

# OneIT@Iowa Status Update - DCS



## Project Details

**Project Name:** Data Centers and Servers  
**Project Team Leads:** Guy Falsetti, JJ Urich, Jerry Protheroe  
**Project Manager:** Kris Halter  
**Reporting Period:** 08/07/2015 – 10/09/2015

## Project Life Cycle - Phases

Item	Phase 1 – Initiation	Phase 2 – Planning	Phase 3 – Implementation	Phase 4 – Close Out
<b>Timeline:</b>	4/13/2015 – 6/18/2015	6/19/2015 - 10/16/2015	10/19/2015 – 08/01/2018	08/02/2018
<b>Status:</b>	On Track	Attention Required	Attention Required	
<b>Completion:</b>	100% Complete	95% Complete	14% Complete	0% Complete

## Executive Summary

Overall Status:	Status	Notes
<b>Schedule:</b>	Attention Required	This will be a multi-year project extending into 2018, the overall timeline is at risk if funding is not approved and relinquished.
<b>Budget:</b>	\$2,060,000	The approval of the budget has not been communicated to the team yet, causing the project to default to lift and shift of servers which will significantly reduce our total savings and potentially cause catastrophic issues when moving old equipment. The high level project budget was outlined in the project Charter with a schedule of release of funds over the next 2 years for facility, server, and network upgrades to facilitate the consolidations. \$300,000 of the requested budget will be a reoccurring expense for the support of 3 lines to handle the influx of additional server support needs within ITS during and post consolidations.
<b>Risks:</b>	Attention Required	Without approval for funding the project will need to heavily rely on using a Lift and Shift process for consolidating server rooms which will dramatically affect our cost savings abilities. The OneIT reporting structure has a significant impact on the OneIT Data Center and Server project. With the project requiring a high amount of labor, up front capital expenditures, reoccurring expenditures, and a high political footprint, broad and inundated executive and collegiate support and backing is highly critical for the success of this project.
<b>Issues:</b>	Attention Required	There was significant push back from specific researchers, colleges, and IT leaders on consolidation of any servers and rooms within their area or jurisdiction. Most of these issues are being worked on, on a case by case bases.

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## Phase 2 – Planning

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**Phase Status:** In Progress  
**Phase Start Date:** 06/19/2015  
**Phase End Date:** 10/16/2015

### **Accomplishments**

#### **Audits:**

- Finalized the scheduling of all macro inventories of server rooms on campus.
  - MEP Macro audits have been completed. This consisted of audits of 42 server rooms, an increase of 6 rooms from the initial planned list.
  - Responses from the audits are wide as not wanting their room to be consolidated to wanting it consolidated and decommissioned as soon as possible.
  - Most owners would like to see their equipment moved and rooms decommissioned
  - Jerry Protheroe of ITS organized and led the audits with the primary team members being Steven DellaBetta with Facilities Management and Stephen Hoffman and Mark Sadewasser of the ITS, Core IT Facilities group, with Kris Halter filling in for Jerry when he was unavailable. There was also occasional participation from the FM Area Maintenance personnel responsible for the server room being audited. Each server room audit also had representation by the room technical owner – usually someone from the distributed IT organization.

#### Quick facts:

- 42 Server Rooms were audited
- Involved 29 campus buildings
- A total of 25,000 sq. ft. represented by server rooms
- Estimated \$1 million dollars being spent on server power and associated cooling.
- 2306 physical servers counted

The breakdown for the 42 server rooms (Definitions below):

6	Data Centers
1	IT Class Server Room
23	Basic Server Rooms
12	Non-Dedicated IT Hosting Spaces

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**Data Center** - Dedicated computing space for hosting IT equipment in a rack-based configuration greater than 1,000 square feet with card-access security provided by Central Security. The space must also have dedicated N+1 or better uninterruptable power supply (UPS), dedicated cooling in an N+1 or better configuration, and should have a dedicated generator.

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**IT Class Server Room** - Dedicated computing space for hosting IT equipment in a rack-based configuration less than 1,000 square feet with card-access security provided by Central Security. The space must also have dedicated uninterruptable power supply (whole room) and dedicated cooling and must not have any significant site risks (water pipes above, janitor's sinks, etc).

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**Basic Server Room** - Dedicated room for hosting IT equipment, but is deficient in not more than one of the following -- card-key security access, dedicated UPS (whole room or cabinet based), or dedicated cooling, or has significant site risks.

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## **Community Updates:**

- Draft letter to Advisory group on updates.
- Met with the OneIT Steering Committee and presented the Status report and discussed funding and expenditure issues with them.
- Began discussion with Researchers on ITS covering hosting equipment at ITF.
- Report out to Mark Braun on state of DCS.
- Presented estimated incentive spending by department or college for the Provost and SC to Steve Fleagle.
- Developed and shared MEP cost savings and server room closure charts to track OneIT Data Center and Server Consolidation savings targets.
- Scheduled follow up meetings with the HPC and Storage OneIT projects to get them up to speed on the audits and answers to their questions for room owners/operators, which will take place on October 21<sup>st</sup>.

