



ICAO

International Civil Aviation Organization

**THE FIFTEENTH MEETING OF THE COMMON
AERONAUTICAL VIRTUAL PRIVATE
NETWORK OPERATIONS GROUP (CRV OG/15)**

Mumbai, India, 15-19 June 2026

Agenda Item 12: Cyber-safety/security and resilience

UPDATE ON CYBER-SAFETY/SECURITY AND RESILIENCE

(Presented by New Zealand)

SUMMARY

This paper presents detail on implementing resilient CRV network connectivity.

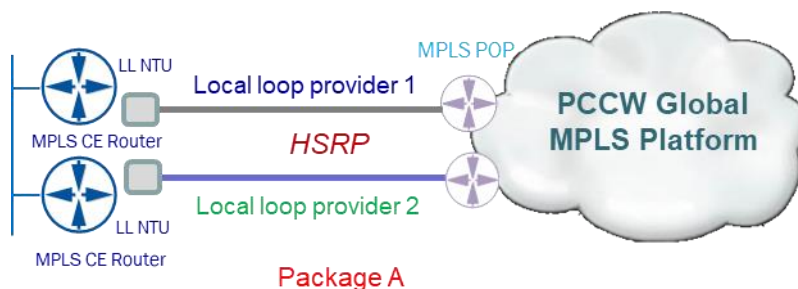
1. INTRODUCTION

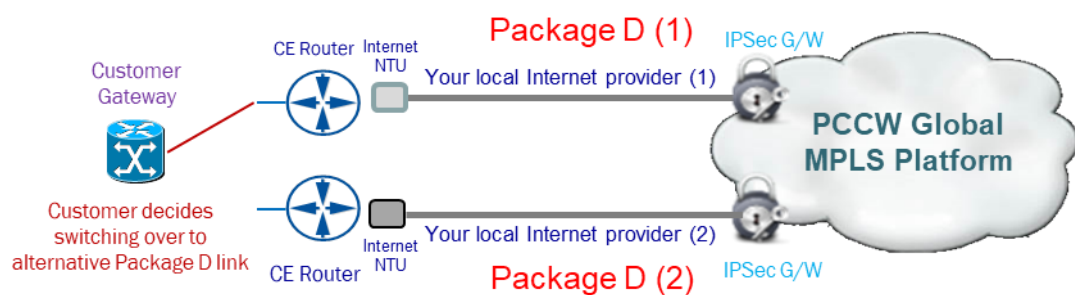
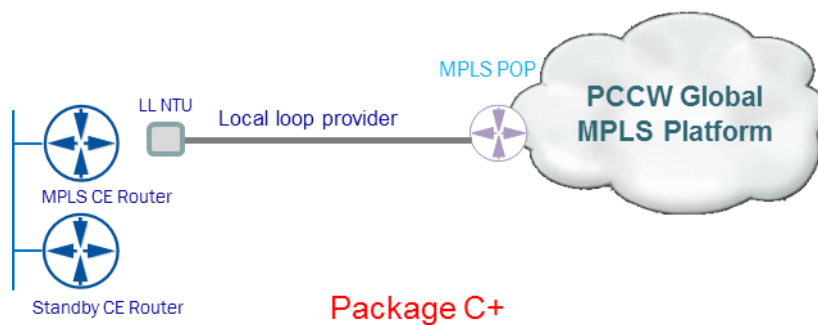
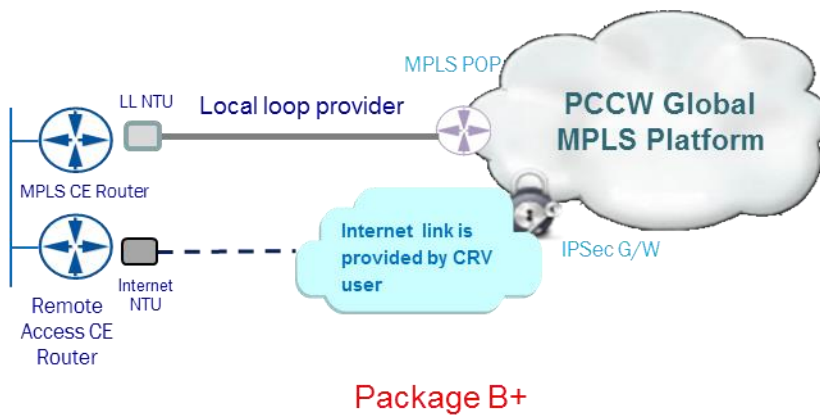
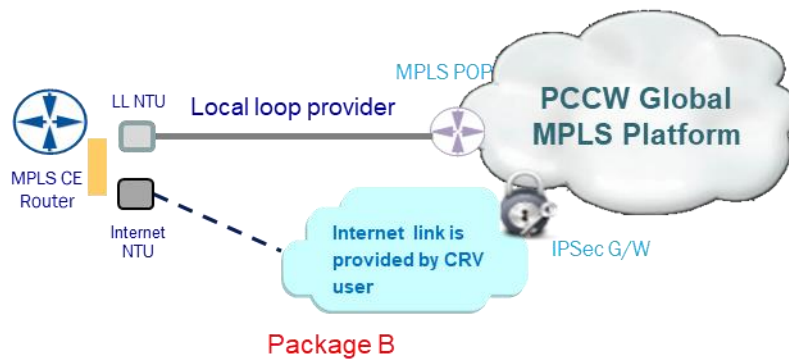
1.1 Since the inception of the CRV, the discussion over resilience has been ongoing. There are several options available to users of CRV to ensure ongoing resilience.

