Common aeRonautical Virtual Private Network (CRV) Operations Group

(OG) of Asia/Pacific Air Navigation Planning and

Implementation Regional Group (APANPIRG) (APANPIRG CRV OG)

OPERATIONS MANUAL

Edition v1.1 - April 2022

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Contents

1 PART I: FOREWORD

1.1 Introduction

a. The Common Regional Virtual Private Network Operations Group (CRV OG) Operations Manual is an informal publication prepared by the CRV Task Force, CRVOG intended to provide, for easy reference of interested parties, a consolidation of material, particularly of a procedural nature, about the work of the CRV OG and its contributory bodies. It contains the Terms of Reference of the CRV OG established by the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) (Decision 27/34). It also contains the working arrangements and internal instructions developed by the Group for the practical application of its Terms of Reference.

b. The document describes; Terms of Reference; Composition; Position within ICAO; Working Arrangements; Rules of Procedure and Practices governing the Conduct of Business.

c. The framework of Part and Sections headings in addition to the page numbering has been devised to provide flexibility and the facilitation of the revision of additional or new material. Each Part includes an Introduction giving its purpose and status. A Table of Contents is also provided which serves also as a subject index and as a check list for the current pages.

d. All pages bear the date of issuance. Replacement pages will be issued as necessary and any portion of a page that has been revised will be identified by a vertical line in the margin. Additional arterial will be incorporated in the existing Sections or will be the subject of new Sections, as required.

e. Changes to text will be identified by a vertical line in the margin in the following manner;

   i. N for new or revised text;
   ii. E for editorial modification that do not alter the substance or meaning of the text;
   iii. D for deleted text

   iv. For practical reasons, this shall not be applied to title pages or to the routine insertion and deletion of Conclusions and Decisions. The absence of change bars, when data or page numbers have changed, will signify reissue of the section concerned or rearrangement of text (e.g., following an insertion or deletion with no other changes).

f. The Operations Manual will be distributed to Members and Observers of APANPIRG, the ICAO Secretariat, and to other States and international organizations participating in meetings, contributing to, or having interest in the work of the CRV OG and/or its Contributory Bodies.

2 PART II: TERMS OF REFERENCE, COMPOSITION AND POSITION IN ICAO OF THE CRV OG

2.1 Background

The establishment of APANPIRG CRV OG was proposed during the deliberations of the CRV Task Force (TF) as a dedicated group to provide oversight of the CRV operations and the performance of the CRV Service Provider. The APANPIRG CRV OG is formally established by APANPIRG Decision 27/34.

2.2 Terms of Reference

The Common Regional 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; and
m. Perform any other activity as required by CRV operations.

2.3 Reporting

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

2.4 Participation

The CRV OG will include all APAC Member States/Administrations, and any other organization as needed.

2.5 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.

2.6 Rapporteur

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

2.7 Position within ICAO

a) CRV OG shall be the guiding and co-ordinating organ for all activities conducted within ICAO concerning the Common Regional VPN for the Asia and Pacific Regions. However, it shall not assume authority vested in other ICAO bodies, except where such bodies have specifically delegated their authority to the Group. The activities of the Group shall be subject to review by the APANPIRG.

b) The work of groups established and meetings held within the framework of ICAO, concerned with the Asia and Pacific CRV shall be coordinated with the CRV OG to ensure full harmonization with all regional activities regarding the development and operation of the Asia/Pacific system.

3 PART II: WORKING ARRANGEMENTS

3.1 APANPIRG Procedural Handbook

The CRV shall be guided by the APANPIRG Procedural Handbook to ensure that work arrangements are consistent with its parent body

3.2 Administration of the CRV OG

c) The CRV shall be administered as follows:

   i. by two (2) Chairpersons, one elected from the Representatives designated by member States of the Group from ASIA Region and one from the PACIFIC region; and

   ii. by ICAO Regional Director, Asia and Pacific Office designated as Secretary CRV OG by the Secretary General of ICAO. In the execution of duties the Secretary will be supported by the Asia and Pacific Regional Office.

d) The Chairpersons, in close co-ordination with the Secretary, shall arrange for the most efficient working of the Group. The Group shall always work with a minimum of formality and paperwork.

e) Between meetings of the CRV OG, some subjects may be dealt with by correspondence among appointed Representatives of Member States through the Secretary of the CRV OG. However, if States are to be consulted this should be done through the ICAO Regional Director, Asia and Pacific Office.

Service Strategy

- Strategy Management
- Service Portfolio Management
- Financial Management
- Business Relationship Management
- Demand Management

Service Design

- Service Catalogue Management
- Availability Management
- Capacity Management
- IT Service Continuity Management
- Service level Management
- Design Co-ordination
- Information Security Management
- Supplier Management

Service Transition

- Transition Planning and Support
- Change Management
- Service Asset & Configuration Management
- Release and Deployment Management
- Service Validation and Testing Management
- Change Evaluation
- Knowledge Management

Service Operation

- Event Management
- Incident Management
- Request Fulfilment
- Problem Management
- Access Management

Continual Service Improvement

- Service Review
- Process Evaluation
- Definition of CSI Initiatives
- Monitoring CSI Initiatives

4 PART III: SERVICE STRATEGY

4.1 Strategy Management

Process Objective: To assess the service provider's offerings, capabilities, competitors as well as current and potential market spaces in order to develop a strategy to serve customers. Once the strategy has been defined, Strategy Management for IT Services is also responsible for ensuring the implementation of the strategy.

a) Reduce telecommunication costs in most cases (to be confirmed by local CBA)
b) Enable integration in the aeronautical infrastructure and enhanced services (GANP, regional objectives)
c) Enhance information security
d) Provide a standardized interface for AFS (instead of multiple protocols, some of which are obsolescent)
e) Rationalize coordination for network management and enhancement
f) Respond to Air Traffic requirements in a timely and standardized manner
g) Coordination with Other Regional Private Networks
h) Promote the use of CRV

4.2 Service Portfolio Management

Process Objective: To manage the service portfolio. Service Portfolio Management ensures that the service provider has the right mix of services to meet required business outcomes at an appropriate level of investment.

- Criteria for services to be added to CRV.
- POC of new services.

4.3 Financial Management

Process Objective: To manage the service provider's budgeting, accounting and charging requirements.

4.4 Business Relationship Management

Process Objective: To maintain a positive relationship with customers. Business Relationship Management identifies the needs of existing and potential customers and ensures that appropriate services are developed to meet those needs.

4.4.1 **CRV Contract**

The CRV contract, as selected by the ICAO TCB and ratified by CRV Task Force Members, was established to begin on 31st December 2017.

The terms of the contract with CRV SERVICE PROVIDER Global, the CRV Service Provider, was set for an initial Five Years with Five additional One-year contract additions totalling a Ten-year contractual agreement until 30th December 2027.

