understand and in which the machine is linked to a location or other information beyond serial number. This information should be available in the asset management system, but there also needs to be a way to have the naming convention happen autobuild machines. An example might be: LOCATION+Machine# or DENT-XXX-XX or UNIT-room# for classrooms and computing/teaching labs or UNIT-uniqnameXX for research machines where uniqname is the PI and XX is a number.
   c. MiWorkspace should ensure MiWorkspace Help Desk has clear understanding of routing knowledge and is able to quickly and easily identify the correct location of a piece of equipment and the correct location/unit for support.

2. **Remote Desktop Protocol: Priority 1 (Must Have)**

   **Existing Service/Component Description:**
   Within Central Administrative Units, Remote Desktop Protocol (RDP) access to MiWorkspace Windows computers is disabled by default except for ITS staff access for remote support.

   **Service, Technology, or Process Gap:**
   Among other things, this prevents remote access to node-locked software applications installed on the computer. Users who have installed an application on a machine in an on-campus location cannot access it remotely.

   **New Service Requirement/Proposal to Fill Gap:**
   The EUC/MiWorkspace Steering Group recommends that RDP access to MiWorkspace Windows computers should remain disabled by default. The Project Team should also develop an exception process for specific situations in which faculty and researchers need to access applications on specific machines remotely.
3. Alternative Approach to the Self-Serve Discovery Tool for Faculty: Priority 1 (Must Have)

Existing Service/Component Description:
The initial implementation/migration in the Central Administrative Units follows a process similar to the Google migration, during which communications go out weeks prior to migration and users are instructed on what they need to do in order to prepare. This includes running a diagnostic tool to identify information about each individual’s computer (hardware, software, file storage, etc.).

Service, Technology, or Process Gap:
While the self-serve process is appropriate for most staff in Academic and Research Units, it is unrealistic to rely solely on a self-serve process to glean information from faculty machines. Academic units learned from the Google migration, one cannot expect faculty to perform diagnostics with a discovery tool on their own within a limited period of time. Without an alternative, the discovery process will take considerably longer merely because many faculty will not run the discovery tool on their own.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the Project Team create a way in which the discovery tool is pushed out to machines (through GPO ideally) and runs automatically in the background. While a communication plan would need to be created to communicate to faculty what the process will entail and how the process will not compromise the content of their machines, this process would collect the necessary discovery information quickly and efficiently.

Such a process would miss a number of machines, which are not on the domain. The EUC/MiWorkspace Steering Group recommends the Project Team develop a plan and allocate staff resources to run the discovery tool manually on the remaining machines for the faculty. While it will require staff time and labor, such an investment would keep the implementation/migration process on track and on time.

The EUC/MiWorkspace Steering Group also recommends the Project Team keep a list of issues and problems are identified during each MiWorkspace pilot to Academic and Research Units. It is important that units learn from each other and improve the transition.

The EUC/MiWorkspace Steering Group also recommends MiWorkspace and the different Academic and Research Units create strong collaboration between the MiWorkspace staff, MiWorkspace Neighborhood IT, and Unit IT.


Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, customers are instructed to move their files into certain locations on their hard drives and to ensure they have no more than 60 GB of files in those locations before their computers are initially reloaded with a MiWorkspace image. For Central Administrative Units, the migration process only backs up standard places/folders on the users’ machines.

Service, Technology, or Process Gap:
Many faculty and graduate students in Academic and Research Units do not back-up their data and many store data in non-standard locations. In addition, IT support staff know from experience that faculty and graduate students often do not remember or are unable to articulate where those files are stored. Furthermore, there are a number of machines in shared computing labs that may have
important data stored on them; but due to their shared nature, no single individual knows all locations where data may be stored.

It is common practice in academic and research units for Unit IT staff to backup all files on a faculty member’s computer before it is reloaded. Some faculty will have difficulty getting under the 60 GB limit, and attempting to do so will require too much of their time and effort. Others will not know where everything is stored on their computers. The risk of missing an important file is unacceptable.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the Project Team create a process by which specific users and machines are identified for full back-up during the migration process. While most staff and certain faculty may be able to follow the migration process as in the Central Administrative Units, many faculty and most lab machines need to be fully backed up.

The EUC/MiWorkspace Steering Group recommends that for those individuals at greatest risk, the Project Team consider providing a complete snapshot of the data/image of the drive or following some other protocol to ensure maximum protection for faculty data.

The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team run a full backup of the contents of a hard drive before overwriting it with a MiWorkspace image. These backups should be secured and kept for thirty days. Files in locations identified by the customer should be restored after the reload, regardless of size.

An alternative might be to install a new hard drive (HDD) that would be the recipient of the MiWorkspace build, while keeping the original drive untouched (either kept on a shelf, given to the user, or installed as the secondary drive on the machine, to be wiped/used at some point in the future). If that process were followed, the unit would cover the cost of the hard drives or other costs.

Minimally, the MiWorkspace Project Team should work with the units to identify the faculty and researchers at greatest risk during the Discovery Process.

**5. Administrative Access to Network File Shares: Priority 1 (Must Have)**

**Existing Service/Component Description:**
For Central Administrative Units, only ITS and Neighborhood IT MiWorkspace staff have administrative (admin) access over network files shares.

**Service, Technology, or Process Gap:**
Unit IT staff providing computer support in Academic and Research Units need to have admin access to network file shares, as well as Neighborhood IT staff, so they are able to provide appropriate support (in a blended approach) to unit-specific technology using MiWorkspace core services and thus meet required response time and flexibility standards of support for their units.

There also needs to be a way to have the local decisions makers able to implement who is in a group and who has access to data, so that they are able to match groups with range of data on the servers. This would allow for shared responsibility and empower Unit IT to prevent bottlenecks or long waits when they are responding to requests or in research situations when staff need to determine who retains data.
New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that all unit network shares have a Unit AD group with full permissions. This should be done with a separate administrative account, not their regular accounts.

6. Administrative Access to Workstations: Priority 1 (Must Have)
Existing Service/Component Description:
For Central Administrative Units, by default, only ITS staff members have administrative (admin) access on workstations. Admin access is granted to users on an “as needed” basis, according to the unit’s guidelines. Regular users are granted admin access through their regular account.

Service, Technology, or Process Gap:
Without admin access to workstations, Unit IT staff providing computing support in Academic and Research Units will not be able to meet the required response time and flexibility standards of support for their units.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the following:
   a. The Project Team should create a process by which access privileges for different individuals are identified and granted.
   b. Unit IT should be given admin access over all workstations through a user account separate from their regular user account.

7. Administrative Access to Workstations: Priority 1 (Must Have)
Existing Service/Component Description:
For Central Administrative Units, by default, only ITS staff members have administrative (admin) access on workstations. Admin access is granted to users on an “as needed” basis, according to the unit’s guidelines. Regular users are granted admin access through their regular account.

Service, Technology, or Process Gap:
Admin access for users through their regular accounts poses a security risk.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the following:
   a. The Project Team should create a process by which access privileges for different individuals are identified and granted.
   b. Regular users should only receive admin access with a demonstrated need (laptops, research machines, etc.), and only through a separate AD account in order to minimize risk

8. Administrative Access to Active Directory: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for the Central Administrative Units, only the MiWorkspace Windows team has administrative (admin) access to Active Directory.

Service, Technology, or Process Gap:
Assuming blended support in at least some areas, without admin access to Active Directory, Unit IT providing research computing support in Academic and Research Units will not be able to meet the required response time and flexibility standards of support for those units. This would cause delays and be a serious impediment to research.
New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the following:
   a. The Project Team should create a process by which access privileges for different individuals are identified and granted.
   b. Provide delegated AD admin access to Unit IT research support staff. This will involve creating new OUs for Units/departments in order to have research machines segregated from “standard” machines and to enable iterative trial and error troubleshooting.

9. Shared-Use Active Directory and Admin Accounts: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for the Central Administrative Units, the current windows service does not support shared-use accounts.

Service, Technology, or Process Gap:
Assuming blended support in some of the areas where shared-use accounts are required, there is no gap if recommendation G is met - there would be a gap if Unit IT did not have AD admin access though, because MiWorkspace does not fully support/manage shared-use accounts.

Shared-use Active Directory accounts are currently used extensively in research labs and other environments, for a variety of reasons:
   ● Most commonly, machines are shared by multiple people to run experiments and gather data. If data ends up in multiple user profiles, it is not accessible by others.
   ● If the screensaver comes on and locks the machine after a user logs in with their own account but then leaves the lab, others cannot unlock it.
Both of these problems cause significant problems in the Academic and Research Environment.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the following:

MiWorkspace should officially support shared-use Active Directory accounts and shared use Admin Accounts as defined by IIA.

10. MiWorkspace Windows Virtual Machines: Priority 1 (Must Have)
Existing Service/Component Description:
There is currently no MiWorkspace Windows Virtual Machine within MiWorkspace for the Central Administrative Units.

Service, Technology, or Process Gap:
Windows Virtual Machines are currently used extensively in Academic and Research Units.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the Project Team build an officially-supported MiWorkspace Windows Virtual Machine. Ideally the VM would be cross-platform compatible (e.g., Virtualbox) so it could be moved from a Mac to a Linux machine for example.5

5 This recommendation is distinct from #17 (Zero-Client Virtual Desktops), which refers to a Virtual Desktop Infrastructure (VDI).
11. **MiWorkspace Windows Virtual Machines: Priority 1 (Must Have)**

**Existing Service/Component Description:**
There is currently no MiWorkspace Windows Virtual Machine within MiWorkspace for the Central Administrative Units.

**Service, Technology, or Process Gap:**
Windows Virtual Machines are currently used extensively in Academic and Research Units.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the Project Team provide an automated way to deploy the Windows VM to workstations (one-click install results in the VM engine plus an instance of the VM being pushed to the workstation).

12. **Means to Deliver MiWorkspace Features and Services to non-SCCM Machines: Priority 1 (Must Have)**

**Existing Service/Component Description:**
Within MiWorkspace for the Central Administrative Units, the MiWorkspace Windows features and services (such as software push) are currently only available to machines built with the MiWorkspace SCCM service.

**Service, Technology, or Process Gap:**
Within the Academic and Research Environment, there are a variety of reasons why a machine might not be able to take the MiWorkspace SCCM build: one-off drivers not included in SCCM, hardware model not supported, older OS needed, etc. Those machines would still benefit from inclusion in the AD domain, as well as the other MiWorkspace Windows features, such as software push. It takes considerable effort and time to hand-install or update software on machines not connected to SCCM. If MiWorkspace is not available to non-MiWorkspace machines, there is a danger that Academic and Research Units would end up deploying their own.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the Project Team create a “SCCM light” package that can be applied to non-MiWorkspace machines, which connects AD/SCCM and enables MiWorkspace software installs and updates. Such a package currently exists in the LSA WLMS implementation.

13. **Limit Significant Changes During an Academic Semester to the PC Computing Service if They Negatively Impact Teaching and Learning: Priority 1 (Must Have)**

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, the project team can make changes to the MiWorkspace PC image at any time during the academic semester.

**Service, Technology, or Process Gap:**
The current MiWorkspace PC management process does not support a freeze on the desktop. In Academic and Research Units, large, unexpected or unscheduled changes will cause issues for faculty during the academic semester.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team recognize the critical times of the year within the academic calendar; and in particular, consider an infrastructure
lockdown and not make significant structural changes to the PC or add new features which would negatively impact teaching and learning, but allow routine maintenance or systematic updates of applications and the operating system to occur as normal and which do not negatively impact the teaching and learning computing environment.

14. MiWorkspace Support for Older Operating System Versions: Priority 1 (Must Have)
Existing Service/Component Description:
The Windows build in MiWorkspace for the Central Administrative Units supports n and n-1 Operating System (OS) versions.

Service, Technology, or Process Gap:
In the Academic and Research Environment, there are many instances where older versions of an OS are required. This is often due to mission-specific/research-specific hardware connections or drivers; or due to older software that does not run on newer versions of the OS. Currently many research machines still need to run on Windows XP; that would represents n-3.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the Project Team create a way to maintain basic support for much older OS versions, even though the infrastructure may only support back to n-1 for the OS build.

15. Alternate Windows settings that cannot be customized by users: Priority 1 (Must Have)
Existing Service/Component Description:
The Windows build in MiWorkspace for the Central Administrative Units has specific default settings in the Windows build. These include: power settings, reboot/restarts due to updates, etc. These settings are also customizable by the user.

Service, Technology, or Process Gap:
In the Academic and Research Environment, some computers in labs and teaching spaces require different settings for power, scheduled updates, and reboots, etc. than the default. In addition, the research or teaching environment require these settings not be changeable by the users. Examples of such situations include research environments where a reboot could interrupt an experiment or shared computers where one user changing settings would negatively affect all other users.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Windows Team develop some standard GPOs that block reboots, prevent machines from going to sleep, etc. Those could then be applied easily to groups of machines when needed. (The specific GPO requirements could be developed in collaboration with units at a later date.)

16. Dual Boot Machines: Priority 1 (Must Have)
Existing Service/Component Description
MiWorkspace for the Central Administrative Units does not support dual boot (Linux/Windows, Mac/Windows).

Service, Technology, or Process Gap:
In the Academic and Research Environment, many lecture room computers and computer classrooms are dual boot Mac/Windows, and lab computers are dual boot Linux/Windows.
In these cases it is necessary to boot up in a particular OS in order to perform work; as opposed to booting into a Virtual Machine, which is not sufficient. Some individual Linux and Mac users in the Academic and Research Environment have this need, as well.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team provide a mechanism by which the MiWorkspace Windows build can be applied to a Mac (bootcamp) or a Linux machine.

**17. Zero-Client Virtual Desktops: Priority 2 (Nice to Have)**

**Existing Service/Component Description**
MiWorkspace for the Central Administrative Units does not support zero-client virtual desktops or thin clients.

**Service, Technology, or Process Gap:**
Some academic units depend significantly on zero-client virtual desktops and would not be able to transition to MiWorkspace if zero-client virtual desktops were not available.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team provide a mechanism by which the infrastructure and service can support zero-client virtual desktops and Thin Client Desktops.  

**18. Imaging Service: Priority 2 (Nice to Have)**

**Existing Service/Component Description**
Within MiWorkspace for the Central Administrative Units, the current windows service does not provide a machine imaging service.

**Service, Technology, or Process Gap:**
Academic and Research Units would greatly benefit from a mechanism by which machines could be imaged so that they can be taken back to their original state quickly when needed (vendor provided/supported for example, or teaching labs where downtime needs to be minimized and the load set is heavily customized).

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group believes it would be helpful if the MiWorkspace Project Team created a method to ensure backup and restore. This might include:

- Create a machine imaging service,
- Provide storage for images, and
- Ideally, allow for multiple methods to recover the image (network, manual, etc.).

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While this recommendation is identified as Priority 2: “Nice to Have”, the steering group recognizes different schools and colleges have different priorities and needs. For the School of Information, for example, this recommendation is critical for adoption and success.
C. MiWorkspace Macs

The MiWorkspace Service for Macintosh Computer, Izzy, provides a management platform for Macintosh computers including OS updates, application delivery and patching, some OS configuration, printer installation, and some log management. Izzy was developed by the College of LSA and is being implemented as the Mac platform management tool for MiWorkspace. Most of the Izzy Service in the Central Administrative Units can be used directly in the Academic and Research Environment. Several schools and colleges have requested faster adoption of the Izzy Service before the rest of MiWorkspace is available. The following recommendations aim to shape the service such that it is even more usable and useful in the Academic and Research Environment.

1. Access to storage resources like AFS or NFS from a Mac configured for non-uniqname users: Priority 1 (Must Have)

Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, the current process for assigning UID’s to Mac users has several potential problems and could result in a lack of access to some critical centrally provisioned services. Some academic units currently have UID’s assigned in such a way that they could become inconsistent with the centrally managed UID’s used to provision services, such as shared storage.

In particular, within MiWorkspace for Central Administrative Units, all uniqname users are assigned a UID by Protection (PT) Server in ITS at account creation. That UID is synced to MCommunity and then synced from there to Active Directory (AD). When a Mac is bound to either MCommunity or AD, the computer can use that UID attribute to meet the mandatory account requirement that exists for login and to access other posix based resources such as AFS and NFS. Non-uniqname users (those that exist in AD only), such as departmental shared accounts and Neighborhood IT admin accounts, do not have the UID attribute populated and therefore cannot login to an AD bound Mac unless the computer is configured to generate a “local” UID for all users who login. This local UID does not match the institutionally assigned one and therefore cannot be used to access storage resources like AFS or NFS from a Mac configured this way. Currently, MiWorkspace computers are configured to generate a “local” UID for all users to accommodate login of uniqname and non-uniqname accounts alike.

Service, Technology, or Process Gap:
Use of a locally generated UID prevents users from access to storage resources like AFS or NFS from MiWorkspace Macs.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team devise a mechanism to implement consistent, non-colliding UIDs that will function with all provisioned file services including NFS and Value Storage while still allowing the both uniqname and non-uniqname accounts to login.

2. Active Directory Groups to Manage Access to Specific Machines: Priority 1 (Must Have)

Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, any Active Directory (AD) account can authenticate to a MiWorkspace Mac.

Service, Technology, or Process Gap:
Many Macs contain sensitive information (e.g. student grades, homework assignments, or exam questions) and/or regulated or restricted data (e.g. ITAR or other controlled data). Allowing anyone...
with an AD account to login to Macs is a security risk and a potential violation of data management requirements, agreements, and/or regulations. Managed authentication is a requirement for data management agreements and is often defined in required data management plans.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that MiWorkspace Macs must adopt a strategy for using AD groups to manage access to specific machines, similar to what is accomplished with MiWorkspace Windows machines.

**3. Limit Significant Changes During an Academic Semester to the Mac Computing Service if They Negatively Impact Teaching and Learning: Priority 1 (Must Have)**

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, the project team can make changes to the MiWorkspace Macs image at any time during the academic semester.

**Service, Technology, or Process Gap:**
The current MiWorkspace Mac management process does not support a freeze on the desktop. In Academic and Research Units, large, unexpected or unscheduled changes will cause issues for faculty during the academic semester.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team recognize the critical times of the year within the academic calendar; and in particular, consider an infrastructure lockdown and not make significant structural changes to the Macs or add new features which would negatively impact teaching and learning, but allow routine maintenance or systematic updates of applications and the operating system to occur as normal and which do not negatively impact the teaching and learning computing environment.

**D. MiWorkspace Storage**

The goal of the MiWorkspace Storage solution is to make storage more manageable and more usable. It is recognized that people currently use a variety of storage types, so the focus is to provide traditional departmental and user storage. MiWorkspace Storage will provide unlimited departmental and user space starting at 5GB.

**1. Access to a Universal Home Drive Space: Priority 1 (Must Have)**

**Existing Service/Component Description:**
Within MiWorkspace for the Central Administrative Units, MiWorkspace Storage does not accommodate a universal home drive for faculty and staff appointed to multiple units.

**Service, Technology, or Process Gap:**
Within the Academic and Research Environment, it is problematic for faculty and staff to maintain multiple home drives, thus causing confusion to the person roaming and creates a difficult situation to support. Multiple home drives also creates additional overhead to manage.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Storage service provide all staff and faculty with a universal home drives that can be accessed anywhere regardless of the unit location.
2. HIPAA, ITAR, FERPA Requirements for Storage: Priority 1 (Must Have)
   Existing Service/Component Description:
   The current Central Administrative Unit version of the MiWorkspace Storage service is not currently compliant in HIPAA, ITAR, FERPA requirements.

