



**INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE**

**REPORT OF
THE SIXTH WORKING GROUP MEETING OF
AERONAUTICAL TELECOMMUNICATION NETWORK (ATN)
IMPLEMENTATION CO-ORDINATION
GROUP OF APANPIRG
(ATNICG WG/6)**

**Hua Hin, Prachuab Khri Khan
22 – 25 September 2009**

The views expressed in this Report should be taken as those of ATNICG WG/6 Meeting and not of the Organization. This report will be provided as baseline for discussion at ATNICG WG/7 and submitted to the Fifth Meeting of ATNICG for further action.

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1. OPENING OF THE MEETING

1.1 The Sixth Working Group Meeting of the Aeronautical Telecommunication Network (ATN) Implementation Co-ordination Group (ATNICG WG/6) of APANPIRG was held at Hilton Hua Hin Resort & Spa, Prachuab Khiri Khan, from 22 to 25 September 2009. The Meeting was hosted by Aeronautical Radio of Thailand Ltd. (Aerothai).

1.2 Inaugurating the meeting ACM Somchai Thean-anant welcomed the participants and wished the meeting all success. He also appreciated the work being done by the Group.

1.3 Mr. Hoang Tran, Chairman of the ATNICG chaired the meeting. Highlighting the tasks to be progressed by the meeting, Mr. Hoang Tran informed the meeting about the developments that are taking place in the ATN implementation scenario. He also reminded the meeting about the immediate tasks that are required to be taken up to comply with APANPIRG's Conclusion to implement BBIS MTA in the next two years.

2. ATTENDANCE

2.1 The Meeting was attended by 41 participants from 12 States (China, Hong Kong China, Fiji Islands, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, Republic of Korea, Singapore, Thailand, USA and 1 Industrial partner from Comsoft GmbH). The list of participants is provided in the **Attachment 1** to this Report.

3. OFFICERS AND SECRETARIAT

3.1 Mr. Hoang Tran, AMHS Programme Manager, FAA USA chaired the meeting.

3.2 Mr. Sujan Kumar Saraswati, Regional Officer CNS, ICAO Asia and Pacific Regional Office acted as Secretary for the meeting.

4. ORGANIZATION, WORKING ARRANGEMENT, LANGUAGE AND DOCUMENTATION

4.1 The ATNICG WG/6 met as a single body. The working language for the meeting was English inclusive of all documentation and this Report. List of Working and Information Papers is placed in the **Attachment 2** to this Report.

1. Following agenda was adopted by the meeting:

Agenda Item 1: Review the Outcomes of APANPIRG/20 on relevant agenda items
and ATNICG/4 Report

Agenda Item 2: Develop implementation schedule

Agenda Item 3: Develop test procedure for MTA and ATN Router

Agenda Item 4: Discuss the Aeronautical Fixed Service (AFS) evolution and
Modernization strategy

Agenda Item 5: Review APANPIRG Draft AMHS IPS implementation strategy

Agenda Item 6: Review Global Internet Protocol Suite (IPS) Implementation Plan

Agenda Item 7: Review Operational Procedure and AMC

Agenda Item 8: Review and finalize IDRP Routing Policy Version 3.1

Agenda Item 9: Other technical issues related to TCP/IP and ATN/OSI Interface

Agenda Item 10: Discuss security related issues

Agenda Item 11: Review and update Implementation related information and
documentation

Agenda Item 12: Review ATNICG Task List

Agenda Item 13: Any other Business

Agenda Item 1: Review the Outcomes of APANPIRG/20 on relevant agenda items and ATNICG/4 Report

1.1 Brief Reports on the outcomes of APANPIRG/20 and CNS/MET SG/13 meetings were presented by the Secretariat through Working Paper 10 (WP/10). Thirteenth meeting of CNS/MET Sub Group of APANPIRG was held from 20 to 24 July 2009 and APANPIRG met for its Twentieth meeting from 7 to 11 September, 2009. Summary of the APANPIRG report relevant for AFS and AMS was presented to the meeting. Both CNS/MET and APANPIRG meetings reviewed the report of ATNICG/4 and the draft Decisions/Conclusions formulated by the ATNICG/4. Based on the recommendations of CNS/MET SG, APANPIRG adopted them. It was mentioned that Chairman, APANPIRG specifically appreciated the timely updating of implementation documents.

1.2 APANPIRG adopted Conclusion 20/28 formulated by ATNICG/4 and recommended by CNS/MET SG which requests States to register their addresses with AMC through Aerothai.