## **Milestones**

- Finalized a server room decommission proposal with feedback from Facilities Management
- Submitted replacement funding ask to Program Office
- Worked with ISPP and stakeholders on Network Redesign 2.0
- Implement a short-term plan to temporarily support remote access tools in Research Services Cabinets and develop a long-term plan going forward for same.
- Started the process of documenting server room decommissions beginning with the three rooms in the Chemistry Building by drafting a scope of work document in collaboration with FM and the Chemistry Faculty Representative.
- Drafted MOU for chemistry so they agree to give up their old racks/PDU's/UPS's in exchange for racks in ITF, so we can de-comm their old server room.

## **Miscellaneous:**

- Developing a DCS award and working with Sue Sager in conjunction on the award funding.

## ***Upcoming Milestones***

- Complete remaining Macro/MEP level audits of server rooms across campus, currently scheduled for completion October 16th.
- Finalize Timeline.
- Finalize Project plan, and obtain public feedback.
- Secure funding and resources to aid in the consolidation of 32+ server rooms.
- Decide on which server rooms will remain and transform into an enterprise level community data center.
- Finalize the details and policies on an incentive program for outdated/unsupported research equipment.

## ***Planned Work***

- Audit 4 remaining server rooms (October 16).
- Finalize Project Plan (October 16)
- Follow up meeting with the HPC and Storage OneIT projects to get them up to speed on the audits and answers to their questions for room owners/operators will take place on October 21st.

## ***Matters for Steering Committee Attention***

- Funding approval of needed Server, Network, and Facility upgrades.
- Funding approval of 3 lines to manage migration and support of servers within ITF.
- Decision on how to handle the research equipment incentive program.

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## Phase 3 – Implementation

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**Phase Status:** In Progress - Attention Required  
**Phase Start Date:** 10/19/2015  
**Phase End Date:** 08/01/2018

### ***Accomplishments***

#### **Enterprise Data Center Enhancements and Expansion to Support OneIT:**

- Scheduled out the grounding of new cabinets.
- Long-term fix for Research Service remote access tools were implemented during Infrastructure Day (9/12/2015)
- Network electronics for 5 new cabinet ready for server out in ITF for support of the OneIT DCS project.
- Explored and selected cabinet shelving system for non-rackable servers and towers to be hosted in ITF.
- Key milestone achieved on Research PDU addition project to expand electrical capacity in the research rows at ITF.
- Performed a utility disconnect to force a start and exercise the ITF generator, this coincided with the electrical outage for the expansion of electrical and PDU capabilities, these were done at the same time to minimize downtime for researchers.
- A 125 step MOP (Method of Procedure) was follow to accomplish this critical task in the new Research PDU project. Our partners, of which there were MANY, including FM PD&C, FM Electric Distribution, HP/EYP design firm, Contractor (Acme Electric), FM Area Maintenance, FM Meters and Controls and ITS Core IT Facilities take very seriously the attention to details required to ensure safety and reliability when working within a live data center. There were several additional MOPs for each of the critical work activities that together will result in a fully commissioned Research floor PDU added to the ITS data hall.
- End state ITF cabinet configuration and tape library moves in support of the OneIT Data Center and Server project have illustrated and action items laid out and communicated.
- Cabinets for LC and ITF have been purchased to support influx of servers in support of the OneIT DCS project.

#### **Campus Server Room Migration Updates:**

- Met with College of Public Health about re-programming the space from one of their data centers that have been shut down.
- Moved 13U of servers out of Chemistry main server room and only have 2 servers left.
- We've moved enough gear that we've turned off the 20 Ton chiller in the main server room in Chemistry.
- 1 server moved to ITF from Chemistry.
- Last Linux server from Chemistry has been moved out of CB.
- Relocated Adrian Elcock HPC cluster from Elcock BSB Lab to EMRB 74 server room
- Scheduled two biology server moves
- Moved a HPC cluster from Biology server room to ITF (8U).
- Moved the remaining servers out of 114 MRC and into EMRB
- Moved 3 physics servers to ITF.
- Decommissioned 7 servers from ABW and migrated to central data storage.
- Dentistry decommissioned 1 server.
- Moved over a server for CLAS (Production Unit) into the ITF AP row.

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- Moved over a non-rackmount tower server from Chem to ITF.
- For Art/CLAS, surplused the decommissioned SAAH SAN hardware in rack AP-41, which includes four Xserve computers, two Promise RAID boxes and one QLogic SANBox switch.

## OneIT Metric Tracking:

Item	Server Rooms Decommissioned	Servers phased out
Value:	6	130
Status:	On Track	On Track
Completion:	18.75% Complete	26.0% Complete

## Upcoming Milestones

- Begin converting decommissioned server rooms back into their base form in conjunction with FM.
- Decommission 10 additional server rooms this fiscal year.

## Planned Work

- Install additional server racks in ITF to house additional equipment for planned moves.
- Test Micro Audit processes on one server room to be consolidated and closed.
- Exercise server room decommission process on first three vacated server rooms in Chemistry Building

## Matters for Steering Committee Attention

- Funding approval of needed Server, Network, and Facility upgrades.
- Funding approval of 3 lines to manage migration and support of servers within ITF.
- Decision on how to handle the research equipment incentive program.