   Service, Technology, or Process Gap:
   A large number of units in the Academic and Research Environment require data which crosses multiple areas of security compliance such as: HIPAA, ITAR, and FERPA. For that reason, storage cannot be compliant in just a single category.

   New Service Requirement/Proposal to Fill Gap:
   The EUC/MiWorkspace Steering Group recommends MiWorkspace Storage meet all HIPAA/ITAR/FERPA compliance requirements. If MiWorkspace Storage is compliant in one category, it should provide universal compliance in all categories.

3. VPN Access to MiWorkspace Storage: Priority 1 (Must Have)
   Existing Service/Component Description:
   The MiWorkspace storage service for Central Administrative Units does not currently allow home computers to connect directly to MiWorkspace Storage, as outside computers connecting directly to MiWorkspace Storage creates an insecure environment

   Service, Technology, or Process Gap:
   Faculty, staff, and graduate students in Academic and Research Units have no boundaries to where they complete their research and work. They need to be able to connect personal computers from home (or any place around the world) directly to MiWorkspace Storage while maintaining a secure environment.

   New Service Requirement/Proposal to Fill Gap:
   The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Storage project allow UM users needing to connect to MiWorkspace Storage with home computers, laptops, or personal machines to access MiWorkspace Storage via VPN from anywhere.

E. MiWorkspace Network

The MiWorkspace Network solution within the Central Administrative Units provides a consistent and stable network. The goal is to reduce complexity and cost while improving stability and performance. In most cases, there will not be any major changes in service or user experience when a unit moves to MiWorkspace.

1. Scope of ITCOM Networking Services: Priority 1 (Must Have)
   Existing Service/Component Description:
   Within the Central Administrative Unit version of MiWorkspace, units are expected to fund upgrades, new networking equipment, and hardware lifecycle; and ITCOM assists with the design and implementation.

   Service, Technology, or Process Gap:
   Many Academic and Research Units currently struggle to maintain and update network equipment and infrastructure. Many Academic and Research Units are unable to purchase new networking infrastructures, keep their equipment lifecycles up to date, or pay for the Service Agreement (SA). In
addition, many Academic and Research Units do not have sufficient staff expertise to make networking recommendations.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that ITCOM provide a full unified service that provides an unified network inclusive of recommendations, maintenance, updates, service and technical expertise to all units across campus.

**2. VLAN/DHCP Issues: Priority 1 (Must Have)**
**Existing Service/Component Description:**
Within the Central Administrative Unit version of MiWorkspace, Proteus (BlueCat) only allows a machine to be registered on one network at any given time.

**Service, Technology, or Process Gap:**
In the Academic and Research Units, Unit IT staff and other technicians currently work on a machine in a building that is different from the machine's home location. The technician either has to VLAN ports with the appropriate network or unregister/register the machine, both of which are time consuming and inefficient.

Similarly, supporting multiple departments in one building would mean two separate VLANs. In the future, Neighborhood IT would need to have knowledge and understanding of the VLAN'ed ports in order to support multiple departments or buildings. If the MiWorkspace machines would all be on the same network, Neighborhood IT and Unit IT would need to coordinate on how non-MiWorkspace machines are included in the network design.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that ITCOM and/or the project team develop a plan to address these issues. Solutions might include flattening the network for all departments supported by a single IT group or to not have registered DHCP.

**3. Maintenance and Upgrade Schedules for Switch OS: Priority 1 (Must Have)**
**Existing Service/Component Descriptions:**
Within the Central Administrative Unit version of MiWorkspace, individual units are responsible for scheduling OS upgrades on the switches, firewalls and access point configurations. If this maintenance is not scheduled proactively, ITCOM will address any issues or problems as they arise.

**Service, Technology, or Process Gap:**
Many Academic and Research Units currently struggle to maintain and update network equipment and infrastructure, as they do not have sufficient staff expertise to make recommendations or determinations as to when updates are needed.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that ITCOM develops a service in which they set a schedule for all maintenance and OS upgrades, and then work with the units to accomplish proactively according to an agreed upon timeframe.
4. Wireless: Priority 1 (Must Have)

Existing Service/Component Description:
Within the Central Administrative Unit version of MiWorkspace, MiWorkspace Network relies on the existing wireless provided by the local unit or ITCOM. Wireless is inconsistent across units and varies significantly from building to building or even within buildings.

Service, Technology, or Process Gap:
In discussions with campus constituencies, faculty, students, and staff consistently raised the lack of wireless or problems with wireless as one of the top problems with campus IT. Faculty members have complained of the lack of wireless in faculty and administrative offices. In addition, not all classrooms or labs on campus are configured for wireless capability.

If classrooms do not have wireless capabilities, the faculty are unable to deliver technology-based lectures or teaching/learning experiences, and students are unable to access cloud-based resources or applications. Also, as more faculty move regularly between buildings -- either due to multi-disciplinary appointments or due to increased scheduling of classes into another unit’s classrooms, inconsistent wireless negatively impacts their ability to communicate, collaborate, or fulfill fundamental duties of research and teaching.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends a consistent wireless infrastructure needs to be offered to ensure seamless ubiquitous access to the Internet. This includes the following:
- All classrooms and everywhere on campus must offer wireless capabilities. At a minimum, a consistent wireless infrastructure needs to be provided across campus.
- Wireless support could be handled separately from when the unit takes on MiWorkspace services, thus allowing resolution to the number of classrooms and offices that currently do not have wireless capabilities.
- Faculty and students must have a consistent and common means of accessing wireless regardless of campus location.
- If current infrastructure is sufficient and lack of access is determined to be user error, a significant communication and support campaign should be implemented to help faculty/staff and students gain access to the appropriate wireless networks, whether using a MiWorkspace supported device or BYOD.

F. Software and Software Lifecycle Management

The MiWorkspace Service provides software to the end users and manages software updates as part of the MiWorkspace image. The following recommendations focus on access to appropriate software for faculty and staff in the Academic and Research Units, as well as the processes used to identify software needs and deliver software to the machines.

1. Discovery Tool and Implementation Process: Priority 1 (Must Have)

Existing Service/Component Description:
Within the current iteration of MiWorkspace within the Central Administrative Units, the software lifecycle starts with the Discovery Tool. The Discovery Tool is currently designed to be downloaded and run by the user of the migrating computer, the results being added to a central database. These results can then be shared with the unit for a final determination before the load configuration is created.
Service, Technology, or Process Gap:
The Discovery Tool, however, is not able to detect all software that may be installed. Additionally, some software may involve processes such as requesting or re-entering activation codes or a return and retrieval of floating licenses. Versions of some packages may no longer be available and require substitution/adjustment.

Faculty, depending on the migration timing and their commitments and priorities, may not respond in a timely manner. A GPO based Discovery Tool may work for some additional cases but does not solve the problem of undetectable software and remains problematic for faculty whose machines, often laptops, are either not in AD, are not normally on a University network (e.g. off-campus), or are not Windows.

New Service Requirement/Proposal to Fill Gap:
There needs to be tight coordination and discussion among Unit IT, MiWorkspace, and the end user during Discovery, both in promoting/providing and interpreting results.

2. User Requests for Software: Priority 1 (Must Have)
Existing Service/Component Description:
In the implementation phase of the current iteration of MiWorkspace within the Central Administrative Units, users may request software (Run State User Request).

Service, Technology, or Process Gap:
Units remain responsible for funding and often, for specialized applications, acquisition and functional ownership of software, which isn’t provided as a Common Good. Units also make strategic and tactical decisions in order to maintain a diverse yet sustainable, integrated, and scalable software environment as needs and capabilities change. Units also provide SME advice on functionality.

New Service Requirement/Proposal to Fill Gap:
The selection and approval process for software must run through designated approvers in the unit; a mechanism needs to be in place to establish this process, which can vary unit by unit. Whether implemented as a software portal, where units determine which applications they wish to have available, or as a direct referral from a user request this has both financial and strategic implications.

3. Review Software Profile and Pathway to Software Rationalization: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, the current process involves re-installation of all existing software.

Service, Technology, or Process Gap:
Some software may be outdated, no longer available, out of compliance, or otherwise unable to be replaced. There is already an effort to work with units to suggest alternatives for some pieces. Looking ahead, with some consolidation/replacement work already required as part of this process, it may be useful to consider a broader rationalization at this time rather than again, later, as part of a second campus effort.

New Service Requirement/Proposal to Fill Gap:
Units are currently offered the opportunity to review Discovery results. This option should be formalized and required, so that units can review their holdings against the accumulated Project data and consider consolidating applications and versions. This would require the Project to develop a rolling software
profile, as data was collected across campus, and to be able to identify standard application/version offerings. Units would still need to make specific decisions. Application and version changes, regardless, because of their effect on the user, are likely to add some time to the process.

Charge to project: collect information, provide the information to the units, have discussion with units about the options, units need to make decision, units may have budgetary reasons why they can’t make all rationalization changes now, but it gives them a path forward this is the logical time to do that.

4. Updates for Lab Installation (Class Labs/Computer Classrooms, Open Labs): Priority 2 (Nice to Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, the current practice for updating lab environments (Class Labs/Computer Classrooms and Open Labs) is similar to a Sites system, with 1-2 week package/deploy timeline.

Service, Technology, or Process Gap:
Academic environments often require a faster change cycle, depending on faculty demand.

New Service Requirement/Proposal to Fill Gap:
A solution for best effort for quick (1-2 day) installation to groups of machines needs to be available. This solution, following the VIP discussion regarding faculty, must also be available to them.

5. ITAM: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, ITAM is not currently a part of MiWorkspace.

Service, Technology, or Process Gap:
Many units in the Academic and Research Environment currently rely significantly on ITAM to provide software.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends units, that purchase software through ITAM or have software provided through other licensing arrangements, must be able to retain that relationship after migration.

6. Ability to Turn Off Forced Software Updates: Priority 1 (Must Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, updates (colloquially referred to as “Friday Updates”) occur automatically. Currently, there is no method on Windows machines, by which to stop or prevent automatic updates, if they’re connected to the network.

Service, Technology, or Process Gap:
In the Academic and Research Environment, faculty, students and research staff, often engage in long-running processes (calculations, renderings, analyses, etc.). In these cases, particularly in research areas, a forced update/reboot could cause substantial work to be lost.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team create a process by which to managing this.
The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team examine their processes closely and discuss these needs during the Discovery Process when they examine other EUS sections.

G. MiWorkspace Hardware

MiWorkspace Hardware is provided to Central Administrative Units through the MiWorkspace Depot Service. The Depot provides six MiWorkspace Technology Packages to Central Administrative Units: a PC and Mac option for a Standard Desktop, a PC and Mac option for the Standard Laptop, and a PC and Mac option for a "Light Weight Laptop". For more detail on the MiWorkspace Technology Packages, please see https://docs.google.com/a/umich.edu/spreadsheet/ccc?key=0AtcKGe5MOdCXdEttdjkzSGhHTk4U0UxY0FxdlJN Rnc#gid=4. (Also available in Appendix 7.)

The MiWorkspace Depot Service also provides the following services

- Daily Build Operations
  - New staff/ departing staff/ equipment end of life
  - Hardware break/fix
  - Equipment loans
  - Coordination with Neighborhood IT
- Printing Deployment and Operations
  - Support MiPrint migration and deployment
  - Hardware break/fix for MiWorkspace printers
  - Supply chain for Tier 1 customers
- Evening Migration Build Team
  - Sser data/state backup and restore
  - Imaging rebuilds
  - Deploy replacement device
- Day 1 Support for Roll Out Process
  - Provide “MiWorkspace Coaches”
- Sites Rover IT Team
  - Support unstaffed Campus Computing Sites

1. MiWorkspace Equipment Loans: Priority 1 (Must Have)

Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, the MiWorkspace service provides short-term hardware loans to cover hardware failures or emergencies, as needed.

Service, Technology, or Process Gap:
The current service does not provide for intermediate or long-term loans. In the Academic and Research Environment, however, longer-term loans are often necessary. Examples include:

- Faculty members in some units only have a single desktop computer provided by their departments. When they travel overseas, do research off campus, or go on sabbatical they currently borrow secure laptops from their local units.
- Visiting scholars currently receive a semester-long loan from a unit or department.
- Academic units often need groups of laptops for meetings, training sessions, orientation sessions, and outreach activities, but do not use them often enough to warrant outright purchase. The consequence for academic units that do purchase laptops for sporadic events, is that they have often have a large number of laptops sitting unused for a majority of the year.
There is, therefore, a clear need within the Academic and Research Environment, for secure, hardened computers available for loan for longer periods of time.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Depot Service expand the hardware loan time frame in order to accommodate longer loan periods and meet the broader loan needs of Academic and Research Units.

The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Depot Service also accommodate loan requests from local units in the Academic and Research Environment, as well as loan requests from unit faculty, unit staff, and Neighborhood IT staff. More specifically, the MiWorkspace Depot Service should create a system in which Academic and Research Units that already maintain their own collections of circulating equipment (instruments, video equipment, audio equipment, media, etc.) also have access to MiWorkspace supported loaner equipment to circulate as they see fit.

**2. MiWorkspace Purchasing Assistance: Priority 2 (Nice to Have)**
**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, MiWorkspace provides purchasing assistance to individuals or units.

**Service, Technology, or Process Gap:**
In the Academic and Research Environment, units and departments currently do their own planning and budgeting for hardware. They will continue to do so after the MiWorkspace service is implemented the unit. In order to plan appropriately, the Academic and Research Units and their departments will need detailed financial information from MiWorkspace as they plan annual budgets.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team develop a mechanism to coordinate purchasing between the service, the recipient, and the budgetary authority.

**3. MiWorkspace Purchasing Assistance: Priority 2 (Nice to Have)**
**Existing Service/Component Description:**
Currently, Central Administrative Units choose hardware from a limited list of “approved” MiWorkspace hardware.

**Service, Technology, or Process Gap:**
In the Academic and Research Environment, while some faculty have unique equipment needs, a large number of faculty and staff don’t realize recommended equipment can sufficiently fulfill their computing requirements. They would benefit from labeling-conventions and descriptions, which target their needs, such as “recommended faculty travel laptop.”

Some faculty and researchers, however, do require non-standard machines from a non-MiWorkspace vendor (Sony, Lenovo, etc.). This might include, the faculty member who needs a laptop with both onboard HDMI and an internal optical drive. If faculty feel official University services do not offer the equipment they require, they will go outside the service to find the specific equipment they want.
New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team identify during the Discovery Process faculty needs for computers for teaching and research in order to determine what equipment should be included on the approved hardware list.

The EUC/MiWorkspace Steering Group also recommends MiWorkspace Project Team evaluate information gathered during the Discovery Process in order to evaluate whether a larger variety of HP and Apple configurations are needed in order to minimize the number of non-preferred vendor purchases.

The EUC/MiWorkspace Steering Group recommends a robust feedback loop in which Academic and Research Units are able to communicate hardware needs as they evolve and change.

The EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team coordinate with Procurement to analyze requests for hardware exceptions and unique cases requiring an outside vendor. This analysis could provide important feedback to MiWorkspace on how they may want to expand equipment included in MiWorkspace.

4. MiWorkspace Purchasing Assistance: Priority 2 (Nice to Have)
Existing Service/Component Description:
Within the Central Administrative iteration of MiWorkspace, MiWorkspace provides purchasing assistance for MiWorkspace machines.

New Service Requirement/Proposal to Fill Gap:
IT staff in Academic and Research Units currently provide deeper services and assist faculty and researchers purchase and support computers and related equipment regardless of vendor or model.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends MiWorkspace acknowledge, that the need for non-standard equipment exists for some faculty members and researchers, and also provide basic MiWorkspace services (software, network, security) to these faculty with non-standard equipment, just as MiWorkspace would provide those services to any machine on campus (e.g., BYOD).

5. Tracking non-MiWorkspace hardware in ServiceLink: Priority 1 (Must Have)
Existing Service/Component Description:
Within the Central Administrative iteration of MiWorkspace, hardware inventory data will be available as part of the ServiceLink project

Service, Technology, or Process Gap:
MiWorkspace hardware will be tracked in ServiceLink, but not all equipment used in the Academic and Research Environment will be MiWorkspace equipment. If units are not able to access ServiceLink inventory tracking systems, there is an increased likelihood they will manage those items separately themselves, thereby creating a situation in which there are multiple inventory locations and systems.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that Academic and Research Units be supported as they track inventory and non-MiWorkspace hardware in ServiceLink, if they choose to do so.
6. Hardware inventory system does not track important departmental purchasing data: Priority 1 (Must Have)

Existing Service/Component Description:
Within the Central Administrative iteration of MiWorkspace, hardware inventory data will be available as part of the Service Link project.

Service, Technology, or Process Gap:
Units will be responsible for purchasing replacement hardware under the MiWorkspace service. To make responsible decisions and maximize the usefulness of data, Academic and Research Units may need unit-specific fields to track information significant to the unit (e.g., purchase date, funding source, primary use of the hardware, funding from multiple departments or research accounts, etc.).

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends MiWorkspace create a process in which units are able to request custom fields common to all units and/or allow units to add custom fields to their inventory data. MiWorkspace may wish to work with staff in Academic and Research Unit to identify which fields would be most useful.

7. Leverage knowledge to improve purchasing power: Priority 2 (Nice to Have)

Existing Service/Component Description:
Within the Central Administrative iteration of MiWorkspace, hardware inventory data for the majority of the University will be available as part of the MiWorkspace project. The MiWorkspace Hardware Service will acquire and deploy replacement computers.

Service, Technology, or Process Gap:
University purchasing contracts with HP and Apple depend on the prediction of future needs in order to establish volume discount pricing. The needed data is gathered quarterly from units and colleges on a “volunteer” basis, and the data gathered is only a small percentage of the actual need. MiWorkspace management will eventually be in a position to recommend the needed hardware, know the quantities required, and orchestrate the upgrade cycles of the vast majority of the hardware in use at the university.

New Service Requirement/Proposal to Fill Gap:
The MiWorkspace Hardware Service should partner with Purchasing to create an aggregated purchasing service and thus maximize purchasing power.

H. MiServer / MiDatabase

MiWorkspace is a consumer of the separate MiServer/MiDatabase service. Service can be purchased anytime and independent of MiWorkspace deployment. After thorough review of the service and examination of unit requirements, there are no major concerns regarding the technology or gaps in process regarding the MiServer/MiDatabase itself. The EUC/MiWorkspace Steering Group provides the following recommendations to improve the experience of the end users in the Academic and Research Environment.

1. Inherent Bundling of MiServer/MiDatabase with MiWorkspace: Priority 1 (Must Have)

It is unclear, however, why migration of unit servers to MiServer are inherently included in the MiWorkspace discovery discussions, since MiServer/MiDatabase is a separate service. For many units, addressing MiServer/MiDatabase issues concurrently with the MiWorkspace transition will complicate the discovery process and could potentially delay unit migration to MiWorkspace. Since MiServer/MiDatabase is an independent service, they do not inherently need to happen simultaneously.
New Service Requirement/Proposal to Fill Gap:

The EUC/MiWorkspace Steering Group recommends that individual units decide when and if transition to MiServer/MiDatabase will be bundled with the transition to MiWorkspace or whether they pursue a transition on a separate time frame more suited to unit needs.

