

# THE UNIVERSITY OF MICHIGAN IT COMMONS NETWORK WORKING GROUP

7 December 2006

## **Network Working Group (UM NWG) Recommendation A Funding Model for the Distribution Layer**

Given the recent interest in the campus UMNNet backbone architecture and associated costs, the Network Working Group began a frank discussion on these two topics a week ago. After a bit of floundering on how to approach these two topics together, we decided the best approach would be to tackle them separately. Our recommendation for the funding model is below. The architecture recommendation will follow in early February 07. Just as an introduction to the architecture, however, current statistics show that the current architecture of 2 distribution layer switches in many buildings is used more extensively than thought:

- 139 DL “sets” were installed (# of buildings on campus where DL’s are located).
- 51 of the buildings were not installed with redundancy (building was too small with no switches behind the DL and/or the DL was also the access layer switch).
- 88 buildings were installed with redundancy. Of those installed with redundancy:
  - 63 of them use the redundant feature (72% of the 88).
  - 25 of them do not use the redundant feature (28% of 88).
- Of the 63 that use the redundant feature:
  - 25 are currently providing redundancy to all switches connecting to the DL’s.
  - 20 are currently providing redundancy to more than 50% of the switches connecting to the DL’s.
  - 9 are currently providing redundancy to more than 20% of the switches connecting to the DL’s.
  - 9 are currently providing redundancy to less than 20% of the switches connecting to the DL’s.

Members of the NWG overwhelmingly agreed that the refresh rate of Distribution Layer (DL) hardware and software, as well as the ongoing maintenance of DL’s need to be consistent throughout the campus. Failure to have this function centrally administered may lead to inconsistent hardware functionally and support, increased costs for sparring and

repairs, and increased costs for system administration and monitoring. In addition to diminishing financial predictability for the total cost associated with this service, this leads to a campus system that is not consistent with an enterprise solution and may, therefore, provide performance that is not consistent across the network. Campus users, desiring a consistent experience across campus, may not have that experience.

The recommended model, by members of the NWG, calls for DL replacements and upgrades to be funded from a common pool (debt financing if IITCom provides) which is replenished by a “capital fee” which would be part of the annual backbone charge. The recommended refresh/upgrade rate would be determined by the NWG and the IT Commons Stewards would have to endorse the recommendation prior to implementation. If a department decides to upgrade or replace a DL prior to the planned refresh cycle, that department would pay the difference in costs, the baseline being covered by the common pool. An equipment baseline would need to be developed by the NWG, and reviewed periodically, so as to not penalize departments for early replacement of high performance equipment.

Ownership of the DL should be the “UMNet backbone” as administered by IITCom. This allows redeployment of DL’s, upon replacement, if they can be used elsewhere in the backbone. If a backbone redeployment cannot be identified, the department would take ownership if a departmental use can be found. There would be an exception for departments that replace DL’s early with very high performance equipment that had a significant additional expense in doing so. The definition of “significant additional expense” has not yet been defined.

This recommendation was endorsed by the below individuals representing their associated schools/Departments:

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| Bruce Leonard<br>Systems Administrator Associate<br>Law School      | Mark Weisan<br>Telecommunications Manager<br>LS&A                |
| Dan Kjos<br>Director, Engineering<br>IITCom                         | Roy Hockett<br>UMNet Backbone Network Engineer<br>IITCom         |
| Dan Maletta<br>Manager of Networking<br>College of Engineering      | Susan Harris<br>Manager<br>IITCom                                |
| David Reinhardt<br>Network Operations Manager<br>School of Business | Walt Reynolds<br>Systems Security Development Engineer<br>IITCom |
| Bill McNamee<br>Network Administrator<br>ITCS                       | Jennifer Miller<br>System Administrator<br>School of Information |