1.3 ATNICG WG/6 meeting was informed about the outcome of Communication Co-ordination meeting held between China PR, Democratic Peoples' Republic of Korea and Republic of Korea. ATNICG WG/6 was informed about the discussions that took place in CNS/MET SG/13 meeting on the Working Paper presented by USA on the evolution of AFS. ATNICG WG was further informed about the recent developments that have taken place on this subject. It was predicted that, all non time-critical services like the MET services and AMC will be using public internet in future. It was informed that a detailed Working Paper will be prepared on the subject for presentation to CNS/MET SG and APANPIRG.

1.4 Secretariat, through WP/15 presented the outcomes of Fourth meeting of ATNICG, hosted by Civil Aviation Authority of Singapore in Singapore Aviation Academy from 4 to 8 May 2009. Working Group was once again reminded that APANPIRG had prescribed the time schedule of 2011 for the completion of the implementation of ATN in the BBIS hubs. Meeting agreed that the implementation of ATN/AMHS in the BBIS hubs has progressed significantly and decided that a comprehensive tabular report recording the current status of implementation and time frame for readiness to start the tests should be prepared for presentation to CNS/MET SG/14 and APANPIRG/21. It was decided that the report will be in two tables one for the physical progress and the other for the logical progress.

1.5 On the issue of timeline for trials of US/Philippines circuit, the meeting was informed that the same will be conducted after stability of the systems is achieved. It was also agreed that the issue of Manila being declared a BBIS hub will be considered in future. Meeting also reviewed the progress achieved on other issues like preparation of bilateral agreement and coordination and exchange of MTA/Router parameters. USA informed the meeting about their plans to conduct testing with Fiji in November 2009 and with Australia in the first quarter of 2010. USA informed the meeting about its provision of sample agreement to the States and India informed the meeting that they have already exchanged the bilateral agreement with Singapore and were coordinating with China and Thailand. India also informed that they have established contact with Oman and Pakistan regarding the establishment of AMHS connectivity.

1.6 The meeting was reminded about the requirement of amending the documents on the basis of PDRs and it was agreed that the same PDR format will be used for the purpose of reporting all types of problems faced within the region. While discussing other strategic issues related to the implementation of ATN/AMHS in the region, the meeting was informed that there was a need to adopt Performance Based Approach in choosing our strategy. Implementation of ATN is required to be justified through cost/benefit study. Meeting was of the opinion that replacing the existing AFTN applications is a very big concern, particularly since AFTN is old and is near obsolescence. It was agreed that anything going into public network needs to be separated from AFS, because of security reasons. All these issues need to be reviewed while working out the new Strategy for ATN/AMHS implementation in the region. On the issue of continuation of EUROCONTROL AMC services for the Asia/Pacific region after the implementation of PEN in Europe, the meeting was informed that EUROCONTROL has assured provision of AMC services under the present conditions till 2014. The

meeting was also informed that a training program on AMC data feeding procedure back to back with the AMHS Workshop had been planned for the first quarter of next year. Aerothai, on the issue of providing AMC services in the region, informed that signing of two separate bilateral agreements one between Aerothai and ICAO Asia/Pacific Office and the other between ICAO Asia/Pacific office and EUROCONTROL will be the most acceptable mechanism for transfer of EUROCONTROL AMC software to Aerothai.

Agenda Item 2: Develop implementation schedule

2.1 Presenting their ATN Implementation plan, FIJI, through Information Paper 4 (IP/4) informed the meeting about its schedule for interoperability testing and transition to ATN with adjacent BBIS hubs of USA and Australia and other regional/domestic hubs. It was informed that the MTA to MTA testing with USA will be carried out from 2 to 17 November 2009 during System FAT. Fiji is planning to implement international inter-domain network in the third quarter of 2010 and implement regional intra-domain network in fourth quarter 2010.

Agenda Item 3: Develop test procedure for MTA and ATN Router

3.1 Through WP/4, USA proposed additional tests to be included for enhancements to the Asia/Pacific Guidance Document for AMHS Conformation Testing (APAC AMHS Manual). As the complexity increases from a point to point network to multiple connections, requirement for enhanced testing procedures will be felt. Paper proposes tests to cater to following additional requirements:

- a) expansion of routers/domains in a test network to more than two domains
- b) removal and restoration of routers from the expanded networks, and verification of the following elements
 - a. updates to routing tables
 - b. correct route selection from new routing list
 - c. successful transmission of re-routed messages
- c) verification that routing loops are not present
- d) verification of parameters such as route recording, checksum etc.

