Siklu

ExtendMM

Multi-gigabit Capacity for Miles and Miles

Introduction

Delivering multi-gigabit mmWave capacity more than a few miles has seemed impossible until now. Approaches used today often include sacrificing availability or adding secondary links with huge cost increases and multiplying the complexity of the installation. To address these challenges and deliver multi-gigabit connections up to 6 miles (10km) or more Siklu offers ExtendMM. ExtendMM is a range extending solution that consists of custom Siklu software, built in switches and PoE out support, plus a dual band 5GHz,70/80GHz antenna. One or more of these elements can be implemented, however when all three are used together Siklu's ExtendMM solution delivers simple, cost effective, long range multi-gigabit connections. ExtendMM at its heart leverages a secondary back up PtP link, be it 5GHz, or any licensed MicroWave radio. The solution automatically and seamlessly keeps the connection alive for those few seconds the primary link may degrade due to temporary RF impediments such as heavy rain.

Using a Siklu EtherHaul-Kilo product 70/80GHz radio with a secondary radio (for example: 5.8GHz, 11GHz, 18GHz, 23GHz or 24GHz radios) plus ExtendMM sw are all that it takes to deploy ExtendMM. With a single click it becomes possible to turn an EH Kilo product into a long range link that delivers the capacity your install base is demanding.

What is ExtendMM and what does it offer?

ExtendMM is a complete solution comprised of:

- Integrated and easy to use, single click configuration, control and monitoring a powerful integrated networking engine
- Built in switches and PoE Out means running a single cable to the combined dual link solution.
- When using 5GHz as the secondary link approach Siklu's dual band 5GHz, 70/80GHz
- antenna supports any 5GHz radio external antenna product

Why Siklu's ExtendMM?

The E-Band spectrum is well suited for last mile high capacity short haul applications with heavy rain being the principal impediment affecting attenuation and as a result range. While light rain affects link performance marginally, heavy rain can degrade link performance significantly. The greater the distance of the link, the greater the degree of attenuation.

Leveraging lower capacity but longer range 5GHz or standard MW solutions and combining them with the EH Kilo product family delivers the best of both technologies.

How does Siklu's ExtendMM work?

Siklu's ExtendMM combines Siklu EtherHaul millimeter wave radios with a secondary radio operating in another frequency to create a high-availability, all-weather, extended range connection. A single click in the EtherHaul management GUI turns the two radios into a single high-performance long-distance multigigabit link.

Multiple Gbps will be available over the interference-free millimeter wave EtherHaul link, while the backup link will be in stand-by mode, ready to be activated for the rare occasions during the year when the mmWave link is not available due to weather conditions.

Siklu's ExtendMM operation in regular conditions (microwave radio in stand-by mode) When a significant rain event takes place, the ExtendMM solution automatically switches the high priority traffic (hitless) from the primary EtherHaul path to the secondary radio path. When the rain cell passes, the link immediately returns to multi-gigabit speed. No additional networking equipment is needed. The EtherHaul's powerful, integrated networking engine provides everything you need.

Adaptive modulation and advanced QoS

As the capacity of the 5GHz or microwave radio is lower than the multi-gigabit capacity of the EtherHaul family, ExtendMM leverages the EtherHaul's traffic prioritization capabilities to extend the availability of high priority traffic. When a significant rain event occurs, the adaptive capabilities of the EtherHaul are activated. When the EtherHaul capacity reaches a configured threshold, high priority traffic is forwarded to the lower frequency radio. Switching the traffic routing to the secondary radio is achieved hitlessly by the EtherHaul integrated networking engine. When the rain cell has moved on, and the EtherHaul can restore capacity to a higher level than the configured threshold, the traffic is routed hitlessly back to the EtherHaul.

Siklu's ExtendMM solution is based on the ITU-T G.8032 Ethernet Ring Protection switching standard. This standard uses advanced and fast networking capabilities to detect main link failures (or capacity drops) and to route the traffic seamlessly to the backup path and back.

Minimum Requirements from your backup radio

Siklu's ExtendMM solution operates with any wireless PtP product which supports an Ethernet transparent bridge mode that can transport any type of layer 2 broadcast or multicast traffic.

Deploying and activating Siklu's ExtendMM

To use and activate the Siklu ExtendMM, deploy the EtherHaul link and establish reliable connectivity. Make sure that the secondary radio is up and running. Connect the traffic cables to the EtherHaul ports (Eth1 & Eth 2). Connect the secondary radio to the EtherHaul port (Eth 3). Siklu's ExtendMM is easily and quickly activated using the web GUI.

1 Login to the link web GUI via your web browser (https://192.168.0.1 is the default address. If your link has a different address, login with it)

2 Activate the ExtendMM EH-OPT-EXTENDMM feature option license key.

3 Click "Advance Config" [1]

4 Click "ExtendMM" [2]

5 Click "ExtendMM Enable" [3]

6 Click "Copy to Remote" [4]

7 Click "Apply" [5]

The Siklu ExtendMM will operate with the default parameters in the majority of the cases. The default parameters may be configured as below – if required:

- Role: the EtherHaul radio on one side of the link functions as the "master" while the other is the "slave".
- Backup Port: the Ethernet port in the EtherHaul to which the lower frequency radio is connected to. (Default: Eth2)
- VID: VLAN ID used for the backup signaling (G.8032). (Default: 1)
- Capacity Threshold [Mbps]: the capacity minimum which triggers traffic being routed to the lower frequency radio. (Default: 20 Mbps)
- Main Path: status of the EtherHaul main path link.
- Backup Path: status of the lower frequency radio backup path link.

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