States are expected to establish contracts directly with CRV SERVICE PROVIDER Global utilizing the CRV Common Package or their own contract terms.

As new States join the CRV, they should align their service terms to end on 30th December 2027, in alignment with existing CRV members. For example, States that join on 31st December 2021 can exercise a Five-Year contract with a single One-year extension. ANSPs that join later will have a shorter contractual term to end on 30th December 2027.

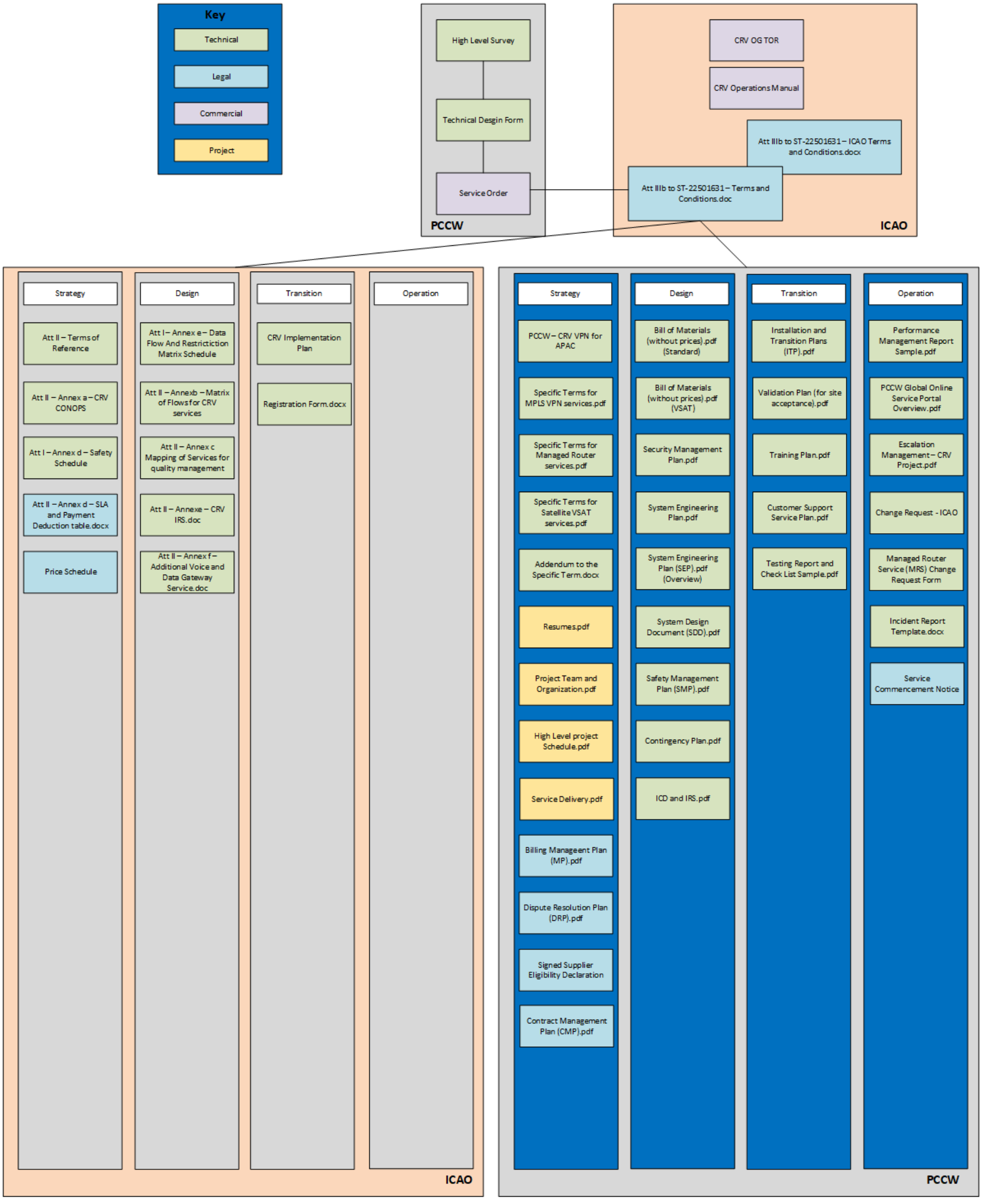
A contract shorter than Five-year contract would result in higher cost, per contract agreement.

If the new “Package” contract is less than 5-year term, the new monthly charge will be confirmed once a formal request is submitted.

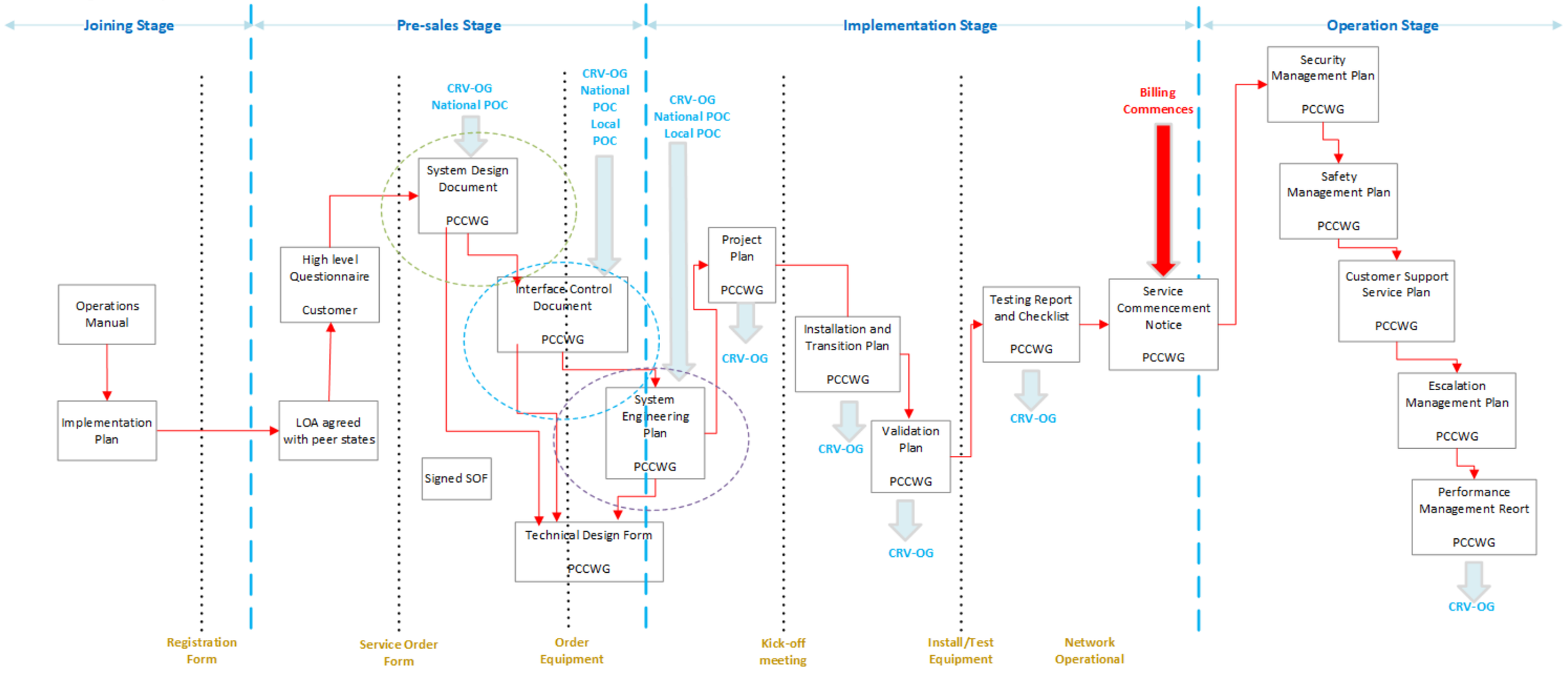
Contract period	
5 years	Quotation is based on "price sheet_6 Package"
4 years	budgetary 10% increase loading under on "price sheet_6 Package"
3 years	budgetary 20% increase loading under on "price sheet_6 Package"
2 years	budgetary 30% increase loading under on "price sheet_6 Package"
1 year	budgetary 40% increase loading under on "price sheet_6 Package"