3.2 USA offered to provide an initial draft for the content of these test cases by the first quarter of 2010 to Singapore for review and distribution. Pointing out that this proposal was the first step in the region from point to point connectivity to logical connectivity, it was hoped that no the major issues will be faced in the implementation of logical connectivity.

3.3 WP/16, presented by Hong Kong China included implementation plan for MTA and ATN Routers in the region with a view to facilitate an orderly implementation of AMHS over OSI/ATN in 2010 and AMHS over IPS/ATN in 2011. To cut down the efforts involved in testing interoperability between every MTA in the region, it has been suggested that comprehensive interoperability test procedures (CITP) should be used only for the MTA pairs, which are connected directly. For the MTA pairs, which are not connected directly, abridged interoperability test procedure (AITP) consisting of Bilateral Test items (except IT 601, para 4, Annex E AMHS Manual) are sufficient.

3.4 The meeting was reminded that MTA routing table has to be updated manually, where as the routing table of the ATN router is updated automatically through IDR. Hop-by-hop routing based on the AFTN Routing Directory has been recommended for initial stage in the region. Paper recommends following phased implementation approach for transition to ultimate objective of any MTA to any MTA connectivity:

- a) Phase I: MTA with MTA routing following AFTN Routing Directory
- b) Phase II: MTA direct routing to end BBIS, MTA changing from AFTN routing to direct BBIS routing
- c) Phase III: direct MTA to any MTA routing within region
- d) Phase IV: repeat the above tests for IPS, transition from OSI router to IPS

3.5 The paper provided examples for all the phases. Proposal presented in the Working Paper was appreciated by the meeting and it was agreed that it provides a very good input for developing ATN implementation Road Map and transition strategy in the region.

3.6 Hong Kong China, through IP/3 informed the meeting about the interoperability tests carried out between Hong Kong and Macao on 3 – 4 August 2009. It was informed that the test covers the following scenarios:

- a) AFTN to AMHS: message sent from AFTN to UA
- b) AMHS to AMHS: message sent from UA to UA
- c) AMHS to AFTN: messages sent from UA to AFTN
- d) AFTN to AFTN: messages sent from AFTN to AFTN terminal

3.7 Trials were carried out using both CAAS and XF addresses. Presentation also listed some of the issues involved in the testing and clarified that even though the end systems used for the test were provided by the same supplier, configuration issue such as presentation of TSAP address were faced.

3.8 Through a presentation “The Staircase to Successful AMHS Operation” COMSOFT shared their experience in the implementation of AMHS with the meeting. Presentation suggested Planning, Training, Conformance tests, Connection tests, Inter-operability tests, Pre-operational tests, Confidence period and then Operational connection as the rungs to be climbed to ensure successful implementation of AMHS. Essentials of all these steps, guidance materials required to be followed, suggested tools to be used, limitations of conformance tests, essentials of inter-operability/pre-operational tests and the process of transition from AFTN environment to AMHS environment were explained in detail. It was pointed out that though there was no test document available for the testing of ATN/IPS, but guidance provided in Doc 9896 could be used for the purpose. Presentation suggested that AFTN should be kept in service for some time, even after the implementation of AMHS has been successfully completed, to ensure no disruption to the services.

Agenda Item 4: Discuss the Aeronautical Fixed Service (AFS) evolution and Modernization strategy

4.1 In WP/5, USA discussed the evolution that is taking place in Air Traffic Control telecommunication infrastructure particularly with reference to Aeronautical Fixed Services. Paper traced the history of development of AFS and also briefly described the development of various documents to provide information on different systems. Configuration arrangements adopted in different regions to provide ATN/AMHS were also discussed and salient differences between them were brought out. In conclusion, it was expressed that Aeronautical Fixed Services is complicated because it interfaces with many applications and networks. It was also observed that public internet and IP based technology had improved steadily and was relatively more reliable now. Meeting was urged to consider the use of new IP based technology over the public internet with appropriate security planning to support non-time critical services.

4.2 The meeting was reminded that a similar paper had been presented to CNS/MET SG/13 meeting and the CNS/MET SG had desired that ATNICG should develop a Working Paper for presentation and this paper should address the complexities involved and bring out suggestion for regional harmony.

