Fiberco: A holding company for national & regional optical networking initiatives

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Emerging requirements may not be met by a high-performance, yet best-effort IP network

- DWDM: 10-Gbps channels now; 40-Gbps soon
- Computational science grids
  - Applications with deterministic network requirements
- Infrastructure for basic and applied networking research

Moment of unprecedented contrarian economics

- Distressed fiber assets available on national scale
  - ‘once in a lifetime’ opportunity
- Optronics industry severely impacted by carrier bust

However, optical networking alone does not solve the end-to-end performance problem

- Host configuration (Web100)
- Local networking capability (DAST, Internet2 E2EPI)
## Optical network project differentiation

<table>
<thead>
<tr>
<th></th>
<th>Distance scale (km)</th>
<th>Examples</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metro</strong></td>
<td>&lt; 60</td>
<td>UW(SEA), USC/ISI(LA)</td>
<td>Dark fiber &amp; end terminals</td>
</tr>
<tr>
<td><strong>State/Regional</strong></td>
<td>&lt; 500</td>
<td>I-WIRE (IL), I-LIGHT (IN), CENIC ONI</td>
<td>Add OO amplifiers</td>
</tr>
<tr>
<td><strong>Extended Regional/National</strong></td>
<td>&gt; 500</td>
<td>TeraGrid, NG Abilene, Light Rail</td>
<td>Add OEO regenerators &amp; O&amp;M $'s</td>
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</table>
Last October, UCAID board authorized an investment of up to $10M over 5 years to a national optical network facility project

- Drawn from current and anticipated Abilene Network reserves
- Contingent on
  - Viable national program
  - Scaleable governance and financial models
  - Critical mass financially
- Potential for the facility to serve as transport platform for 3rd generation Abilene IP backbone
  - 2005-2006 time frame
- Subsequent board action to authorize acquisition of national fiber
  - Both through CENIC and separate UCAID LoI
UCAID role

UCAID has examined >10 national facilities based networking options over last two years

- Goal is to leverage incremental cost advantage of DWDM systems
  \[ \frac{\text{Cost}(\lambda_N)}{\text{Cost}(\lambda_1)} \sim O(10\%) \]
- Case for ‘build’ becomes stronger when system has >10 \( \lambda \)’s

Pressing need for state/regional optical networks

- Joint Techs and Member Meetings sessions
- IP/Optical technical working group

UCAID has been active participant in both

- National Light Rail (NLR)
- SURA NBC & USA Waves
U.S. optical networking initiatives

Three current projects
- Fiberco
- USA Waves
- National Light Rail

Common factors
- National fiber footprint represents a strategic asset for HEC
- All leverage the much lower *incremental* cost of \( \lambda \)'s in an existing DWDM system

Differentiating factors
- Scope
- Buy vs. build approach
- Production vs. research capabilities
- Participation cost
CENIC – on behalf of NLR – has negotiated a significant fiber acquisition and operations partnership with Level(3)
  • Ability to purchase fiber at pricing at least through 2003

Can we create a lightweight vehicle for holding and redistributing fiber assets for both national and regional initiatives?
  • emulate success of Quilt Commodity Internet project

Achieving this alone represents a quickly attainable milestone with immediate benefits to the community while work on creating a national optical networking capability proceeds in parallel
Proposal

Outcome of NLR governance discussions

• Collaboration of CENIC, P/NW, Virginia Tech, and UCAID
• Level 3 has been very supportive of idea

Create a lightweight LLC – ‘Fiberco’

• solely to serve as a holding company for fiber assets
• Limited scope mitigates tax and other concerns that are the usual motivations for 501(c)(3) tax exempt status

Fiberco will acquire, hold, and distribute these assets for the benefit of its equity participants

• will operate on cost-recovery basis
• nationally leveraged tool for regional fiber acquisition

Fiberco will not be an operating entity

• will not light fiber or otherwise offer services
Regional
- Fiberco provides access to national-scale fiber pricing for state & regional networks

National
- If a national optical facility like NLR is launched now…
  - Fiberco can provide the fiber
- However, if the ‘buy’ option wins out over the ‘build’ option for now…
  - Fiberco provides the capability for higher education community to build such a facility at a later date
  - Fiber still can support network research
Participation

Equity participation open to non-profits (e.g., regional optical networks and universities) seeking to acquire fiber on either regional or national scale.

Equity participants will invest capital for Fiberco to acquire designated fiber segment(s):

- Fiber equity can be withdrawn under defined conditions.
Fiberco operations

Can either hold for or assign to non-profits

Operating costs will include

• Minimal business operation cost & insurance (D&O)
• Share of significant fiber repairs above covered events
• Any unexpected property and other tax liabilities

Costs will *not* include

• Fiber O&M, equipment co-location & power

Annual capital calls to cover expenses
Timeline

Fiberco initially chartered for two years
  • Board may extend lifetime in two-year intervals

Once Fiberco has distributed all its fiber assets, it will be dissolved
  • Pro-rated distribution of liquid assets to equity participants
Fiberco status

LLC incorporated in Delaware last month as *National Research & Education Fiber Company*
  - Name reserved

Documentation
  - Introductory slides and white paper

Draft LLC term sheet in preparation

For more information…
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