4.4.2 **Legal Documentation**

The list below shows the precedence of the legal documents that pertains to CRV.



4.4.3 Design and Implementation document flow



4.4.4 Common Package

The Common Package is the common set of documents required to be used to join and operate the CRV Network.

The documents and how they relate to the stages in the Design and Implementation document flow is detailed below.

The Common Package contains documents that are essential for an order/contract (Blue documents) and general/common documents that assist with the design, implementation and operation (Orange documents). The Common Package Change Control record lists the blue and orange documents.

This is located on the CRV Users Portal here: Common Package.

4.4.5 Joining Stage

a. Operations Manual

This provides the Policies, Processes and Procedures for the Strategy, Design, Transition and Operation of the CRV network.

b. Implementation Plan

The purpose of this Implementation Plan is to provide guidance for all States/ Administrations on the operation requirements for implementing the Common aeRonautical Virtual Private Network (CRV) used in Asia/ Pacific (APAC) Region and the roadmap for implementation.

It contains information on Points of Contacts for each State, Allocated IP addressing for States and Service Providers, proposed implementation dates and suggested tests.

IP Addressing is also listed on the APAC CRV Portal.

c. Registration Form

Provides the information required to connect to CRV as an ANSP.

Example of the Registration Form

4.4.6 Pre-Sales Stage

a. LOA agreed with peer states

Before signing with CRV SERVICE PROVIDER, members should agree an LOA with peer states to ensure alignment with each other for connectivity with CRV SERVICE PROVIDER and services expected to be shared between states.

The LOA should consider the following:

I. The Scope of Services between states
II. System Operations
III. First Level Support
IV. Escalated Support

V. Re-affirm performance goals
VI. Security
VII. Constraints
VIII. Maintenance Procedures/Schedules/Notifications
IX. Points of Contact
X. Terms of the agreement
XI. Go Live Date for each State
XII. CRV service commissioning tests
XIII. ANSP Service tests

NOTE: Ensure that the dates agreed between states for the connectivity is also agreed with the CRV Service Provider to ensure the 3-day window is achievable.

b. High Level Questionnaire

This provides the high level information to CRV SERVICE PROVIDER to be able to provide the Service Order Form (SOF) for signing.

Example of the High Level Questionnaire

c. Service Order Form

Provides the information to CRV SERVICE PROVIDER to provide the connection and initiate billing.

Example of the Service Order Form.

d. System Design Document

This is the over-arching Design Document for the CRV Network.

Example of System Design Document

e. Interface Control Document

Example of Interface Control Document

f. Technical Design Form

Example Technical Design Form

g. System Engineering Plan

This is a living document covering the technical aspects of the CRV implementation. Any changes can be updated by the User or CRV SERVICE PROVIDER.

Example of a System Engineering Plan

4.4.7 **Implementation Stage**

a. System Engineering Plan

This is a living document covering the technical aspects of the CRV implementation. Any changes can be updated by the User or CRV SERVICE PROVIDER.

Example of a System Engineering Plan

b. Project Plan

Provided to each state post signing of the Contract and is only relevant to that state. It is updated regularly by the CRV SERVICE PROVIDER Project manager

Example of a Project Plan

c. Installation and Transition Plan

Example of an Installation and Transition Plan

d. Validation Plan

This is CRV SERVICE PROVIDER's testing plan post implementation of the Managed Service

Example of a Validation Plan

e. Testing and Report Checklist

This is the result of CRV SERVICE PROVIDER's Testing plan post implementation of the Managed Service and is accompanied by the Service Commencement Notice (SCN).

The Testing, Report Checklist and the 3-day test window only applies to any new physical install by the CRV Service Provider, that is the circuit, LL and NID.

There is no need to carry out the testing that was carried out during the Proof of Concept (POC) as this would impact current CRV network connections.

At the point the following occurs:

CRV Member led 3-day Test Window (3 working days)

The 3-day test window is to be arranged after the validation plan (CRV SERVICE PROVIDER's testing plan post implementation of the Managed Service) is reviewed and agreed by CRV users and CRV SERVICE PROVIDER.

Ensure that the dates agreed for testing are reflected in the LOA and agreed with the CRV Service Provider.

- Perform a connectivity test (ping or traceroute) between endpoints.

The 3-day test window can be extended PROVIDED that the issue is due to CRV SERVICE PROVIDER (e.g. local loop fault, NID fault, network configuration problem, etc.), or if the implementation of one state is delayed and impacts the implementation of another state, providing the following is met:

1. The peering states have agreed the implementation dates.
2. The CRV Service Provider is advised of the implementation dates and agrees.

3. Any slippage of the agreed dates by the CRV Service Provider does not impact the Authority's ability to carry out the 3-day test before billing commences.

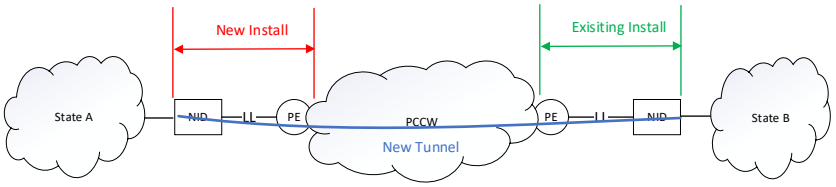
If the issue is due to CRV user (e.g. equipment not ready, counter-part not available, etc.), then the CRV Service Provider will still commence the billing after the 3-day test window.