Agenda Item 5: Review APANPIRG Draft AMHS IPS implementation strategy

5.1 Japan, in its presentation of Working Paper 9, recommended adoption of IPv6 in the region since it has been specified in Doc 9896 and to avoid unnecessary transition through IPv4. Paper explained the proposal with the help of an example which included all the operating environments. Options of using private network address space or global address space, acquisition of global or regional address prefix through IANA or through Regional Address Registry (RIR) or to acquire local address by each State individually through Internet Service Providers (ISP) were also discussed in the paper. It was recommended that APANPIRG should acquire a regional address prefix of a certain length and in case it does not become possible to acquire the address prefix, region should self-designate a prefix which is unlikely to be allocated by IANA in the near future like 2CAA::/24 (since ATN is expected to be a closed network). Paper also discussed Security issues and was of the view that this issue is more important in IPS than in OSI, because IPS is ubiquitous and attracts the attention of hackers. It was suggested that recommendations should be made to secure communication between IPS hosts in the Asia/Pacific region based on Doc 9896 and for protecting the hosts from unauthorized intrusion, denial of service and other attacks.

5.2 The meeting discussed the issues relating to IPv4 and IPv6 and concludes that the region by default has adopted the position of allowing BBIS MTA to interface with BIS MTAs and UAs as a local matter. Therefore, the long term plan to convert to IPv6 network between BBIS MTAs is deferred until completion of AMHS implementation over ATN X.25 sub-network in Asia/Pacific region and AMHS over TCP/IP network in other regions.

5.3 An Adhoc group with Singapore in the lead was established in the meeting to review the current strategy and propose amendments to it necessitated by the developments in the environment. This Adhoc group developed a new version of the Strategy based on change proposals that were developed at the ATNICG/4 meeting held in Singapore in May 2009 and comments received subsequent to the May meeting. At the ATNICG/4 meeting updates were added to reflect the ASIA/PAC strategy of operating with an ATN/OSI backbone but with non-backbone systems being either ATN/OSI or ATN/IPS based, and of eventually migrating to all ATN/IPS for AMHS. During the presentation to the meeting there was a suggestion to modify the Draft Implementation Strategy to more clearly differentiate the general strategy from the specific requirements of States to implement the Strategy. This resulted in a further update to the document to have three sections: Considerations for the Strategy; a Description of the General Strategy; and State Requirements to Implement the Strategy. This update was presented and accepted by the meeting. The breakout group then met again to review the new version. During this review it was agreed to re-insert an item in the Considerations section on trials and demonstrations held in the ASIA/PAC region and to add a requirement for States having connections to States in other regions to provide high availability on these connections in the section of State Requirements to Implement the Strategy. The Draft Regional ATN Implementation Strategy is attached to this report as **Appendix A**. There was also an action item identified to develop a companion paper to the strategy paper which provides a more detailed description of each item in the strategy with examples and the rationale for the items when appropriate.

5.4 The Strategy for Implementation of the ATN in the Asia/Pacific Region has three sections: Considerations for the Strategy; a Description of the General Strategy; and State Requirements to Implement the Strategy:

- a) The considerations for the Strategy includes the need for digital data communications, the availability of ICAO specification for ATN/OSI and ATN/IPS, the availability of supporting documentation, AFTN and AMHS terminal support, trials and demonstrations that have already been conducted, and the availability of equipment for ATN/OSI and ATN/IPS.
- b) The general strategy for implementation of ATN in ASIA/PAC is to initially deploy a backbone network of ATN/OSI routers and MTAs as the basic infrastructure. The ATN/OSI routers will start with X.25 connections to one another but gradually migrate to IP. This however will not be over the Public Internet. Non-backbone MTAs may connect to backbone MTAs using either ATN/OSI or ATN/IPS. Backbone MTAs may likewise connect to MTAs in other regions using either ATN/OSI or ATN/IPS. The strategy does not require all states to implement MTA but rather permits the States to simply have Terminals which connect to MTAs in other states. These connections may be via the Public Internet provided appropriate security provisions are in place. The longer term strategy of the region is to convert all AFTN systems to AMHS, and eventually transition completely to ATN/IPS for AMHS.
- c) The Strategy for Implementation of the ATN in the Asia/Pacific Region contains specific implementation requirements for the States. All implementations must be in compliance with ICAO standards and APANPIRG documents. Specific requirements for backbone systems, non-backbone systems to interconnect are identified as are requirements for connections to other regions. States are also required to work co-operatively to implement the ATN expeditiously and ensure system inter-operability, and provide appropriate training to the personnel for ATN implementation.

