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SEAMLESS INTEGRATION BETWEEN ETHERNET VIRTUAL PRIVATE NETWORK FLEXIBLE CROSS-CONNECT AND LEGACY VIRTUAL PRIVATE WIRE SERVICE

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ABSTRACT

Techniques are provided herein for staged migration to Ethernet Virtual Private Network (EVPN) Flexible Cross-Connect (FXC) / Virtual Private Wire Service (VPWS) on a site-by-site basis and per Peer-to-Peer (P2P) instance. This will enable staged migration without requiring any changes to existing legacy VPWS. These techniques should thereby allow for the coexistence of Provider Edge (PE) devices running EVPN FXC/VPWS and legacy VPWS. Furthermore, migration may occur from legacy/old device to new device P2P services.

DETAILED DESCRIPTION

Legacy Virtual Private Wire Service (VPWS) is widely deployed across Service Provider (SP) networks. Legacy VPWS is defined as using static, targeted Label Distribution Protocol (LDP), and Border Gateway Protocol (BGP) auto-discovery routes to deploy VPWS services. Many SPs who are looking to move to Ethernet Virtual Private Network (EVPN) Flexible Cross-Connect (FXC) or EVPN VPWS want to preserve their investments in legacy VPWS. Hence, they require a mechanism by which EVPN FXC/VPWS technologies can be introduced into their brownfield legacy VPWS networks incrementally, thereby enabling migration without requiring any upgrades to these networks. Accordingly, techniques are described herein which specify the control-plane and forwarding behavior needed for seamless integration and migration.

In accordance with techniques described herein, EVPN FXC/VPWS Provider Edge (PE) devices should advertise both legacy VPWS routes and EVPN FXC/VPWS routes to their neighbors. Legacy VPWS PE devices should only advertise legacy VPWS routes. When a legacy VPWS PE device receives an EVPN FXC/VPWS route, the device will

ignore the route because the device treats the route as an unknown Subsequent Address Family Indicator (SAFI).

When an EVPN FXC/VPWS PE device receives both a legacy VPWS route as well as an EVPN FXC/VPWS route from a given remote PE device for the same VPN instance, the PE device should give preference to the EVPN route for the purpose of discovery. Any legacy VPWS Pseudowires (PWs) should be torn down, for example via label map withdraw or PW status signaling. This ensures that all EVPN FXC/VPWS PE devices discover other EVPN-capable PE devices in addition to the legacy VPWS PE devices for that VPN instance. All legacy VPWS PE devices will discover the EVPN FXC/VPWS PE devices as if they were standard legacy VPWS devices. These mechanisms may be operable with EVPN VPWS and EVPN FXC in both Virtual Local Area Network (VLAN) - aware and VLAN-unaware mode.

When the discovery phase is complete, the EVPN FXC/VPWS will have discovered all the PE devices in the VPN instance along with their associated capabilities (e.g., EVPN FXC/VPWS or legacy VPWS only). Legacy VPWS PE devices will have discovered all PE devices in the VPN instance as if they all were legacy VPWS PE devices.

Ethernet Auto Discovery Route per EVI (EAD/EVI), also referred to as Route Type 1, may use BGP EVPN Nexthop A. Optionally, a legacy loopback extended community may be used if/when BGP EVPN and LDP use different loopbacks as Nexthop A. Static, targeted LDP, and BGP auto-discovery routes may also use Nexthop A. Optionally, in the interest of security, when a legacy VPWS is from Nexthop B, but the EVI/EAD is from Nexthop A, the system may not perform legacy VPWS teardown unless the legacy loopback extended community is included to explicitly allow this.

In summary, techniques are provided herein for staged migration to EVPN FXC/VPWS on a site-by-site basis and per Peer-to-Peer (P2P) instance. This will enable staged migration without requiring any changes to existing legacy VPWS. These techniques should thereby allow for the coexistence of PE devices running EVPN FXC/VPWS and legacy VPWS. Furthermore, migration may occur from legacy/old device to new device P2P services.