The 3-day test only applies to new connections to CRV being delivered by the CRV Service Provider.

Example of a Testing and Report Checklist

Examples of when to test.

1. **New circuit install single state**.

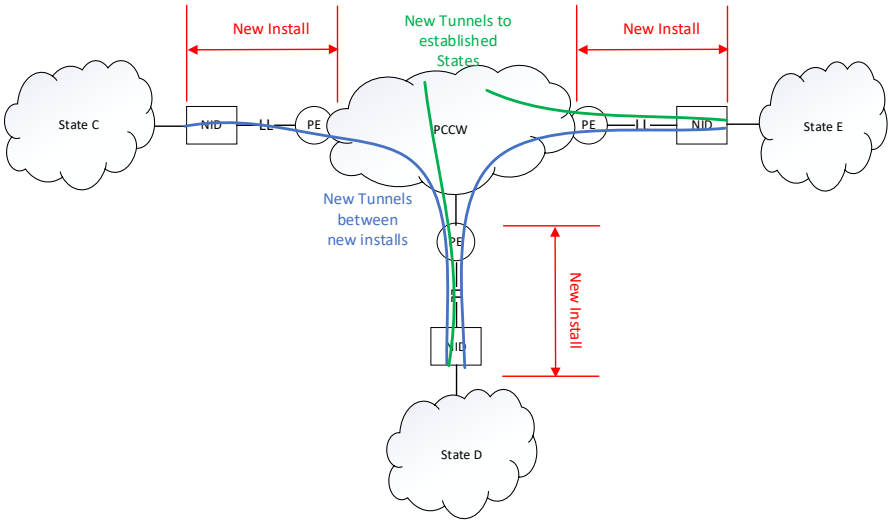


State A is having a CRV circuit installed wither as their first install or an additional site. State A is peering with State B, but State B has an established CRV network connection.

The LOA between the States, details the testing and commissioning dates.

Upon receipt of the Testing and Report Checklist and the Service Commencement Notice from the CRV Service Provider, State A initiates the 3-day testing of connectivity tests with State B.

2. **New circuit install multiple states with delay and test windows.**



State C, State D and State E are all joining CRV and have circuit installs to be completed.

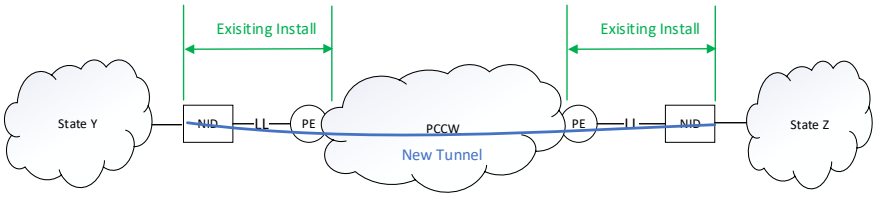
State C is peering with State D only, State D and State E also have a peering with each other and with other established States.

The LOA between the States, details the testing and commissioning dates as they will all have a 3-day test window.

During the installation phase an issue, the install for State D is delayed due to last mile delays, but the installs for States C and E are on track. This will have an impact on the 3-day test windows for the States. Potentially States D and E can continue with the 3-day test window when their circuits have been installed as they have peering's with other States, however State C is impacted because State D is delayed.

All States should now discuss with the CRV Service Provider the need to delay the 3-day test window and billing.

3. Addition of a tunnel between States.



State Y and State Z have decided to have a CRV connection between each other. Both States already have an established CRV circuit and tunnels to other States.

The LOA between the States, details the testing and commissioning dates.

The addition of a GRE tunnel between states does not formally initiate the need for the 3-day Test Window, however it is suggested the connectivity test is carried out prior to application testing.

f. Service Commencement Notice

At this point billing will commence. The Service Commencement Notice is accompanied with the Test Report.

4.4.8 Operation Stage

a. Security Management Plan

Example of the Security Management Plan

b. Safety Management Plan

Example of a Safety Management Plan

c. Customer Support Service Plan

This details the contact details for any Problems or Incidents that the State may encounter.

Example of a Customer Support Service Plan

d. Escalation Management Plan

This details the contact details if the need arises to escalate any Tickets. It also details the escalation criteria

Example of an Escalation Management Plan

e. Performance Management Report

Example of a Performance Management Report

4.5 Demand Management

Process Objective: To understand, anticipate and influence customer demand for services. Demand Management works with Capacity Management to ensure that the service provider has sufficient capacity to meet the required demand.

5 PART IV: SERVICE DESIGN

Service Design

- Service Catalogue Management
- Availability Management
- Capacity Management
- IT Service Continuity Management
- Service level Management
- Design Co-ordination
- Information Security Management
- Supplier Management

5.1 Service Catalog Management

Process Objective: To ensure that a Service Catalogue is produced and maintained, containing accurate information on all operational services and those being prepared to be run operationally. Service Catalogue Management provides vital information for all other Service Management processes: Service details, current status and the services' interdependencies.

5.1.1 **Requirements**

a. Latency (from the ADDENDUM TO THE SPECIFIC TERMS)

Locations	**Average Round Trip Delay**
Within the cities specified in Asia (On-net/Off-net)	200ms
Within the cities specified in Oceania (On-net/Off-net)	200ms
Between the cities specified in Middle East & Europe (On-net/Off-net)	200ms
Within the cities specified in Europe (On-net/Off-net)	200ms
Other cities combination not specified above	600ms

b. Availability (from the ADDENDUM TO THE SPECIFIC TERMS)

Service Package	**Service Availability**
Package A	99.97%
Package B	99.5%
Package B+	99.95%
Package C	99.5%
Package C+	99.7%
Package D	99.5%

c. Jitter (from the ADDENDUM TO THE SPECIFIC TERMS)

The Target Average Jitter Level for voice application and data application is 15ms and 250ms respectively

d. QoS/DSCP markings

Service class name	**DSCP Name**
Border Gateway Protocol (BGP)	CS6
Voice	EF
Voice Signalling	CS5 (preferred) EF (if CS5 is not possible)
ADS-B	CS4
AFTN, ATN.	AF21
All traffic not otherwise defined.	DF (CS0)

e. Security

Security is the responsibility of each of the ANSPs. Basic security is provided by CRV SERVICE PROVIDER utilising Route Filtering and GRE tunnels between ANSP sites.

f. Voice

Voice over the CRV network has some specific requirements. This can be found in the Voice ICD.