The EUC/MiWorkspace Steering Group also recommends that during the Discovery Process, Academic and Research Units undertake discussions with the MiWorkspace team regarding continued access to servers and other server services despite workforce changes.

2. Response Times for MiServer/MiDatabase: Priority 1 (Must Have)

EUC/MiWorkspace Steering Group members have found that provisioning of servers and databases within the MiServer/MiDatabase service has taken what is felt by many as an extraordinary long time. Requested task completion times often range between days and weeks, while the same tasks would take local units minutes and hours within their own infrastructures.

New Service Requirement/Proposal to Fill Gap:

If the MiServer/MiDatabase services are, indeed, to be part of the MiWorkspace rollout, the EUC/MiWorkspace Steering Group recommends sufficient resources be dedicated to resolving current delays. In addition, the EUC/MiWorkspace Steering Group recommends that service expectations for MiServer/MiDatabase response time match those of MiWorkspace; that is, any MiServer/MiDatabase ticket/task should be resolved within the MiWorkspace stated four hour (high priority) resolution time.


Service, Technology, or Process Gap:

ITS has traditionally been slow in deploying and supporting new versions of managed Server Operating Systems. Such delays often cause units to build and run their own infrastructures in order to meet faculty research needs and remain on the cutting edge.

New Service Requirement/Proposal to Fill Gap:

In order to successfully encourage units to decommission their own systems in favor of managed MiServer/MiDatabase, the EUC/MiWorkspace Steering Group recommends that ITS managed MiServer/MiDatabase respond much more quickly to releases of new OS’s and provide a timetable (i.e. 3-, 6-, 9-months from initial OS release) for their support. There should be a clear ITS managed migration path from an unmanaged instance of MiServer to a managed instance.

4. Inclusion of Firewall Information: Priority 1 (Must Have)

Service, Technology, or Process Gap:

The form used to request a MiServer instance currently does not include a way for units to indicate which ports need to be open on the server. As this information is not included from the start, this requires follow-up discussions with numerous ITS entities which delays deployment of said server.

New Service Requirement/Proposal to Fill Gap:

The EUC/MiWorkspace Steering Group recommends that ITS MiServer/MiDatabase team adjust the request form to accept firewall rule information and address security requirements earlier in the process.
I. MiWorkspace Security

UM Information and Infrastructure Assurance (IIA) currently is an IT security partner for Academic and Research Units. When a unit adopts MiWorkspace, MiServer, MiDatabase, or some other shared service, IIA becomes that unit’s primary IT security service provider for the systems, services, policies and applications that ITS manages.

1. Firewalls: Priority 1 (Must Have)

   Existing Service/Component Description
   MiWorkspace (MiWorkspace) is a consumer of the security responsibilities of Information and Infrastructure Assurance (IIA). IIA recommends security settings on MiWorkspace machines, sets network security policies, and determines appropriate firewall systems to prevent intrusion.

   Service, Technology, or Process Gap:
   IIA proposes to discontinue support for the Campus Virtual Firewall in favor of an Intrusion Prevention System (IPS). While this does indeed provide enhanced security to the entire campus, there are still instances in the Academic and Research Environment, which require firewalls (either physical or virtual) in front of a unit’s networks. These include certain grants and/or research work contracts, which require firewalls be in place for unit networks. There are also units, which hold sensitive data, which must be firewall from campus. The IPS will not provide this protection.

   New Service Requirement/Proposal to Fill Gap:
   The EUC/MiWorkspace Steering Group recommends that IIA make efforts to understand the ongoing firewall (physical or virtual) needs of all Academic and Research Units prior to the rollout of MiWorkspace. IIA should then develop a plan to provide appropriate assistance or a common solution rather than letting a series of “one-off” solutions emerge.

J. MiWorkspace Roll-out: Day One User Experiences

The Roll-Out Process identifies the process by which MiWorkspace services are transitioned and transferred to a unit. The following recommendations focus on the Day One User Experience and focus on improving the Day One Experience for the faculty and staff in the Academic and Research Units.

1. Full backup prior to initial reload: Priority 1 (Must Have)

   Existing Service/Component Description:
   Within MiWorkspace for Central Administrative Units, customers are instructed to move their files into certain locations on their hard drives and to ensure they have no more than 60 GB of files in those locations before their computers are initially reloaded with a MiWorkspace image. For Central Administrative Units, the migration process only backs up standard places/folders on the users’ machines.

   Service, Technology, or Process Gap:
   Many faculty and graduate students in Academic and Research Units do not back-up their data and many store data in non-standard locations. In addition, IT support staff know from experience that faculty and graduate students often do not remember or are unable to articulate where those files are stored. Furthermore, there are a number of machines in shared computing labs that may have important data stored on them; but due to their shared nature, no single individual knows all locations where data may be stored.
It is common practice in academic and research units for Unit IT staff to backup all files on a faculty member’s computer before it is reloaded. Some faculty will have difficulty getting under the 60 GB limit, and attempting to do so will require too much of their time and effort. Others will not know where everything is stored on their computers. The risk of missing an important file is unacceptable.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends the Project Team create a process by which specific users and machines are identified for full back-up during the migration process. While most staff and certain faculty may be able to follow the migration process as in the Central Administrative Units, many faculty and most lab machines need to be fully backed up.

The EUC/MiWorkspace Steering Group recommends that for those individuals at greatest risk, the Project Team consider providing a complete snapshot of the data/image of the drive or following some other protocol to ensure maximum protection for faculty data.

The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team run a full backup of the contents of a hard drive before overwriting it with a MiWorkspace image. These backups should be secured and kept for thirty days. Files in locations identified by the customer should be restored after the reload, regardless of size.

An alternative might be to install a new hard drive (HDD) that would be the recipient of the MiWorkspace build, while keeping the original drive untouched (either kept on a shelf, given to the user, or installed as the secondary drive on the machine, to be wiped/used at some point in the future). If that process were followed, the unit would cover the cost of the hard drives or other costs.

Minimally, the MiWorkspace Project Team should work with the units to identify the faculty and researchers at greatest risk during the Discovery Process.

2. *Drop off locations for computer reloads: Priority 1 (Must Have)*

**Existing Service/Component Description:**
Within MiWorkspace for Central Administrative Units, at the end of the day prior to their migration customers are instructed to leave their computers in their offices with the office doors unlocked. The night team picks up the computer, reloads it, and returns it prior to the start of the next business day.

**Service, Technology, or Process Gap:**
Some offices in academic and research units are adjacent the publically-accessible areas which are used overnight, so leaving office doors unlocked presents an unacceptable theft risk. Other locations are restricted and require background checks or safety training prior to entry.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team develop a process whereby customers, or IT staff acting as proxies for customers, can drop off computers for reload and then return to pick them up. Drop off locations would be staffed to ensure the security of the computers and would be convenient to the customers in the migrating unit.
3. Involvement of desktop support staff in “Day 1” activities: Priority 1 (Must Have)

Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, there are separate teams responsible for reloading computers, initial configuration tasks, and verification that each customer is up and running in their MiWorkspace environment on “Day 1”.

Service, Technology, or Process Gap:
Even after Unit IT desktop support staff transition to Neighborhood IT, they will remain in their former unit and will retain their trust relationship with and sense of responsibility for their customers. They will view it as their duty to follow up with each customer and make sure that everyone is able to be productive in the new system, which will be duplicate work.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team train and equip the Neighborhood IT staff in a unit to work with the deployment team as active participants in the “Day 1” customer assistance activities in their unit.

4. More Flexible Approach to Scheduling: Priority 1 (Must Have)

Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, a unit or a subunit is scheduled to move to MiWorkspace all at once. When scheduling issues arise, individual moves are requeued at the end of the previously established migration calendar. It is expected that units will be completed within a set time frame and that the transition team will be able to close out one unit and move on to another.

Service, Technology, or Process Gap:
In academic and research units, it is not uncommon for individual faculty to be traveling on business, on sabbatical, on intergovernmental service assignments, or otherwise unavailable during a short time window.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team anticipate that this will be the case for deployments to academic and research units and adopt a more flexible approach to scheduling deployments. Such an approach will need to accommodate outstanding punch list items for weeks or months without considering such delays as negatives.

5. Option to Defer Reload Until Computer Replacement: Priority 1 (Must Have)

Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, computers are reloaded during the unit’s regular deployment window.

Service, Technology, or Process Gap:
In academic and research units, computers are used as tools on projects spanning years and cannot be reconfigured in the middle of the project without affecting the schedule and possibly the results of the project. In addition, some faculty members heavily customize their computers in order to streamline their productivity. Requiring a set schedule for reloading their computer and forcing them to reconfigure it again would negatively and significantly impact their productivity until they are able to restore their working environment.
New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team accommodate these realities of academic life by giving faculty the option not to have their current computer reloaded with a MiWorkspace image when their unit first migrates to MiWorkspace. Instead, the team should track these self-managed computers and be prepared to load the replacement computer with a MiWorkspace image whenever the existing computer comes up for replacement at the end of its normal life cycle, even if that may not occur until two or three years from now.

6. Password Syncing Campaign: Priority 2 (Nice to Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, one of the pre-migration steps for everyone in a transitioning unit is to sync their authentication passwords via the password changing web page at https://accounts.itcs.umich.edu/password/.

Service, Technology, or Process Gap:
It has been more than a year since having synced passwords became recommended practice on campus. For some units not transitioning until late 2014, it will be at least another year before they are required to do so for MiWorkspace purposes.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that ITS conduct a communications campaign in the fall of 2013 to promote university-wide password syncing best practices in order to separate this action from the direct MiWorkspace deployment preparation activities that each migrating individual must undertake.

7. Option for Role-Based Deployment Scheduling: Priority 2 (Nice to Have)
Existing Service/Component Description:
Within MiWorkspace for Central Administrative Units, deployment within a unit takes place to everyone in the unit at the same time, regardless of their role.

Service, Technology, or Process Gap:
In academic and research units, it is not uncommon for staff to experience technology and other changes before faculty do. This approach allows unit-level transition issues to be identified and addressed before busy faculty are impacted. It also allows support staff to gain familiarity with a new procedure or service so that they are better able to support their faculty during the faculty members’ own transitions.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team support and offer the option for units to deploy MiWorkspace to their staff as a group first, then to their faculty as a group second. Units also would decide if staff who provide direct support to faculty would migrate with the staff group or with the faculty group.

K. The MiWorkspace Discovery Process
The Discovery Process is the process by which the MiWorkspace Project Team collects considerable detailed information about the unit as they prepare to transition from unit based IT services to MiWorkspace.
1. Pre-Workforce Transition/Pre-Discovery Information Gathering: Priority 1 (Must Have)

The Discovery Process for MiWorkspace in the Central Administrative Units currently begins with information collection at the 11-week mark. The detailed discovery portion of the Discovery Process is scheduled to be completed over a 2-week period beginning at approximately week 8. The discovery portion of the process includes in-person meetings with each of the MiWorkspace technical leads and unit technical experts; many times related technologies discovery activities happening concurrently. Within the Academic and Research Environment, many academic units are comprised of multiple different user communities, departments, subunits, labs, etc. Detailed discovery for all elements of the MiWorkspace service - networking, printing, storage, security, end user computing - will need to be completed for each of these separate entities within the unit. It is unlikely that this can be accomplished within a two week period given the sheer number of these divisions and considering the same MiWorkspace technical leads and unit technical experts may be involved in multiple detailed discoveries. However, as MiWorkspace has begun to work with some of the larger Central administrative units, they are experiencing challenges with the timetable for conducting the detailed discovery. As a result they are working on possible solutions to ensure they gather all critical information with creating untenable lengthy delays (e.g. possibility of defining user roles/profiles that may span more than one of the different user communities, departments, subunits, labs, etc.). We have the opportunity for the EUC/MiWorkspace Steering Group to establish a partnership with the MiWorkspace Discovery Teams to build a model that will better serve both the MiWorkspace project and the academic units during the detailed discovery process.

Service, Technology, or Process Gap:

Representatives from a number of schools and colleges expressed concern regarding the order of the Workforce Transition occurring prior to the MiWorkspace Discovery Process. They felt the detailed information necessary for comprehensive and accurate discussions regarding adequate workforce levels for an Academic and Research unit would not be available for consideration, if a detailed, deliberate cataloguing of services provided in a unit and the staffing resources necessary to provide those services had not been completed. Many units felt they would not have the amount of detailed information without a formal information gathering process, such as that of the MiWorkspace Discovery Process.

New Service Requirement/Proposal to Fill Gap:

The EUC/MiWorkspace Steering Group recommends that MiWorkspace information gathering tools, detailed Discovery Questionnaires, templates and processes be shared with all Academic and Research Units as soon as possible, so that they might begin to collect relevant information for the Workforce Transition Discussions, as well as for the Discovery Process. This Pre-Workforce Transition/Pre-Discovery information gathering could align all parties within a unit as to which applications, services, etc. would be best migrated to MiWorkspace and which would be best supported by Unit IT staff. That Pre-Workforce Transition/ Pre-Discovery information, along with the information gathered about individual staff as part of the Workforce Transition planning, would enable units to better plan migrations of staff to MiWorkspace and ensure the best possible outcome for overall support in each unit and for the MiWorkspace service.

The EUC/MiWorkspace Steering Group also recommends that the MiWorkspace Project Team and Discovery Teams share accumulated wisdom and information among units, in order to help other units tune their analyses, identify common needs, and find synergies, which might benefit from collaboration.
2. Order of Discovery and Workforce Transition: Priority 2 (Nice to Have)

Existing Service/Component Description:
Due to limitations of time and the need for expedited transition, the current MiWorkspace deployment schedule calls for all workforce transition planning and migration to be made in advance of the discovery process.

Service, Technology, or Process Gap:
Migration of staff prior to discovery would not benefit from the detailed, deliberate cataloguing of services provided in a unit and the staffing resources necessary to provide the services.

New Service Requirement/Proposal to Fill Gap:
The discovery process should take place in academic units prior to or at least in concert with workforce transition planning. The discovery process will bring all parties into agreement about which applications, services, etc. are best migrated to MiWorkspace and which would be best supported by Unit IT staff. The information from the discovery process, along with the information gathered about individual staff as part of the workforce transition planning, will enable units to better plan migrations of staff to MiWorkspace and ensure the best possible outcome for overall support in each unit and for the MiWorkspace service.

3. Mission Specific Responsibilities and Filling Orphan Gaps: Priority 1 (Must Have)

Existing Service/Component Description:
The current model for Workforce planning and migration is based on the practice of staff being assigned 100% to either ITS or to the unit. When a staff member has a small percentage of job responsibility dedicated to a unique or critical task, MiWorkspace takes on “orphan tasks” in the cases in which it is determined that moving a staff member fully to ITS is most appropriate. In other cases, the unit (or ITS) has determined it is best to keep the staff member with specialized mission-critical skills within the unit and, therefore, not move to ITS.

Service, Technology, or Process Gap:
In many Academic and Research Units—particularly, in smaller units—IT staff are responsible for a variety of tasks — some of those tasks fall within the scope of MiWorkspace and some are outside the scope of MiWorkspace. In many Academic and Research Units, there are staff who have a small percentage of job responsibility dedicated to a unique or critical task tied closely to the Academic or Research Mission of the unit. In the Central Administrative Units, MiWorkspace took on those specialized or mission-critical tasks, as the larger portion of the staff member’s duties were most appropriately transferred to MiWorkspace. Within the Academic and Research Units, however, assigning the staff to either ITS or the unit may not be in the best interest of either unit. Academic and Research Units would be uncomfortable with moving research/mission-critical activities to MiWorkspace. Similarly, smaller units, in particular, would find it difficult to reassign the “orphan“ and out of scope tasks to remaining unit staff simply because there are not enough knowledgeable staff left behind. Thus, schools would be forced to hire replacement staff (sacrificing the financial benefits of MiWorkspace) or sacrifice support for mission critical and research critical activities.

New Service Requirement/Proposal to Fill Gap:
The EUC/MiWorkspace Steering Group recommends that the MiWorkspace Project Team, Unit Leaders in the schools and colleges, and University IT Leadership consider, on a case-by-case basis, creative and alternative shared staffing opportunities in order to meet mission-critical needs, while maintaining the benefits of the MiWorkspace campus initiative. This might include:
• “Hybrid” staffing where a position may be shared between the unit and ITS. A negotiated % allocation depending on amount of “out of scope” tasks.
• Retaining IT staff in the unit and have that staff use the MiWorkspace infrastructure for improved efficiency and stay aligned with MiWorkspace
• Encourage units with similar mission critical needs in close proximity to each other to create a local shared staffing group to focus on shared needs.
• Encourage campus units to contract for services provided by another unit -- the Center of Excellence Model.

L. The MiWorkspace Neighborhood IT Model

The MiWorkspace Neighborhood IT service is comprised of the desktop support staff in ITS. These staff will be grouped into and managed by geographic regions of campus. Initially, these staff will be unit-based desktop support staff who will transition into ITS during their units’ MiWorkspace discovery and deployment processes. The Neighborhood IT service is described as follows:

“Local Support Experts (Neighborhood IT) – Subscribers to MiWorkspace will be able to rely on the continuity of a familiar, locally-based support technician to rapidly answer questions and provide personalized support. The support technician, while locally-based, will be part of the ITS organization in its role as a shared service provider for MiWorkspace. MiWorkspace Local Support experts will have access to extensive expertise such as shared best practices, expanded knowledge base, and advanced technical engineering.”

The EUC/MiWorkspace Steering Group acknowledges the thoughtful effort which has been put into the development of the Neighborhood IT service. While some of the service level and support model issues noted earlier in this report do touch on aspects of the Neighborhood IT service, the steering group does not believe that the Neighborhood IT service itself as defined has any large service delivery gaps which would need to be remediated in order for the service to be successfully deployed to academic and research units. Our main concerns center around the need to develop and maintain strong working relationships between the transitioned Neighborhood IT staff and the retained Unit IT staff in order to most efficiently meet the support requirements of each and every customer regardless of who they happen to approach for assistance.

The EUC/MiWorkspace Steering Group offers the following recommendations for consideration with the expectation that meeting them will lead to a more successful Neighborhood IT desktop support service deployment and ongoing service delivery across campus. All of these recommendations have been determined to be Priority 1 (Must Have).

1. Information sharing and incident handoff between Neighborhood IT and Unit IT

The EUC/MiWorkspace Steering Group recommends Neighborhood IT leadership and unit leadership jointly and explicitly define the connection and handoff points between Neighborhood IT staff and Unit IT staff during the MiWorkspace discovery process for each unit. The steering group anticipates that in the majority of cases Neighborhood IT staff will handle all general desktop support tasks, while specialist Unit IT staff will be responsible for mission-unique systems and services. The steering group also recognize the demarcation between these two groups may vary on a unit-by-unit basis. In addition, as discussed elsewhere in this report, certain circumstances may call for a blended service approach, in

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7 This approach is already in practice in the Schools of Public Health and Kinesiology sharing a facilities manager.
8 This approach is also already in practice in certain circumstances; for example, LSA Instructional Support Services provides classroom technology support in UMMA teaching and learning spaces.
which Unit IT staff collaborate with and work closely with MiWorkspace staff to provide MiWorkspace services together. In those circumstances, it will be critical to clearly define during the Discovery Process who is responsible for which tasks, under what conditions collaboration is called for, and which handoff points should exist between Neighborhood IT staff and Unit IT staff.

