CASE STUDY

C1 CHAMPION O·N·E™

HOSPITAL DATA NETWORK UPDATE

Leverging a passive DWDM system for increased bandwidth

Executive Summary

DEF Hospital is being challenged with two main data infrastructure problems: increased bandwidth demands and a maintenance issue with the existing fiber cable connecting its two data centers. The increased bandwidth demand is primarily the result of pending improvements to patient support systems throughout the hospital. For instance, one of the systems being requested by the X-Ray department requires multiple 10Gigabit links for higher-speed data transmission; another system allows patient information to be downloaded to a doctors' laptop while visiting the patients' room.

New services would normally be added to spare strands of fiber as they are implemented, but a damaged fiber cable has greatly reduced the amount of available fiber. There are, however, a few ways to address this problem. One solution is to repair or replace the damaged fiber cable; another option is to implement a passive DWDM system which will support up to 40 channels over two of the existing fiber strands. In order to meet the planned schedule for the new patient systems, a solution needs to be in place by the first quarter of 2010.

Alternative #1 involves the replacement of the defective fiber cable, as a fiber characterization of the existing fiber cable revealed there are several problems areas and that the cable should be replaced. The placement cost for a new cable is estimated to be a sum in the low six figures and does not include the network rearrangement cost of around 20 percent.

Alternative #2 involves the installation of a DWDM passive network. This network would support up to 40 channels over two fiber strands and consist of a MuxDemux unit at each location. The DWDM transceivers will plug into switches and routers and will be connected to the corresponding wavelength on the MuxDemux unit. The MuxDemux filters are purely passive devices and do not require any power to operate. The cost of this solution, which includes transceivers for the first six channels, is almost 40 percent less than Alternative #1. Champion ONE (C1) provides a five year warranty for the transceivers and filters at no additional cost.

Recommendation

Based upon the initial cost estimates and quote, it is recommended that the hospital proceed with the implementation of the passive DWDM system. This solution will satisfy the bandwidth requirements for the entire study period and will provide a lower cost solution that meets industry standards.

Business Opportunity

DEF Hospital owns a two-location fiber optic network today, as illustrated in Figure 1. This network connects the two data centers, North and South. Survivability is provided via leased service in another fiber route that is not shown in Figure 1.

Two departments within the hospital have secured funding for the upgrade of their patient support systems. These support systems, however, require the addition of multiple 10GigE links between data centers as well as many GigE links with the hospital. This technology upgrade will allow the hospital's nurses and doctors to provide a higher degree of patient care, enhancing the patient experience. In-house patient numbers are expected to increase as recognition of these investments in improved patient care sparks discussion around the city. As a result of these needs, the new network must be in place by the start of 2010.

Present Data Network

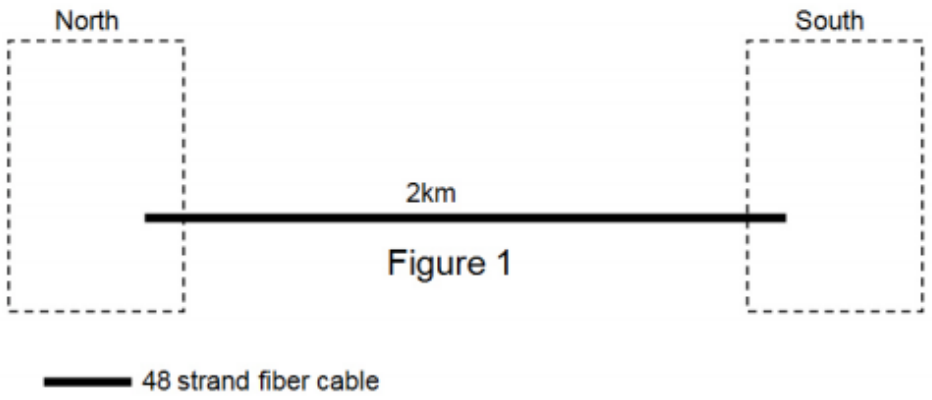


Figure 1

Project Schedule

Gather data requirements from each department	- complete by end of April, 2009
Design new data network with one of our partners	- complete by end of May, 2009
Receive approval to move forward with RFP	- complete by June 12, 2009
Issue RFP to vendors on record	- complete by July 17, 2009
Receive completed responses	- complete by August 7, 2009
Submit business case for approval	- complete by August 31, 2009
Select vendor and award contract	- complete by September 17, 2009
Place equipment purchase order with vendor	- complete by September 28, 2009

Alternatives

There were two viable alternatives considered to deal with the hospital's infrastructure dilemma – repair/replacement of existing fiber cable and installation of a passive DWDM 40 channel network. In order to receive competitive bids, the RFP process was used for the passive network option. A copy of the RFP was sent to several equipment vendors and C1 emerged with the winning response and quote.