5.1.2 Criteria to add a new service

a. Considerations

i. Connecting a Service Provider / Service Consumer (SPSC) to the CRV can be initiated by any party that identifies a need for an SPSC to connect to it. The following should be considered by the SPSC and the CRV-Member state.

ii. The SPSC should be referred to CRV SERVICE PROVIDER to enable an initial discussion with them to assess the feasibility of connecting to the CRV. During this discussion the SPSC should clarify:

iii. Interfaces

iv. Data transfer rates

v. DSCP marking etc.

vi. It is recommended that Service Providers use public ip addressing for the delivery their services.

vii. It is recommended that Service Consumers are provided with a 10.x.x.x ip addressing from the CRV Member State where the CRV SERVICE PROVIDER NID is installed.

viii. SPSCs will NOT be a member of the CRV Operations Group (OG). The OG may establish a CRV user group that could facilitate discussion on the use of the CRV by SPSCs.

ix. SPSCs will need to adhere to the Common Regional VPN (CRV): System Design Document (SDD). Substantive changes to the SDD MUST be endorsed by the CRV OG.

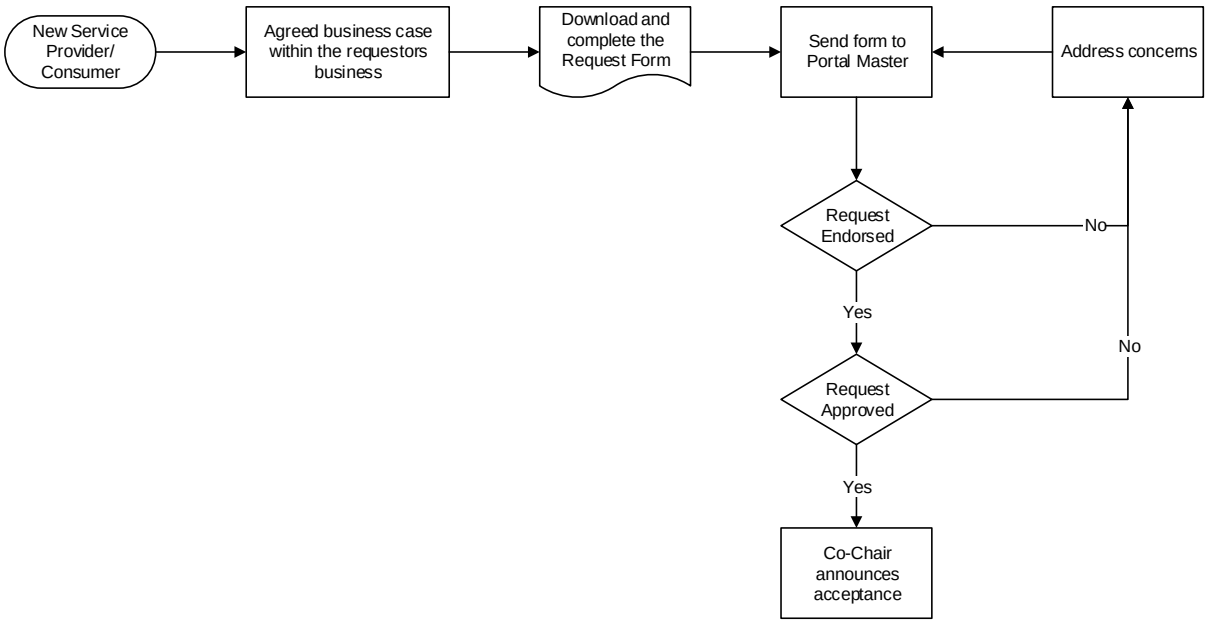
x. CRV member states should consider ICAO Doc 9855 AN/459 Guidelines on the Use of the Public Internet for Aeronautical Applications as guidance when they are the Primary sponsor.

xi. The CRV OG IS NOT responsible for the accreditation/certification/validation of a Service Provider but must ensure that all reasonable steps have been taken to ensure that the Service Provider has sufficient systems and process in place to provide their service over the CRV.

xii.

xiii. Service Consumers and CRV members SHOULD ensure that when obtaining a Service from a Service Provider that the service meets their operational service requirements.

b. Process



1. Procedure.

i. The information required in the connection request, should be presented in English and in a clear and logical format. The following process will be used for an SPSC to obtain approval connect to the CRV:

ii. Provide a business justification including Benefits Realization for joining the CRV

iii. For a Service Provider:

a. provide a documentation using Section 2.3 ACCREDITATION OF AN IASP in ICAO Doc 9855 AN/459 as a guide including a cyber-security plan.

iv. For a Service Consumer; at a minimum, provide a CRV connection plan and cyber-security plan on how they will shield the CRV from their organisation.

v. Obtain a Primary CRV member state to sponsor their connection to the CRV.

vi. Obtain business justification from Primary Sponsor to support their request.

vii. Obtain a Secondary CRV member state to sponsor their connection to the CRV based on the information above.

viii. The information provided above, will be provided to the CRV OG via the APAC CRV portal.

ix. CRV OG members will be notified and have 25 business days to review and address any concerns that they may have with the request.

x. After the 25 days, if the majority of reviews by CRV OG members are endorsed, the CRV OG chairs will review the request.

xi. For the request to be approved, both CRV OG C-Chairs need to approve the request.

xii. A Document/Certificate will be provided to the primary sponsor that can used to verify that the SPSC is approved to connect the CRV.

xiii. The on boarding of Service Provider / Service Consumer will be supported by the Airways New Zealand provided APAC CRV SharePoint portal. There will be word forms to facilitate the information and these forms will be migrated to an automated SharePoint Workflow as soon as practical.

Service Provider / Service Consumer will be required to undertake the following:

Provide a business justification including Benefits Realisation for joining the CRV

Provide a High-Level System Design oh how their Service could potentially connect to the CRV.

Service Providers to use Public IP Addressing

Service Consumers to use the ICAO allocated IP addresses

Interfaces

Data transfer rates

DSCP marking

5.2 Availability Management

Process Objective: To define, analyse, plan, measure and improve all aspects of the availability of IT services. Availability Management is responsible for ensuring that all IT infrastructure, processes, tools, roles etc. are appropriate for the agreed availability targets.