The EUC/MiWorkspace Steering Group recommends that appropriate Unit IT staff be provided with access to and training on the ServiceLink incident management system so they are able to receive and respond to incident tickets in their areas of specialization from Neighborhood IT staff and from the Service Center.

The EUC/MiWorkspace Steering Group recommends that Neighborhood IT staff and Unit IT staff working near each other meet regularly and share information so they each have a clear understanding of the other's services and can direct faculty to the other group when appropriate.

2. Transitioning from an organizational model to a geographic model
Unit IT staff who are transferred to Neighborhood IT will remain in their current office locations for some period after their unit’s initial deployment of MiWorkspace. Over time, the intent of Neighborhood IT leadership is to form more geographically-based teams. If the Neighborhood IT staff within a geographic neighborhood are consolidated into a single, remote-to-most customers team location, then they will no longer be “local” support experts - they will lose their close connections and relationships with the departments/faculty.

The EUC/MiWorkspace Steering Group recommends that no changes be made to Neighborhood IT staff office locations for at least six months after a unit’s initial MiWorkspace deployment, in order to give transitioning staff an opportunity to focus on the new processes and procedures they will be using without simultaneously experiencing the disruption of an office move.9

After that time, the steering group recommends that Neighborhood IT leadership work closely with units to identify appropriate locations for the Neighborhood IT staff, as faculty members expect someone to be in close proximity so they are able to have a face to face conversations regarding their IT needs.

3. Unit involvement in Neighborhood IT personnel decisions
The first MiWorkspace Neighborhood IT staff in a geographic area will be staff transitioning from units. These initial staff members previously have developed close working relationships with the faculty, students and staff in their units. In the future, as normal staff turnover occurs, Neighborhood IT will be hiring new staff to work in these roles.

The EUC/MiWorkspace Steering Group recommends that MiWorkspace involve unit faculty and staff, as well as Unit IT, in the hiring process for geographically relevant Neighborhood IT positions. Customer participation in the identification, hiring, and orientation / training of nearby Neighborhood IT staff will go a long way to ensure that Neighborhood IT staff will be compatible with the cultures and needs of the faculty, staff and students in a particular neighborhood. It will also foster open communication and better customer satisfaction.

9 The steering group recommends at least 6 months, but the length of time an office should remain in its original location is likely to vary significantly from unit to unit. In addition, the time of year within the academic calendar will be critical in this determination. The most appropriate length of time should be determined during the Discovery Process--some units may be able to move faster, others may take longer.
Starting with the MiWorkspace deployment to a unit and beyond, the steering group also recommends that Neighborhood IT management consult with geographically proximate unit leadership when conducting normal periodic evaluations of Neighborhood IT staff. This would give the units being served an opportunity to provide input on annual and other performance reviews, as well as merit and retitling decisions.

4. Retaining access to expertise

Some Unit IT staff members who will transition to Neighborhood IT have developed and possess subject matter expertise in specific support areas relevant for their units. They may be experts in widely used applications such as Excel or Qualtrics, or with software titles, which are more specific to particular disciplines. This acquired deep knowledge is a valuable resource to customers, as well as to the institution. All efforts should be made to retain these talents and encourage staff to use and share those talents, rather than ignoring staff members’ special skills and placing them in positions in which those talents are unnecessary.

The EUC/MiWorkspace Steering Group recommend that Neighborhood IT develop a means of recording the subject matter expertise and special talents that these staff members have and then work with the Service Center to develop a mechanism to route helpdesk requests requiring specific expertise to those individuals most capable of providing assistance.\(^{10}\)

The EUC/MiWorkspace Steering Group also recommend that Neighborhood IT management encourage and support continuing professional development for Neighborhood IT staff who are interested in furthering their support knowledge and skill development to the benefit of their customers.

5. Customer satisfaction

Neighborhood IT staff members providing MiWorkspace services have the potential to improve the consistency, efficiency and quality of desktop support across campus. However, the implementation of standardized processes throughout units, which had previously customized their support models to their specific circumstances, also has the potential to result in customer dissatisfaction relative to previous experiences.

The EUC/MiWorkspace Steering Group recommends that Neighborhood IT leadership share neighborhood-by-neighborhood reporting information on customer satisfaction metrics and support ratios with unit leadership and across schools/colleges on a monthly basis.

The EUC/MiWorkspace Steering Group also recommends that Neighborhood IT leadership put in place and communicate a standard escalation process for unit leadership to follow when normal procedures are not satisfying customer needs. A well-defined path to resolution will help considerably if and when conflicts arise.

\(^{10}\) The steering group recognizes the identification of skills is particularly challenging, as most of the data on subject matter expertise and special talents tend to be based on self-reporting, which can potentially be less than accurate. This information would be extremely useful, however, as it would allow ITS to use people’s existing talents and would provide a greater community of staff who can address issues as they arise (“easy handoff”).
M. MiWorkspace Manage Your Own Devices [Also known as Bring Your Own Device (BYOD)]

Personal mobile devices are now ubiquitous on the UM campus. UM faculty, students and staff expect they will be able to interact and work seamlessly with their mobile devices on campus and off. Bring Your Own Device (BYOD) access, security, and other issues are, therefore, critical for MiWorkspace to address. For the purposes of this document, BYOD refers to all devices purchased with non-UM funds including phones, tablets and computers.

1. **BYOD Access to the network, collaboration tools, and departmental drives: Priority 1 (Must Have)**

   **Existing Service/Component Description:**
   Within MiWorkspace for Central Administrative Units, the service provides support to connect both personal and U-M-owned mobile devices to the U-M network. Selecting, purchasing, and learning to use devices, or finding specific U-M resources remain the responsibility of individuals or, when business need requires it, of the unit. Enhanced support is provided for executive leadership and units that currently support mobile devices.

   **Service, Technology, or Process Gap:**
   Within the Academic and Research Environment, most of the features of the MiWorkspace service for Central Administrative Units will be sufficient to connect both personal and U-M-owned mobile devices to the U-M network. Selecting, purchasing, and learning to use devices can easily remain the responsibility of students and many staff members, as long as sufficient self-help U-M resources are available.

   **New Service Requirement/Proposal to Fill Gap:**
   The EUC/MiWorkspace Steering Group recommends that MiWorkspace support connecting personal devices to the campus wireless network and assist faculty and staff to configure the devices for use with standard U-M collaboration tools (email, calendar, M+Box) and access home and shared drives. In addition to online documentation and phone support available to all, MiWorkspace support should include hands-on support by Neighborhood IT minimally for faculty and other VIPs, if not for all staff and graduate students.

2. **Printing from Personal Mobile Devices: Priority 2 (Nice to Have)**

   **Existing Service/Component Description:**
   The MiWorkspace service for Central Administrative Units does not currently support printing from personal mobile devices.

   **Service, Technology, or Process Gap:**
   Within the Academic and Research Environment, BYOD users -- faculty, students, and staff -- would all find it extremely useful to be able to print to MiWorkspace managed printers. Such an enhancement would enhance collaboration and improve productivity.

   **New Service Requirement/Proposal to Fill Gap:**
   The EUC/MiWorkspace Steering Group recommends that MiWorkspace provide a way for non-managed, personally-owned devices to print to MiWorkspace managed printers to which the user is eligible to print.
3. **BYOD Security: Priority 1 (Must Have)**

**Existing Service/Component Description:**
IIA provides guidelines for personal mobile device security on their website at:
http://www.safecomputing.umich.edu/MDS/

**Service, Technology, or Process Gap:**
While Staff in Central Administrative Units have had some needs in this area, faculty are much more likely to travel with private devices that contain research or other sensitive data. MiWorkspace BYOD security will be a considerably larger issue in the Academic and Research Environment.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that Help Desk and Neighborhood IT need to be prepared to advise users and set up devices according to the recommendations of IIA taking the sensitivity of data into account.

When MiWorkspace staff provide support for personally-owned devices, they should take the opportunity to educate the users about mobile device security and advocate that they follow best practices as defined by IIA.

4. **BYOD Student Support: Priority 1 (Must Have)**

**Existing Service/Component Description:**
The existing service does not include support for providing and installing unit specific software for students.

**Service, Technology, or Process Gap:**
A number of Unit IT groups currently provide controlled access to unit specific software, create install scripts, run IT orientation sessions, and provide direct assistance to students (undergraduate, as well as graduate). Their work ensures every student who walks in on the first day of class is prepared to start the academic work of the course. This is critical to the academic mission.

**New Service Requirement/Proposal to Fill Gap:**
The EUC/MiWorkspace Steering Group recommends that MiWorkspace provide mechanisms to make unit-provided licensed software available to ensure that students are appropriately prepared before classes start, in addition to all of the other BYOD services discussed above. The EUC/MiWorkspace Steering Group also recommends discussion during the Discovery Process to determine on a case by case basis whether additional services and student support is best provided by MiWorkspace Neighborhood IT, Unit IT, or through a blended approach.

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**Part VI: Process and Services to Advance Research, Teaching and Learning, and Administrative Support in the Academic and Research Environment**

As the current iteration of the MiWorkspace Service has been developed for Central Administrative Units, several major areas of technology and support must be added in order to meet the needs of research, teaching and learning, and administrative support in the Academic and Research Environment. Below are recommendations of the EUC/MiWorkspace Steering Group for Linux Computing, Classroom Computing, and Research Computing. The specific recommendations are integrated within the discussion and appear in **bold**.
A. MiWorkspace Linux Recommendations

As a primarily academic and research oriented operating system, Linux-based computing did not appear in the Central Administration iteration of MiWorkspace. Linux is, therefore, addressed as an entirely new item, rather than as a modification. The campus Linux user community and their requirements are also significantly different from the common usage models for the Windows and Mac platforms. The EUC MiWorkspace Steering Group and the MiWorkspace Project Team recognized the nature of the Linux service would be very different than for the other platforms. The EUC MiWorkspace Steering Group and the MiWorkspace Project Team launched a joint End User Computing Linux project, with members from both groups, to investigate the issues associated with Linux use on campus, identify centralized resources that would be most valuable to the campus Linux community, set priorities, and develop an initial product.

From this valuable work, the End User Computing Linux project group determined there was insufficient interest at this time in a fully managed MiWorkspace Linux service analogous to the Windows and Mac services to justify the resources necessary to develop such a service. The EUC/MiWorkspace Steering Group therefore does not recommend the creation of a fully managed MiWorkspace Linux service.

From their research, however, the Linux project group did identify a significant set of common Linux needs, on which the EUC/MiWorkspace Steering Group recommends the MiWorkspace Linux project team focus their efforts to develop easily deployable Linux packages to meet the Linux needs most common to the campus. The initial set consists of the following items:

- Identification, authorization, and authentication (Kerberos/MCommunity, Active Directory)
- Group authorization (needed from MCommunity and/or Active Directory)
- Printing (MPrint)
- Storage access
- Enhanced security (2-factor authentication)
- Backup (CrashPlan)
- VPN access
- MWireless access

The EUC/MiWorkspace Steering Group recommends, in order to provide the maximum initial benefit to academic and research Linux users, the End User Computing Linux project team will focus, for the first phase of the project, on the design and build of the above eight packages for the current Ubuntu Long Term Support distribution, while maintaining as much flexibility as possible so that campus Linux users who must use other distributions may also benefit. As there is strong interest in the campus Linux community to have support for both Ubuntu and Red Hat Enterprise Linux distributions, the EUC/MiWorkspace Steering Group recommends that the Linux project team also fully support Red Hat Enterprise Linux at the earliest reasonable opportunity. The EUC/MiWorkspace Steering group also acknowledges the importance of the existing support for Red Hat Enterprise Linux that LSA IT provides. This LSA service should remain available to the rest of the campus until the ITS Linux project team has full support for Red Hat Enterprise Linux. If LSA chooses to discontinue their Red Hat Enterprise Linux service, then ITS should pick it up.

For more details see the End User Computing Linux Project Charge Document (Appendix 8). The EUC/MiWorkspace Steering Group recommends proceeding with the Linux project plan as currently defined.
B. MiWorkspace Classroom Computing Recommendations

As a central aspect of the instructional mission of undergraduate and graduate education at the University of Michigan, classroom computing is critical in the UM Academic and Research Environment. While Central Administrative Units have a large number of conference rooms and training rooms, conference rooms and administrative training rooms do not have the unique requirements that the teaching and learning spaces in UM schools and colleges have. Moreover, the unique requirements for classroom computers and classroom computing do not currently appear in the Central Administration iteration of MiWorkspace. Classroom computing is therefore addressed as an entirely new item, rather than as a modification.

In alignment with the goals to create a cohesive coherent and efficient service that allows faculty, researchers, graduate students, undergraduate students, and staff teach without unnecessary encumbrances, cross institutional and physical borders on campus, innovate, and access new tools and resources, the EUC/MiWorkspace Steering Group acknowledges a potential long-term benefit of engaging University leaders to discuss and evaluate the possibility of a more consolidated approach to other aspects of classroom design and support. This initiative could allow for greater coordination among schools, colleges, and campus leaders to implement more systematic approaches to learning technologies, audio-visual systems, furniture, lighting and audio controls, writing surfaces, and other requirements to bring all UM teaching spaces up to appropriate levels appropriate to the UM teaching and learning mission.

However, due to unit-specific and field-specific approaches to the design and implementation of teaching and learning spaces, and complexity of the multiple areas of responsibilities (facilities, IT, AV, media production, teaching and learning support), as well as the degree to which field-specific instruction and specialty services are intertwined with classroom services in the instructional realm, a far-reaching consolidated campus classroom support initiative is beyond the scope of MiWorkspace in its current form.

In addition, the absolutely critically required consistency in classroom support and special events services for 50 weeks out of each year inherently limits the amount of experimentation and iterative evolution a service may undergo. While administrative staff and even some researchers can wait as glitches and problems are identified and resolved, lost class-time is lost forever and will not be tolerated by tuition-paying students or the faculty charged with teaching them. The EUC/MiWorkspace Steering Group, therefore, recommends that MiWorkspace focus on the fundamental commodity IT services necessary in UM classrooms, for which MiWorkspace will be most readily prepared to support quickly and successfully. These common commodity services include:

- Lectern / Podium Computers in 110-Classrooms
- Student computers in computer classrooms (typically, 210- and 220-class labs/computer classrooms)
- Ethernet connections in all teaching spaces
- Wireless throughout the entire campus
- Software access to students, faculty, and staff
- Mobile Devices / BYOD (faculty, students and guests)

This narrow approach meets the requirements of the initial charge, in which the MiWorkspace service is expected to provide the technology foundation for technology-enabled instruction, while enabling unit resources to focus on providing faculty with specialized, mission-differentiating technologies and unit-specific services.

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11 MiClassrooms, perhaps.
1. Teaching and Learning Spaces
UM teaching and learning spaces vary widely from college to college and school to school, as requirements of specialized fields demand. In order to ensure success of the MiWorkspace project, the steering group recommends focusing primarily on classrooms in which there is the greatest need for consistent experience for users -- that is the set of classrooms in which faculty from different schools and colleges will most likely teach. These are the “110 Classrooms” in the Space Survey, which are already subject to Provost’s Office mandates for shared scheduling and utilization. As of Spring 2013, there are currently 532 “110 Classrooms” on campus (see Table 11 below).


<table>
<thead>
<tr>
<th>Table 11: “110 Classrooms” in Schools and Colleges across UM</th>
<th>Number of Classrooms (“110 Classrooms”)</th>
<th>% of campus classroom pool</th>
<th>Number of Seats in Classroom (rmstationcnt)</th>
<th>% of campus rmstationcnt pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Alfred Taubman CA&amp;UP</td>
<td>8</td>
<td>1.50%</td>
<td>460</td>
<td>1.57%</td>
</tr>
<tr>
<td>Acad Affairs &amp; Public Goods</td>
<td>2</td>
<td>0.38%</td>
<td>215</td>
<td>0.74%</td>
</tr>
<tr>
<td>Academic &amp; Budget Affairs</td>
<td>1</td>
<td>0.19%</td>
<td>10</td>
<td>0.03%</td>
</tr>
<tr>
<td>Academic &amp; Educational Affairs</td>
<td>5</td>
<td>0.94%</td>
<td>149</td>
<td>0.51%</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>52</td>
<td>9.77%</td>
<td>3,311</td>
<td>11.34%</td>
</tr>
<tr>
<td>College of Literature, Science, &amp; the Arts</td>
<td>279</td>
<td>52.44%</td>
<td>13,533</td>
<td>46.33%</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>3</td>
<td>0.56%</td>
<td>282</td>
<td>0.97%</td>
</tr>
<tr>
<td>Ford School of Public Policy</td>
<td>5</td>
<td>0.94%</td>
<td>402</td>
<td>1.38%</td>
</tr>
<tr>
<td>Institute for Social Research</td>
<td>1</td>
<td>0.19%</td>
<td>24</td>
<td>0.08%</td>
</tr>
<tr>
<td>Intercollegiate Athletics</td>
<td>3</td>
<td>0.56%</td>
<td>84</td>
<td>0.29%</td>
</tr>
<tr>
<td>Law School</td>
<td>20</td>
<td>3.76%</td>
<td>1,579</td>
<td>5.41%</td>
</tr>
<tr>
<td>Medical School</td>
<td>19</td>
<td>3.57%</td>
<td>1,580</td>
<td>5.41%</td>
</tr>
<tr>
<td>Ross School of Business</td>
<td>26</td>
<td>4.89%</td>
<td>2,170</td>
<td>7.43%</td>
</tr>
<tr>
<td>School of Dentistry</td>
<td>11</td>
<td>2.07%</td>
<td>899</td>
<td>3.08%</td>
</tr>
<tr>
<td>School of Education</td>
<td>14</td>
<td>2.63%</td>
<td>666</td>
<td>2.28%</td>
</tr>
<tr>
<td>School of Information</td>
<td>5</td>
<td>0.94%</td>
<td>267</td>
<td>0.91%</td>
</tr>
<tr>
<td>School of Kinesiology</td>
<td>6</td>
<td>1.13%</td>
<td>261</td>
<td>0.89%</td>
</tr>
<tr>
<td>School of Music</td>
<td>18</td>
<td>3.38%</td>
<td>998</td>
<td>3.42%</td>
</tr>
<tr>
<td>School of Natural Resources and Env</td>
<td>9</td>
<td>1.69%</td>
<td>477</td>
<td>1.63%</td>
</tr>
<tr>
<td>School of Nursing</td>
<td>10</td>
<td>1.88%</td>
<td>261</td>
<td>0.89%</td>
</tr>
<tr>
<td>School of Public Health</td>
<td>21</td>
<td>3.95%</td>
<td>1,191</td>
<td>4.08%</td>
</tr>
<tr>
<td>School of Social Work</td>
<td>9</td>
<td>1.69%</td>
<td>302</td>
<td>1.03%</td>
</tr>
</tbody>
</table>
If one were to ask faculty and students about classrooms, however, their definition is likely to include other teaching spaces, as well. Many teaching labs and computer classrooms (210 teaching labs and 220 open labs) as well as some conference rooms (350 conference rooms) are often considered classrooms. The degree to which 210, 220, and 350 spaces would be appropriate recipients of MiWorkspace services and support will vary significantly from school to school and from department to department. For the fastest and most successful implementation, the EUC/MiWorkspace Steering Group recommends MiWorkspace start their initial pilot with the computers in podiums in 110 classrooms, and through the Discovery Process evaluate on a case by case, unit by unit, basis whether computers in some 210 class labs, 220 open labs, and 350 conference rooms could be included in the initial rollout.

