International Civil Aviation Organization

Twenty Fourth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/24) of APANPIRG

Web-conference, 30 November – 4 December 2020

Agenda Item 8: Review and updates

CHINA CIVIL AVIATION GROUND-GROUND COMMUNICATION NETWORK STATUS

(Presented by China)

SUMMARY

This paper presents the information of China civil aviation ground-ground communication network, including network scale, network topology, application technology and services accessing.

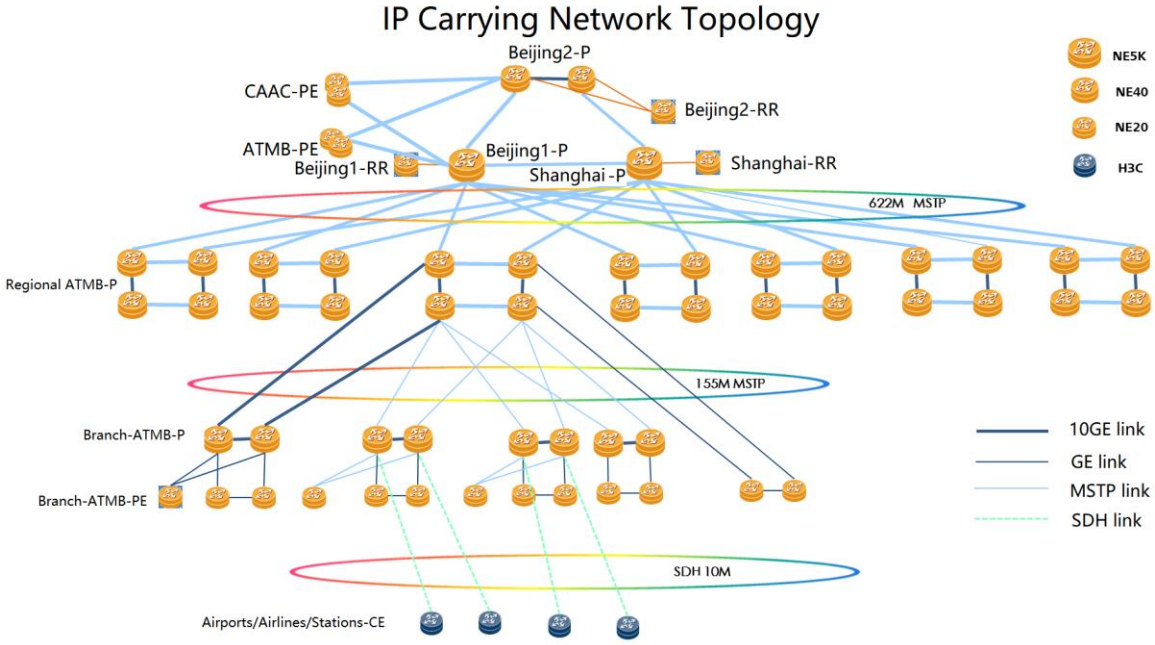
1. INTRODUCTION

1.1 In order to enhance the ATS service communication stability, safety, reliability and availability, China has constructed a new ground-ground communication network named China Civil Aviation Communication Network (CCACN) to replace the previous network that based on ATM technology from October 2016 to November 2019. The new communication network covering the whole civil aviation system including civil aviation administration organization, air traffic management organization, airports, airlines and communication stations, involving about 762 nodes.

1.2 CCACN is composed of transmission network, service carrying network, cyber security system and comprehensive management system. The bandwidth of backbone is 622M-155M. Transmission network is the physical layer network. It provides transmission channels and distributes trunk bandwidth resources. The service carrying network is above the transmission network to access the services. According to the service transmission characteristics, the service carrying network is divided into IP carrying network and TDM carrying network.

1.3 The transmission network is built by SDH and DWDM equipment, and MSTP technology is used to provide private circuit for IP and TDM networks. IP network base on MPLS/VPN technology which mainly accesses services with large bandwidth service requirements such as Meteorology information, Information system, Voice, Monitor video. Video Meeting. TDM network base on datalink layer tunnel technology, which is accesses aeronautical service, including AFTN, VHF, Radar and ADS-B.

1.4 CCACN has been designed as a three-tier network architecture model which contains a common core layer, a convergence layer and an access layer. Dual core and dual circuit architecture were also designed to provide network redundancy protection. Important nodes have installed dual devices, two power supply module for guarantee node reliability. The transmission network supports MSP and SNCP protection for rapid circuit switching. The IP/TDM network use dynamic routing protocol to achieve routing protection BFD protocol and FRR technology are used to accelerate the routing convergence. The topology of the IP network is shown in the figure:



1.5 CAACN is a comprehensive communication network with high bandwidth, cost efficiency, circuit resources flexibility distribution and abounding interfaces selection. It is a historic milestone for the development of China's civil aviation communication network.Since the operation of the CCACN in November 2019, the service by ATM network have been gradually migrated to CCACN. By the end of September 2020, the services migration has been basically completed.

1.6 CCACN will not affect or make change communication mode with neighboring states. China joined the CRV Network in October 2020 and had already completed the implementation on 26 October 2020.The CCACN will setup interface for connecting the CRV for more selection in international communication in the future.

2. ACTION BY THE MEETING

2.1 The meeting is invited to:

a) note the information contained in this paper.

– – – – – – – – – – – –