5.2.1 **Monthly Performance Management Reports**

Provided by CRV SERVICE PROVIDER to each State that has joined CRV covering:

- Router report
- Interface report
- QoS report
- Traffic report

(More SLA data is available from the CRV SERVICE PROVIDER Portal)

5.2.2 **Monthly Operations Reports**

Provided by CRV SERVICE PROVIDER to each State that has joined CRV covering:

- Active Service Inventory
- Site Availability (More SLA data is available from the CRV SERVICE PROVIDER Portal)
- Ticket Statistic
  - Problem Statistic
  - Incident Statistic
  - Requests
  - Maintenance
- Ticket Details
- AOB

5.2.3 **Monthly meetings with CRV SERVICE PROVIDER**

Conducted via Telephone conference that is hosted by CRV SERVICE PROVIDER, with each State that has joined CRV to discuss:

- States Performance Management Report (information from the Portal)
- States Operations Report (Service Report)

5.2.4 Quarterly Operations Reports

Provided by CRV SERVICE PROVIDER to the OG covering:

- Implementation progress
- Site Availability (More SLA data is available from the CRV SERVICE PROVIDER Portal)
- Ticket Statistic
  - Problem Statistic
  - Incident Statistic
  - Requests
  - Maintenance
- Ticket Details
- AOB

5.2.5 Annual OG meetings

- Implementation progress
- Site Availability (More SLA data is available from the CRV SERVICE PROVIDER Portal)
- Ticket Statistic
  - Problem Statistic
  - Incident Statistic
  - Requests
  - Maintenance
- Ticket Details
- Network Utilisation
- AOB

5.2.6 Root cause analysis reports

Provide detail post every Incident to the affected State and the APAC CRV OG. Include these in each of the Monthly, Quarterly and Annual Report.

5.2.7 Notifications of Maintenance

Ensuring that all affected parties of maintenance releases are updated as appropriate.

5.2.8 Diversity Audits

A rolling audit of States/Sites physical and logical connectivity based on the information provided in the Service Commencement Notice.

5.2.9 Testing failover

State LOA/MOU/Technical Letter for carrying out failover testing to ensure service continuity.

5.3 Capacity Management

Process Objective: To ensure that the capacity of IT services and the IT infrastructure is able to deliver the agreed service level targets in a cost effective and timely manner. Capacity Management considers all resources required to deliver the IT service, and plans for short-, medium- and long-term business requirements.

Co-ordinate and standardize the establishment or upgrade of CRV services as required

Oversee the performance of the CRV network;

5.4 IT Service Continuity Management

Process Objective: To manage risks that could seriously impact IT services. ITSCM ensures that the IT service provider can always provide minimum agreed Service Levels, by reducing the risk from disaster events to an acceptable level and planning for the recovery of IT services. ITSCM should be designed to support Business Continuity Management.

a) CRV Contingency Operations

from CRV TF/6 report there is this report:

The meeting discussed again the contingency plan in relation to the safety case. To mitigate the risk of a total or major failure (such as IT disaster that would affect the whole CRV), two layers of process would have to be articulated:

- *the procedures and measures planned and implemented by CRV SERVICE PROVIDER; and*
- *consistently, the procedures and measures planned and implemented by the CRV Users, as part of their contingency plan required by ICAO SARPS.*

Furthermore, the meeting agreed that procedures to mitigate the total failure of CRV should be discussed by CRV OG as part of the contingency planning.

b) CRV Network overview
CRV SERVICE PROVIDER maintains a drawing showing the overall connectivity of the CRV Users sites to the various CRV SERVICE PROVIDER POPs. This is a high-level drawing which is available here.

5.5 Service Level Management

Process Objective: To negotiate Service Level Agreements with the customers and to design services in accordance with the agreed service level targets. Service Level Management is also responsible for ensuring that all Operational Level Agreements and Underpinning Contracts are appropriate, and to monitor and report on service levels.

5.6 Design Co-ordination

Process Objective: To coordinate all service design activities, processes and resources. Design coordination ensures the consistent and effective design of new or changed IT services, service management information systems, architectures, technology, processes, information and metrics.

Change Requests

Engineering Package

Legal Documents

Dial Plan

The CRV Dial Plan is an important document detailing the endpoint dialling information for the Ground-to-Ground voice communications over the CRV Network. The current version is available here.

5.7 Information Security Management

Process Objective: To ensure the confidentiality, integrity and availability of an organization's information, data and IT services. Information Security Management usually forms part of an organizational approach to security management which has a wider scope than the IT Service Provider.

Security is the responsibility for the implementation of security controls to ensure the integrity of services.

As a minimum the connectivity states is via GE Tunnels.

Other methods of ensuring the security of the connectivity are:

a. Utilising as small an IP Address range as possible.
b. Only advertising relevant IP addresses.
c. Only accepting verified IP Routes when required.
d. Utilising firewalls.
e. Utilising NAT.
f. Utilising Intrusion Protection Software (IPS)

It is recommended that external security advice is sought.

5.8 Supplier Management

Process Objective: To ensure that all contracts with suppliers support the needs of the business, and that all suppliers meet their contractual commitments.

a) Oversee the performance of the CRV Service Provider, including customer service;

b) 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

6 PART V: SERVICE TRANSITION

Service Transition

- Transition Planning and Support
- Change Management
- Service Asset & Configuration Management
- Release and Deployment Management
- Service Validation and Testing Management
- Change Evaluation
- Knowledge Management

6.1 Transition Planning and Support

Process Objective: To plan and coordinate the resources to deploy a major Release within the predicted cost, time and quality estimates.

a) Covered by the Implementation Plan

6.2 Change Management

Process Objective: To control the lifecycle of all Changes. The primary objective of Change Management is to enable beneficial Changes to be made, with minimum disruption to IT services.

a) All changes are to be conveyed to CRV SERVICE PROVIDER via their Change Request Form. And covered by the Change Management Process as found in the Common Package.

6.3 Service Asset and Configuration Management

Process Objective: To maintain information about Configuration Items required to deliver an IT service, including their relationships.

a) 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;

This information is collated in the following ways:

CRV Operations Manual – APAC Portal
A list of CRV users – Registrations page on the APAC portal
Record of Variations is found in the APAC CRV Portal in the Common Package Folder

6.4 Release and Deployment Management

Process Objective: To plan, schedule and control the movement of releases to test and live environments. The primary goal of Release Management is to ensure that the integrity of the live environment is protected and that the correct components are released.

a) Oversee the implementation of the CRV post Contract Award;

b) Manage issues arising from the transition with CRV TF, if any

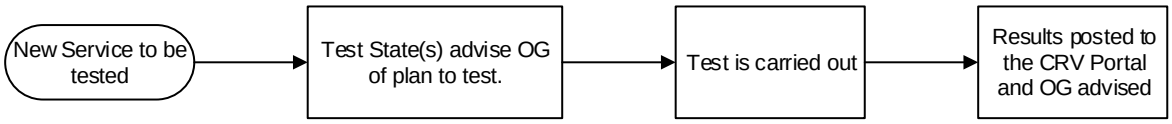
6.5 Service Validation and Testing Management

Process Objective: To ensure that deployed Releases and the resulting services meet customer expectations, and to verify that IT operations is able to support the new service.

a) Accept deliverables from the CRV Service Provider on behalf of the CRV Users as required;

b) Refer to the CRV Implementation Plan

c) New Services



New services being tested by any state,
Notifies OG intention to test as soon as practical.
Advises CRV OG and CRV SERVICE PROVIDER 48hrs prior to testing

Testing is to be carried out with a DSCP marking of DF so as to avoid impacting other services.