While more and more faculty and students are bringing laptops to class (which would benefit from the recommendations in the Mobile Devices and Bring Your Own Device (BYOD) section elsewhere in this document), computers in classroom podiums / lecterns are still expected in many teaching spaces on campus for the time being. The computers in podiums / lecterns in 110 classrooms across UM schools and colleges tend to be PC-Windows (53.282%), Macs (6.564%) and Dual Boot machines. The EUC/MiWorkspace Steering Group does not anticipate many significant differences in the MiWorkspace lectern/portal computers from other machines in the Academic and Research Environment, but there are a number of technical requirements and service requirements, which are absolutely critical to success in the teaching and learning spaces. The EUC/MiWorkspace Steering Group, therefore, recommends the following technical requirements be included in the MiWorkspace Classroom Computing Service:

2. Technical Requirements for Podium Computers in 110 Classrooms
   1. Units must be able to choose the platform for podium computers: PC, Mac, and dual-boot options; as well as have the ability for users to connect their own laptops.
   2. The basic MiWorkspace build itself will be sufficient in 80-90% of the cases; however, some schools and colleges may have unit-specific or field-specific needs which either need to be identified and incorporated into the requirements for all classroom machines or the possibility needs to be created for the units to place an order with MiWorkspace to build the base and then allow Unit IT to layer whatever they need on top (a blended support model). The EUC/MiWorkspace Steering Group recommends the latter.
   3. Machines in classrooms are always in a known state
   4. Users receive a clean profile at login
   5. User files are deleted at logout or machine reboot
   6. Users receive access to resources based on identity and group membership
   7. The user profile may include some or all of the following customizations: browser bookmarks, desktop background, start menu / dock items, software specific preferences
   8. Machines should not prompt users for first launch configuration of software, prompt for license codes, etc.
   9. Machines support dual head display and revert to standard configuration of Mirrored at logout
   10. Ability to target software deployment to specific locations
   11. Machines are optimized for quick login (faculty preference: 15 seconds desirable; 30 seconds tolerated; never longer than 1 minute)
   12. Machines do not lock for a minimum of 50 minutes of idle time (length of time could change unit to unit)
13. Machines are on (not sleeping) during class hours
14. Machines must be able to be deployed ready-to-use within targeted windows (i.e.: overnight, during recesses, etc.)
15. Machines must be configured to support performance requirements for special use software (SPSS, Matlab, FinalCut, etc.)
16. Ability to connect unit-specific peripherals, other hardware, or unit-specific systems (lecture capture equipment, clickers, wireless projection, video conferencing, video recording/streaming, other control systems)
17. Some machines need to support shared users, guest logins, and/or auto login. As this will vary from unit to unit or from teaching space to teaching space, support staff will need to enable or disable this capability on a per-device basis. If one state is the default, the other state should be easily implemented.
18. Courses may not be interrupted for software updates, security patches, or anything else. All Ann Arbor Campus updates should take place between the hours of 3am-6am. In the event of an extreme emergency, updates must occur at a specifically identified time—giving faculty at least two hours email/text notice or other means in order to contact faculty personally and provide alternatives to prevent failure of classes.
19. Old versions of software are never changed or are replaced in the middle of the semester without direct communication with faculty and agreement to transition plan, personal training, and, documentation. New software may be added but no changes to old versions mid-semester or even during the Fall / Winter Academic year. Major changes in software must have sufficient time to notify faculty and for support staff to provide training, documentation, assignment changes, and other syllabus adjustments. to the faculty and students.
20. There should be a mechanism by which faculty can request new software and in which faculty and other stakeholders are included in discussions as to whether/when new items are added and whether/when new versions replace old versions.
21. Must support native resolution, connector type, etc. for projectors, flat screens, and other equipment in classrooms
22. Hardware changes take place between terms – preferably between Spring & Summer Semesters or between Summer & Fall Semesters

3. Technical requirements for In-room Student Computers in 210 Class Labs/Computer Classrooms and 220 Open Labs
In addition to all of the technical requirements for podium computers in 110 classrooms listed above, the following requirements are critical for student computers in 210 and 220 class labs/computer classrooms and open labs:
1. Units must be able to request specific hardware and software for certain 210 and 220 class labs/computer classrooms and open labs: PC, Mac, and dual-boot options. Versions in these teaching spaces often are different from those in general teaching and learning spaces (110 classrooms and SITES computer labs).
2. Units must be able to place an order with MiWorkspace to build the base and then allow the Unit IT group to layer whatever they need on top of the base in order to accommodate teaching and learning needs in 210 and 220 class labs/computer classrooms and open labs. [A blended approach to support, as with 110 classrooms and other MiWorkspace computers.]
3. Units must be able to customize computers in class labs/computer classrooms and open labs: whether user files are deleted at logout or machine reboot, where files are stored, browser bookmarks, desktop background, start menu / dock items, software specific preferences, special datasets, etc.
4. Units must be able to request print solutions, which are limited to specific configurations of classrooms, with the ability to customize access to those printers (e.g., all students, only students enrolled in certain courses, or students from particular academic programs / concentrations / etc.)
4. Support Model Requirements for Podium Computers in 110 Classrooms and In-room Student Computers in 210 Class Labs/Computer Classrooms and 220 Open Labs

For the purposes of definition, users of classroom podium computers in 110 classrooms and student computers in 210 and 220 Class Labs/Computer Classrooms and Open Labs, include the following individuals:

- All regular faculty, staff, and students (graduate students and undergraduates)
- Visiting faculty, adjuncts, clinical faculty, visiting scholars, etc.
- VIPs (Deans, directors, department and area chairs, etc.)
- Unique degree students (Executive MBA, Part-time/Weekend MBA, etc.) and distance students (CIC Courseshare, Distance Ed Programs)
- Emeritus faculty
- Guests: speakers, recruiters, board members, special visitors, conference attendees, camps, outreach guests, etc.
- Continuing Education participants

There should be some mechanism for all of these individuals to have general access by Kerberos Login to podium/lectern computers in all 110 classrooms across campus. Guests and Continuing Ed participants may need additional mechanism to gain access, but everyone involved in the teaching and learning mission of the institution should be able to teach in any 110 classroom. Some units may need to require additional restrictions on the access to certain applications or resources; that would need to be determined during the Discovery Process.

Similarly, access to in-room student computers in 210 Class Labs/Computer Classrooms and 220 Open Labs may depend on specific units’ needs and requirements. Such information should be identified during discovery with each unit.

In 110 Classrooms, 210 Class Labs/Computer Classrooms, and 220 Open Labs Faculty and students should have access to all basic University software, as well as specialty software which the department or faculty in that unit require. This will be a critical point of discussion during the Discovery Process, as some units may require different software on different computers within a single 210 or 220 lab. Similarly, a unit may need to limit access to certain software to particular groups of students within a teaching space. The Project Team and Unit IT staff may also find that choices need to be made limiting software availability—either for improved functionality reducing conflicts or for pedagogical reasons. Wherever possible, those choices should be made by the unit faculty and driven by the instructional and research needs of the unit, not by MiWorkspace staff. When conflicts arise they should be brought to unit leadership and customer lead governance.

Classroom support and expectations for level of support in classrooms vary significantly across schools and colleges, and even across rooms within a particular School or College. For most schools and colleges, the current support staff will remain in place, until (if or when) a larger campus classroom initiative is sufficiently defined and resourced. Until a more comprehensive classroom support service is created, the current classroom support staff will be the primary point of contact for all users of the 110 classrooms and 210 / 220 class labs/computer classrooms and open labs. 4-HELP may be an available point of contact with fast and easy routing to the appropriate unit support staff for that particular location, and all support services must incorporate and share information with unit classroom support staff and neighborhood IT.

5. Service Expectations and Support Model for Classroom Computers

When unit classroom support staff identify a problem as being within the podium / lectern computer or with one of the in-room computers, unit support staff, faculty, or other users shall contact Neighborhood
MiWorkspace staff or other MiWorkspace staff available. The following service expectations hold for computers in 110 classrooms and 210 / 220 class labs and computer classrooms:

1. Classroom response within 5 minutes (in person)
2. Begin an informed diagnosis of any problem in computer within 10 minutes with temporary solution (for example, temporary replacement equipment) during that same class period.
3. Unless otherwise requested by the unit, there will be a suitable classroom resolution no longer than 1 hour for supported hardware and software (This includes, temporary solutions such as finding a new classroom or providing replacement gear, so that following classes are not negatively impacted.)
4. 50% incidents closed within 1 day; 100% closed within 3 days
5. 100% service requests responded back to requester in 24 hours
6. Installation of all hardware and software on date and time agreed upon with unit support staff (basic requests within 1 day; special classroom / academic requests within 3 days)
7. Classroom, Academic, and Library software requests and software loads sets must be in place no later than 1 week before the start of each semester
8. Faculty and unit support staff must be informed of any major changes a semester in advance
9. Physical onsite support available for Faculty, Staff, Students, and Special Events in 110 Classrooms and in most 210 and 220 computer labs and computer classrooms: Seven days per week; 7am-10pm.
10. 24x7 support for 210 and 220 computer labs and computer classrooms, as needed (determined during Discovery Process)
11. Network infrastructure, LAN and local network services support 24/7.

6. Staffing for Classroom Support for Small Units: Possible Cases of Orphan Services

In some Academic and Research Units and in some departments within Academic and Research Units, some IT staff are currently responsible for all basic classroom support in a small number of classrooms (IT, AV, facilities, instructional support, etc.) and special event support (guest speakers, conference support, other events) in addition to their IT duties. In these units, mission critical classroom support and special events support comprise a small percentage of IT staff members’ job responsibilities. The EUC/MiWorkspace Steering Group recommends that units identify (either through pre-discovery self-analysis or through the Discovery Process itself) and evaluate on a case by case, unit by unit basis what classroom support and special events tasks have the potential to become “orphan” services.

In the Central Administrative iteration of MiWorkspace, MiWorkspace took on certain specialized or mission-critical tasks, as the larger portion of the staff member’s duties were most appropriately transferred to MiWorkspace. Until (if or when) a more far-reaching campus classroom initiative is sufficiently defined and resourced, however, the “orphan” tasks of non-computing classroom support should be provided by campus units with existing expertise in classroom and special events support. The EUC/MiWorkspace Steering Group, therefore, recommends that the MiWorkspace Project Team, Unit Leaders in the schools and colleges, and University IT Leadership consider, on a case-by-case basis, creative and alternative shared staffing opportunities in order to meet mission-critical classroom support and special events needs, while maintaining the benefits of the MiWorkspace campus initiative. This might include:

- “Hybrid” staffing where a position may be shared between the unit and ITS, with a negotiated % allocation depending on amount of “out of scope” tasks.  
- Retaining IT staff in the unit and have that staff use the MiWorkspace infrastructure for improved efficiency and to stay aligned with MiWorkspace [A blended support model]

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12 This is not unprecedented: CEW, for example, has a staff member who transitioned to MiWorkspace, who through an addendum (no additional cost) will continue to do unit-specific work and support specialized software.
● Encourage units with similar mission-critical needs in close proximity to each other to create a local shared staffing group to focus on local classroom and special events support among the units (for example: between the Ross Business School and the Law School, or between the Taubman College of Architecture and Urban Planning and the Stamps School of Art & Design).13

● Encourage campus units to contract for services provided by another unit -- the Centers of Excellence Model (e.g., central campus units contracting support from LSA; north campus units contracting support from Engineering).14

7. Ethernet connections in UM Teaching and Learning Spaces
As wireless connections are still not ubiquitous on campus, and as some teaching and learning activities may overtax campus wireless systems (streaming full-feature length films, videoconferencing, etc.), a hard-wired Ethernet connection is necessary to conduct in-class activities expected by our faculty and students. The EUC/MiWorkspace Steering Group therefore recommends that all 110 Classrooms on campus must have at least one wired Ethernet connection to the internet -- either at a lectern/podium or elsewhere in the room to which an instructor can connect a laptop with a portable projector. At the very minimum, a service should be provided to easily identify and accurately track which 110 Classrooms have live Ethernet connections and which do not.

8. Wireless in UM Teaching and Learning Spaces
In presentations and discussions with stakeholders, the most commonly raised and most passionately argued issue was that of wireless access. Staff, students and faculty consistently complained about lack of wireless, insufficient wireless, inconsistent access to wireless, and lack of information about wireless access on campus. The EUC/MiWorkspace Steering Group strongly recommends that all 110 Classrooms, 210 class labs/computer classrooms, 220 open labs, and other teaching and learning spaces on campus be equipped with robust wireless capabilities. At a minimum, a robust wireless infrastructure needs to be provided across campus. When there are classrooms, teaching labs, offices, and other teaching and learning spaces without wireless capabilities, the faculty are unable to deliver a technology based lecture and students are not able to take advantage of cloud-based resources or applications. Also, as more and more faculty move between buildings and more classes are scheduled in other units’ spaces, consistent infrastructure must be available.

9. Software in UM Teaching and Learning Spaces
Another commonly raised issue among faculty and students concerns student access to University licensed software on personal devices. Faculty and students find the lack of access to critical software for students to use on their own laptops not only hinders learning and innovation, but also adds to increased costs. Moreover, students complain when their tuition does not cover the fundamental tools required in their fields of study. When students are not able to access software for their classes or for student research on their own laptops, units are obligated to continue to build expensive computer labs and then invest in staff and access-control systems to regulate access to the computer desktop stations outside of regular business hours when students do the majority of the work. The EUC/MiWorkspace Steering Group strongly recommends that BYOD access to software for faculty, students and guests be improved for easy access to and streamlined management of University licensed software on personal devices.

13 A current example of sharing staff between closely located units is the Facilities Manager shared between Public Health and Kinesiology.

14 This is currently in place between UMMA and LSA, in which LSA provides all support (in-class assistance, classroom IT, equipment maintenance, and engineering and design) for the UMMA classrooms and auditorium for classes and special events.
10. Bring Your Own Device (BYOD) in UM Teaching and Learning Spaces
Personal mobile devices are ubiquitous within the teaching and learning environment on the UM campus. UM faculty, students and staff expect they will be able to interact and work seamlessly with their mobile devices on campus and off in order to accomplish instructional activities on campus. Bring Your Own Device (BYOD) access, security, and other issues are, therefore, critical for MiWorkspace to address. In order to ensure success within the instructional and classroom computing environment, the EUC MiWorkspace Steering Group recommends the MiWorkspace Project Team address the BYOD recommendations discussed elsewhere in this document (BYOD access to network and collaboration tools, printing from personal mobile devices, security, and student support) for all personal devices including phones, tablets and computers.

C. Recommendations for MiWorkspace in the Research Environment

The original concept for the MiWorkspace Service did not include a component for the Research Environment. It had been thought that the MiWorkspace standard technology platform would not be applicable in many cases to specific research requirements such as data acquisition from scientific instruments, and that the service would be limited for when researchers accessed university and public-provided support administration systems such as e-research and the NIH. The EUC/MiWorkspace Steering Group identified several areas within the Research Environment, in which MiWorkspace services could be beneficial—namely, there were specific procedures, policies, and design features which could be oriented so as to provide maximum benefit to research computing users.

1. Uniform first point of contact for support: Priority 2 (Nice to Have)
The 4HELP contact should be capable of fully supporting research systems as an available point of contact. Appropriate procedures should be developed to allow 4HELP staff to quickly determine which requests need routing to other support resources (Neighborhood or Unit IT) and to route them accordingly. Procedures should be developed for the final solver of an issue to record the solution in ServiceLink for future use.

2. Machine acquisition: Priority 2 (Nice to Have)
Mechanisms should be in place for research users to take advantage of the MiWorkspace bulk computer purchases (competitive pricing, economies of scale, on-campus inventory), even for researchers who will not be using a MiWorkspace software load. More specifically, where it is possible to take advantage of bulk purchasing, that should be encouraged and facilitated, whether or not the users are participating in the other MiWorkspace services.

3. Flexible load set: Priority 1 (Must Have)
Mechanisms for choosing software load sets should be sufficiently flexible to allow research computing users to include or omit specific MiWorkspace software components on an item-by-item basis.

4. Support for dual boot configurations: Priority 1 (Must Have)
Some research applications require dual boot or multi-boot situations. Loadsets should be developed that will work in dual or multi-boot situations using the technologies employed to support single boot computer setups.

5. Develop a system for supporting research computers; specifically the computers controlling research data collection devices: Priority 2 (Nice to Have)
Many of the research device controlling computers require specific loadsets ranging from turnkey (no patching, no third party applications, no antivirus, no change in configuration other than by vendor), to systems that can be fully supported locally but the application install, configuration, and setup is difficult, time consuming, and involved. The current iteration MiWorkspace cannot support devices that cannot fully participate in the current
managed scheme and therefore those research computers must remain otherwise completely independent of
the management mechanisms used to support mainstream MiWorkspace computers.

The EUC/MiWorkspace Steering Group urges the MiWorkspace Project Team to develop mechanisms
appropriate to support highly specific research computer needs ranging from simple imaging and housing of said
image for restore, to fully managed systems implementing all MiWorkspace tools. The issues that must be
addressed are imaging or backup of fully configured research computers, a la carte implementations of the
MiWorkspace services and tools intended to support to the level that a given research computer and its
associated support agreements will allow. This also assumes the mechanism by which a “Blended Support”
model is possible and research-oriented Unit IT staff members can collaborate with MiWorkspace staff and are
able to access MiWorkspace resources. The EUC/MiWorkspace Steering Group also recommends the
MiWorkspace Project Team consider for these specific instances implementing a bare OS with no applications
installed allowing the computer to be focused solely on data collection.

6. Discovery process: Priority 1 (Must Have)
An efficient discovery process for units with research computing facilities will require the units to identify the
most knowledgeable technical contacts (Unit it staff, research faculty, lab managers, etc.) for each research
computing installation and involve these people in the discovery process to determine the most appropriate way
in which to handle each of these research computing installations.

7. Expanded hardware support: Priority 1 (Must Have)
The EUC/MiWorkspace Steering Group recommends that MiWorkspace acknowledge the need for non-standard
equipment does exist for some faculty members and researchers, and also provide basic MiWorkspace services
/software, network, security) to faculty with non-standard equipment, just as MiWorkspace would provide those
services to any other machine on campus (e.g., BYOD).

D. Additional Recommendations to Advance Research, Teaching and Learning, and Administrative
Support in the Academic and Research Environment

In addition to the specific recommendations above on the Linux, classroom computing, and research
environments, the EUC/MiWorkspace Steering Group presents the following comments and recommendations
to advance research, teaching and learning and provide the steering group’s perspective on several important
issues in the Academic and Research Environment.

1. Critical Components Available as Part of a Campus-Wide Service, not just in the MiWorkspace Service
The MiWorkspace effort has been an important and highly productive locus of IT innovation on the UM campus
as the MiWorkspace project team developed tools to support MiWorkspace services. A number of
MiWorkspace components would make the entire campus IT environment better if they were made available as
campus-wide services, and not just MiWorkspace services. Given the number of exceptional services created
as part of the MiWorkspace initiative, we should not miss this opportunity to transform the entire campus by
extending these commodities as far as possible and improving access to these services to units and individuals as
quickly as possible.

