TACLANE® Agile VLAN Feature

For TACLANE-Micro (KG-175D), 1G (KG-175G) and 10G (KG-175X) Encryptors

TACLANE-1G (KG-175G)

TACLANE-Micro (KG-175D)

TACLANE-10G (KG-175X)

Simultaneous HAIPE® and Layer 2 Encryption

Uses Existing Infrastructure

Increased Bandwidth Efficiency

Supports Failover and Redundancy

Equipment and Cost Savings

Easy to Implement and Configure

Overview

TACLANE Agile VLAN is an optional software feature available for TACLANE-Micro, 1G and 10G users that enables a specific group of devices to communicate as though they were directly connected regardless of their location. VLAN-enabled TACLANEs use frame encapsulation to encrypt different protocols, such as IP/VLAN/Ethernet/MPLS, providing the capability to send and receive HAIPE/Layer 2 traffic simultaneously without any infrastructure changes. This approach gives users added Layer 2 capability while maintaining interoperability with standard HAIPE devices.

Benefits of Agile VLAN Feature

- Adds layer 2 capabilities without losing standard HAIPE features and interoperability
- Agility on a per packet basis eases network transitions
- No infrastructure change required
- Simplifies the network by eliminating GRE Tunnels, reduces reliance on routers and simplifies logistics and maintenance
- Equipment and cost savings
- Increases bandwidth efficiency by providing a single broadcast domain (multicast) and load balancing
- Traffic stays up and running with failover and redundancy
- Optimized to be both end user and infrastructure friendly

Virtual Local Area Network (VLAN) Transparency

VLAN is a method of partitioning a network to group specific end points or hosts and limits communication based on VLAN tags applied to Ethernet traffic. The TACLANE approach to VLAN transparency meets customer requirements to preserve VLAN tags across the network, supports dynamic discovery of PT Ethernet MAC addresses and provides users with bandwidth efficiency that results in significant cost savings. We provide a scalable solution that allows the same VLAN to exist behind one, two or many other endpoints. Our solution doesn't require any changes to the CT side network. In addition to preserving layer 2 VLAN tagging, VLAN-enabled TACLANEs preserve layer 2 Multiprotocol Label Switching (MPLS) tagging.

Interoperability and Flexibility

VLAN tunnels can be configured for voice and data traffic, eliminating the need to create and maintain separate networks. VLAN-enabled TACLANEs can also translate the Priority Code Point (PCP) Quality of Service (QoS) value from a VLAN tags to an IP Differentiated Services Code Point (DSCP) value for optional bypass to the CT IP header - allowing Quality of Service (QoS) to be maintained.

TACLANE Agile VLAN Feature

Bandwidth Efficiency

The movement of large data is bandwidth intensive and can bog down the network. With the TACLANE VLAN feature enabled, users can "load balance" traffic aggregated across multiple PT Ethernet switch ports. This not only allows the aggregated ports to act as one port with twice the bandwidth, but also limits the impact of a link failure by automatically adjusting bandwidth down to the port with the surviving end-to-end link.

To conserve network bandwidth, the TACLANE-1G and 10G support compression of PT VLAN/Ethernet payloads. A configurable threshold minimum packet size allows compression to only be applied on larger packets. If the CT packet size increases after compression, the 1G and 10G detect the increase and do not use compression for that packet. Compression/decompression statistics are recorded for monitoring and tuning compression settings. The TACLANE VLAN solution also conserves bandwidth by eliminating the need for Generic Routing Encapsulation (GRE) tunnels – since layer 2 traffic is encrypted transparently across the PT routing infrastructure.