5.5 In support of the ATN implementation strategy, an AMHS Implementation Roadmap was developed. The roadmap provides guidance on the implementation of AMHS and also the transition from hop-by-hop routing to direct MTA routing. In response to query on whether the different phases were sequential, the meeting was given to understand that Phase II could start before the completion of Phase I as long as there was no address looping. However, the changing from hop-by-hop routing to direct routing should be carried out after all BBIS had completed their interoperability tests. An AMHS Implementation Planner was also developed to assist States to plan their testing and implementation activities. States were requested to provide the dates to Mr. Kapoor of India within 2 months after the meeting. A copy of the schedule matrix is placed at **Appendix B**. Based on the implementation experience some of the States have and based on the expert opinion from a leading supplier of the system, the meeting came to an agreement that both the AFTN circuit and new AMHS circuit should operate in parallel for a period of three to six month, before the AFTN circuit is withdrawn.

Agenda Item 6: Review Global Internet Protocol Suite (IPS) Implementation Plan

6.1 USA presented Information Paper 2 (IP/2) giving a brief report on the outcome of Fifth Meeting of CAR/SAM CNS ATN Task Force Working Group held in Mexico City on 12 and 13 June 2009. Report reviewed the implementation plan considering the resources available like two communication satellites etc. It was informed that ACP Group I, reviewed a Working Paper containing information on the CAR/SAM IPv4 addressing scheme proposal, and observed that the proposed addressing scheme was overlapping with the existing ANSP IPv4 assignments in other regions, proposed private address space was also in conflict with ARINC-664 aircraft addressing and the proposal was conflicting with Doc 9896 also which specified that States shall request globally unique IPv6 address space from their Regional/Local Registry. Considering above observations and taking into account that registration of IP addresses was required only when public internet was to be used, meeting considered to develop a global addressing scheme but to use it only in the CAR/SAM

Region. The paper also described in brief the activities that are going on in the CAR/SAM region for the implementation of AMHS.

6.2 WP/3 presented by USA on the results of the analysis carried out by Argentina and presented in the Fifth CAR/SAM CNS ATN Task Force meeting (Mexico City, Mexico 12 – 13 June 2009) proposed a global IP Addressing Plan, which will at present be used in the CAR/SAM Region only. Argentina took into account the observations made in Information Paper 2 and proposed using private network addressing plan and developed following salient conclusions:

- a) 1 bit would be reduced to State/Territory level. This means the transfer of 256 States to 128 States by Region.
- b) 1 bit at Host's level would be added to allow the transfer from 4096 to 8190 hosts per State/Territory. This was considered due to the amount of future applications that would be implemented.
- c) Networks assigned to each State are private networks (RFC 1918)

6.3 Requirements for the utilization of the address space and its justification were also described in the paper. Paper also presented a table, indicating the suggested address allocations for all the regions. A copy of the Table is placed at **Appendix C**. It was clarified that the region will transit to IPv6 once all the required information is available. Meeting was invited to review the usage of address space allocated to APAC region in the table.

6.4 The meeting concluded that Asia/Pacific ATN AMHS will adopt the proposed IPv4 address assignment proposed by CAR/SAM region if States want to use IPv4 network. It was further clarified that States are not required to use IPv4 network. However, if States want to use IPv4 network, then States are required to use the assigned IPv4 address to avoid addressing conflict with other ICAO regions that use IPv4. Furthermore, the meeting proposed to CAR/SAM region to combine networks of Asia and Pacific regions into one network.

6.5 In WP/2, USA presented their current efforts for implementation of dissemination of non-time critical Air Traffic Services like Meteorological data on public internet. Paper traced the history of operation of World Area Forecast System (WAFS) the usage of satellite broadcast for its distribution. In the existing arrangements, US government has provided VSAT SGS equipment required to receive WAFS products via satellite broadcast at no cost to the user States. In 1982, US government realized that such equipment can no longer be given or donated to a foreign government, when it has been purchased by US government. As a replacement to this service, US, in consultation with ICAO is proposing to make WAFS products available for download via a WAFS Internet File Server (WIFS) accessible via the public internet. It was informed that WIFS will be available for use by March 2010.

6.6 The meeting noted the progress of using public internet to replace satellite broadcasting service to reduce recurring cost and improved performance. The public internet use of non time-critical services such as AMC and WIFS are complimenting the AFS without interfering its service. Due to its independence from AFS, the public internet based service can be implemented in a timely manner.

6.7 Flimsy 1, presented by the Secretariat provided supplementary information on this issue and informed the meeting about APANPIRG Decision 20/59 describing WAFS forecast information as non time-critical and hence can be accessed through internet, Conclusion 20/60 requesting the provider States to extend the current ISCS-G2 service through 30 June 2012, provide an WIFS by March 2010 and Conclusion 20/61 requiring ICAO to conduct a survey to assess the preference of the States between ISCS-G3 or WIFS, similar plans for ISCS G3 and to invite WAFSOPSG to amend all ICAO regional procedures to render WIFS and SADIS FTP services as an alternative to the respective satellite broadcasts as the primary means of obtaining WAFS forecasts and OPMET data for flight planning purposes.