The EUC/MiWorkspace Steering Group recommends that the individual technology products behind the
MiWorkspace services be made available to the entire campus as stand-alone services. These services include:

• SCCM
• PaperCut
• Izzy
The primary benefit of having these particular services as stand-alone campus services is that units or individuals would still be able to benefit from the best commodity services for machines which are not MiWorkspace imaged machines -- the units could still take advantage of these particular services without having to develop and duplicate the services on their own.

Similarly, a number of units have been eager to access these particular services as soon as possible, before MiWorkspace was fully prepared to take on faculty, staff, and students into MiWorkspace; for example, Dentistry is interested in receiving MiWorkspace’s Izy Service for Macs as soon as possible, as it would allow them to encrypt laptops and gain HIPAA compliance. They are eager to receive that service now and gain benefit now, rather than waiting for MiWorkspace to be prepared to take on all aspects of the MiWorkspace Service for Dentistry. In addition, this would be an excellent example of how a blended approach to support would allow local IT staff to support a MiWorkspace product earlier in the adoption cycle.

2. Customer Satisfaction

The EUC/MiWorkspace Steering Group feels strongly that a critical aspect to MiWorkspace’s success will be its ability to stay closely attuned and responsive to the satisfaction of faculty, staff, and students in the Academic and Research Units. This does not only include communication out to the users, but also allowing users to communicate back to the service provider about satisfaction. This also means maintaining close connections with various levels of staffing within the units (VIPs, leaders, faculty, groups of staff, advisory committees, and individuals) and sharing all metrics across schools and colleges.

This will be particularly important when a unit is first joining MiWorkspace. While MiWorkspace services have the potential to improve the consistency, efficiency, and quality of technology support across campus, the change in-and-of itself has the potential to result in customer dissatisfaction relative to previous experiences. The EUC/MiWorkspace Steering Group recommends that MiWorkspace leadership share neighborhood-by-neighborhood and unit-by-unit reporting information on customer satisfaction metrics and support ratios with the units and with individuals on a monthly basis.

The EUC/MiWorkspace Steering Group also recommends that MiWorkspace leadership constitute and communicate a standard escalation process for unit leadership to follow when normal procedures are not satisfying customer needs. A well-defined path to resolution will help considerably if and when conflicts arise.

3. Next Steps for MiWorkspace and the Campus: Tasks Remaining

At various points throughout the steering group’s work, issues arose during our deliberations which impact the Academic and Research Redesign of the MiWorkspace services, but which were not in the purview of the steering group to make direct recommendations. More often than not, these were also issues, which were not within the direct purview of MiWorkspace and, therefore, MiWorkspace leadership will need to work together with the Campus and with ITS leadership to address these additional concerns. These include: 4-HELP, Procurement, customer-led governance, and collecting and applying feedback from faculty and students. This list is by no means comprehensive, but rather includes topics, which came up regularly in our discussions of multiple topics over the past several months.

• 4-HELP: Representatives on the EUC/MiWorkspace Steering Group recognize that much of the perceived success of MiWorkspace will depend on users’ experience with and satisfaction with the customer service provided by 4-HELP. The interaction between 4-HELP and MiWorkspace staff –more specifically, the successful and efficient routing of 4-HELP calls to the most appropriate staff member (Neighborhood
IT, back-end technical support groups, or Unit IT)—will drive satisfaction levels for MiWorkspace itself. The steering group expressed serious concerns regarding the impact that long waits in queue (a 4 minute wait being intolerable in Academic and Research Units) would have on a patron’s perception of the change from unit-based support to MiWorkspace. The steering group is also concerned about questions and requests getting to the correct staff—whether a request is to be fulfilled by Unit IT staff as a specialized or unit-mission task or whether it must be fulfilled by MiWorkspace. While ServiceLink technology promises to address many of these concerns, meeting schools’ and colleges’ service expectations will be absolutely critical. The EUC/MiWorkspace Steering Group urges the MiWorkspace Project Team and ITS as a whole to work with units during the MiWorkspace discovery process to develop triage processes and routing scripts in order to address these concerns.

- **Procurement:** The representatives on the EUC/MiWorkspace Steering Group believe the ability to purchase the correct equipment to meet the teaching, administrative, and learning requirements of faculty, staff, and students and have the MiWorkspace price be the most cost-effective on the market will play a significant role in the overall success to the MiWorkspace initiative and on campus IT rationalization in general. Procurement must have greater transparency and general alignment with MiWorkspace. There is also a tremendous need for access to data on purchases across campus—ways to pool specialized purchases across units in order to get the best possible pricing and most cost-effective services. The steering group recognizes Procurement issues are outside the scope of the MiWorkspace initiative, but urges leadership to consider providing units with greater opportunities to aggregate their spending in the purchasing of hardware and software.

- **Customer Led Governance:** Ongoing participation of and governance by end user and customer representatives will be significant to the success of the MiWorkspace initiative. The governance model is being created and implemented by other groups within the UM IT leadership. Close alignment with MiWorkspace services and with the MiWorkspace Project Team is critical if they are going to benefit from decisions made by governance. Similarly, members of the governing body will benefit from a close relationship with MiWorkspace in order to understand the impact and consequences of their decisions on end users and service team members.

- **Collecting and Applying Feedback from Faculty and Students:** Given the iterative and evolving nature of the MiWorkspace Service, it will be critical for the MiWorkspace Project Team and leaders to receive feedback from all users as the services are introduced and changed to better meet needs across campus. As a staff-based representative group, the EUC/MiWorkspace Steering Group recognizes we may not be able to reflect all needs and concerns for the faculty and students in all units. In addition, while customer-led governance will reflect the needs and concerns of leaders and representatives included in governing groups, the direct voice of the academic users—faculty, researchers, graduate students, and undergraduates—will provide critical insight into future directions and desired services. The EUC/MiWorkspace Steering Group urges ITS and the MiWorkspace Project Team to construct a means of collecting and responding to the perspectives of those academic users on an ongoing basis.

As these are important topics, which will impact the success of and satisfaction with MiWorkspace services, the EUC/MiWorkspace Steering Group recommends the MiWorkspace Project Team consider turning to the IT Commons, the Unit IT Steering Committee, or similar campus-based representative groups to take up these issues. It might also be appropriate for MiWorkspace customer relations leaders to lead individual focus groups focused on each of the above areas as MiWorkspace moves forward into the Academic and Research Environment.
VII. Conclusion and How to Respond

The recommendations in this document reflect the collective expertise of the entire EUC/MiWorkspace Steering Group. They are meant to provide guidance to the project team to align MiWorkspace products and services with user needs and requirements in the Academic and Research Environment on the specific technical topics for which the EUC/MiWorkspace Steering Group organized presentations and campus discussion. This work was specific to the central points of the steering group’s charge for the Academic and Research Redesign:

- Seek the most effective and efficient solutions for the university overall while representing members’ units and communities of interest;
- Provide oversight of and guidance on project team deliverables most appropriate for the academic teaching and research environment;
- Directly engage various populations in the academic units and gather end user input to guide the project team in accurately understanding myriad user needs and their relevance within individual population categories;
- Evaluate and guide the adaptation of the Phase 1 Central Administration operational model and technology platform as to whether it meets the needs of the academic and research communities;
- Steer the project team in aligning project deliverables to identified end user requirements.

The EUC/MiWorkspace Steering Group believes implementation of these recommendations will meet the initial goals set out improve the quality and consistency of MiWorkspace service, simplify operational delivery for end users, reduce hardware and software asset acquisition costs, and enable a foundation for application rationalization. Whether the recommendations allow the MiWorkspace initiative to meet targets for cost savings and cost reductions, is beyond the scope or knowledge of this group. The hope would be, however, that greater efficiencies in Academic and Research Units would generate cost savings to the institution as a whole and allow for greater investment in innovation and advancement of the teaching, learning, research, or medical missions. Minimally, MiWorkspace will be able to move into Academic and Research Units and continue to provide faculty, staff, and students with levels of service critical to their success.

Feedback, comments, questions, and suggestions may be directed to the EUC/MiWorkspace Steering Group at the following address: MiWorkspace.Steering.Group.Input@umich.edu
Appendix 1: Charges for Phase 1 and Phase 2

EUC Steering Group Charter (Phase 1)

This document is a proposal to form a new steering group to guide the End User Computing (EUC) Project. It is intended to outline the responsibilities of the project team and those of the steering group.

Group Name: EUC Steering Group

Background:

In their IT Rationalization recommendations, Accenture emphasized the importance of standardizing and consolidating end user computing support as a critical cost saving approach for the University. The objective of the project is to create a consistent operational model and technology platform for providing computing services to end users.

The EUC project is divided into 2 phases beginning with the quick start Phase 1 project: Consolidate and Rationalize IT for Central Administration (see http://www.nextgen.umich.edu/rationalization/campus-recommendations.php#areaA ) and continuing with Phase 2 project: Enhance Desktop Support and Classroom Support for Academic Units (see http://www.nextgen.umich.edu/rationalization/campus-recommendations.php#areaB )

The success of Phase II depends on implementing an adaptable and extensible Phase I operational model and technology platform that is adaptable to meet the needs of the academic and research communities. Together, both phases are designed to provide the following benefits:

- Improve service quality
- Simplify operational delivery for end users
- Reduce HW/SW asset acquisition costs
- Reduce labor required to provide the service below current state levels
- Enable a foundation for application rationalization

Project Team Accountability:

The End User Computing project team must develop a model that blends the best of Michigan’s ability to deliver tailored, targeted services with best practices that bring efficiencies in provisioning and servicing end user devices. The model must be adaptable to satisfy the requirements of administrative, academic and research units realizing that faculty and staff seldom function wholly in one environment or the other.

Major deliverables include:

1. Refine the technical, operational and financial view of current state EUC services
2. Update the business case for changing the current state
3. Develop an end to end service delivery organizational model which considers:
   - The organizational alignment for the new EUC shared service provider
   - Leverage, wherever possible, existing scalable shared service provider capabilities (helpdesk for service support and service requests, operations center, quality and cost reporting, cost
management, etc.) – This project will not recreate capabilities that are available from other suppliers

- Model for organizing and dispatching the desk side support resources distributed throughout campus
- Tiered service level expectations
- Recommended staffing levels
- In partnership with unit leadership and unit HR, facilitate the collaborative effort to plan a structured transition of resources from units to the shared service

4. Define an end to end technology platform architecture which includes:
   - Integrated management layer (deployment tools, remote assistance tools, security tools, software management tools, etc.)
   - Standard list of devices in scope
   - Standard builds and configurations of in scope devices with use case descriptions
   - Lifecycle management standards (refresh cycles, new technology introduction process, containment and retirement processes)

5. Create implementation plans for implementing the EUC service

**EUC Steering Group Accountability:** The EUC Steering Group is being chartered to serve as the guiding body for the project team throughout the project lifecycle. In addition to leadership to help steer the deliverables outlined above, the steering group will provide feedback from the diverse end user community and help guide project communication, change management, and implementation activity.

The steering group will:

1. Gather EUC technology and organizational leading practice information from other universities, government agencies, and the private sector
2. Seek the most effective and efficient solutions for the university overall while representing their unit and communities of interest.
3. Provide oversight of and guidance about project team deliverables
4. Participate in development of project success criteria and associated metrics
5. Gather end user input to help guide the project team in accurately gauging the myriad user needs
6. Steer project team in aligning requirements with the end user input
7. Guide ongoing participation and governance by end user/customer representatives
8. Develop strategies and methods for collaborating with related campus, MCIT and ITS projects (software asset management, IT strategic sourcing, desktop virtualization, health system Exchange upgrade, storage, workforce planning, etc.)
9. Help project align with the UITSC and other governance bodies
10. Help determine pilot groups
11. Collaborate with end users and the project team to help steer implementation planning

**Logistics:** The group will begin meeting in June. Initially, they will meet weekly for 1 - 2 hours. As project activity ramps up, the group could be asked to meet more frequently or for longer periods. There will be varying meeting demand throughout the project lifecycle. In spring of 2013, after solutions have been defined and built, it could be desirable to transition this group into a service governance group by appropriate transitions in membership to include representatives of end user constituent groups. It is anticipated, due to the long project timeline, the membership of the steering group will change from time to time. The Steering group chairs will collaborate with unit leadership to adjust membership as required.
Desired Membership: Members should be senior leaders (Directors or senior staff) with a broad vision for how IT can work at the University in the future. Further they should have knowledge and experience in delivering end user services in the campus environment. Members should be decision makers for their units in regard to the management of EUC services and/or EUC infrastructure.

Membership will also include appropriate project team members such as the Project Owner Project Manager. Senior project team members should attend as invited to provide input and expertise.

Project team(s): As the project completes its charter phase (6 – 8 weeks) and at different points throughout the project lifecycle, additional people will be added to the project team. These team members should be composed of technical staff with extensive experience in delivering EUC services both at the University of Michigan and in other leading practice environments. The Steering Group will provide input into selecting the membership of the project team.

Governance: http://www.nextgen.umich.edu/governance/

Charge 2: EUC/MiWorkspace Steering Group Charge for Academic and Research Redesign

EUC/MiWorkspace Steering Group Charter (Phase 2)

This document is a proposal to reconstitute the End User Computing (EUC) Steering Group to guide Phase 2 of the MiWorkspace/EUC Project focusing on University of Michigan Academic and Research Units. It is intended to outline the responsibilities of the steering group and those of the project team in the second phase of the MiWorkspace Project.

Group Name: MiWorkspace/EUC Advisory Steering Group

Background:
In their IT Rationalization recommendations, Accenture emphasized the importance of standardizing and consolidating end user computing support as a critical cost saving approach for the University. By reducing the effort it takes to deliver core technologies to campus, we may be able to reinvest in our highest priorities and support U-M's academic, teaching and research goals. The objective of the project is to create a consistent operational model and technology platform for providing computing services to end users.

The EUC project is divided into two phases:
- Phase 1: Consolidate and Rationalize IT for Central Administration (see http://www.nextgen.umich.edu/rationalization/campus-recommendations.php#areaA)
- Phase 2: Enhance Desktop Support and Classroom Support for Academic Units (see http://www.nextgen.umich.edu/rationalization/campus-recommendations.php#areaB)

MiWorkspace/EUC Advisory Steering Group Charge: The MiWorkspace/EUC Steering Group is charged to serve as the guiding body for the project team throughout the project lifecycle. In addition to providing leadership to
help steer the deliverables most appropriate for the academic teaching and research environment, the steering group will provide feedback from the diverse end user communities targeted for service delivery and help guide project communication, change management, and implementation activity.

The steering group will:

1. Seek the most effective and efficient solutions for the university overall while representing members’ units and communities of interest
2. Provide oversight and guidance on project team deliverables most appropriate for the academic teaching and research environment.
   a. The categories within academic units on which to focus include:\[1\]:
      i. Administrative staff
      ii. Faculty (non-research/non-specialty computing) and staff functionally aligned to faculty in computing usage/needs
      iii. Research
      iv. Instruction
      v. Students
   b. By means of small focused working groups coordinated with the appropriate governance domains, directly engage various populations in the academic units and gather end user input to guide the project team in accurately understanding myriad user needs and their relevance within individual population categories.
3. Evaluate and guide the adaptation of the Phase 1 Central Administration operational model and technology platform as to whether it meets the needs of the academic and research communities.
   Both phases are intended to provide the following benefits:
   a. Improve service quality/consistency
   b. Simplify operational delivery for end users
   c. Reduce hardware and software asset acquisition costs
   d. Reduce the labor required to provide the service to below pre-project current-state levels
   e. Enable a foundation for application rationalization
4. Steer the project team in aligning project deliverables to identified end user requirements
5. Participate in defining the model for customer-led governance to be fulfilled by end user/customer representatives
6. Participate in the development of project success criteria and associated metrics
7. Provide guidance and feedback on project communications
8. Help determine pilot groups
9. Collaborate with end users and the project team to help steer implementation planning

**Logistics:** The Phase 2 group will begin meeting in December; initially, every other week for 1-2 hours. As project activity ramps up, the group (or subsets of the group) could be asked to meet more frequently or for longer periods. There will be varying meeting demands throughout the project lifecycle. In spring of 2013, after solutions have been defined and built, this group will transition into a service governance group by appropriate transitions in membership to include representatives of all end user constituent groups. It is anticipated, due to the long project timeline, the membership of the steering group will change from time to time. The steering group chairs will collaborate with unit leadership to adjust membership as required.

**Membership:** Phase 2 steering group members should be senior leaders (Directors or senior staff) from academic and research units with a broad vision for how IT can work at the University in the future. Further, they should have knowledge and experience in delivering end user services in the campus environment. Members should be decision makers for their units in regard to the management of EUC services and/or EUC infrastructure.
Membership of project team members in the steering group will be limited to the Project Owner, the Project Manager and Project Change Manager. Senior project team members and representatives of Central Administrative Units will be invited to provide input and expertise, as necessary.

**Project Team Accountability:**
In Phase 2 of the project, the End User Computing project team will enhance the phase 1 model developed for central administrative units in order to deliver tailored, targeted services with best practices that bring efficiencies in provisioning and servicing end user devices. The model must be expanded to satisfy the additional requirements of academic and research units, realizing that faculty and staff seldom function wholly in a single context.

**Project Team Major Deliverables:**
1. Continue to maintain and support the phase 1 EUC services being delivered to central administrative units.
2. Document and publish the as-built phase 1 EUC services and service levels; present the supported services and service levels to the phase 2 steering group and working groups.
3. Document and present the current (pre-phase 2 input) roadmap for any additional planned EUC service enhancements. Indicate which additional service components from the input given by the phase 1 steering group remain on the roadmap to be implemented and which components are not planned for implementation at this time.
4. Work with the phase 2 steering group and working groups to determine the additional EUC service scopes, features and service levels required to expand the EUC platform in order to meet the needs of the academic and research units.
5. Refine the technical, operational and financial view of the phase 1 EUC services to reflect the required phase 2 changes.
6. Update the business case and the timeline to incorporate the required phase 2 changes. Secure governance approval to proceed with the changes.
7. Implement the required EUC service changes.
8. Document and publish the as-built phase 2 EUC services and service levels.
9. Document and publish ongoing statistics to demonstrate performance against defined service delivery metrics and other success criteria.