2. DISCUSSION

2.1 Packages.

Several packages have been created to provide a level of resilience. These range from packages that have redundant routers and circuits to those with a warm spare.





2.2

Last mile

Whilst PCCWG is responsible for the circuit and NID installs, CRV Users can nominate preferred last mile services. This provides the opportunity to provide guidance to PCCWG on the implementation of circuits from the local loop providers, last mile providers or Local Fibre Providers (LFP).

The opportunity is also here to take into account any Network-to-Network Interfaces (NNI) that may be involved. We have the ability to ask PCCWG to verify diversity of services when the service is being provisioned.

Leveraging account relationships to ensure a level of resiliency is encouraged.

2.3 **Overview Drawing**

Located in the CRV portal - [CRV-PCCW Overall Diagram.pptx](#) to check on what Points of Presence (PoP) are available. This can provide options on ensuring multiple CRV connections, a User may be installing a termination on different PoPs, and also ensuring diversity to other Users being peered with.

2.4 **Internal networks.**

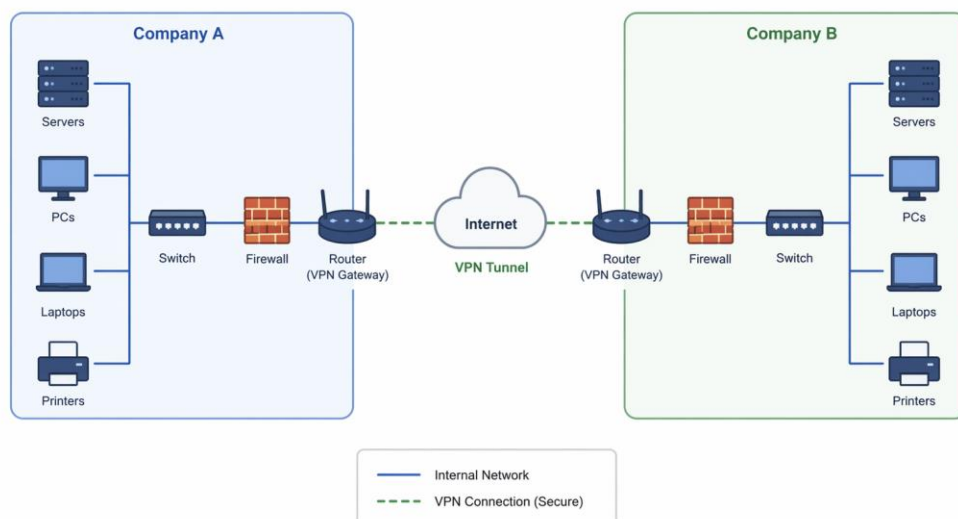
If installing a single circuit and a single Network Interface Device (NID), a User can leverage any diversity and resilience in the internal Local Area Network (LAN) or Wide Area Network (WAN) to provide failover capability.

2.5 **Business-to-Business connections (B2B)**

Typically, an internet-based connection uses IPSEC VPN technology to secure the end-to-end connection. This is outside of CRV and not provided by PCCWG.

Usually implemented with agreement between peering Users. Can provide limited functionality in the event of a failure.

B2B Network Setup



2.6 The implementation of resiliency in the last mile is for each CRV User to determine, and this is usually done based on risk to service and cost benefit.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss the resiliency of CRV and other measures; and

- c) discuss any relevant matter as appropriate
