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# INTERNATIONAL CIVIL AVIATION ORGANIZATION

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# Pacific States CRV Implementation

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# The potential solution for ATS connectivity issues: CRV

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## About CRV

- ✓ A cross-border cost-effective telecommunications network for States.
- ✓ Reliable communications infrastructure for aeronautical communications.
- ✓ Enabler for the GANP ASBUs: B0-FICE, B0-NOPS, VoIP and B1-SWIM modules.
- ✓ End to end service

# Brief History (1/2)

## Origin of CRV OG

- ✓ APANPIRG Decision APANPIRG/24/32 established a Task Force consisting of the Subject Matter Experts (SME) to study regional virtual private network (VPN) and develop a detailed proposal by January 2016.
- ✓ APANPIRG Decision APANPIRG/ 27/33: Creation of the Common Aeronautical VPN (CRV) Operations Group (CRV-OG) in 2016.
- ✓ The first CRV OG meeting was held on 16 December 2016.





## Brief History (2/3)

### The OG

- ✓ Every State that has a CRV connection joins the Operations Group (OG)
- ✓ Meet face to face annually
- ✓ Meet regularly during the year, 8 times in 2022, to discuss operations, changes, strategy, contract issues etc.
- ✓ Currently engaged with the SWIM TF and working towards interconnectivity with other regional networks such as PENS and REDDIG.



## 2. Terms of Reference

The Common aeRonautical Virtual Private Network (VPN) Operations Group (OG) will provide oversight of the function and performance of the CRV and the performance of the Service Provider. The following are the activities to be performed:

- a) Oversee the implementation of the CRV post Contract Award;
- b) Manage issues arising from the transition with CRV TF, if any;
- c) Co-ordinate and standardize the establishment or upgrade of CRV services as required;
- d) Co-ordinate activities with other ICAO CRV OGs, if any, to make sure that decision making and communication with CRV Service Provider is consistent and timely;
- e) Oversee the performance of the CRV Service Provider, including customer service;
- f) Oversee the performance of the CRV network;
- g) Oversee the escalation and solving by the CRV Service Provider of issues associated with the provision of the CRV, including safety and security related issues;
- h) Assist with the resolution of issues associated with the provision of the CRV among the CRV Users as required, including safety and security related issues;
- i) Assist with the migration of Aeronautical Fixed Services (AFS) onto the CRV, in line with the GANP and seamless ATM plan;
- j) Maintain CRV OG documentation associated with the function, performance and management of the CRV, including the CRV OG Operations Manual, a list of CRV users and a record of variations to the common tender package;
- k) Accept deliverables from the CRV Service Provider on behalf of the CRV Users as required;
- l) Promote the use of CRV;

- m) Undertake continuous service improvements review to ensure CRV meets future needs; and
- n) Perform any other activity as required by CRV operations.

## 3. Reporting

The CRV OG will report to Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) through ACSICG and CNS SG.

## 4. Participation

The CRV OG will include all APAC Member States/Administrations, and any other organization as needed. Member States and/or inter-regional entry/exit Administrations in other ICAO regions may also be invited or request to participate in the activities of CRV OG.

## 5. Conduct of the work

It is anticipated that the CRV OG will conduct its work primarily by Web Conferences, teleconferences and other electronic means of communications. Face to Face meetings of CRV OG may be required on an annual basis.

The ICAO APAC Regional Office will provide secretariat support for the CRV OG.

## 6. Rapporteur

There will be two Co-Chairpersons of the CRV OG, one primarily responsible for Asia coordination and the other for Pacific coordination.

# CRV Implementation Status



## Under Operation

Australia, Bhutan, China, Fiji, Hong Kong China, India, Indonesia, Japan, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, Philippines, PNG, Republic of Korea, Singapore, Thailand, and USA