Alternative # 1

Alternative #1 requires the replacement of the existing 48 strand fiber cable with a 96 strand cable. Fiber characterization revealed damaged fibers at several locations along the route, and it was established that the cost to replace the cable would be a sum in the low six figures, plus 20 percent to rearrange the network. When completed, this solution would provide for 48 dual-fiber services, meeting the forecast.

Benefits

Lower Transceiver Cost
Due to the fiber route's short distance, standard transceivers can be used.

Ease of Operation
The transceivers can easily be connected to the assigned fibers.

No Technician Training Required
No technician training is required as no abnormal operation is required.

Detriments

Higher Rearrangement Cost
All of the hospital's present services will have to be disconnected and moved over to the new cable

Alternative #2

Alternative #2 calls for implementation of a passive DWDM solution that provides 40 DWDM channels between data centers using only two strands of fiber. DWDM transceivers are plugged into the switches and routers, which are in turn connected to the corresponding port on the MuxDemux units.

Benefits

Lower Initial Cost
This alternative is 40 percent less expensive than Alternative #1.

Fiber Conservation
This alternative uses only two strands of fiber whereas the other alternative uses 80 strands for 40 services.

Detriments

Technician Training
Technicians will need to receive a minimal amount of training on how to connect the fibers to the correct ports on the MuxDemux units.

Assumptions

There are a few underlying assumptions involved when analyzing this situation. The first assumption is that equipment pricing will hold steady for the next 12 months. The second assumption is that bandwidth demand that is forecasted by each department will not fluctuate more than 30 percent during the next twelve months. The discount rate is five percent.

Project Description

In the event that the business case is approved, the director of the hospital's IT department will generate a purchase order through the purchasing department. This department will proceed to submit the purchase order to Champion ONE for the passive network recommended as Alternative #2.

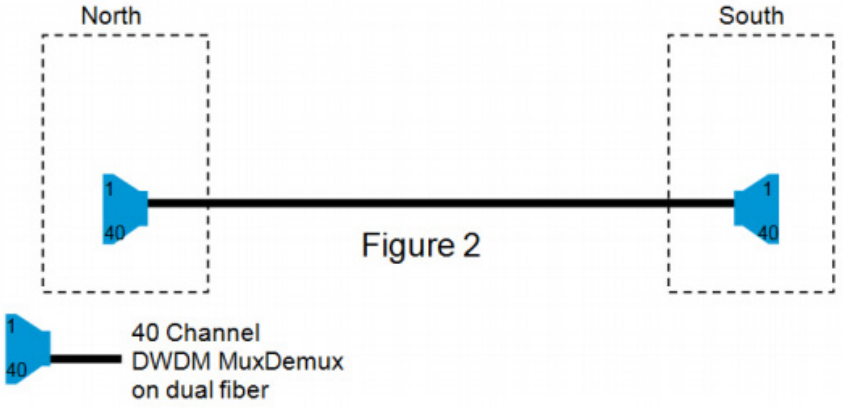
Champion ONE will ship the equipment to the hospital within an agreed upon interval and will assist with the staging and on-site installation/testing. The testing phase should take less than eight hours or one work day. During the testing interval, Champion ONE will provide training to the hospital's technicians who will be maintaining the passive network

Support via e-mail and telephone will be made available to the technicians at no charge, should it be necessary. On-site support beyond the eight hours can be arranged at the regular rate.

This passive network is designed to support up to 40 DWDM channels between data centers at the 1GigE and 10GigE rates. All 40 channels can be utilized when following the instructions provided by Champion ONE to the hospital's technicians.

Alarm reporting and troubleshooting of the passive network will be accomplished by use of the Layer 2 and Layer 3 networks. The technicians will be monitoring the switch and router ports for these outside alarms.

The passive network being recommended is illustrated in Figure 2 below.



The Champion ONE Commitment

For over twenty years, we at Champion ONE have been delivering great value to our customers through high-quality products at competitive prices. As one of the leading suppliers of compatible optical transceivers and a major supplier of optical networking solutions, we take great pride in building long-term relationships as a trusted partner. In this spirit, everything we bring to market bears the Champion ONE Shield™, which strengthens this trust through five core promises: Performance, Availability, Compatibility, Protection, and Value.

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