

# Challenges Facing Transport

The background features a series of overlapping geometric shapes in various shades of green and white. A prominent dark green shape runs diagonally from the bottom left towards the center. Above it, a lighter green shape follows a similar path. The top portion of the image is a solid, medium green. The bottom right corner is white, creating a sense of depth and perspective.

# Topics

## Spares

- Location
- Equipment Variables
- Managing Spares for New and Old Equipment

## Manufactured Discontinued Equipment

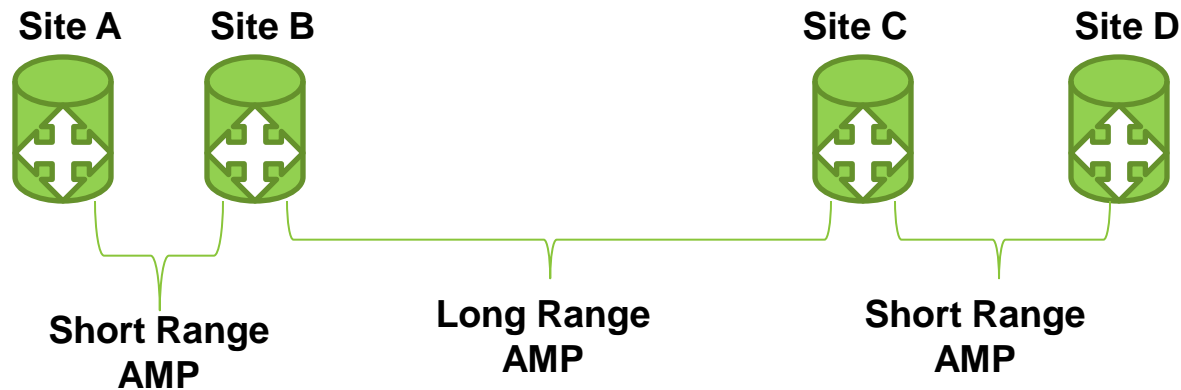
- Services on a specified product
- Entire Product Line
- Common Services Affected by Manufactured Discontinued Equipment

Spares

The image features a solid green background. In the upper left, the word "Spares" is written in white. The lower half of the image is dominated by a large, abstract graphic composed of several overlapping, angular shapes in two shades of green (a lighter lime green and a darker forest green) and white. These shapes create a sense of depth and movement, resembling a stylized landscape or a complex architectural structure. The white lines between the green shapes are sharp and clean.

# Spares - Location

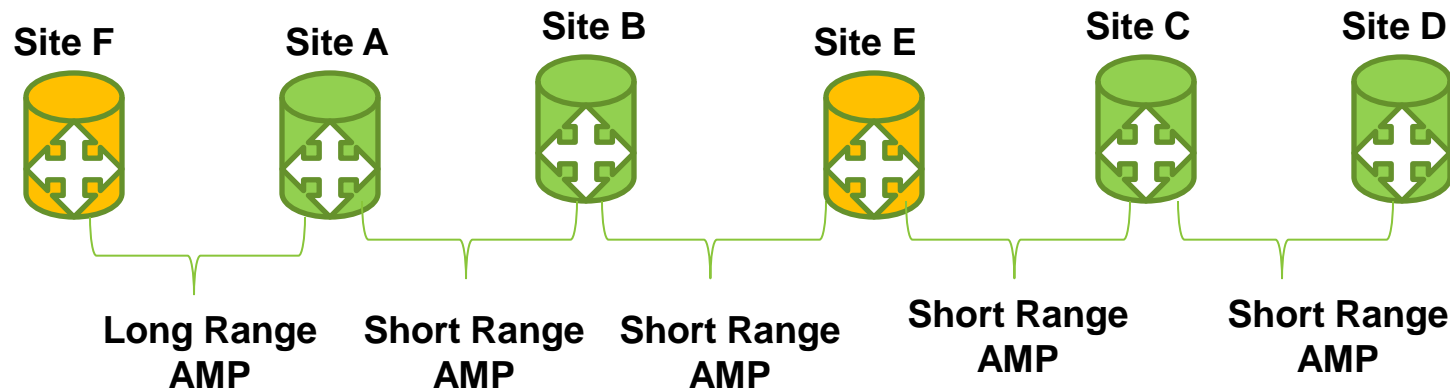
- Location – Managing locations is a crucial area when dealing with spares. It is key to improving **Mean Time to Restore Service**. Managing locations of spares will also help in overhead costs. In this example, we are focusing on transmitting across facilities and various amplifiers at locations.



- Policies need to be in place to manage distance between locations. An example of a policy might be “Spares must be within 2 hours of location”.
- Depending on which sites are closer to a metro region is where it is most likely technicians will be dispatched from. Knowing this will help determine where spares should be located.
- Systems need to be in place to help manage the equipment inventory to ensure spares are distributed appropriately. The timeliness and accuracy of these systems are crucial to managing spares for inventory and location.

# Location Continued

As we continue to grow new equipment in a region, we may have to re-allocate spares based on new services deployed.



In this example, we have added new equipment in areas, (Site E and F) which changes the amount of amplification needed in certain areas. This could change the location of spares.

Let's look at how sparing works for other equipment besides amplifiers.

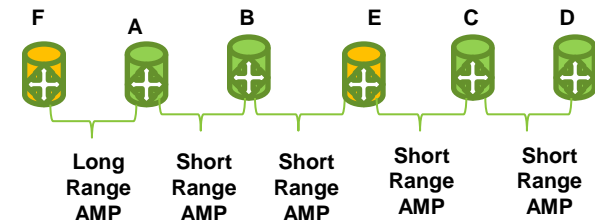
# Spares – Equipment Variables

- Processors

- Not only in growth do we have to match types of amplifiers, but you now have to watch processor modules, as well as other Common Equipment.