## Under Provisioning

French Polynesia, New Caledonia, Myanmar, Vietnam



## Hot Prospects in 2024

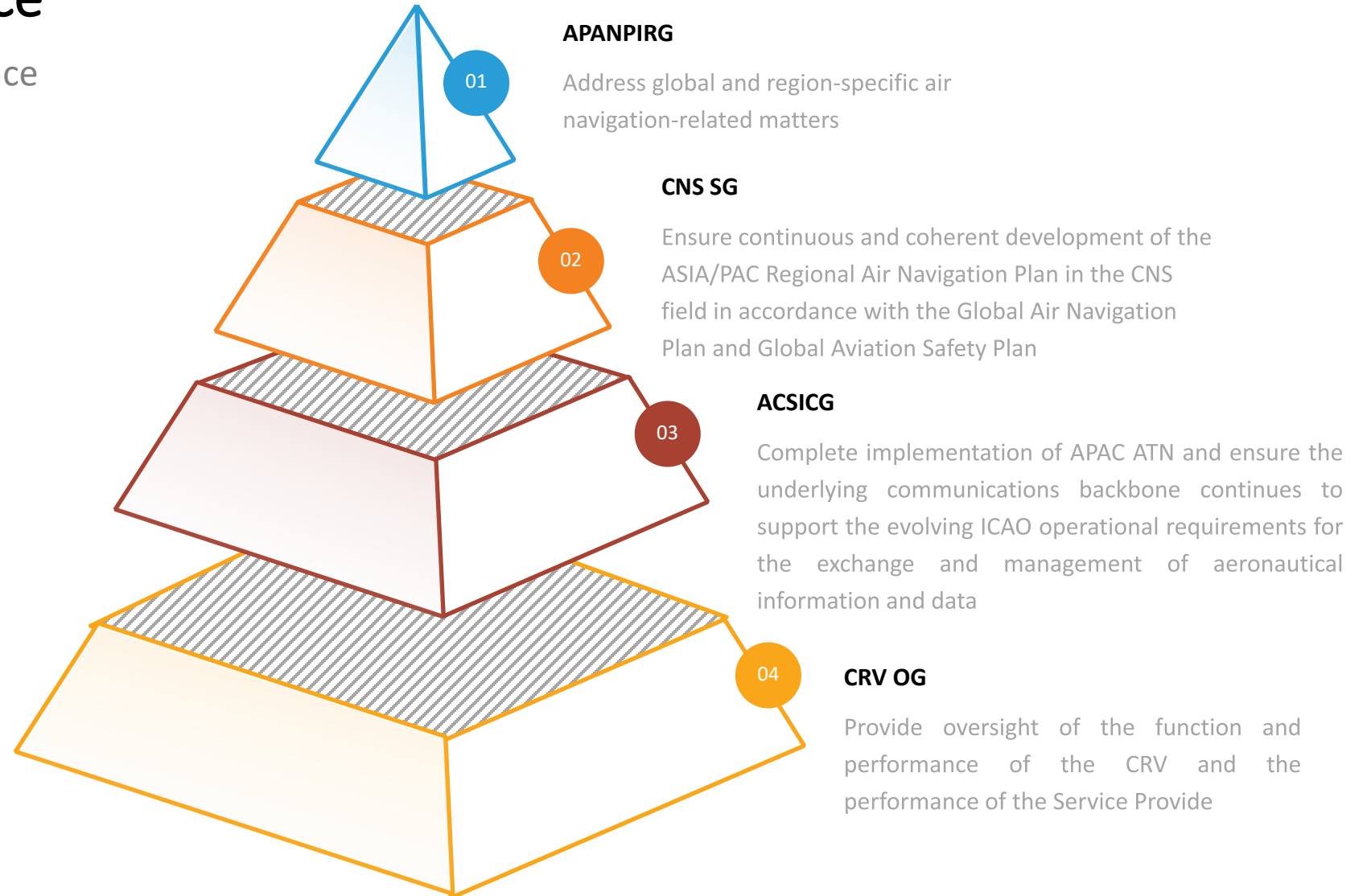
Bangladesh, Macau China, Cambodia, Sri Lanka



