

INFOBRIEF

# Creating an Apples-to-Apples Comparison of Dark Fiber Self-Provisioned Networks and Lit Services

The addition of dark fiber and self-provisioning options in the E-Rate funding program has generated considerable interest among school districts seeking to meet the increased bandwidth requirements of digital curricula, streaming video, and online assessments.

One of the challenges districts face is how to demonstrate that a dark fiber or self-provision option is a more cost-effective alternative than a traditional 'lit' fiber solution purchased from a telecom service provider. District executives are struggling with how to structure their respective Requests for Proposal (RFP) to ensure an 'apples to apples' comparison between the options.

The FCC and USAC administrators have not provided specific guidance beyond the fundamental test of whether the chosen option is the most cost-effective alternative via a competitive bidding process. However, there are some key factors to consider to make the dark fiber or self-provision project 'reasonably defensible.'

Build vs. Managed Service  
Which is right for you?



**Length of time:** Ensure the time period for the network is clearly defined. As dark fiber leases (IRUs) can range from a few years to over 20 years, be sure to include the same time period for the lit services contract. Typically, lit services contracts provide discounts for longer time periods, but could lock purchasers into a specific bandwidth level that may not be adequate for their needs over the length of the contract term.

**Be specific** about bandwidth growth rate over the duration of the contract period. For example, if 1 Gb/s circuits are needed to connect locations today, but video, online testing, and 1:1 learning will push that to 10 Gb/s within three years, ensure that this incremental growth is included in the RFP. Consider the forecast student growth rate within the district and factor that in with the average bandwidth-per-student target requirements.

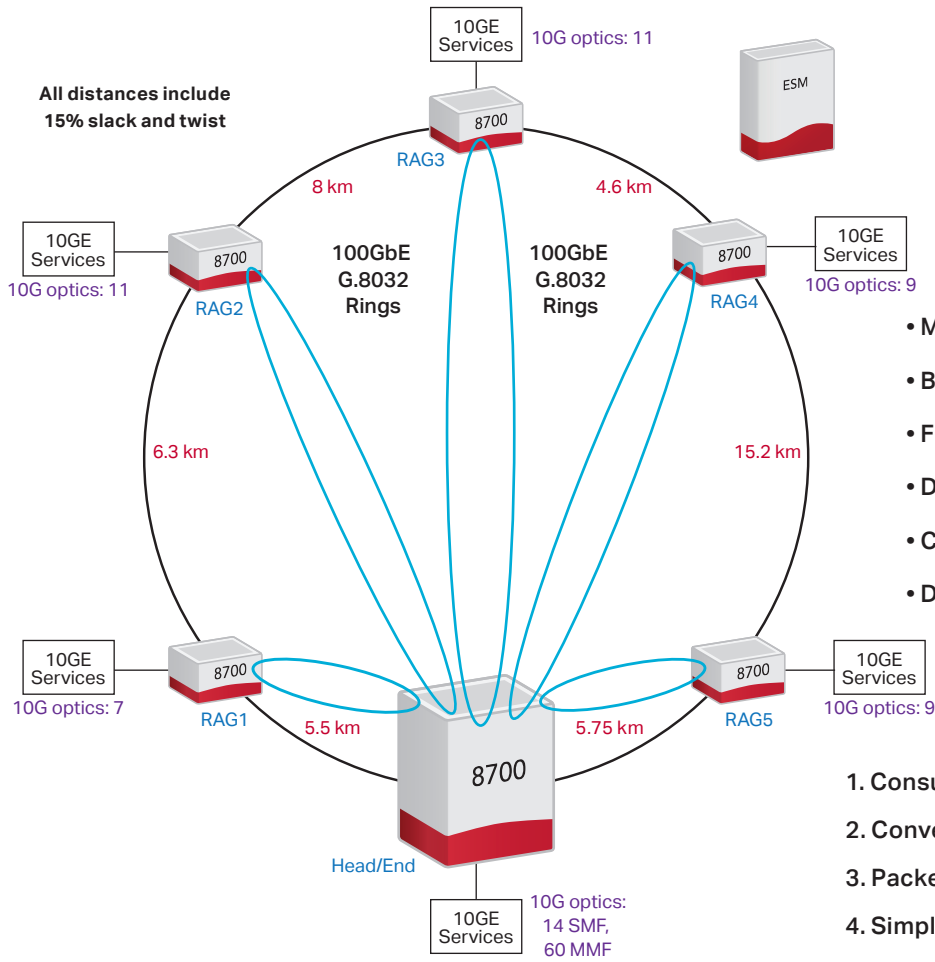
**Define** the type of service needed for each circuit within the network. Specify which circuits and locations will include higher-cost Internet access, which circuits will be transporting data between schools within the district, and which will be connecting data centers. This level of specificity will help vendors propose the most cost-effective network architecture for the amount of bandwidth needed. For example, a cluster of private clouds that connects a number of schools within the district may be a more cost-effective configuration than dedicated connections between all schools.

**Include** any up-front investments for special construction that may be required in the lit services option, along with the up-front costs for design and deployment for the dark fiber and self-provisioning options.

**Be sure to add** any maintenance and operations costs for fiber and electronics for dark fiber and self-provisioning projects. Many dark fiber vendors include fiber maintenance and operations costs within their IRU leases.

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3. Packet solution portfolio with common SAOS
4. Simplicity of a native 100GbE-based network

Figure 1. Example of a Ciena dark fiber solution

## Conclusion

The type of electronic equipment and network configuration can have a surprising effect on the cost-effectiveness of a dark fiber or self-provision option. The configuration design should minimize the number of network elements while ensuring the data transport required to provide a rich digital learning environment. As the cost of electricity to power the equipment can be substantial, it is imperative to specify technology that provides the most energy-efficient data transmission rate possible.

Although the dark fiber and self-provisioning options involve a larger up-front cost, the ongoing monthly charges can be significantly lower than a lit service. Incorporating some of the factors listed above in the RFP can ensure an equal comparison between the available options, and can help ensure that the dark fiber or self-provisioning option is the most cost-effective and reasonably defensible option.

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