WHITE PAPER

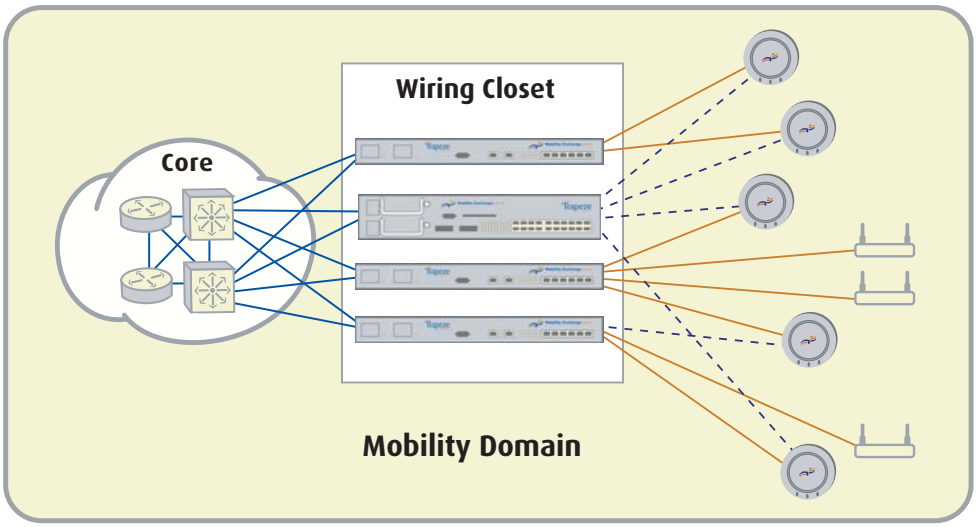
Wireless LAN Switches: A Topology Guide

The Trapeze Mobility System provides a variety of flexible deployment options when designing a wireless LAN. Its architecture ensures that security, mobility and other critical wireless LAN functions will operate in any topology.

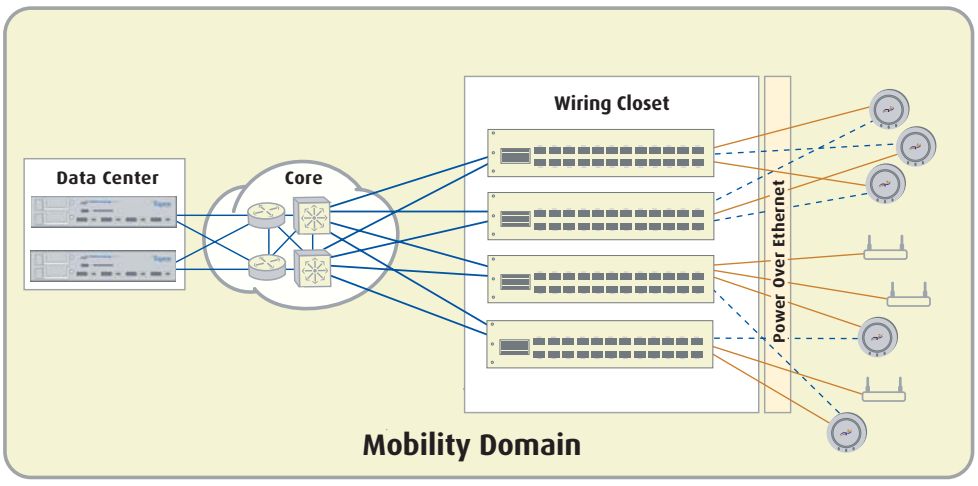
The brain of the Trapeze Mobility System is the Mobility Exchange, where most of the system's intelligence resides. The Mobility Exchange is available in three different platforms to support a variety of data center and wiring closet topologies.

When Mobility Exchanges are in the data center – at the network core – it's a centralized deployment. Conversely, when Mobility Exchanges are in wiring closets, it's a distributed deployment. Trapeze Mobility Points support both topologies because they can be directly and indirectly attached to Mobility Exchanges, ensuring that the Trapeze Mobility System will operate well in any design.

Trapeze Networks Mobility System in a Distributed Topology



Trapeze Networks Mobility System in a Centralized Data Center Topology



For most organizations, network realities will prompt a combination of centralized and distributed Mobility Exchanges, although one may be predominant. In general, a centralized deployment is best served by the MX-400 or the MX-20, while a distributed deployment favors the MX-20 or the MX-8.