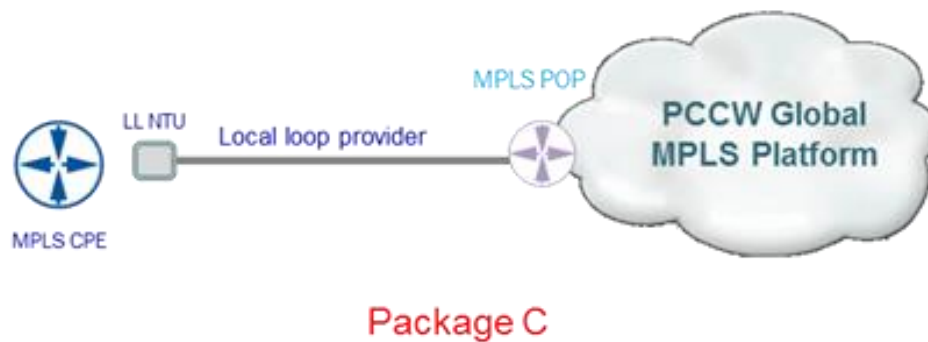
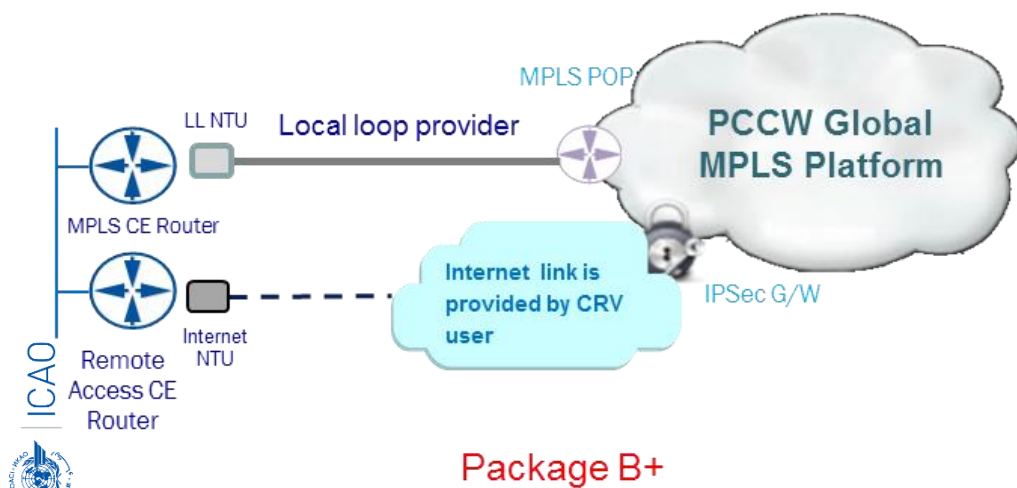
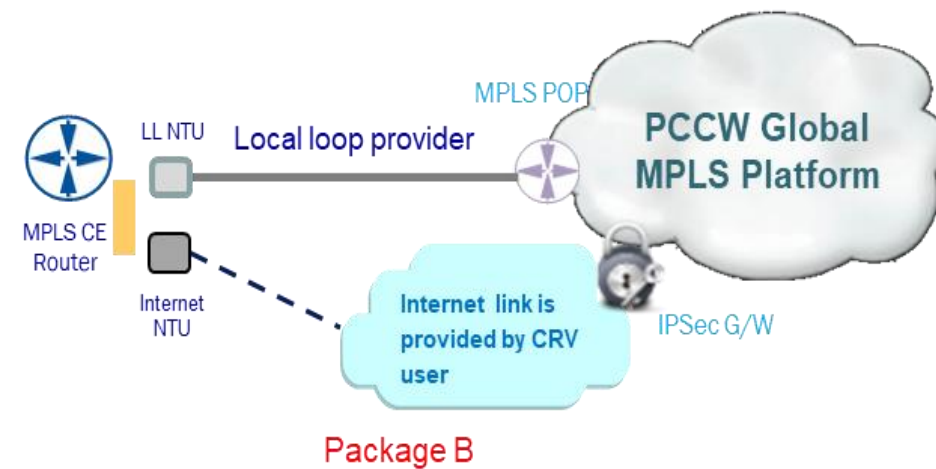
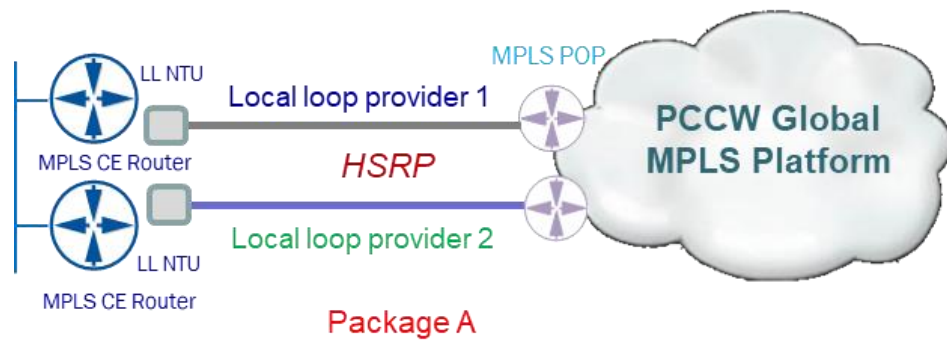


