

**University of Washington
Data Center Task Force Preliminary Report**

**Presentation to the
Information Technology Advisory Committee**

April 11, 2005

- Study Highlights
- Conclusions and Recommendations
- Next Steps

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Study Highlights

The Charge: The Data Center Task Force was appointed in August, 2004 to respond to the critical demand for increased data center space by:

- Evaluating projected data center needs for the next ten to fifteen years, and identifying need drivers.
- Assessing alternative solutions based on best business practice criteria including functionality, security, capital requirements, and operating costs.
- Exploring cost recovery models.

Pressure and Opportunity: Growth in the number of servers required to support the university's operations is expected to continue unabated in the foreseeable future, and the demand for centrally housing servers is expected to increase. This growth is straining the University's ability to meet its computing space needs. At the same time, UW Medicine is moving toward a policy of requiring that servers be housed in centralized facilities for reasons of security and efficiency. We have an opportunity to integrate UW Medicine's centrally housed servers with other server housing needs to realize economies of scale in the creation of a data center.

- The UW's primary data center in the 4545 Building is 93% full – 375 out of a capacity of 406 server racks are full, and the electrical and cooling systems are at capacity or near the end of their useful lives.
- The UW's small secondary data center in the Academic Computing Center is about 70% full and lacks emergency back-up power to ensure reliability.
- Approximately 5,000 server dependent devices are being added to the campus network each year, resulting in a current rate of growth of about 1,000 servers per year.

- UW Medicine is moving toward a policy of requiring that servers be centrally housed for reasons of security and efficiency. The growth in servers in UW Medicine, combined with the migration of existing servers to central data facilities makes UW Medicine a significant growth driver.
- The primary drivers of growth are:
 - UW Medicine (including related research)
 - Research (non-Medicine)
 - Instruction
 - Administration

Best Business Practices Criteria and Alternative Solutions: The DCTF developed a list of “best business practices” criteria and several alternative solutions, and then ranked the alternatives according to their ability to meet the criteria. Based on this evaluation, four alternatives were selected for further study.

- On-Campus Facility — Academic Computer Center Site (representative)
- Off-Campus / Owned Facility — Sand Point Building 5
- Off-Campus / New Acquisition — Canyon Park (representative)
- Outsourcing — Sabey Data Center, Tukwila (representative)

Rough cost estimates were then prepared for these alternatives at a level allowing comparison of relative total capital and operating costs, with the common parameter being a monthly “rack rate” charge that would cover the full and true costs of the facility.

Conclusions and Recommendations

Conclusion 1: *Computing is a utility and should be recognized and strategically managed as such.*

Conclusion 2: *The University is at a fork in the road.* Its primary data center has reached capacity. Also, UW Medicine is moving toward centrally housing all of their servers for security and cost efficiency reasons. The University has an opportunity to integrate UW Medicine as an “anchor tenant” in a central facility if we act soon. Both pressure and opportunity are compelling the University to make a decision regarding the creation of a central data facility.

Conclusion 3: It will be costly to develop a new primary data center; however, continuing to grow the campus computing utility in an *ad hoc* decentralized manner will

also be costly and inefficient in terms of space utilization, use of capital dollars, and security risks.

Conclusion 4: *Cost recovery approaches to achieving a financially self-sustaining central data server facility have not been identified.* The DCTF concluded that there exist several viable cost recovery opportunities, including UW Medicine fees, indirect cost recovery from research (requires policy and budget decisions), and a user fee or utility charge option (similar to telephone charges). A combination of these sources is likely, however, to fund only a portion of the facility.

In light of the above conclusions, the Task Force recommends the following:

Recommendation 1: *The DCTF recommends that the University initiate a pre-design study to further develop the concept of a new primary data center.* This study should be based on a phased approach and should carry out a more detailed analysis in order to identify a preferred option. A Data Center Planning Committee should be appointed to undertake this pre-design study.

Recommendation 2: *The DCTF recommends that four of the alternative solutions be advanced for further study.* While the Sand Point alternative is a specific site, the other options are intended to be representative of a type of alternative.

- On-Campus Facility — Academic Computer Center Site (representative)
- Off-Campus / Owned Facility — Sand Point Building 5
- Off-Campus / New Acquisition — Canyon Park (representative)
- Outsourcing Facility — Sabey Data Center, Tukwila (representative)

Recommendation 3: *Since a permanent solution is likely to take two to four years to implement, the University should pursue an interim solution.* Space should be leased in the interim in order to capture UW Medicine's near term growth and to build a market for a centrally managed data facility. Servers housed in this facility would be relocated to a central facility once it's available and the leased space relinquished. This interim period would also allow for the development and refinement of operating practices for the long term facility.

Recommendation 4: *The existing primary data center in the 4545 Building should be retained as a secondary data center to provide redundancy in support of business continuity for the University.*

Recommendation 5: *Since locally maintained servers and small distributed server rooms will continue to be the best solution for some users, the University should create a mechanism to properly support those small server rooms.* This support should include two components: first, advice during the establishment phase of a "unit-based" server

room, to help evaluate the feasibility of the server room compared to locating the servers in the University's central data center ("co-location"); and second, maintenance support of the utility infrastructure of the server room (HVAC, electrical, etc.) with appropriate service levels, perhaps as a fee-based or subscription service.

Recommendation 6: *A business plan for the management and cost recovery practices for the central data facility should be developed.* During the pre-design process, further analysis, negotiation, and decision-making should move forward with regard to cost recovery approaches for the data center.

Next Steps

Preliminary Report: The DCTF has concluded its initial work and has finalized its preliminary report. The Task Force is in the process of reviewing its findings with the university's technology advisory committees. Following this review, recommendations from these committees will be incorporated and the final recommendations will be presented to the UW budget committees in the spring.