Agenda Item 7: Review Operational Procedure and AMC

7.1 In WP/7, Secretariat described the Short Term procedure prescribed for the AMHS address coordination and other services. Paper presented the background of EUROCONTROL AMC and went on to describe the concept, scope and objectives. Paper also discussed the procedure involved in initiating major and minor changes through AMC. It was once again stressed that each State/ANSP should designate an AMC user associated with its Communication Center. It was recommended that though it was possible for each State to go to EUROCONTROL AMC directly, yet it was preferred that these requests were initiated through Aerothai, the agency identified for the purpose for validation. Need of using correct address data to ensure efficiency of operation, was also stressed during the meeting. It was proposed, that there should be a mechanism to send a message to the originator (if identifiable) asking him to remove the address, which was not accessible. Some States were of the view that the validation responsibility should be with the States. Irrespective of whether hop-by-hop routing or direct routing is being used, the NDR should be traced back to the originator.

7.2 Meeting was informed that, EUROCONTROL AMC is primarily the database administrator where the information is validated, but it also works as a sort of help-desk, where help is provided to resolve other operational issues. It provides additional information like the nodal agencies in each State/information on the contact agency/person responsible for each stage etc. The meeting was of the opinion that Aerothai should take over this responsibility in the region, in case this service is not being provided by EUROCONTROL AMC. It was felt that this was more important in the case of region specific information.

7.3 Aerothai reminded the States that though the information downloaded from MD Register may be correct, when it is downloaded, but may become invalid at some later stage, it therefore becomes the responsibility of the State to ensure that the MTA data is always current.

7.4 WP/17 presented by Thailand described the proposed procedure of the AMC operation within Asia Pacific region. Proposed procedure is based on time based schedule using a splitting of AIRAC cycle in five phases. Action required by each phase was described in detail. The meeting was invited to review the procedure and offer comments. In response to a query about the consistency of data entered, it was clarified that ICAO APAC office with the support from Aerothai will validate the change requests. The help desk facility of AMC will provide support to further queries, hence the possibility of continuing with wrong data in AMC was rather remote. Importance of having a single timeline for the States to initiate change process was also stressed.

7.5 Aerothai clarified that though the information may be available earlier, but the States will be required to switch to the new data on the 28th day precisely. It was also informed that the forms prescribed for initiating change request also contained information about the contact details and other important information and hence must be filled up.

7.6 The meeting was also informed about the development of AMC Phase 2 and it was mentioned that EUROCONTROL had the intention of putting the new version in operation on 24 September 2009, starting at 17:30 CET. It was informed that though the new phase had some new attributes, but it did not change the operating procedures significantly. It was specifically mentioned that the usage of new version will require training for the users.

7.7 FAA/USA presented Application of Asia/Pacific ATN Security Guidance to the ATS Messaging Management Centre (AMC) System through Working Paper/WG14 for agenda item 7 – Review Operational Procedures and. The paper addressed the Security Guidance Document for the Asia/Pacific Region, which provides guidance on the implementation of security for states and organizations operating in the region. The working paper provided an example of the application of the guidance for the ATS Messaging Management Centre (AMC) System. The paper discussed seven potential Information Security threats to the AMC system. Further the paper discussed Application of Operational Controls to the AMC system, which was based on the threats. Twelve recommendations based on Operational, and Technical controls were discussed. In developing this example a number

of recommendations were identified. These recommendations will be forwarded to EUROCONTROL for their consideration.

7.8 Secretariat presented the IPv6 address allocation procedures as applicable for Asia and Pacific Region through WP/12. Paper referred to the procedure that has been adopted in the European region and touched on the provisions made in *Manual for ATN using IPS Standards and Protocols* (Doc 9896). It was informed that APNIC is one of the five Regional Internet Registers (RIRs), charged with ensuring fair distribution of internet resources and assigned the responsibility of management of IP addresses and related resources in Asia and Pacific regions.

7.9 It was also noted that by obtaining IPv6 address assigned by LIR, States were expected to pay for recurring annual administrative cost of managing address in addition to a one time fee.

7.10 Paper informed that an agency could be assigned the responsibility of Local Internet Registry (LIR) for the purpose of managing the address. Paper also discussed the funding and administrative requirements for the implementation and estimated the expenditure for acquiring /32 address block for the region.