# CRV Governance

## Current CRV Governance

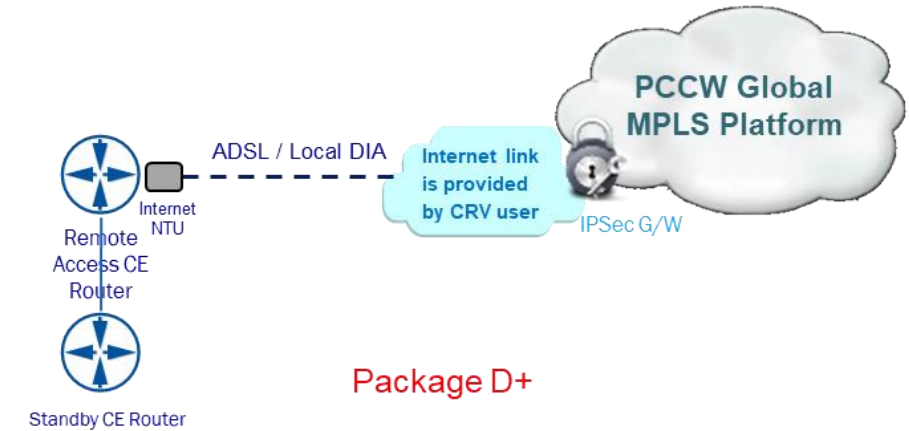
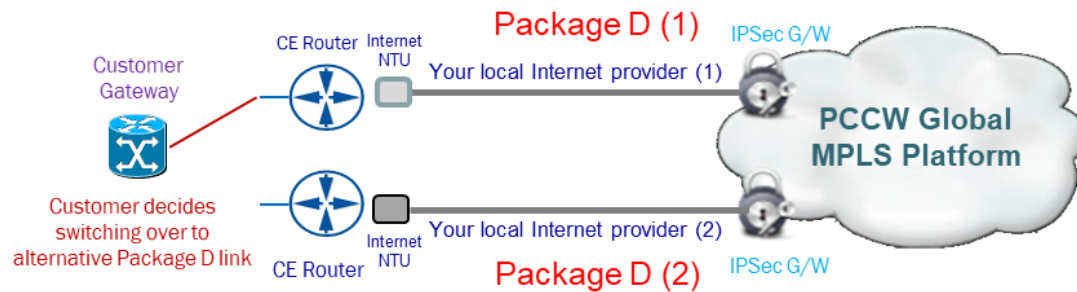
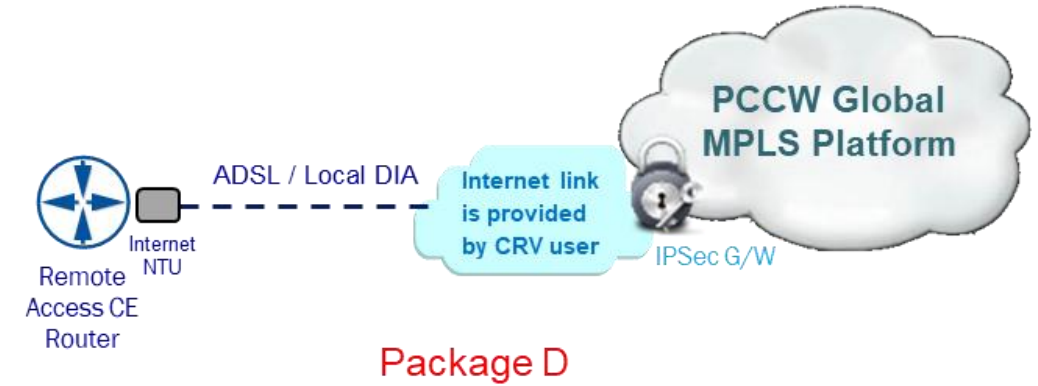
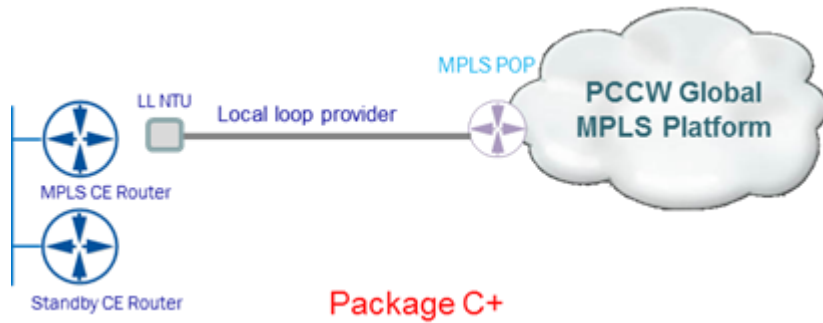


