Anywhere

INTELLIGENT CONNECTIVITY

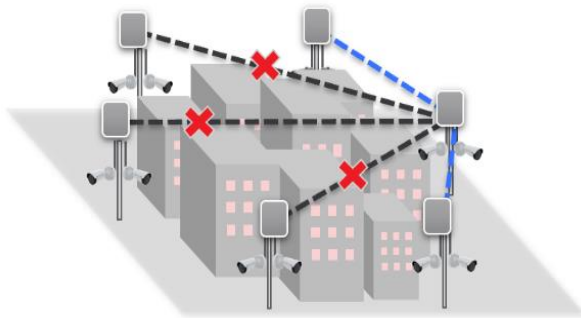# Smart Wireless Mesh vs. PTMP

Network Infrastructure

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Smart Wireless Mesh vs. Point-to-Multipoint Network
Connectivity in Enterprise Level Critical Infrastructure

Consumer level products in the market today are able to achieve PTP (Point-to-Point) or PTMP (Point-to-multipoint) network topologies at a reasonable price with easy plug-and-play features. If security is the main concern in a network, high-bandwidth high security products for data sensitive projects are often the common practice to the enterprise market. With so many products and network setups to choose from in the market, it is important to distinguish between different Mesh and PTMP options best suited for industrial level critical infrastructure networks for sufficient **Security, Reliability, and Stability.**

PTMP Network Topology

Point-to-Multipoint (PTMP) Network consists of one master node and several client nodes. The line of sight between each client node and the master node is critical for this type of network to work. This topology is recommended for one-way wireless broadcasting as the master node takes

charge and distributes the data to the designated client nodes, or when all client nodes stream data only to the one single master node.

The Advantages

The PTMP topology has the advantage of being conceptually simple to setup and configure. With a broadcasting master node, the client nodes can be **installed anywhere** in the area covered as long as the line-of-sight (LOS) between the client node and the master is present. The cost for the more expensive master node is often offset by cheaper client nodes.

The Disadvantages

The total bandwidth available is divided and shared across a PTMP network since the master node is the centre point in transmitting data to all the connected client nodes. Lower bandwidth performances in to the PTMP is unenviable. Demanding high data throughput applications may run the risk of creating a bottleneck in data traffic when too much data travels to and from the single master node, which in return affects the network performance as a whole. Secondly, the distances between each of the client nodes and the master should be similar. **A distance that varies too much can result a drop in network performance and efficiency.**

Due to the bandwidth drop for every node added to the PTMP setup, future expansions are not supported which in turn limits the scalability of this type of network topology. Lastly, with the master node broadcasting the radio signal over a wide area it will affect and limit the use of the radio frequency spectrum for other applications, e.g., local Wi-Fi hotspots or similar wireless uses.

PTMP Network Reliability

The most challenging drawback with PTMP is the **Reliability**. Everything relies on the master node, that then becomes the single-point-of-failure. A single-point-of-failure due to power loss or disconnection may cause the whole network to fail. There is no way around this as it is very fundamental in the PTMP topology design.
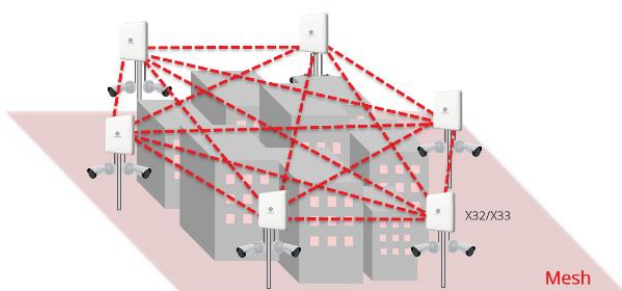
Smart Wireless Network

Anywhere Networks' Smart Wireless Network supports long-distance backhaul connectivity capable of overcoming diverse and challenging outdoor environments, such as seen in smart cities, rural provinces, airports, mining camps, industrial ports, construction sites, and more. Common challenges our solutions resolve include various terrain challenges, extreme weather conditions, and limited timeframe for installation and project completion.

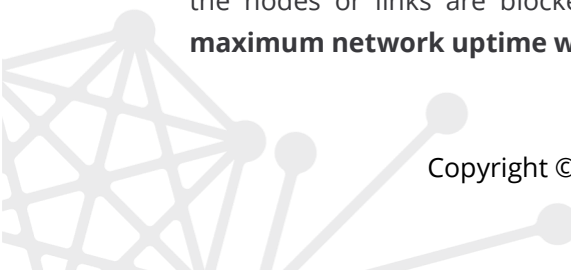## Mesh Network Topology

Designed for Demanding High data rate and Low Latency

The **Smart Wireless Mesh Network** provides the backhaul connectivity needed in any security or applicational network with a web of coverage in a designated area. The distributed nodes with individual links multiply the total available bandwidth within a network to optimize traffic flow. Since there is no differentiation between master and client node, each link of the mesh network can support **up to 1,000 Mbps** – sufficient for any video streaming and analysis setups – with **built-in failover and redundancy.**

The Reliability

Multiple wireless backhaul paths forming a web of connectivity is specifically designed to improve network resilience to unknown threats or risks. It avoids the challenge with a single-point-of-failure by its very design. Redundant paths in a mesh topology are instrumental in critical infrastructures due to the ability to support a reliable network even under circumstances where one or more of the nodes or links are blocked. **Having multiple paths allows for data traffic to ensure maximum network uptime with the optimal transfer speed for any data at all times.**

Network security is vital in contributing to the overall reliability of the network. **Anywhere Networks Smart Mesh products** are all IP67 rated to withstand the harshest environmental challenges and provides end-to-end AES 256 encryption to safely and securely protect users against cyber-threats. This is more advanced than most PTMP options in the market. Each link is encrypted to provide **maximum security end-to-end throughout the network to prevent eavesdropping or data sniffing**.

The Stability

Anywhere Networks increases the possibilities of creating a dynamic and desirable solution by overcoming the limitations of fibre installations over impractical terrain or the limitations of a direct line of sight in PTMP installations with added load-balancing features and multi-hop protocol optimizations are also unique features within the mesh. High data rates are ensured through the designed web of unique links with built-in contingencies catering for multi-directional communication within the network for quick response to the ongoing fluctuation of network traffic essential for critical infrastructure installations.

Conclusion

Mesh is more versatile to project requirements, especially in cases where the Line-of-Sight might not always be guaranteed 100% of the time. A mesh network does not sacrifice the total bandwidth available and is suitable for multiple hops throughout the network. **PTMP** solutions do not qualify for further expansions as the bandwidth will be reduced across the entire network. It also has a bottleneck disadvantage as the point of the master node in prioritising the data traffic. PTMP solutions are not suitable for critical infrastructure deployments as the primary route performance cannot always be guaranteed. With extra reliable measures in place to **improve the redundancy, security, and scalability** of a network, the **Smart Wireless Mesh** by **Anywhere Networks** supplies more suitable backhaul support than a PTMP setup for critical network infrastructures.

It is not just your wireless connection – it is a Smart Wireless Network from Anywhere Networks!

Enquiries

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