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[1] Recognizing that individuals in academic units often cross multiple categories with devices in different categories and fulfilling multiple functions.
Appendix 2: Membership/Participation from Across Campus (list of 90+ participants)

<table>
<thead>
<tr>
<th>Steering Group Members, Phase 1</th>
<th>Steering Group Members, Phase 2</th>
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<tbody>
<tr>
<td>● Ed Adams (Business School)</td>
<td>● Ed Adams (Business School)</td>
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<tr>
<td>● Steve Beebe (Executive Support)</td>
<td>● Greg Beyer (LSA IT)</td>
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<td>● Greg Beyer (LSA IT)</td>
<td>● Bill Connett (ISR)</td>
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<tr>
<td>● Bill Connett (ISR)</td>
<td>● Monika Dressler, Co-chair (LSA ISS)</td>
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<tr>
<td>● Monika Dressler, Co-chair (LSA ISS)</td>
<td>● Kerry Flynn (Dentistry)</td>
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<tr>
<td>● Marjory Falconer (University Human Resources)</td>
<td>● John Herlocher (Medical School)</td>
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<tr>
<td>● Kerry Flynn (School of Dentistry)</td>
<td>● Tim Kelly (ITS MiWorkspace)</td>
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<tr>
<td>● Michael Gattinger (Accenture)</td>
<td>● Greg Laman (Music, Theatre &amp; Dance)</td>
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<tr>
<td>● John Herlocher (Medical School)</td>
<td>● Bill Manspeaker (Taubman College)</td>
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<tr>
<td>● John Hufziger (Business &amp; Finance)</td>
<td>● Steven Mattson, Co-chair (Engineering)</td>
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<tr>
<td>● Tim Kelly (NextGen Michigan)</td>
<td>● Sue McDowell (LSA ISS)</td>
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<tr>
<td>● Elizabeth Loesch, Co-chair (Student Affairs)</td>
<td>● Gary Munce (Library)</td>
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<tr>
<td>● Ron Loveless (LSA IT)</td>
<td>● Reid Paxton (LSA ISS)</td>
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<tr>
<td>● Bill Manspeaker (Taubman College)</td>
<td>● Rosa Peters (Law School)</td>
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<tr>
<td>● Steven Mattson (Engineering)</td>
<td>● Eric Pinaud (LSA Psychology)</td>
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<td>● Sue McDowell (LSA ISS)</td>
<td>● Todd Raeker (School of Information)</td>
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<td>● Gary Munce (Library)</td>
<td>● David Sterling (ITS MiWorkspace)</td>
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<td>● Reid Paxton (LSA ISS)</td>
<td>● Matthew Walters (Social Work)</td>
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<td>● Rosa Peters (Law School)</td>
<td>● Lyle Whitney (Law)</td>
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<td>● Todd Raeker (School of Information)</td>
<td>● Don Winsor (Engineering)</td>
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<td>● Jacqui Spicer (Plant Operations)</td>
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<td>● Chris Shudes (Accenture)</td>
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<tr>
<td>● Gretchen Weir (Office of the Provost)</td>
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Appendix 3: Initial Apprehensions and Concerns--Word Cloud Based on “The Elephant in the Room” Task
Appendix 4: Additional Campus Participants in the Various Presentations

1. Adam Lane (LSAIT - CSG)
2. Agnes Soderbeck (LSA Chemistry)
3. Ali Berry (LSA NUIT)
4. April Nance (LSA IT)
5. Bill Bingham (Int.Institute)
6. Brad Battey (LSI)
7. Bruce Leonard (Law)
8. Bryan White (CoE/AOSS)
9. Cathy Behrendt (SMTD)
10. Charles Antonelli (LSAIT)
11. Charles Wiykovics (CoE/ME)
12. Chris Brenner (LSA IT)
13. Chris Frazier (Ross)
14. Chris Konrad (CoE/IOE)
15. Chuck Nicholas (Co/E/BME)
16. Crystal Borgman (LSA)
17. Damon Elgas (CoE/CAEN)
18. Dan Maletta (CoE/CAEN)
19. Daniella Elbialy (Law)
20. David Worley (Ross)
22. Dennis Blay (LSAIT)
23. Dennis Hogan (UMSI)
24. Don Lambert (CoE/CAEN)
25. Doug Cox (LSA-NUIT)
26. Duane Lute (LSA CATS)
27. Eric Konarske (TCAUP)
28. Faye Ogasawara (CoE/AOSS)
29. Felix Robertson (Ross)
30. Franz Agas (UMSI)
31. George Rauch (Ross)
32. Greg Baker (CoE/CAEN)
33. Greg Laman (SMTD)
34. Gretchen Kopmanis (LSA-EHTS)
35. Henry Reynolds (SMTD)
36. Herb Loner (LSA-SAA)
37. Hugh Battley (CoE/ECECS)
38. Igor Belopolosky (LSAIT – CSG)
39. Jamie Keeley (CoE/ME)
40. Jason Jude (Law)
41. Jeroen Spitaels (CoE/NAME)
42. Jim Rennell (CoE/CAEN)
43. Jim Schmidt (UMSI)
44. Joel VanLaven (CoE/ECECS)
45. John Lockard (UMSI)
46. John Loyd (Law)
47. John Muckler (CoE/CAEN)
48. John Torgersen (LSAIT)
49. Jonathan Billings (CoE/CAEN)
50. Karen Wilson (LSAIT)
51. Keith Rainwater (Advance)
52. Ken Grafmiller (LSA EHTS)
53. Kevin Borowski (Dentistry)
54. Kevin McClain (Dentistry)
55. Kevin Worth (CoE/MSE)
56. Kim Chinchak (LSA IT)
57. Kris Fazzari (A&D)
58. Kurt Kaiser (Law)
59. Laura Fink (CoE/ECECS)
60. Linda Randolph (CoE/ECECS)
61. Liz Zaenger (Co/E/ECECS)
62. Mahendra Kumar (Art & Design)
63. Mark Giuffrida (Co/E/CAEN)
64. Matt Vuocolo (Dentistry)
65. Melissa Terwilliger (Co/E/AOSS)
66. Michael Africa (Co/E/ChE)
67. Michelle Jacques (LSA-SAA)
68. Mike Bleed (Dentistry)
69. Mike Doa (UMSI)
70. Mike Standor (Co/E/ECECS)
71. Neil Clennan (Art & Design)
72. Neil Tweedy (LSA IT)
73. Patrick Smitowski – LSA HR
74. Phil Kennedy (MCIT)
75. Phillip Bonam (LSA IT)
76. R J Novack (Ross)
77. Rebi Varghese (Co/E/CEE)
78. Richard Slane (Ross)
79. Rick Smoke (LSA-Soc)
80. Rita Barinov (MCDB – LSA)
81. RJ Novack (Ross)
82. Rob Heller (LSA Bio)
83. Roger Gillie (Dentistry)
84. Ross Smith (Co/E/CAEN)
85. Roy Bonser (LSA Astronomy)
86. Sean Meyer (SOD)
87. Shawn Rahl (Dental Inform.)
88. Stephen Fuller (Law)
89. Suleman Diwan (LSA Statistics)
90. Terry Silver (Ross)
91. Tim Ahlgren (LSA-EHTS)
92. Tim Rolston (LSA CATS)
93. Vlad Miskevich (LSA Bio)
94. Yoni Drazin (LSA IT)
95. Young Kim (Business)

Plus numerous individuals who didn't sign in
Appendix 5: MiWorkspace Service Expectations for Central Administrative Units

http://services.it.umich.edu/miworkspace

Support:
Beginning in fall of 2012, MiWorkspace will be redesigned to meet the needs of academic and research units, which could include adjustments to the support model and additional technical requirements to meet research and classroom needs.

Regular hours of support include:

- **Local Support Experts** – Technicians are available Monday to Friday, 7:30 am until 4:30 pm for UHR, and 7:00 AM until 5:00 pm for ITS. As the service is deployed to additional units, hours may be expanded.
- **Service Center Support** – Support representatives are available Monday to Friday, 7:00 am until 6:00 pm. As the service is deployed to additional units, hours may be expanded.
- **Self-Service** – Self-service is available 24/7 with exception of standard system maintenance windows that occur during non-business hours on a monthly basis.
- **Executive-level Support** – After-hours support continues for executive leadership and other individuals as designated by units.
- **Core Infrastructure** – Network and storage services are monitored and supported 24/7 by the service provider.

**Security of Data:**
Securing the data and guarding the privacy of the university community is a shared responsibility. MiWorkspace computers and computing environments are designed to ensure that your computers and personal information are safe and secure, but the appropriate use of these IT resources and the data is your responsibility. The security and privacy measures extend into back-end systems, ensuring that your entire computing experience is safe at its source. MiWorkspace customers are protected with:

- Encrypted laptops to secure data in event of theft or loss
- Automatic anti-virus updates and other network protections to identify security threats in real-time
- File scans to locate sensitive data such as social security numbers on personal computers and shared infrastructure
- Secure configurations on laptop and desktops to limit unauthorized access
- Support materials to help you make the best choices to secure your sensitive data and privacy

**Service Availability:**
The MiWorkspace service is available 24x7. Customers can expect a consistent experience every time they use the service.

- **Service Center Support** – During regular support hours, the service center answers support calls in the order received with a target average hold time of no more than 3 minutes.
- **Local Support** – During support hours, the service center refers issues to local support within 1 hour of initial contact. After referral to local support, a technician will respond to issues within 4 hours during designated support hours.
- **Failed hardware** will be replaced within 24 weekday hours of reporting the issue.
- **Equipment and IT orientation** for a new/transferred user will be delivered and installed within 72 weekday hours of time of request.

*Weekday hours* – Some expectations outlined here are based on ‘weekday hours,’ meaning clock hours Monday to Friday, excluding university holidays and season days. For example, replacement of failed hardware is expected within 24 weekday hours; a laptop determined to have a hardware failure as of 2pm on a Friday would be replaced by 2pm on Monday.
Appendix 6: Service Description for MiWorkspace

Below is the Service Description as of July 2013. The online version which is updated regularly can be found at the MiWorkspace website

http://miworkspace.it.umich.edu/learn/about/service-description.pdf

MiWorkspace for Central Administrative Units
June 2013

Service Description
U-M MiWorkspace for Central Administrative Units describes a new service to provide information technology resources and tiered support for our faculty, staff, and students. The service supports most computing devices, combined with wired and wireless U-M and Internet network connectivity, file storage, and data security. In addition, it provides the back-end engineering and operations required to deliver a solution that works seamlessly in the larger U-M and non-UM technology environments. Implementation of MiWorkspace for Central Administrative Units (the service) is a multi-phase, 2-3 year effort that began in mid-2012. The service is being redesigned to meet the needs of academic and research units, with that design work beginning in early 2013. Separate design and expectations documents will be created specifically for academic and research units in late-2013.

The features and service level expectations have been developed based on interviews with many campus stakeholders, along with review and feedback from NextGen program governance, including leadership of Central Administrative Units.

Intended Consumers
MiWorkspace for Central Administrative Units serves the staff and faculty of central administrative units of the Ann Arbor campus. Units which are not strictly considered to be central administrative may request, and be considered for service, if the service expectations defined here meet their needs

Value Statement
Establishing a consolidated service organization to provide end user support for all units provides consistent overall service quality, enhances security, and improves procurement cost. The design of MiWorkspace prioritizes self-service which enables users to access required services rapidly and empowers users to acquire needed services rapidly from anywhere at any time. Standardizing the processes, tools, and technologies used to support end users will increase operational effectiveness and improve the ability to collaborate at a higher level than is currently possible.

Management and Governance

<table>
<thead>
<tr>
<th>IT Service Role</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Owner</td>
<td>Tim Kelly</td>
</tr>
<tr>
<td>Service Manager(s)</td>
<td>John Hufziger</td>
</tr>
</tbody>
</table>

Ongoing customer-led governance is currently in development, and is expected to be operational by the end of 2013. Design considerations include input from Accenture’s engagement with U-M’s Administrative Services Transformation initiative, and relationships with the existing campus IT governance structures. Customer led governance is expected to address:
• Continuous improvement feedback and priorities
• Service performance issues and resolution of issues
• New/changing requirements and expectations for features, quality, and cost
• Joint accountability factors

Service Details
Subscribers to the MiWorkspace for Central Administrative Units service experience a fully supported computing environment with the following key features:

1. Full-Service Laptop and Desktop – Subscribers of the new service experience a secure computing environment that allows easy access to applications and information. Windows and Macintosh hardware and software are supported. The service initially supports subscribers’ existing hardware and software. When it is time for hardware to be replaced (usually when equipment is between 3 and 5 years old), the new service helps plan for and provides the updated hardware. The cost of new hardware remains the responsibility of the individual unit. Any software licensing costs, either renewing existing licenses or purchasing new ones, is the responsibility of the individual unit (see the Service and Fees section below).

2. Comprehensive Support Options – Subscribers of the new service have multiple options for support; see the Types of Support section below.

3. Special Order – Subscribers can special-order hardware and software for additional needs (for example, higher capacity workstations) or special needs (such as accessible technology), above and beyond what is covered by full-service laptop and desktop support. Knowledgeable specialists are available to consult with subscribers and help them with project planning, coordination, installation, and logistics (see the Service and Fees section below).

4. Software Access – The new service offers access to an extensive store of hundreds of software titles for the Macintosh and Windows platforms that are licensed by the university or the unit. Departments can define approval processes to authorize software usage specifically for their unit. Departments can also specify a standard software collection for their users. Customers may also request software for individuals, workgroups or departments that is not readily available; these requests are tested for compatibility with the service, and subject to an approval process defined by the subscriber’s unit (see the Service and Fees section below). For software that requires no pre-approval, or after approval occurs, software downloads initiate immediately. User connection speeds determine download times. Note: This automated download feature is not available yet for Windows and is partially available for Macs. It will be incorporated into the academic and research re-design and will then be available to central administrative units.

5. Mobile & Remote Access – Our employees are increasingly mobile and expect to access U-M resources from devices they personally own or from mobile devices that are provided to them by their unit. MiWorkspace provides support to connect personal or Mowed mobile devices to the U-M network and provides a capability to allow them to print to some network connected printers. Selecting, purchasing, and learning to use devices, or finding specific U-M resources, remains the responsibility of individuals, or in some cases, the unit.
Enhanced support is provided for executive leadership and units that currently support mobile devices (see the Service and Fees section below).

6. Storage & Backup – This service provides subscribers with access to secure storage for both shared and individual (or non-shared) files. Files stored on these network and cloud-based locations are backed up and retained according to the university’s Standard Practice Guide.

- Individual (non-shared) File Space Access – Each subscriber receives 50 gigs of fully integrated cloud-based storage for his or her personal files via the M+Box service which:
  - M+Box automatically syncs with the pre-defined local file storage folders on a user’s PC/Mac. Files can travel with subscribers anywhere and will be backed up whenever connected to the Internet.
  - Allow access to the cloud-based storage from the most common computing devices, including personal computers, smart phones, and tablets.
- Providing for additional storage when needed, may be a future enhancement for the service, but is not currently available.
- Departmental (Shared) File Space Access – Shared files can be backed up and stored on a secure, internally-hosted storage platform.
- User Home Directory File Space Access – Each subscriber also receives secure internally provided storage on equipment in a secure, internally hosted storage platform.
- Optional: Desktop Backup (CrashPlan) – Since effective backup is provided through the features above, most MiWorkspace customers will not need to use Desktop Backup (powered by CrashPlan) to meet their needs. We will work with individual units to determine who would most benefit from this option.

7. Network – Subscribers have wired and wireless access to the U-M network.

- Procuring and Installing Network Equipment – Units are responsible for funding the procurement and installation of new or additional wired and wireless networks and their respective infrastructure such as switches, in-wall wiring, in-building fiber riser cabling, conduits, cable trays, etc.
- Network Equipment Monitoring – All network equipment is monitored 24x7.
- Network Equipment and Infrastructure Repairs – ITS will respond to In-Building Network equipment and infrastructure experiencing failures between the hours of 8am and 5pm, Monday through Friday. Units have the option to purchase 24x7 response for network switches. Units should refer to the In-Building Networks SLE for additional details on the types of equipment and infrastructure covered and the specific response times for during and after regular business hours.
- Network Capacity Planning – ITS will work with units to ensure that they have adequate amount of network capacity available to meet their business needs.
- Network Equipment Lifecycle Analysis – ITS will work with units to ensure that they have the network equipment in place to deliver the types of service they need to meet their business needs.

8. Printing – The new service provides printing on demand for devices supported by the service. Subscribers can print to networked printers that are in MiWorkspace units (see the Service and Fees section below).

9. Network Printing Devices – The printing service infrastructure is designed to provide the ability to print from university or personally supplied devices to a broad spectrum of university supplied network printer devices. These printer devices can be existing printers or new printers, purchased and installed through the U-M Procurement Services Print Smart program.

- Print Smart Program – Through a unique partnership with U-M Procurement Services (Print Smart), MiWorkspace enables a full-service managed printer offering. Representatives of Procurement
Services and the Print Smart supplier will work with units to survey needs and identify the right mix of network printers to meet the unique needs for each location. MiWorkspace will manage the hardware installation and implementation, the supplier is responsible for maintenance of printer hardware, and units will manage the supplies. A key focus of this service is environmental sustainability. This service strives to move 100% of unit printing to high-efficiency network printers, minimizing environmentally damaging desktop printing. This level of service is included for all subscribers, and helps to enable a unit to take advantage of all the advanced features of the MiWorkspace Printing Service.

- MiWorkspace Printing Service – Departments may choose to not partner with Procurement’s Print Smart hardware program and continue to supply and maintain some or all of their own printers. The MiWorkspace printing service infrastructure is designed to provide the ability to print to a broad spectrum of printer devices, but results will vary (some printers will perform better than others). To take advantage of the full-featured environment, it is recommended that units partner with Print Smart.

10. Loaner Equipment – Subscribers are able to borrow equipment (e.g., laptops, desktops, monitors) on a short-term basis for special needs such as travel or testing. A subscriber may pick up and return equipment from a local facility or have it delivered.

11. Security – Security is integral to every aspect of the new service: from malware defense, disk encryption, and core infrastructure, to the protection of file storage. In addition to secure technology, subscribers to the new services can rely on oversight from the ITS to continuously respond to emerging threats, minimize IT security-related service disruptions, and protect sensitive data stored on MiWorkspace workstations. ITS provides a suite of services that provide a foundation of protection for university IT resources, as well as security services specific to MiWorkspace units.

IT Security Essential Service is a suite of services that provides a foundation of protection for university IT resources, including those that enable teaching, learning, research, and administration. It is provided as a common good across the University of Michigan, Ann Arbor campus, for all MiWorkspace and non-MiWorkspace units. The following services comprise the IT Security Essential Service:

- IT Policies, Standards, & Guidelines
- Compliance with Laws & Regulations
- Education & Awareness
- Security Incident Response
- Basic Network Monitoring and Protection
- Risk Analysis
- Hardening Guides
- Vulnerability Scanning
- See IT Security Essential Service for more information about these services. In addition to IT Security Essential Service, MiWorkspace workstations benefit from the following enhanced IT Security Services:
  - Enhanced Network Monitoring and Protection – Provides early detection of network attacks and compromises associated with MiWorkspace workstations storing sensitive information. In the broadest sense, network security monitoring is the collection and analysis of alerts to determine a course of action in response to intrusions, malicious network activity or compromised systems. The goal of enhanced network protection is instantiating a security mechanism closer to the services that are running on the MiWorkspace platform.
  - Risk Management – Provides an independent security professional to perform risk assessments against sensitive or mission critical environments deployed on the MiWorkspace platform. ITS then
leads the implementation of mitigating controls for vulnerabilities discovered during the risk assessment.

- **Data Loss Prevention (DLP) Scan** – A DLP scan is an automated scan designed to detect social security numbers and credit card numbers. It is performed every six months on MiWorkspace servers and workstations, to ensure that the university is in compliance with laws and regulations governing the storage of these types of sensitive and regulated data. If any unsecured data is detected, unit IT security staff will receive a report of the findings and work with ITS to mitigate any potential security risks. DLP increases electronic security by reducing unnecessary storage of sensitive data. The DLP scan does not scan the Personal and Private folder on MiWorkspace workstations.