# CRV Packages 1/4

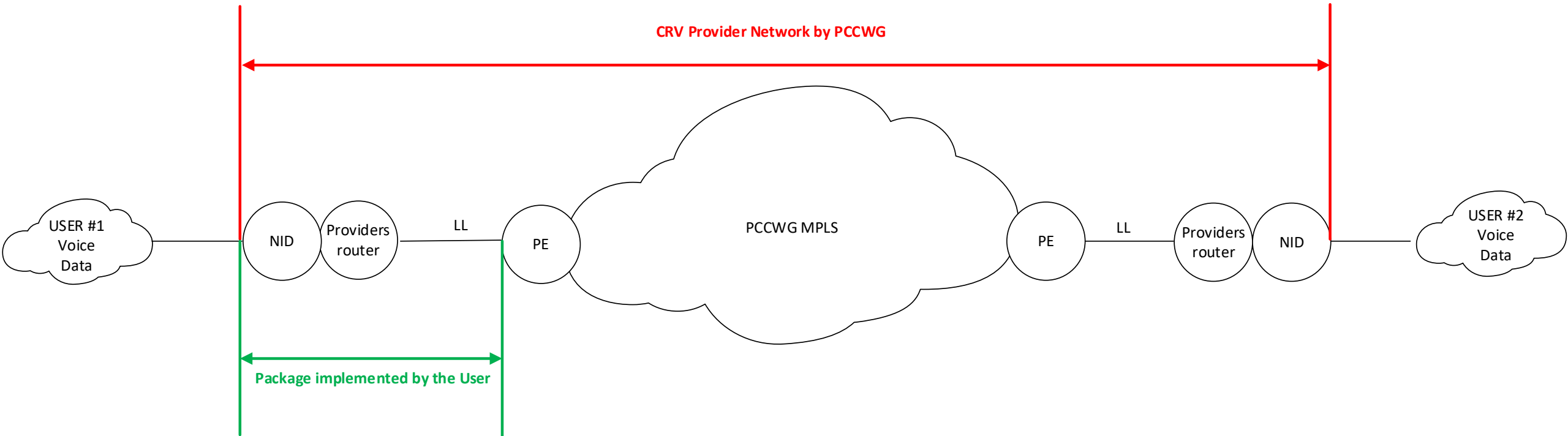


# CRV Packages 2/4

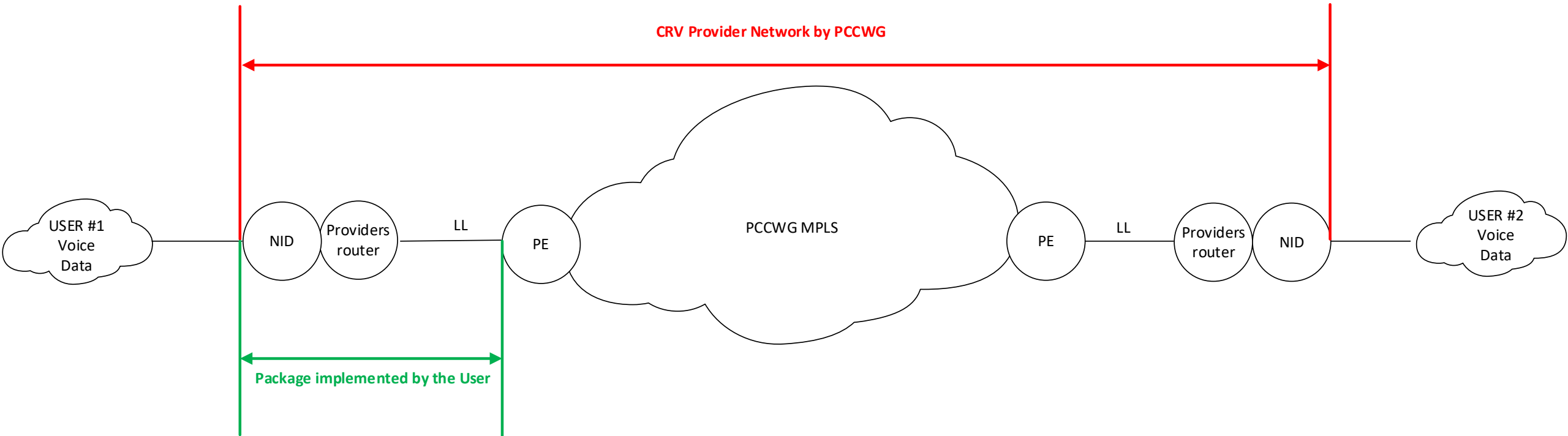
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# CRV Packages 3/4



# CRV Packages 4/4





## PASNET Overview 1/4

- ✓ PASNET was a World Bank initiative.
- ✓ Provides for VSAT connectivity with routers, switches and firewalls at each site to facilitate voice and data services.
- ✓ Each state owns the VSAT and Network equipment provided except for Fua'amotu, Tonga which is owned by Airways New Zealand.
- ✓ Airways New Zealand maintains PASNET.
- ✓ Spares are held at each location.

## PASNET Overview 2/4

- ✓ Sites delivered are:
  - ✓ Samoa – Faleolo
  - ✓ Tonga - Vava'u - Lupepau'u.
  - ✓ Tuvalu – Funafuti
  - ✓ Kiribati - Tarawa
  - ✓ Kiribati - Kiritimati
  - ✓ Vanuatu – Tanna
  - ✓ Cook Islands – Rarotonga.
  - ✓ Niue – Hanan
  - ✓ Vanuatu – BAUERFIELD
  - ✓ Vanuatu - SANTO-PEKOA
  - ✓ Solomons – Honiara
  - ✓ Solomons - Munda