- What happens when you first deploy:

- Sites A-D with processor type 1,
- Sites D and E are turned up with processor type 2.



- Again, you have to be ready with spares in those areas to handle the change. In this example, growing in new sites, we would now have to make sure we have spares for those sites as well as managing the spares for the older type processor.

# Spares – Equipment Variables

- Services
- This same practice is done for each type of card carrying traffic and common control cards, right down to the SFP, XFP and CFP.



SFP



XFP



CFP

- Here you can have variations at each location. These include, but not limited to:
  - Single Mode vs. Multi Mode
  - Short Range, Intermediate Range, and Long Range
  - Types of service, Ethernet, FICON, Fiber Channel, SONET Optical Carrier

# Managing Spares for New and Old Equipment

You have to also add in when you do overlays of new equipment. You should strive to remove the old and use that equipment as spares in other regions.

It is usually remote regions that are not upgraded to new services first. This can possibly get you to have spares in these remote areas for quicker access than the general rule you have in place.



# Summary

- While this discussion is slated towards Fiber Optic equipment, these practices need to be in place for every type of traffic bearing equipment in your network.
- As you can see, managing spares takes a lot of time and can cost companies a great deal of money in equipment inventory.
- It is a critical part in maintaining and improving **Mean Time to Restore Service** in the event of a manufacturer hardware issue.
- Upgrading to new equipment in metro areas can get longer life out of equipment in rural areas.

# Manufactured Discontinued Equipment



# Manufactured Discontinued Equipment

- Services on a Specified Product
  - During the life of a product, manufacturers may discontinue features, as well as individual components of a product. When this happens we have a few options:
    - Work with manufacturer to see if services on this product line will be migrated to a new feature in this product line. Example, Single port card, being migrated to Multi port card. (This is very common when a card is discontinued)
    - Begin a migration process to remove Manufactured Discontinued component.
    - Purchase large quantities as spares to help maintain this product throughout the migration period.
- This also plays a big role in managing spares.

# Manufactured Discontinued Equipment

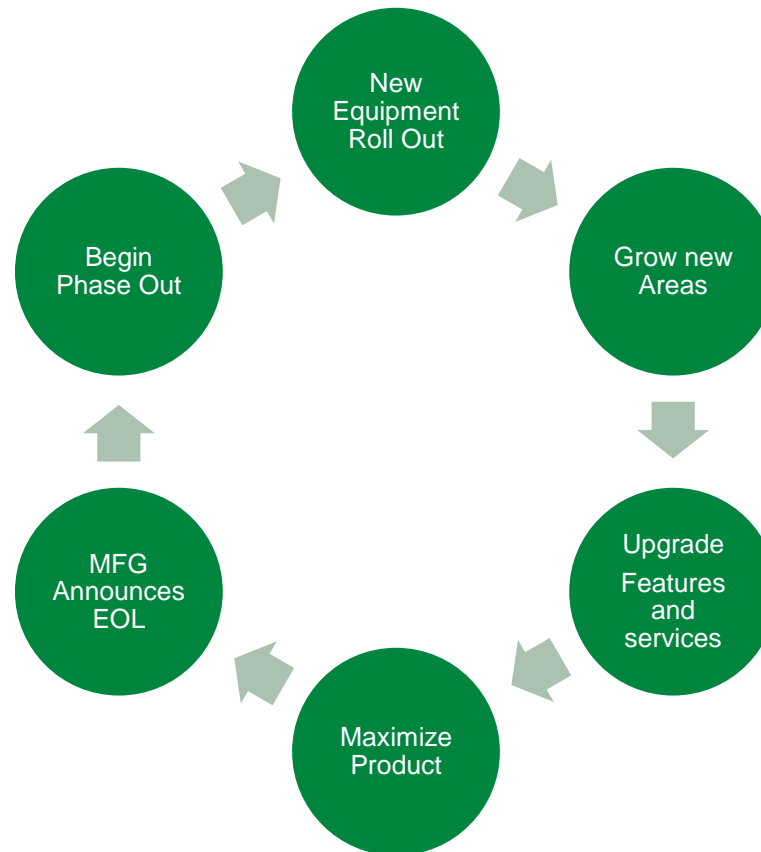
- Entire Product Line
  - This is when the manufacturer states it will no longer support anything on this platform, including new features and software upgrades. When this occurs we need to strive to:
    - Purchase these as spares to help maintain this product.
    - Seek out 3<sup>rd</sup> party vendors who will repair the manufactured discontinued portion of this product.
    - Work out a plan to migrate away from this product line.
- While we are given advanced notice of this type of scenario, it is challenging to keep up with the upgrade/migration to a newer platform

# Common Services Affected

- SONET, while still widely used, is one area that is the hardest hit with the rise of new technologies.
- There is a lot of older equipment that can only support a Synchronous Transport Signal (STS). To extend the life of some older equipment, manufacturers have enhanced some of their older equipment to support Ethernet Over SONET (EOS).
- While this has helped extend the life of some equipment, with the newer signal types such as Optical Transport Network (OTN), there now needs to be a migration process away from these older systems in place.

# Summary

- Every piece of equipment in the network today will be manufacturer discontinued sometime in the future. How you manage the migration away from old platforms and the steps you take to extend the life of the Manufactured Discontinued Equipment are the keys to successful growth.



# Thank You

- Questions?
- Thank you for your time today.