7.11 In response to a query, it was clarified that there was no requirement of using IPv6 for availing the services of EUROCONTROL AMC and also it was clarified that if it is decided to adopt the same concept that has been followed in CAR/SAM region, then there may not be any requirement of formal allocation of address block. In conclusion, it was decided to follow the progress in the implementation of PEN in the European region and take a decision accordingly.

Agenda Item 8: Review and finalize IDRPs Routing Policy Version 3.1

8.1 On behalf of the group responsible for the development of IDRPs policy for the region, it was informed that the policy presented to ATNICG/4 had been updated by incorporating some editorial changes and this updated document was adopted by APANPIRG/20. It was also informed that this amended document will be published and uploaded on the website by ICAO APAC Office.

Agenda Item 9: Other technical issues related to TCP/IP and ATN/OSI Interface

9.1 No paper was presented under this agenda item as the issue of interface between MTAs with different network protocols is yet to come up. It is anticipated that this issue will come up as and when the implementation of inter-regional MTAs takes place in the future. The USA/FAA will present on this issue when it completes the MTA interface with UK in 2010 using RFC1006 over TCP/IP network.

Agenda Item 10: Discuss security related issues

10.1 WP/13, presented by USA discussed significant security considerations related with transition to IPS. Reminding the meeting that Asia Pacific region had adopted ATN/IPS, Paper described the operating environment in which the AMHS will be operating and discussed the security requirements applicable for the environment. It was pointed out that in IP environment, security at network level will become a major concern. Paper recommends that IDRPs may be used as additional measure in the ATN X.25 environment. Mechanism of using IDRPs level security was explained. Since PKI is not expected to be available, pre-shared keys were recommended for use. It was also suggested that a default set of options (e.g. authentication only) and default set of cryptographic algorithms be used. Paper invited the meeting to consider the primary recommendation to use IPsec when IP is used for connectivity and the additional recommendation for network security implementations. It was also recommended that security mechanism should be implemented along with the system itself, as the subsequent implementation of security would raise complications and add to the cost.

Agenda Item 11: Review and update Implementation related information and documentation

11.1 In WP/8, Japan reminded the meeting about the need for configuration management of ATN systems as brought out in ATNICG/4 meeting. Paper stressed on the establishment of a system of Configuration Management in the region. Requirement of following the PDRs adopted by ACP to amend the regional documents was stressed and creation of a sub-group to monitor activities in ACP WG M and assess the impact of PDRs for maintaining the regional documentation was brought out.

11.2 Importance of Tracking PDRs and amending the regional documents accordingly was appreciated by the meetings. A mechanism is required to be developed to incorporate this requirement into the routine. It was agreed that a Task needs to be incorporated in the Subject/Tasks list to meet this requirement. Thailand has been requested to lead this Task group. Aerothai will inform at the next ATNICG WG if it will be able to lead this effort and the Task List will be updated accordingly.

Agenda Item 12: Review ATNICG Task List

12.1 Meeting, while reviewing the Terms of Reference assigned by APANPIRG for ATNICG, noted that it has become important to deliberate some of the operational issues in addition to the implementation issues. After a brief discussion, it was agreed that these issues will be taken up for consideration in the next Working Group meeting scheduled for the first week of January.

12.2 Meeting also reviewed the Subject/Tasks list and proposed amendments to incorporate the developments that have taken place in the environment. It was considered necessary to track PDRs and reflect them as amendments to the regional guidance documents. Meeting also recommended some updates in the status of some of the tasks. A copy of the amended Subject/Tasks list is provided at **Appendix D**.

12.3 Performance Framework Form for Objective 8 was also reviewed and no change to it was felt necessary.

Agenda Item 13: Any other Business

13.1 Some of the developments that are taking place in the deployment of ATN over IPS for air-ground communication were presented to the meeting through WP/6 by the Secretariat. The meeting was reminded that Amendment 83 to ICAO Annex 10 includes ATN/IPS as a means to provide mobility for aircraft by using Mobile Ipv6 (MIPv6) over air ground communication links.

13.2 Meeting was provided a brief information on the outcomes of trials conducted by EUROCONTROL to demonstrate prototype implementation of ATN/IPS dialogue service defined in ICAO Doc 9896, which is specific to aviation community for air ground communication to make use of it over a mobile platform. Validation activities were completed on 9 December 2008 and final tests were conducted in February 2009 devoted to Network Mobility (NEMO) and route operation.

13.3 Sixth Research Framework Programme (FP6), a team of TiewGnoSys and Institute Supérieur de l'Aéronautique et de L'Espace also carried out a test to assess application of tunneling and NAT for mobility.