Discovery

TACLANE VLAN supports PT MAC learning to allow dynamic discovery of remote PT host MAC address-to-peer TACLANE mappings. Ethernet frames for which no remote peer mapping exists are multicast. Remote VLAN-enabled TACLANEs that receive the multicast learn the PT MAC address-to-peer TACLANE mapping for the local PT host. When the remote PT host replies, the remote TACLANE uses the learned mapping to send the response (and subsequent traffic to the same MAC address) over a unicast SA – conserving bandwidth. Upon decrypting the response, the local 1G or 10G learn the remote PT MAC address-to-peer TACLANE mapping and also sends subsequent traffic to the same MAC address over a unicast SA. The aging out of peer mappings supports PT host mobility by re-learning the PT MAC address-to-peer TACLANE mapping for a remote PT host that is now reachable behind a different remote peer TACLANE.

Failover/Redundancy

The Agile VLAN feature protects against link failure. In the event of link failure, the PT-side Ethernet switches between two Local Area Network (LAN) enclaves may use protocols such as Spanning Tree encrypted by the VLAN-enabled TACLANEs to identify the downed link and switch to the open, available path. This provides the redundancy that is necessary to ensure mission-critical communications succeed. PT-side routers with redundant connections and transparent encryption of layer 2 traffic across the PT routing infrastructure, eliminate the need for GRE tunnels to support redundancy and failover.

Easy to Use and Manage

With the Agile VLAN feature enabled, Network Administrators can perform TACLANE upgrades while maintaining network operations, and VLAN routes can be easily configured using the TACLANE HMI or the GEM X Encryptor Manager.

Agile VLAN implementation varies, please contact your INFOSEC Account Manager for more information.
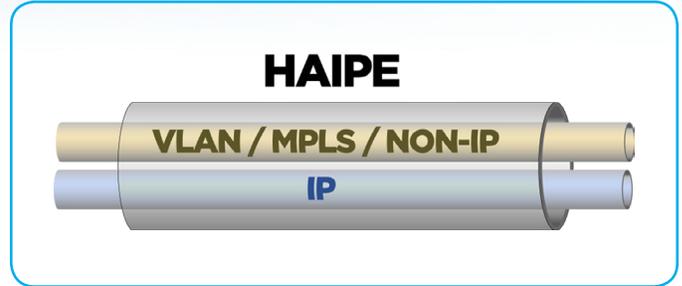
Frame encapsulation provides protocol flexibility while maintaining HAIPE interoperability.
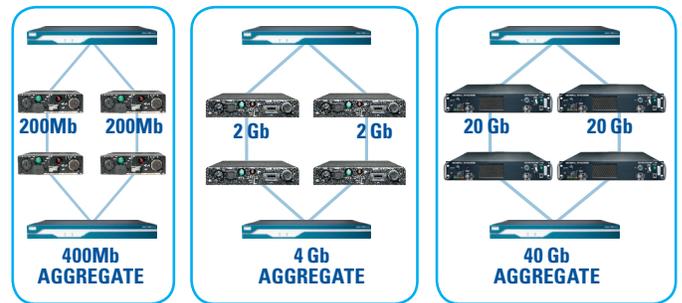
Routing traffic via multiple paths allows network users to push more data through the network in the same amount of time which increases bandwidth capacity, efficiency and reliability.
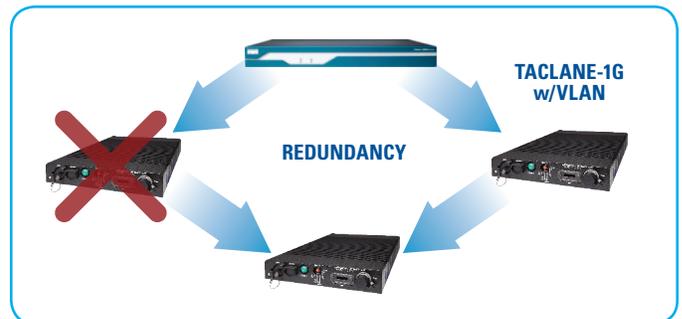
Redundancy provides failover capability. When a path through an INE is no longer available, traffic is re-routed to the next best route.

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