CARRIER CO-LOCATION BUILD OUT

Expansion of Ethernet Services Via DWDM Passive Networking

Executive Summary

HIJ Carrier has decided to expand its service area and establish points-of-presence (POPs) at two co-location sites in a large downtown area. The company's marketing study has revealed a high demand for metro and regional Ethernet services, and as a result, the plan is to build a ring between the two POPs for a higher level of survivability. If there is a problem at one POP, the customer can quickly be re-routed to the other POP, avoiding a service interruption. This feature has drawn a lot of customers to the HIJ Carrier sites over the years, and it is forecasted that eight services or circuits will be required in early 2009 when the POPs will become functional. This business case study covers the expenditures required for the protected network between the two POPs.

The team overseeing this project reviewed the technologies available and came to the conclusion that a passive DWDM network is the best solution to meet the carrier's needs. This type of network allows up to 40 services or channels to be multiplexed over two strands of fiber. In order to realize the best pricing, the project team drafted a RFP and distributed it to vendors who offer passive data systems. The team had requested that all responses be designed to support 1GigE and 10GigE signals over fiber routes, 13.4km and 19.3km. The RFP process ultimately identified two strong vendor alternatives for the passive DWDM network.

C1 CHAMPION O·N·E™

Alternative #1 represents a Champion ONE (C1) passive DWDM network that does not require power and has an initial cost in the low six figures. This solution is expandable up to 40 channels on two fiber strands, but allows the customer to start with 16 channels, eight for the initial forecast and eight for growth. Included in the price of the network are transceivers for the first nine channels – eight working channels and one maintenance channel. The C1 solution provides customers the ability to select the starting channel number and skip channel plan. The C1 equipment also carries a five year warranty.

Alternative #2 represents another DWDM passive network supplied by Vendor Z that also does not require power to operate. This network will supports up to 40 channels on two fiber strands, but the customer must install all forty channels immediately and the channel count and channel skip plan is already determined. The DWDM transceivers connect to the switches, routers, and MuxDemux units in the same way as Alternative #1. The MuxDemux filters are purely passive devices and do not require any power to operate. The cost of this solution including transceivers for the first eight channels is 20% higher than Alternative #1. Vendor Z's equipment offers a one year warranty.

Recommendation

Based upon the initial cost, it is recommended that HIJ Carrier proceed with the implementation of Alternative #1. This option provides the most flexibility when it comes to scalability, flexibility and warranty period. It will satisfy the bandwidth requirements for the entire study period and provides a lower cost solution that meets industry standards.

Business Opportunity

HIJ Carrier leases space and connecting dark fiber at two POP locations in the downtown area, as illustrated in Figure 1. It is forecasted that eight data channels will be required to transport customer service from one location to the other in the event of a service problem at one of the POPs. Passive DWDM equipment needs to be installed on the leased fiber to handle the forecasted service demand, and protection switching will occur at Layer2 or above in order to provide POP survivability. The carrier's marketing study has revealed a demand for metro and regional Ethernet service in this area, and it is anticipated that the protected POP architecture will attract more customers to HIJ Carrier's network. The new network must be in place by the start of 2009.