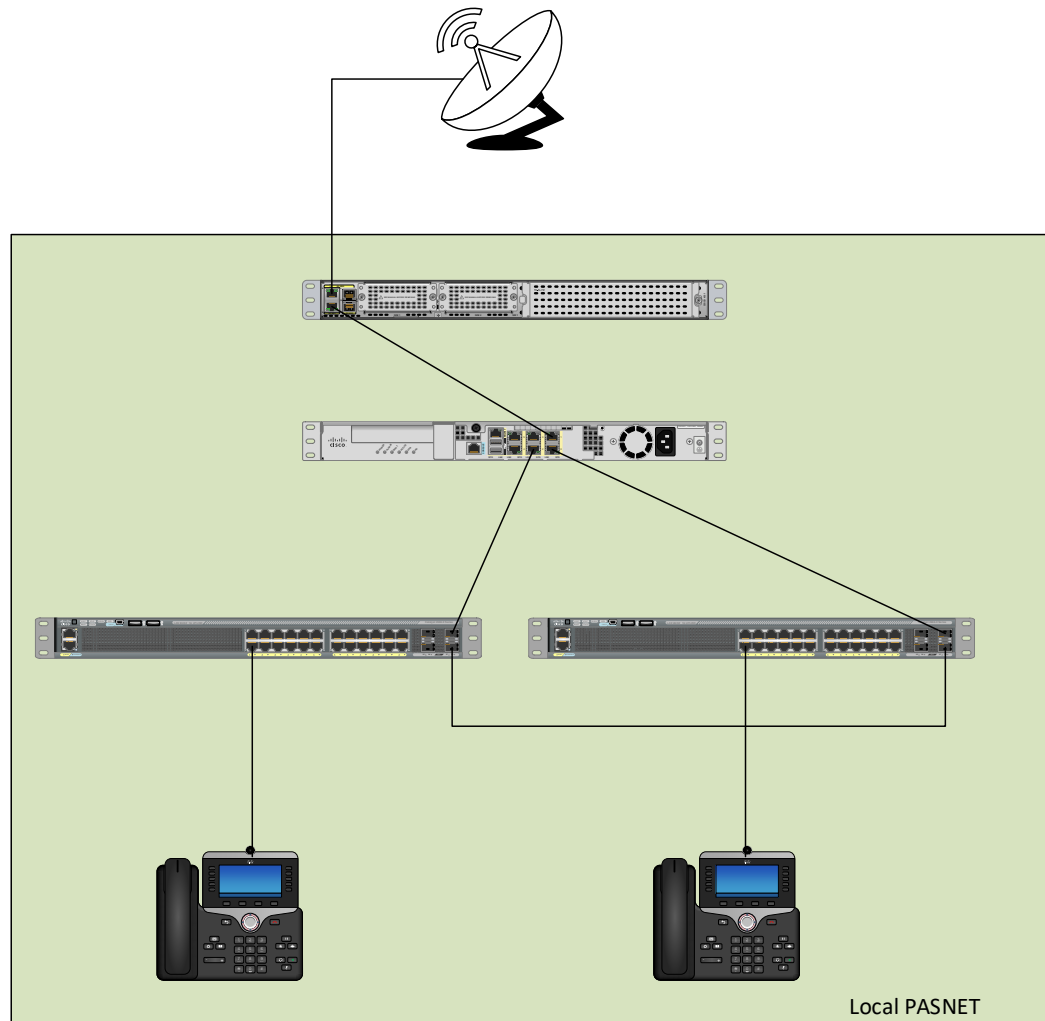
## PASNET Overview 3/4

- ✓ Sites without PASNET:
  - ✓ American Samoa
  - ✓ Marshall Islands
  - ✓ Federated States of Micronesia
  - ✓ Nauru
  - ✓ Palau
  - ✓ Timor Leste
  - ✓ Wallis and Futuna
  - ✓ Guam
  - ✓ Saipan

## PASNET Overview 4/4

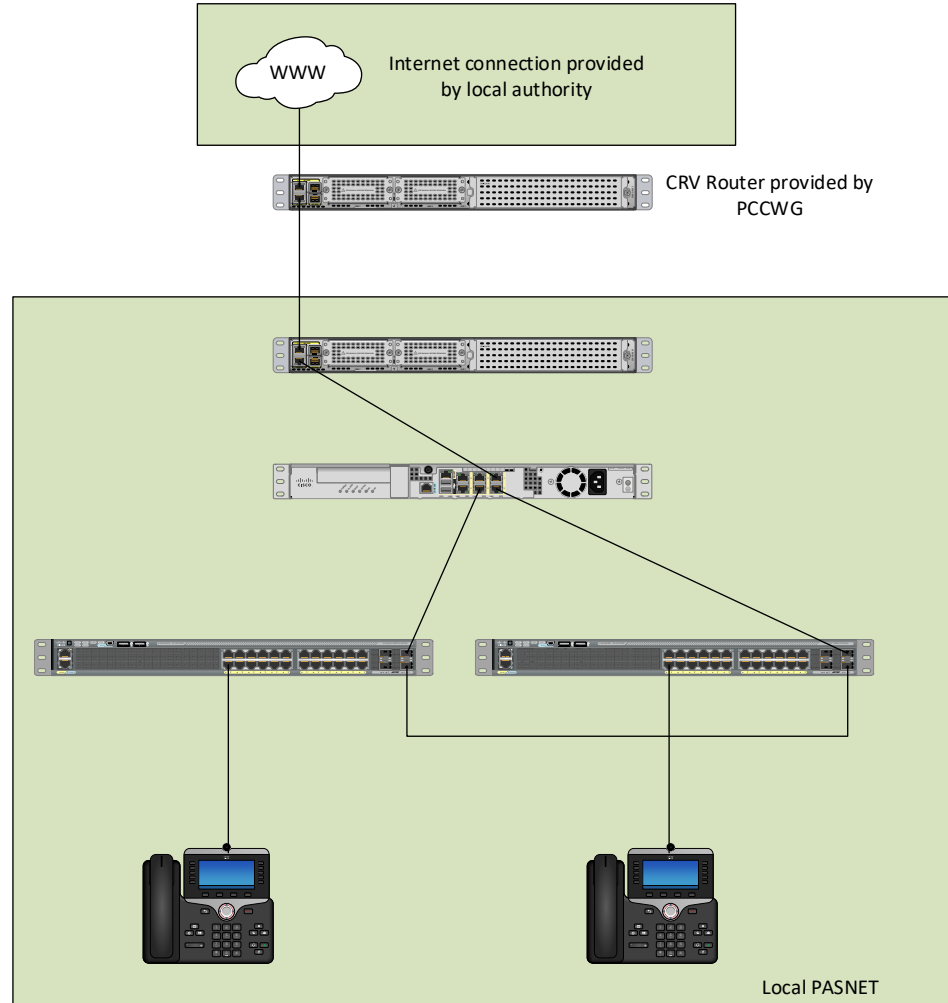
- ✓ PASNET provides limited connectivity across the Pacific.
- ✓ All connections come back to the hub hosted by Airways New Zealand in Christchurch New Zealand.
- ✓ There is no connection between PASNET and CRV.
- ✓ With connectivity from the Pacific desired by other States for voice, AMHS and soon ADS-B, PASNET is no longer fit for purpose.
- ✓ Need to migrate from PASNET to CRV