If both centralized and distributed topologies support all wireless LAN functions, how do you determine the best way to roll out the Trapeze Mobility System and which Mobility Exchange platform to use? Ultimately, a variety of factors impact the decision, including:

- Topology preference
- Initial wireless LAN size
- Access point density
- Power over Ethernet and device management
- Link security
- Voice and quality of service
- Capital cost

Factors Impacting Topology Choice

Topology preference. IT organizations often advocate one topology over another. Some prefer a centralized deployment with as many resources in the data center as possible. Others prefer a distributed topology where network resources are in the wiring closet.

Your IT organization's preference for one topology versus another will bring more focus and clarity in your choice of Mobility Exchange platforms. If your IT organization does not have a strong topology preference, many other factors will shape your final decision.

Initial wireless LAN size. If you take the "walk-before-you-run" approach to wireless LANs, centralized deployment is an ideal starting point. You can install a wireless LAN switch in the data center and populate just conference rooms and other specific areas with Mobility Points.

As your wireless LAN infrastructure grows and traffic patterns change, deploying more wireless LAN switches in wiring closets might be the easiest way to scale. Deploying additional Mobility Points in wiring closets will require the installation of wireless LAN switches that support power-over-Ethernet – either directly or by using a third-party power injector.

Access point density. The number of Mobility Points needed in a wireless LAN depends on the level of performance you desire. A few Mobility Points will suffice for simple coverage that allows many users to share each radio.

With few Mobility Points in a given area, you can centralize the Mobility Exchange in the data center, use the wired infrastructure to link to them, or distribute low-density MX-8 Mobility Exchanges to wiring closets. Higher densities require a centralized approach with the MX-400 in the data center supporting scores of Mobility Points or distributed MX-20s in wiring closets.

Power over Ethernet and device management. All wireless LANs need power over Ethernet in wiring closets to activate access points. This can be done using a switch with power-over-Ethernet ports or a third-party power injector. For long-term flexibility, power-over-Ethernet devices should supply ample power for dual-radio access points, which need about 8-10 watts.

For IT organizations that put a premium on managing fewer devices, distributed Mobility Exchanges with integrated power over Ethernet can meet the challenge. A centralized topology with Mobility Exchanges in the data center still requires power over Ethernet in the wiring closet as well as more individual switches to manage.

Link security. Although physical links can be used to launch an attack, the wired network is considered a trusted medium. Physical access to the premises is restricted, wires and cables are hidden in conduit, and assets are locked away in wiring closets and data centers. In this case, a centralized Mobility Exchange in the data center can connect indirectly to Mobility Points through an interceding network.

Alternatively, if the link between the switch and access point cannot be compromised, consider distributing Mobility Exchanges in the wiring closet and directly connecting Mobility Points. In this instance, an intervening device will render the Mobility Point inoperable. Deployments in public spaces like airports may place a premium on this level of physical link security.

Voice and quality of service. If you are deploying a wireless LAN to support voice services, consider the impact of the wired infrastructure on voice-over-wireless-IP traffic. Distributing Mobility Exchanges to wiring closets simplifies voice support. Mobility Exchanges mark priority traffic and Mobility Points, with multiple queues per user, always serve voice traffic first.

In a centralized topology with Mobility Exchanges in the data center, the wired backbone must support quality of service policies to prioritize voice traffic. Few wired networks support quality of service because bandwidth is usually plentiful. But the need to support voice over wireless means core routers and switches need to handle traffic marking and priority delivery.

Capital Cost. Businesses and IT organizations vary in their sensitivity to initial capital outlay. Distributing Mobility Exchanges to wiring closets will likely cost more than a centralized approach in the data center. However, keep in mind that directly connecting Mobility Points to Mobility Exchanges lets you forgo configuring each Mobility Point, which significantly lowers deployment and operational costs.

Guide to Selecting a Mobility Exchange

Factors	Preference	Platform
Topology Preference	Strongly prefer centralized	MX-400 MX-20
	Strongly prefer distributed	MX-20 MX-8
Initial Wireless LAN Size	Wireless LAN everywhere	MX-400 MX-20
	Start small, grow implementation	MX-20 MX-8
Access Point Density	High	MX-400 MX-20
	Low	MX-400 MX-8
Power Over Ethernet/Device Management	High need to manage fewer devices	MX-20 MX-8
	Low need to manage fewer devices	MX-400 MX-20
Link Security	Low requirement	MX-400 MX-20
	Stringent requirement	MX-20 MX-8
Voice/Quality of Service	Want to leave backbone unchanged	MX-20 MX-8
	Willing to upgrade the backbone to support quality of service	MX-400 MX-20
Capital Costs	Require the lowest possible capital cost	MX-400 MX-20
	Not a primary consideration	MX-20 MX-8

Trapeze NETWORKS

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