Proposed Data Network

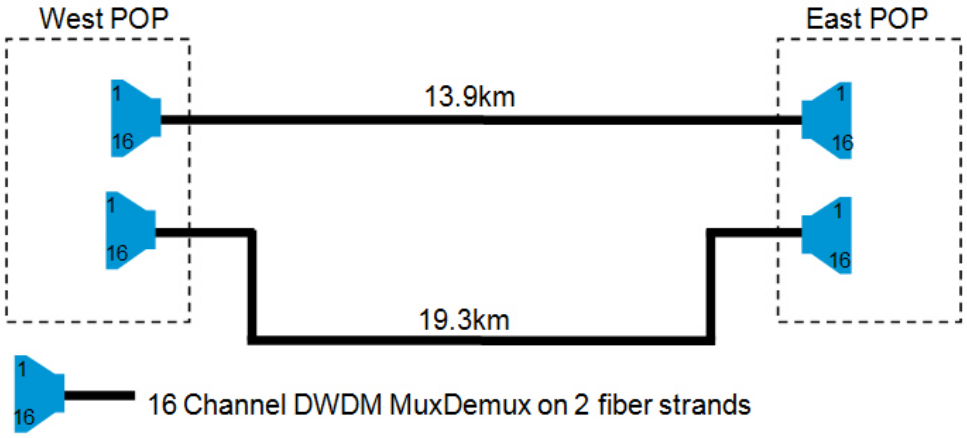

Figure 1

Project Schedule

Gather data from marketing study	- complete by end of April, 2008
Design new data network with one of our partners	- complete by end of May, 2008
Receive approval to move forward with RFP	- complete by June 13, 2008
Issue RFP to vendors on record	- complete by July 18, 2008
Receive completed responses	- complete by August 8, 2008
Submit business case for approval	- complete by August 29, 2008
Select vendor and award contract	- complete by September 12, 2008
Place equipment purchase order with vendor	- complete by September 26, 2008
Take delivery of equipment	- complete by November 21, 2008
Equipment ready for new service	- complete by December 19, 2008

Alternatives

There were two alternatives considered for this project: installation of a sixteen channel passive DWDM network scaleable to 40 channels, or installation of a 40 channel passive DWDM network. In order to receive competitive bids for the passive network, an RFP process was used. A copy of the RFP was sent to several equipment vendors and C1 emerged with the winning response and quote.

Alternative #1

Alternative #1 represents the C1 passive DWDM network that does not require power and has an initial cost in the low six figures. This solution is expandable to a level of 40 channels on two fiber strands, but allows the customer to start with 16 channels – eight for the initial forecast and eight for growth. Additional channels can be added on an in-service basis. Included in the price of the network installation are transceivers for the first nine channels: eight working channels and one maintenance channel. These transceivers plug into the data switches and routers and are connected via fiber patch cable to the corresponding wavelength port on the MuxDemux units. The C1 solution offers customers the ability to select the starting channel number and skip channel plan. The C1 equipment also has a five year warranty.

Benefits

Lower Initial Cost

The C1 solution is almost 20% less expensive than the alternative. The solution is scalable if more channels are needed and supports a "pay as you grow" strategy.

Flexible Design

The C1 solution allows a customer to select the starting channel and the channel skip plan if connection to other carriers is required.

Minimal Technician Training Required

C1 documents simplify the carrier technician's efforts.

Longer Warranty Period

Champion ONE offers a five year warranty period.

Detriments

None identified.

Alternative #2

Alternative #2 represents an alternate DWDM passive network provided by Vendor Z that also does not require power to operate. This network will supports up to 40 channels on two fiber strands, but the customer must install all forty channels at once and the channel count and channel skip plan is already determined. The DWDM transceivers connect to the switches, routers and MuxDemux units in the same way as Alternative #1. The MuxDemux filters are purely passive devices and do not require any power to operate. The cost of this solution, including transceivers for the first eight channels, is almost 20% higher than that of Alternative #1. Vendor Z's equipment offers a one year warranty.

Benefits

Fixed Channel Plan

Carrier does not have to determine the channel plan.

40 Channels Available on Day One

Carrier doesn't have to add channels later.

Detrimints

Higher Initial Cost

Carrier must pay for 40 channels if demand does not materialize.

Fixed Channel Plan

Carrier may have difficulty interfacing with other carriers.

Assumpitons

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% during the next twelve months. The discount rate is 5%.

Project Description

In the event that the business case is approved, the director of the carrier's planning department will generate a purchase order through the purchasing department. This department will submit the purchase order to Champion ONE for the passive network recommended as Alternative #1.

Champion ONE will ship the equipment to HIJ Carrier within an agreed upon interval and will assist with the staging and on-site installation/testing. The testing phase should take less than 16 hours or two work days. During the testing interval, Champion ONE will provide training to HIJ Carrier'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 16 hours can be arranged at the regular rate.

This passive network is designed to support up to 40 DWDM channels between POP locations at the 1GigE and 10GigE rates. Champion ONE will provide training to HIJ Carrier's technicians regarding how to grow the network up to 40 channels.

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.

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