# Migrating from PASNET to CRV – 1/4

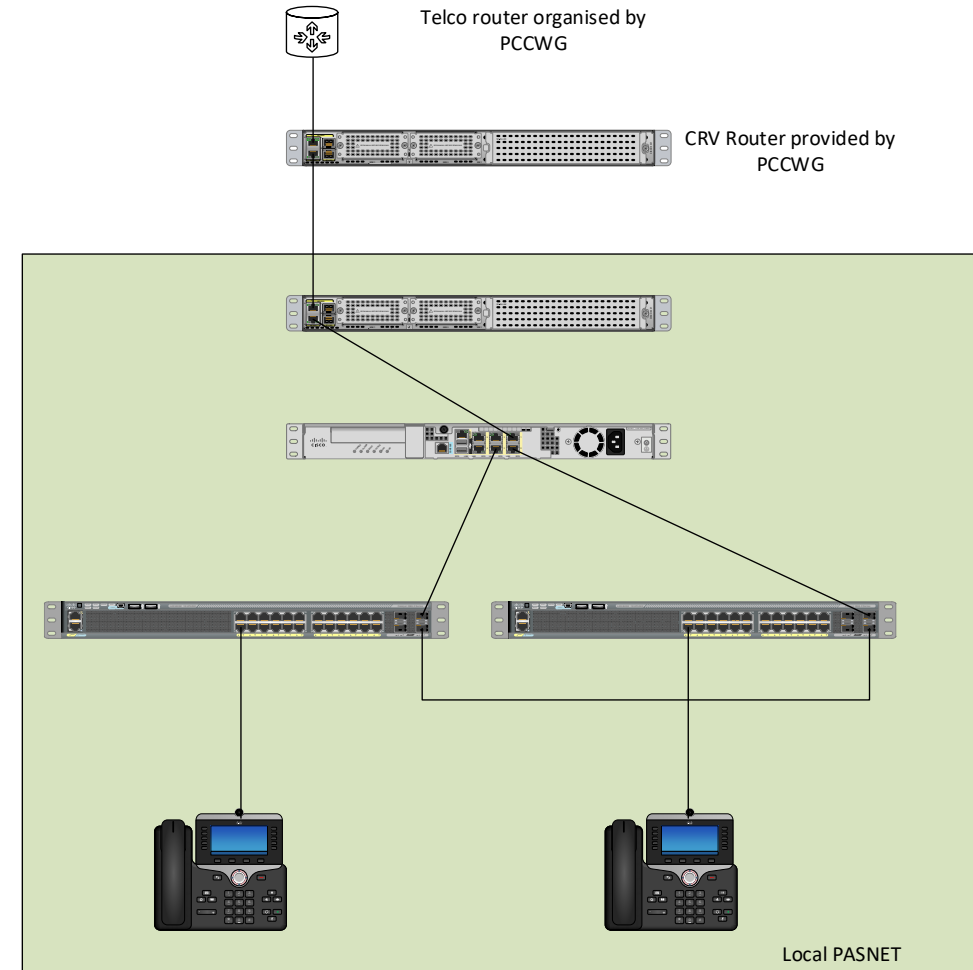




# Migrating from PASNET to CRV – 2/4



Package D Option - Internet



Package A,B,C Option - Internet

# Migrating from PASNET to CRV – 3/4

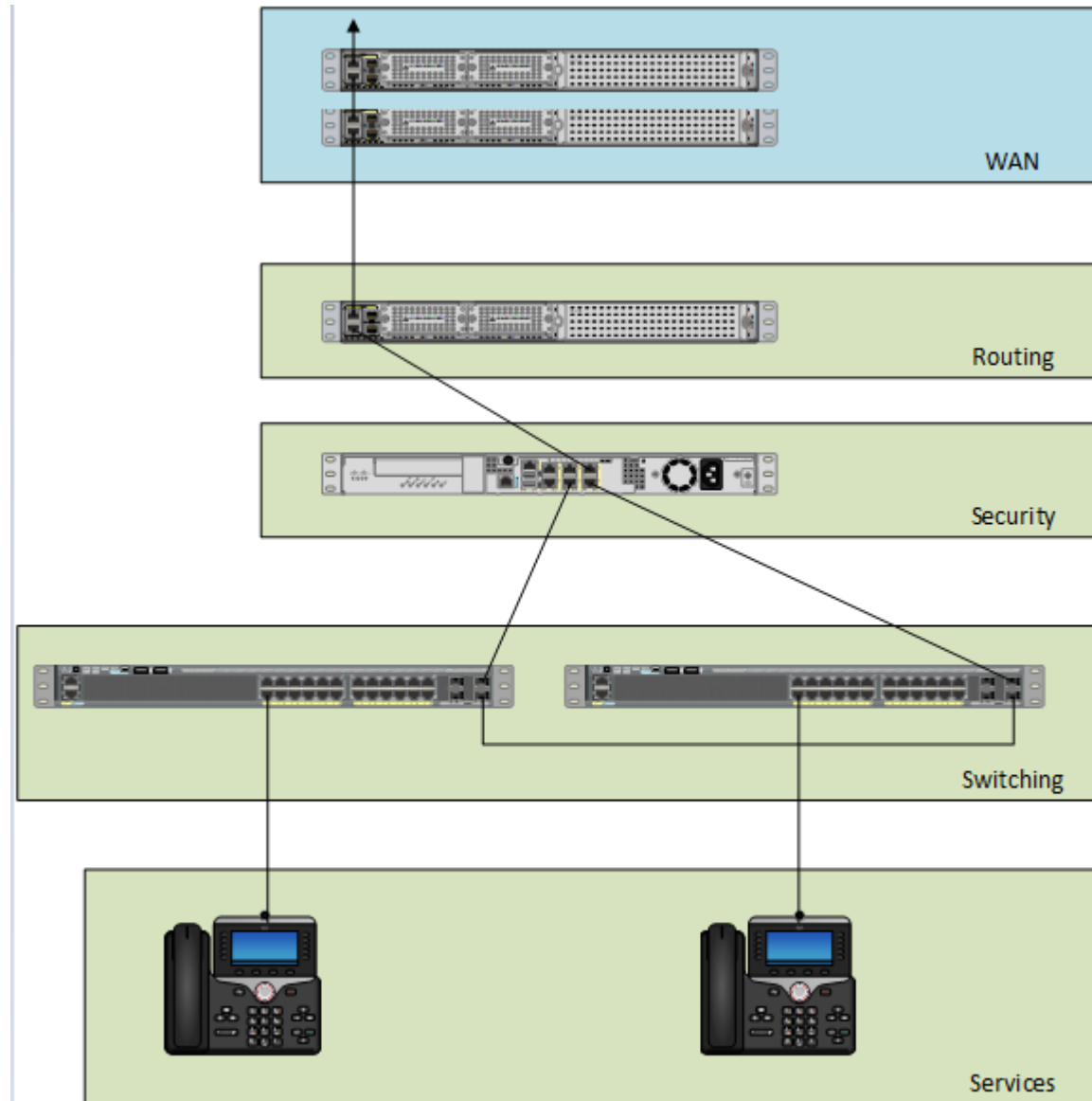
WAN is the Teclo connection as part of the last mile and the PCCWG NID