The results of the tests are to be posted on the CRV portal and the OG advised of the posting.

6.6 Change Evaluation

Process Objective: To assess major Changes, like the introduction of a new service or a substantial change to an existing service, before those Changes are allowed to proceed to the next phase in their lifecycle.

6.7 Knowledge Management

Process Objective: To gather, analyse, store and share knowledge and information within an organization. The primary purpose of Knowledge Management is to improve efficiency by reducing the need to rediscover knowledge.

a) All information relating to the ongoing operation of the network shall be retained in the APAC CRV Portal

There will be a link to the portal from the ICAO APAC page.

b) To add items to the portal.

c) To Workflow a document.

7 PART VI: SERVICE OPERATION

Service Operation

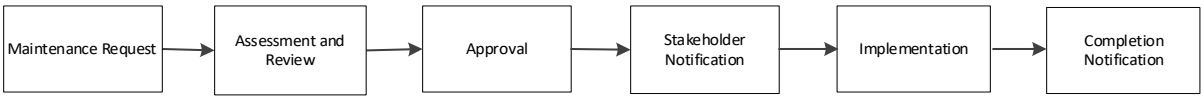
- Event Management
- Incident Management
- Request Fulfilment
- Problem Management
- Access Management

7.1 Event Management

Process Objective: To make sure CIs and services are constantly monitored, and to filter and categorize Events in order to decide on appropriate actions.

- Overview

  In order to prevent loss of service and reduce impact of service on member states, planned and unplanned event management activities shall follow the below event management process. Any concerns about the change event can be raised by the member state at the stakeholder notification stage.



a) Managed by CRV SERVICE PROVIDER.

CRV SERVICE PROVIDER have in place an Event Management Process that meets the above. Upon receipt of a maintenance or event notification from CRV SERVICE PROVIDER, States operating a single site, single connection model (Package B, C or D), can request their circuit be groomed to another node during the maintenance/event window.

The grooming request will need to be submitted via a change request form to groom the service if necessary. CRV Service Provider engineers will validate the request subject to feasibility study on a case-by-case basis. The CRV User needs to express the safety concern/traffic or ANSP impact as a result of the window as part of the change request.

CRV SERVICE PROVIDER will provide notification of maintenance as per the Customer Support Service Plan.

An example of Planned Outage Notification

An example of Urgent Maintenance Notification

b) Managed by CRV Users

The objective of this process is to prevent uncontrolled removal or degradation of a service by maintenance or project activities due to a planned event by a partner ANSP. Member states are to provide impacted stakeholders at least 14 days notification prior to the event. Other notification periods are by agreement from stakeholders.

The following diagram details this process.

The Notification template is available from the APAC CRV OG Portal

7.2 Incident Management

Process Objective: To manage the lifecycle of all Incidents. The primary objective of Incident Management is to return the IT service to users as quickly as possible.

a) Managed by CRV SERVICE PROVIDER

After an incident, an incident report (IR) can be provided upon request.

Under normal circumstances, an IR would be ready in 3 working days.

An IR Form template is provided in the Common Package.

An example of an Incident Ticket creation notification. An example of Incident Progress update notification.

b) Managed by CRV User

This would apply the services between CRV Users for the purposes of operations, ie Voice, AMHS, Surveillance etc.

Affected CRV Users would be able to request a CRV User IR for more clarity/explanation.

The Incident template is available from the APAC CRV OG Portal

7.3 Request Fulfilment

Process Objective: To fulfil Service Requests, which in covers the lifecycle of the change, linking to other processes such as Design and Change Management.

The objectives of the request fulfilment process are to：

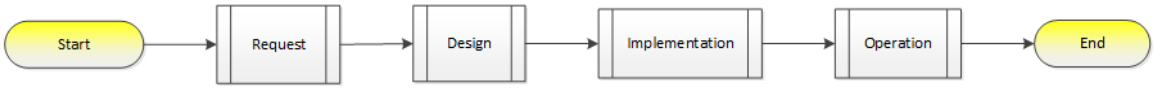
- Maintain user satisfaction through efficient and professional handling of all service requests.
- Provide a channel for users to request and receive standard services for which a predefined authorization and qualification process exists.
- Provide information to users about the availability of services and the procedure for obtaining them.
- Source and deliver the components of requested standard services (e.g. licences and software media)

a) General Request Fulfilment as managed by CRV SERVICE PROVIDER

The general service fulfilment is the process of managing the lifecycle of CRV user service requests from initial request to fulfilment using separate request fulfilment records/tables to record and track their status by CRV SERVICE PROVIDER. Service requests handle all other interactions between CRV SERVICE PROVIDER and CRV users that are not service disruptions. Examples of service requests might include the solicitation of assistance with the acquisition of a service, guidance on how to use CRV service, request for a password change, adding a connection, or moving a user NID. The general service fulfilment is managed by CRV SERVICE PROVIDER. Follow CRV SERVICE PROVIDER's standard process for service fulfilment.

b) Specific Request Fulfilment as managed by CRV OG

- Process

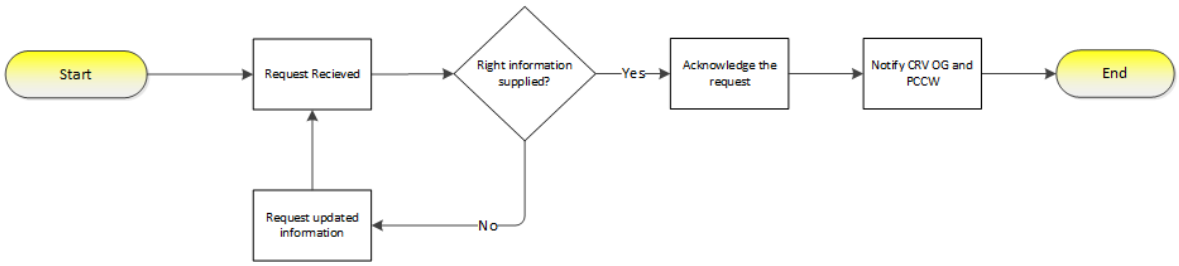


- Procedure
  - Request

There are four types of requests:

1. Request to join CRV as a user.
2. Request to change
3. Request to add a new service
4. Request to terminate the CRV connection

- Process



- Procedure

1. Request Received

   Details on how to join CRV are posted on the ICAO APAC and ICAO MID pages.

   An initial request is sent to the APAC CRV Portal Administrator requesting to join, leave or add a new connection to CRV.

2. Right information Supplied

   Upon receipt of the request to join, leave or add new connection to CRV, a registration form is provided.