**Vulnerability Management** – Provides frequent, in-depth vulnerability scanning of MiWorkspace systems provided within a comprehensive vulnerability management framework designed to identify and properly mitigate high-risk exposures. Provides scanning to detect publicly known vulnerabilities adversaries may exploit.

- **Workstation Hardening** – Ensures compliance with applicable regulations for the MiWorkspace Service utilizing appropriate configurations and controls to protect sensitive data stored on MiWorkspace workstations.
- **Information Asset Classification** – Identifies and tracks MiWorkspace workstations that store sensitive data. Meets the requirements of SPG 601.27 and determines whether additional MiWorkspace-specific security services are required.

**Summary of In-Scope and Out-of-Scope Features**

<table>
<thead>
<tr>
<th>Included in the MiWorkspace Service</th>
<th>Out of Scope for the Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Managing desktops, laptops, and the software that runs on them</td>
<td>• Approving and paying for Hardware and Software Purchases, including:</td>
</tr>
<tr>
<td>• Ordering (with customer funding and approval) laptops, desktops, and software</td>
<td>o Mobile Devices</td>
</tr>
<tr>
<td>• Providing the related back-end infrastructure that supports MiWorkspace customers and equipment</td>
<td>o Printers/Multifunction devices</td>
</tr>
<tr>
<td>• Securing desktops, laptops, and infrastructure including</td>
<td>o Laptops</td>
</tr>
<tr>
<td>o Monitoring, protecting, and scanning networks and responding to mitigate compromised systems</td>
<td>o Desktops</td>
</tr>
<tr>
<td>o Developing and implementing risk treatment plans for MiWorkspace environment</td>
<td>o Peripherals</td>
</tr>
<tr>
<td>o Identifying and tracking MiWorkspace systems that store sensitive data and scanning to locate sensitive info (SSNs, CC#s) stored in servers</td>
<td>o Network Equipment</td>
</tr>
<tr>
<td>• Web conferencing</td>
<td>o Special Orders</td>
</tr>
<tr>
<td>• Special event planning and coordination</td>
<td>o Conference Room Technology</td>
</tr>
<tr>
<td>• Providing traditional voice or VoIP</td>
<td>• Providing user requirements for network service, as well as knowledge of buildings and facilities</td>
</tr>
<tr>
<td>• Identifying and tracking sensitive &amp; mission critical assets</td>
<td>• Identifying and tracking sensitive &amp; mission critical assets</td>
</tr>
</tbody>
</table>
and systems
  o Providing security awareness materials/training
  o Supporting specific compliance requirements in systems (e.g., for storing FERPA or HIPAA data)
• Managing anti-virus and patches
• Supporting users via Service Desk, Desk-side Support, equipment repair and replacement, Self-Help, convenient online ordering/onboarding, and all appropriate documentation
• Providing custom executive support (e.g., extended hours, advanced mobile device support, even the small things)
• Managing user permissions (e.g., Active Directory)
• Providing consultation on the use of IT services
• Providing complete in-building wired and wireless networks in a common way by consolidating existing networks, designing and configuring new networks while standardizing and operating all in-building networks managed by MiWorkspace
  o Network service components include: DCHP, DNS, VPN, firewall, IPv4, IPv6
• Supporting secure mobile and off-campus
• connection to the U-M Network
• Printing
• Managing special order hardware
• Providing short-term equipment loans
• Managing conference room technology
• Provisioning and supporting storage and backup for individual and departmental shared files
• Service Level Expectation and trend reporting
• Providing a temporary workstation test environment for developers
Appendix 7: MiWorkspace Technology Packages

Below is the current list of standard MiWorkspace desktop and laptop computer configurations as of July 2013. The online version which is updated regularly can be found at: https://docs.google.com/a/umich.edu/spreadsheet/ccc?key=0AtcKGe5MOdCXdEttdkzSGhHWTk4U0UxY0FxdaJNRnc#gid=4

<table>
<thead>
<tr>
<th>MiWorkspace Technology Packages</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Desktop</strong></td>
<td>Windows</td>
<td>Mac</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>Price</td>
<td>Notes</td>
<td>Model</td>
</tr>
<tr>
<td>HP 6300</td>
<td>534</td>
<td>Add on 20&quot; or 24&quot; display</td>
<td>iMac 21.5-inch: 2.9GHz Quad-core Intel Core i5 Specifications Processor: (065-C0N4) - 2.9GHz Quad-core Intel Core i5, Turbo Boost up to 3.6GHz Memory: (065-0635) - 8GB 1600MHz DDR3 SDRAM - 2x4GB Storage: (065-C13P) - 1TB Serial ATA Drive @ 5400 rpm Graphics: (065-0652) - NVIDIA GeForce GT 650M 512MB GDDR5 Mouse/Magic Trackpad: (065-0661) - Magic Mouse Apple Keyboard and Documentation: (065-0664) - Apple Wireless Keyboard (English) / User's Guide (English) &amp; 3-yr AppleCare (MD094LL/A)</td>
</tr>
<tr>
<td>6470b 14&quot; Notebook &amp; 4-yr NBD Onsite Accidental; 8GB 1600MHz DDR3 (2x4GB) 500GB 7200 rpm SATA HDD; i7-3540M</td>
<td>975</td>
<td>Add on 20&quot; or 24&quot; display; 90W or 120W dock</td>
<td>MacBook Pro 15-inch Specifications Processor: (065-0785) - 2.3GHz Quad-core Intel Core i7, NVIDIA GeForce GT 650M with 512MB GDDR5 memory Memory: (065-0788) - 8GB 1600MHz DDR3 SDRAM - 2X4GB Hard Drive: (065-C0M4) - 750GB Serial ATA Drive @ 7200 rpm Optical Drive: (065-0797) - SuperDrive 8x (DVD±R DL/DVD±RW/CD-RW) Display: (065-0798) - MacBook Pro 15-inch Glossy Widescreen Display Mini DisplayPort to VGA Adapter: (065-0806) - Mini DisplayPort to VGA Adapter Keyboard and Documentation: (065-0815) - Backlit Keyboard (English) / User's Guide (English) &amp; 3-yr AppleCare (ME664LL/A)</td>
</tr>
<tr>
<td>Light Weight Laptop*</td>
<td>HP Elitebook Folio 9470m: Intel® i7-3687, 720p HD webcam, 14.0-inch LED-backlit HD+ (1600x900) Display, 8GB 1600MHz DDR3 (1x8GB), 256GB SSD SED Sata III Drive, No Flash Cache, Backlit Dual Point Keyboard, 4 Cell 52 W/Hr Long Life 3 Yr Warranty Battery, Fingerprint Reader, NO Optical Drive, No Modem, Intel Centrino Advanced 6235 abgn 2x2 + Bluetooth 4.0 HS Combo &amp; 4-yr NBD Onsite Accidental</td>
<td>1453</td>
<td>Add on an HP Ultraslim Docking station ($110).</td>
</tr>
</tbody>
</table>

* Please note that specific models and associated pricing will change periodically.

For ordering assistance, please email depotorders@umich.edu
Appendix 8: End User Computing Linux Project Charge Document

Linux Project Charge Document
Project Charge Document (M101)

1. Project Information

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>EUC Linux Service</th>
<th>Planview Work ID:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Unit:</td>
<td>Academic and Research Units</td>
<td>Service Portfolio:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collaboration and Productivity</td>
</tr>
<tr>
<td>Project Manager:</td>
<td>Dawn Brennan</td>
<td>Service Portfolio Owner:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tim Kelly</td>
</tr>
<tr>
<td>Requested Start:</td>
<td>3/19/2013</td>
<td>Requested Finish:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12/31/2013</td>
</tr>
<tr>
<td>Request Priority:</td>
<td>Standard</td>
<td>Rush Order:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

2. Needs Analysis

An inventory was performed on the use of Linux throughout campus. No additional departments have been identified as having Linux machines. The majority of Linux machines exist within the College of Engineering and LS&A. The number of Linux machines is lower than original projections. Likewise, the number of Linux workstations that may be part of MiWorkspace is also lower than anticipated. Below is a summary of this inventory:

<table>
<thead>
<tr>
<th>Department</th>
<th>Linux Workstations(^1)</th>
<th>Linux Labs(^2)</th>
<th>Linux Servers(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS&amp;A</td>
<td>605</td>
<td>&lt;200</td>
<td>190</td>
</tr>
<tr>
<td>Engineering</td>
<td>420</td>
<td>955</td>
<td>435</td>
</tr>
<tr>
<td>Dentistry</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>ITS</td>
<td>20</td>
<td>0</td>
<td>~800</td>
</tr>
<tr>
<td>School of Information</td>
<td>&lt;5</td>
<td>0</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Total</td>
<td>1,059</td>
<td>~1,155</td>
<td>1,440</td>
</tr>
</tbody>
</table>

\(^1\) In this context, workstations are defined as those that are a desktop or laptop for individual use.

\(^2\) Linux Labs include but are not limited to: Research labs with specialized equipment, research labs with high-end workstations but no specialized equipment, virtual labs, bridge boxes to transfer data, teaching labs (includes classrooms), and computer labs.

\(^3\) MiServer is piloting a Linux service using Red Hat Enterprise Linux 6 for a few users in LS&A, Engineering and the Office of New Student Programs. Linux Servers are out-of-scope for this service.
The original assumption for the EUC Linux Service is that a need existed for a Linux managed service similar to what was implemented for Windows and Macs. However, during the EUC Steering Group meeting on May 1, 2013, the group and those invited attendees expressed a different list of requirements:\(^4\):

- Begin with Linux workstations
  
  (Note: The Linux labs are complex systems which may not be part of MiWorkspace.)
- Enhanced security
- Easy to deploy
- Interact with University systems
- Identification
- Authorization and authentication (like AD, MCommunity)
- Group authorization (needed from AD or MCommunity; there is no workaround for Linux)
- Software channels
- Printing
- Network connectivity
- Centralized mainstream storage access (similar to the way that AFS is now)
- Desktop support
- 2-factor authentication
- Multi-boot support
- CrashPlan backup

\(^4\) Note: With some of the requirements, there is a strong dichotomy in use. Researchers need flexibility while others would be content with a stable system. This same dichotomy applies with the distribution - some prefer RedHat while others prefer Ubuntu.

Based on the requirements identified at the EUC Steering Group meeting and the lower than anticipated number of workstations that may become part of MiWorkspace, the design and build of a fully-managed MiWorkspace Linux service is not viable at this time. However, there does appear to be a need to develop easily deployable “packages” for the following common Linux needs:

- Identification, authorization and authentication (Kerberos/MCommunity, Active Directory)
- Group authorization (needed from MCommunity and/or Active Directory)
- Printing (MPrint)
- Storage access
- Enhanced security (2-factor authentication)
- Backup (CrashPlan)
- VPN access
- MWireless access

The other open question is which distribution should be deployed. The two most common ones on campus are RedHat (65%) and Ubuntu (35%). From a NextGen perspective that is being employed for Academic and Research Units, Ubuntu meets these requirements. The first phase of this project will, therefore, be the design and build of easily deployable Ubuntu LTS (long term support) “packages” for the needs noted above. Use of these components on other distributions (such as RedHat Enterprise, Fedora, and the Ubuntu six-month release) will be later phases.
## Project Detail

<table>
<thead>
<tr>
<th>Project Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background:</strong></td>
<td>MiWorkspace is a new service that supports a suite of desktop services used everyday by University of Michigan faculty and staff. These services include printing, network connectivity, storage, security, software, and desktop support. This multi-year roll-out began with central administrative units in June 2012. The central administrative units roll-out included a managed desktop for Windows and Macs. This managed desktop allows updates for patches and other functional updates to be pushed to these machines. The updates can also be deferred if it will cause an interruption to any work. A Linux service was not part of the central administrative unit. However, it will be required for the Academic and Research unit rollout.</td>
</tr>
</tbody>
</table>
| **Project Description:** | The purpose of this project is to plan, design, build, test, and pilot a Linux service. As noted in the Needs Analysis section, the design and build of a fully-managed MiWorkspace Linux service is not viable at this time. Instead, a series of easily deployable “packages” will be developed and made available on campus. These packages will address the following common Linux needs:  
  - Identification, authorization and authentication (Kerberos/MCommunity, Active Directory)  
  - Group authorization (needed from MCommunity and/or Active Directory)  
  - Printing (MPrint)  
  - Storage access  
  - Enhanced security (2-factor authentication)  
  - Backup (CrashPlan)  
  - VPN access  
  - MWireless access  
  The initial service offering will be built on Ubuntu LTS (long term support). |
| **Objectives and Scope:** | 1. **Plan Documents**  
Plan documents will be developed to provide a strong foundation for the scope, effort and roles, and timeline required for this Linux service to meet project stakeholder goals and expectations. These documents include:  
  - An inventory of Linux machines at the University of Michigan  
  - A Charge Document which details the project scope, high level requirements, timeline, and effort |
2. Analyze / Design Documents
During the analyze / design phase, business, functional, and technical requirements are defined and a solution architecture is developed. Since the Linux service will be an addition to EUC / MiWorkspace, the following existing documents will be updated with the new service offerings:

- Service Definition
- Solution Architecture Blueprint
- Requirements Traceability Matrix
- Service Flow (ordering and request)
- Support Model
- Information Assurance Questionnaire

3. Build Documents
The objectives of this phase of the project is to ensure that the service has been built in accordance with the plan, analysis and design. When complete, the service will be ready to be tested. Build documents may include:

- Test Approach
- Build Documents
- Service Level Expectations (SLE)
- Production Support Plan
- Service Capacity Plan
- Service Availability Plan
- Package Documentation (instructions, information)

4. Test Documents
During the test phase, service components are tested individually and collectively to ensure functional requirements have been met. Other test activities include performing user acceptance testing and regression testing with the end result to include preparing for the service pilot. The test documents may include:

- Test Scenarios, Conditions, and Expected Results
- Service Pilot and Deployment Plan
- Service Restoration Plan
- Early Life Support Plan
- Organizational Readiness Assessment

5. Service Pilot
A Service Pilot rolls the service to a small group of users. The major document required for this phase is the Pilot Lessons Learned.

6. Rollout
Following the Service Pilot, the Linux Service will be ready to incorporate into the Academic & Research Unit deployments to MiWorkspace.
### Excluded from scope:

Other Linux distributions and operating systems
- RedHat Enterprise Linux (RHEL)
- Other derivatives of RHEL, including but not limited to CentOS, Oracle Linux, Scientific Linux, and Fedora operating systems.
- Ubuntu six month release
- Note: These distributions may be evaluated at a later date for inclusion in a separate project.

Linux MiServer. This service is being provided through the MiWorkspace MiServer / MiDatabase project.

Specialized equipment and workstations
- Specialized equipment integration
- Complex and minimally-used applications
- Mobile devices
- Non-University owned machines

### Dependencies:

- MCommunity and / or Active Directory access and existence
- Kerberos access and existence
- Server for hosting repositories (and potentially code development)

### Assumptions & Constraints:

- Analyze, design, and build resources are available
- Ubuntu will remain in business and will not make any major changes to their system
- Unit using Ubuntu is interested in participating in a pilot
- No major changes to MCommunity, Active Directory or Kerberos
- A development server will be required (version control, development)
- WebServer is available for a repository

### Preliminary Assessment

#### Pros

- Provides local and neighborhood IT with common packages to build required Linux workstations for faculty and staff saving time and money
- Allows units to only select the packages that are applicable for their needs
- Provides a common reference implementation for functions that are currently done differently across campus
- Automates a previously manual process

#### Cons

- Not all Linux users will want Ubuntu
- Does not provide a fully-managed service; Departmental admins still responsible for set-up and administration.

### Performance Implications

None identified at this time
### 4. High-level Requirements

<table>
<thead>
<tr>
<th>Requirement Area</th>
<th>Projected Steps/Comment s</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Workstation Packages for high-level requirements</td>
<td>See Timeline below in Section 6</td>
</tr>
</tbody>
</table>

### 5. High-Level Deliverables

<table>
<thead>
<tr>
<th>Deliverable Type</th>
<th>Name/Description</th>
</tr>
</thead>
</table>
| **Project Management - Planning** | Project Charge Document  
Project Schedule (in Planview)  
Project Resources (in Planview) |
| **Project Management - Execution** | Status Reports  
Meeting Agendas and Minutes  
Issues and Risks |
| **Business Process** | Detailed list of technical / business deliverables can be found in Documents and Objectives in Section 3 |
6. **Timeline and Resources**

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Estimated Effort(^{15})</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Analyze / Design  
* Identification and AuthZ criteria/design  
* Packaging tools  
* Repository server requirements | 1.0 FTE | June 28, 2013 |
| (0) Build package-building environment, obtain test devices etc. | 1.0 FTE | July 19, 2013 |
| Build / Test Ubuntu LTS Packages Part 1  
(1) MWireless profile (if autoconfig not available)  
(2) U-M VPN  
(3) MiPrint (PaperCut)  
(4) Backups  
(5) Bootstrap package to configure local package manager | 1.5 FTE | August 30, 2013 |
| Build Ubuntu Repository  
(1) Obtain server resources  
(2) Ubuntu PPA repository setup | 1.5 FTE | September 13, 2013 |
| Build / Test Ubuntu LTS Packages Part 2\(^{16}\)  
(6) Identification  
(7) Authentication  
(8) Authorization  
(9) Storage Access - AFS, Value, Mainstream  
(10) Disaster Recovery (if applicable) | 2.0 FTE | December 13, 2013 |
| Build / Test Ubuntu LTS Packages for Sensitive Data Users  
https://docs.google.com/a/umich.edu/document/d/1vMPMwYXgOF2k3FBegzbRqV4NplOdyX5gn7PEuVNyEcY/edit |   | January 10, 2014 |

\(^{15}\) The estimated effort in this column is for Application Developer(s) who will be the person(s) spending the most time on this project. Additional resources include:
- Business Analyst - assist with requirements and documentation
- Subject Matter Experts (as needed) - security, architecture, other
- Communication Lead - create and deliver new service communications
- Project Manager - facilitate meetings, create status reports, escalate risks and issues
- Project Owner - provide guidance and feedback, resolve risks and issues

\(^{16}\) Will need additional resources between mid-September and mid-December 2013.
Pilot (LSA Psychology and Mathematics has expressed an interest. Contact Eric Pinaud when we have more information) | January and February 2014
---|---
Rollout | During MWS Academic & Research Unit deployment

Although out-of-scope of this project, it is anticipated that the same packaged service will be made available for RedHat Enterprise Linux shortly after the build and test of Ubuntu LTS. Milestones will include:

- Same packages as Ubuntu for RHEL (January 2014)
- RHEL repository - server resources, yum repo set-up (February 2014)

Acknowledging that there are existing RedHat Enterprise services across campus, MiWorkspace will create an operational and transitional roadmap for these services during the pilot phases.

7. Scope and Resource Signoff

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>EUC Linux</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Unit:</td>
<td>Academic and Research Units</td>
</tr>
<tr>
<td>Service Portfolio Owner:</td>
<td>Tim Kelly</td>
</tr>
<tr>
<td>Project Manager:</td>
<td>Dawn Brennan</td>
</tr>
</tbody>
</table>
| Project Team: | Don Winsor  
Jason Liu  
Adam Bisaro  
Shawn Rahl  
Kevin Jones  
Elle Loesch |  |  |