

## The Mobility Exchange™ (MX™)

The Trapeze Networks™ Mobility Exchange is a new class of networking device that delivers Identity-Based Networking. It enables attributes like VLAN/subnet assignments, access control lists (ACLs), authentication, usage tracking, location tracking and network statistics to stay with the user from wired to wireless and throughout the WLAN. Since mobile enterprise users can connect to the WLAN from a variety of locations, the MX shifts the management focal point from device ports and fixed geography to user identities and the services they need no matter where they are. The MXs exchange the full set of user attributes amongst themselves, providing per-user services and distributing intelligence throughout the Trapeze Mobility System™.



The MX integrates seamlessly with existing wired infrastructures and requires no changes to clients or network protocols. Designed for installation in the wiring closet, any of the wire-speed 10/100 Mbps MX ports can be configured as uplink ports to attach to switches in the network core or distribution layer. Uplink ports provide redundant, load-sharing links to the network, including 802.1Q trunking, spanning tree (802.1D), and per-VLAN spanning tree (PVST+).

The MX manages all aspects of the Mobility Points (MPs) and provides power over Ethernet (PoE) to them through 10/100 Ethernet ports. The MX also provides redundant connections to dual-homed MPs and has redundant, hot-swappable power supplies.

### Key Features

- Tracks and maintains user authentication and authorization information as the user roams across multiple MXs
- Authenticates multiple users per port to the same VLAN or to different VLANs while maintaining traffic isolation
- Maintains a user's native VLAN based on knowledge of the user's authenticated identity, whether the VLAN is locally attached or across a router boundary from the MX
- Scales the AAA back-end infrastructure
  - Terminates and processes the Extensible Authentication Protocol (EAP) for 802.1X users
  - Supports multiple AAA server groups and can load share across multiple AAA servers or within a server group
  - Acts as a AAA authenticator, consolidating sessions from connected MPs into one and reducing the session load on the AAA back end by as much as 20:1
  - Offload Transport Layer Security (TLS) operation in the back end
  - Generates and manages X.509 digital certificates
- Assigns and enforces per-user authorization policies that are managed centrally from the AAA back end, such as
  - VLAN membership and access control
- Performs local cryptographic functions
  - Generates master and session keys
  - Performs hardware-accelerated public key/private key operations
  - Provides key management for each encryption technique
  - Advanced Encryption Standard (AES), Temporal Key Integrity Protocol (TKIP) and dynamic Wired Equivalent Privacy (WEP) with rolling keys
- Provides detailed per-user session accounting statistics and management
  - Tracks the location, roaming history, VLAN, network addresses, state, activity, errors, usage and other attributes by user name, session, VLAN, user group or other categories selected by IT.
  - Provides per-user audit trail and charge-back capability through the accounting component of AAA
- Wire-speed performance
  - 4 Gbps throughput
  - 20 10/100BASE-TX ports with PoE for powering MPs
  - 2 1000BASE-X Gigabit Ethernet ports equipped for GBIC transceivers



# Hardware

## Physical and Environmental:

- Dimensions (W x D x H):  
17.4 in x 18.2 in x 3.5 in  
44.2 cm x 46.2 cm x 8.8 cm
- Weight:  
19.50 lbs (8.85 kg) with no power supplies  
22.75 lbs (10.32 kg) with one power supply  
26.00 lbs (11.79 kg) with two power supplies
- Operating Temperature:  
-10°C to +50°C
- Storage Temperature:  
-20°C to +70°C
- Humidity % non-condensing:  
10% to 95%
- Power VAC range, Hz range:  
90-250 VAC, 47-63 Hz to 350 watts, hot-swappable power supply
- Amperage draw maximums:  
At 120Vrms: 8Arms  
At 230Vrms: 3.5Arms

## Power over Ethernet:

- Voltage output range:  
46 VDC nominal; with 41 VDC minimum and 49 VDC maximum
- Total wattage budget (all ports): 240W
- Wattage per port: 12W per port if all ports are utilized; 15.3W maximum allowable draw on any individual port without exceeding total wattage budget
- Cable requirements: PoE on 10/100 Mbps RJ-45 ports using pins 4, 5 (node) and 7, 8 (return) on standard Category 5 UTP or STP

## Regulatory Safety:

- UL 60950
- TUV/GS (EN #s) EN 60950
- CSA 22.2 NO. 60950

## EMI/EMC:

- FCC PART 15
- ICES PART 15
- VCCI
- EN 55022
- EN 55024
- CISPR 22

# Software

## IETF:

- RFC 2246 - Transport Layer Security (TLS)
- RFC 2284 - EAP
- RFC 2315 - PKCS #7: Cryptographic Message Syntax Version 1.5
- RFC 2548 - Microsoft RADIUS VSAs
- RFC 2716 - PPP EAP-TLS Authentication Protocol
- RFC 2759 - Microsoft PPP CHAP Extensions, Version 2
- RFC 2865 - RADIUS Authentication
- RFC 2866 - RADIUS Accounting

- RFC 2869 - RADIUS Extensions
- RFC 2986 - PKCS #10: Certification Request Syntax Specification Version 1.7
- draft-congdon-radius-8021x - RADIUS usage guidelines for 802.1X
- draft-ietf-tls-extensions - Transport Layer Security (TLS) Extensions
- draft-josefsson-pppext-eap-tls-eap - Protected EAP Protocol (PEAP)
- draft-kamath-pppext-peapv0-00.txt - Microsoft's PEAP Version 0 (Implementation in Windows XP SP1; Win2K SP3)
- draft-kamath-pppext-eap-mschapv2 - Microsoft EAP CHAP Extensions Version 2

## IEEE:

- IEEE Std 802.1X-2001 - Port-Based Network Access Control
- IEEE Std 802.11i (tracking latest draft) - Enhanced Security for 802.11 wireless networks

## Cryptography:

- WEP & TKIP: RC4 40 & 104 bit
- SSL & TLS: RC4 128 bit & RSA 1024 & 2048 bit
- CCMP: AES 128 bit (AES standard is FIPS-197)

## General:

- RFC 1122 Host requirements
- RFC 1393 Traceroute
- RFC 1519 CIDR
- RFC 1591 DNS (client)
- RFC 1769 SNTp
- RFC 768 UDP
- RFC 783 TFTP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- IEEE 802.1D Spanning Tree
- IEEE 802.1Q VLAN tagging
- IEEE 802.3ad (static config)

## Management:

- RFC 854 Telnet
- RFC 1157 SNMP v1/v2c
- RFC 1213 MIB-II
- RFC 1866 HTML
- RFC 1907 SNMPv2
- RFC 2068 HTTP
- RFC 3164 Syslog
- Trapeze private MIB

## IP Multicast:

- RFC 1112 IGMP v1
- RFC 2236 IGMP v2
- draft-ietf-idmr-igmp-mrdisc-09.txt
- draft-ietf-magma-snoop-05.txt

## QoS:

- IEEE 802.1D (802.1p) packet priority
- RFC 2472 DiffServ precedence
- RFC 2597 DiffServ Assured Forwarding
- RFC 2598 DiffServ Expedited Forwarding



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