   Upon receipt of the registration form to join or leave, check the content is complete:

   a. ANSP Making the Request
   b. Technical Point of Contact
   c. State(s) connecting to.
   d. Proposed services between ANSPs
   e. Proposed go live/removal date

   If complete, acknowledge the request with a link to the Common Package, the Operations Group Manual and the Implementation Plan and the CRV Portal.

   If not complete, request updated information.

3. Acknowledge request

   All relevant information relating to the request must be logged by CRV Portal Administrator so that a full historical record is maintained – and so that if the request has to be referred to other process or procedure, they will have all relevant information to hand to assist them.

4. Notify the CRV OG and CRV SERVICE PROVIDER.

5. Update the Registrations List.

- Design
  - Go to Design Co-ordination
- Implementation
  - Go to Change Management
- Operation
  - Go to Service Operation

7.4 Problem Management

Process Objective: To manage the lifecycle of all Problems. The primary objectives of Problem Management are to prevent Incidents from happening, and to minimize the impact of incidents that cannot be prevented. Proactive Problem Management Analyses Incident Records, and uses data collected by other IT Service Management processes to identify trends or significant Problems.

a) CRV SERVICE PROVIDER Initiated – Follow the Customer Support Service Plan

b) Authority Initiated

   a. Troubleshoot local connectivity

   b. Polling the NID. On the ANSP NID provided by CRV SERVICE PROVIDER, a loop back IP will be configured using a specified IP address from the allocated range of IP addressing. This will be called the troubleshooting IP address.

   c. Troubleshoot with peers

   d. Fault with CRV SERVICE PROVIDER following the Customer Support Service Plan

7.5 Access Management

Process Objective: To grant authorized users the right to use a service, while preventing access to non-authorized users. The Access Management processes essentially execute policies defined in Information Security Management. Access Management is sometimes also referred to as Rights Management or Identity Management.

a) Physical Access Control

   i. The Cabinet for Core Routers are locked

   ii. The network main PoP sites are under 7x24 CCTV monitoring and recording

b) Remote Network Access Control

   i. The remote access of Cores and CE routers are controlled by access-list ACL that is only allow authorized terminal of management systems.

   ii. The TACACS is deployed to allow the authorized persons of CRV SERVICE PROVIDERG to access Core Routers or CE routers as AAA clients.

c) Portal Access

   Review member's access annually.

8 PART VII: CONTINUAL SERVICE IMPROVEMENT

Continual Service Improvement

- Service Review
- Process Evaluation
- Definition of CSI Initiatives
- Monitoring CSI Initiatives

8.1 Service Review

Process Objective: To review business services and infrastructure services on a regular basis. The aim of this process is to improve service quality where necessary, and to identify more economical ways of providing a service where possible.

Expert Group Name	Volunteered Member	Group leader
Service Strategy	Singapore, USA, India	New Zealand/Fiji
Service Design	Singapore, USA, Hong Kong China	New Zealand/Fiji
Service Transition	China, Singapore	New Zealand/Fiji
Service Operations	Australia, China, Singapore, India	New Zealand/Fiji

8.2 Process Evaluation

Process Objective: To evaluate processes on a regular basis. This includes identifying areas where the targeted process metrics are not reached, and holding regular bench markings, audits, maturity assessments and reviews.

8.3 Definition of CSI Initiatives

Process Objective: To define specific initiatives aimed at improving services and processes, based on the results of service reviews and process evaluations. The resulting initiatives are either internal initiatives pursued by the service provider on his own behalf, or initiatives which require the customer's cooperation.

8.4 Monitoring CSI Initiatives

Process Objective: To verify if improvement initiatives are proceeding according to plan, and to introduce corrective measures where necessary.

9 PART VIII
DEFINITIONS

9.1 Definitions

Service - Any service provided over the CRV supporting Meteorological Service for International Air Navigation or Air Traffic Control Services.

Service Provider (SP) is defined as a company that provides aeronautical service using the CRV as the means of communication.

Service Consumer (SC) is defined as a company or organisation that consumes aeronautical information using the CRV as the means of communication.

Incident - An Incident is defined as an unplanned interruption or reduction in quality of an IT service (a Service Interruption).

E.g. A link has been flapping in the network causing reroutes.

Problem - A cause of one or more Incidents. The cause is not usually known at the time a Problem Record is created.

E.g. Link flaps have been caused by unplanned work by a third party.

CRV User

CRV Service Provider

10 PART IX
DOCUMENTATION MANAGEMENT

10.1 Common Package

Documents in the Common Package can be updated by both CRV SERVICE PROVIDER and the APAC CRV OG

10.1.1 APAC CRV OG

When an APAC CRV OG controlled document is required to be updated, it will need to be copied from the Current Version folder to the Draft Versions folder.

Once the Draft is ready to be published it is moved from the Current Version folder and saved in the Previous Versions folder. The new version is then copied from the Draft Versions folder to the Current Version folder.

10.1.2 CRV SERVICE PROVIDER

When CRV SERVICE PROVIDER send an updated document, the current version is moved from the Current Version folder and saved in the Previous Version folder. The new version is then saved to the Current Version folder.

10.1.3 Change Control

The Common package – change control document will need to be updated and saved with a new version number.

Documents that are essential for an order/contract (Blue documents) and the other documents (Orange documents) that are general/common documents (Orange Documents), shall be noted as such in the Change Control document.

10.2 Dial Plan

This is an APAC CRV OG document and is maintained by the nominated representative of the OG. Currently the USA.

When this document is updated, the current version is moved from the Current Version folder and saved in the Previous Versions folder. The new version is then saved to the Current Version folder.

10.3 Implementation Plan

This is an APAC CRV OG document and is maintained by the nominated representative of the OG. Currently Singapore.

When this document is updated, the current version is moved from the Current Version folder and saved in the Previous Version folder. The new version is then saved to the Current Version folder.

The updated version is also saved in the ICAO APAC Electronic Documents portal.

CRV SERVICE PROVIDER will also send and Excel file called CRV Network Implementation Progress Report. This is saved in the Implementation Plan folder.

10.4 Operations Manual

This is an APAC CRV OG document and is maintained by the nominated representative of the OG. Currently New Zealand with the support of an Ad Hoc group.

When an the Operations Manual is required to be updated, the current version will need to be copied from the Current Version folder to the Draft Versions folder.

Once the Draft is ready to be published it is moved from the Current Version folder and saved in the Previous Versions folder. The new version is then copied from the Draft Versions folder to the Current Version folder.

10.5 Overview drawing for CRV from CRV SERVICE PROVIDER

This is a CRV Service Provider document and is maintained by the CRV Service Provider

When this document is updated, the current version is moved from the Current Version folder and saved in the Previous Versions folder. The new version is then saved to the Current Version folder.