Routing is the existing PASNET Router

Security is the existing firewall.

Switching is the existing switching

Service are the existing and any new services

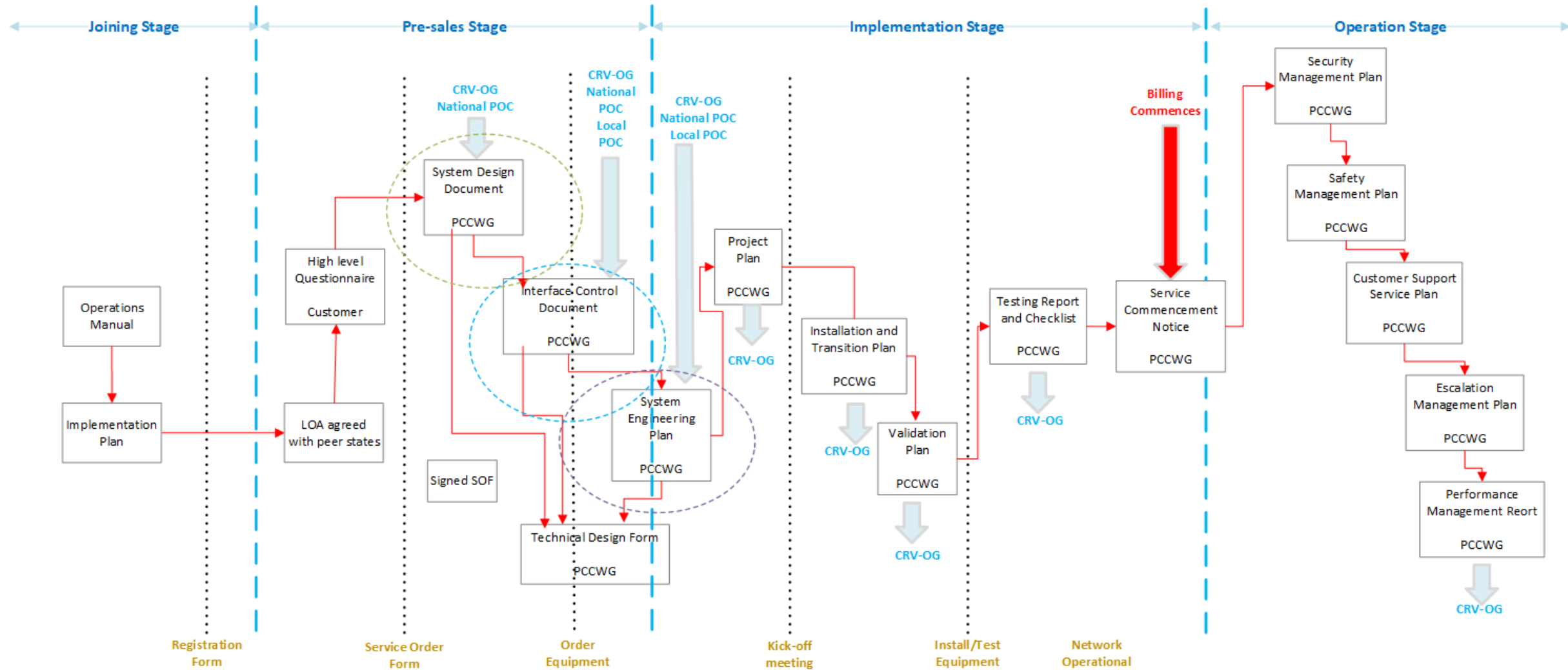


## Costs

- ✓ The CRV OG is aware of the cost implications for delivering CRV to the Pacific States.
- ✓ The original pricing was done based on a VSAT install, so is quite expensive per month.
- ✓ Need states to work with PCCWG to better understand the options and the associated costs.
- ✓ Example costs:
  - ✓ Pacific Island Package D - US\$ 3000 MRC + internet cost
  - ✓ Country List A VSAT – One time charge USD 24,675, USD 5400 MRC

# Joining

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## Conclusion

- ✓ Reliable communications infrastructure for aeronautical communications across APAC.
- ✓ Provided by and backed by a global telecommunications provider PCCWG
- ✓ Facilitates an end-to-end service
- ✓ Governed by the users
- ✓ Possible to migrate from PASNET to CRV with some effort





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Thank You!