13.4 Paper discussed issues like latency etc. and concluded that, in the basic form Mobile IPv6 is well suited to support ATN applications by delivering a robust and flexible mobility solution for the aviation community along with foreseen enrichment of its features. Meeting was provided further information on the developments that is taking place in USA regarding the usage of IPS Dialogue Service for non air-ground communication applications.

Documentation Tree

13.5 It was informed that the documentation tree was last updated in 2005. Basic structure of the tree in terms of different levels of application was explained to the meeting. It was considered necessary to review the currency of the documents and update it wherever required. Requirement of additional guidance like IPS Transition Plan, guidance on AMC etc. was identified. It was concluded that Task Leads will inform Mr. V. Patel about the status of relevant documents, so that the currency of these could be ensured.

Conclusion

13.6 The meeting concluded with reviewing the actions required to be taken in future. Meeting thanked Aeronautical Radio of Thailand for hosting the meeting and specially thanked ACM Somchai Thean-anant, President of Aeronautical Radio of Thailand and other Senior Officials for being present to encourage the participants.

13.7 It was decided to have the next Working Group meeting will be held back to back with the AMC Training in the first quarter of 2010.

13.8 Declaring the meeting closed, Chairman thanked the participants for their contribution.

**STRATEGY FOR IMPLEMENTATION OF THE
AERONAUTICAL TELECOMMUNICATION NETWORK (ATN)
IN THE ASIA/PACIFIC REGION**

Considering:

- 1) the requirement for a robust ground-to-ground Aeronautical Telecommunication Network (ATN) to meet the growing need for digital data communication to support the Air Traffic Management Concept;
- 2) the availability of ICAO SARPs and technical manuals based on the OSI Protocol Suite (ATN/OSI) and the Internet Protocol Suite (ATN/IPS);
- 3) the availability of AMHS Transition and Implementation guidance materials required to assist States to ensure harmonization of procedures and protocols and thereby assure inter-operability within the region;
- 4) the need to support States currently using AFTN terminals for communication with other States, and the need to replace these aging terminals with ATS Message User Agents;
- 5) that several States in the ASIA/PAC region have conducted trials and demonstrations for implementation of AMHS and have taken actions for introduction of AMHS; and
- 6) the availability of equipment and readiness of vendors to provide equipment for both ATN/OSI and ATN/IPS ground-to-ground and ATN/OSI air-ground communications.

**THE GENERAL STRATEGY FOR THE IMPLEMENTATION OF THE ATN
INFRASTRUCTURE AND ASSOCIATED ATN APPLICATIONS IN THE ASIA/PAC
REGION IS AS FOLLOWS:**

- a) strategically deploy a backbone network of ATN/OSI routers and MTAs to provide a reliable infrastructure to initially support ground-to-ground applications and the planned ATN/OSI air-ground applications;
- b) gradually migrate ATN/OSI backbone routers from X.25 sub-network connectivity to IP sub-network connectivity using the IP SNDCF feature of ATN/OSI routers;
- c) implement IP sub-network connections among backbone and non-backbone routers as a private network, i.e., without connection to the Public Internet;
- d) permit non-backbone States to connect to backbone States using either ATN/OSI routers and MTAs, or IP routers and MTAs;
- e) permit backbone States with connections to States in other regions to connect using either ATN/OSI routers and MTAs, or IP routers and MTAs on a bilateral basis;
- f) permit States with limited AFTN or AMHS connections to other States to connect to MTAs in other States rather than operate their own MTAs;

- g) permit States with limited AFTN or AMHS connections to other States to connect terminals to MTAs in other States using the Public Internet but with appropriate security provisions for access control;
- h) within a reasonable time frame convert all AFTN systems to AMHS; and,
- i) eventually operate AMHS applications only with IP routers and MTAs.

IN ORDER TO ACHIEVE THE ABOVE STRATEGY THE FOLLOWING IS REQUIRED OF STATES IN THE ASIA/PAC REGION:

- j) States shall provide implementations in compliance with Annex 10 SARPS and ICAO Manuals, and with the Plans, Policies, and AMHS Transition and Implementation guidance materials adopted by APANPIRG;
- k) States having Backbone Boundary Intermediate Systems (BBIS) shall implement MTAs that support both ATN/OSI and ATN/IPS;
- l) States having BBIS shall implement ATN/OSI routing with X.25 sub-network capability and optionally with IP sub-network capability for interconnection with other BBIS;
- m) States having BBIS that connect to States in other regions shall provide high availability connections (e.g., with redundant physical connections);
- n) States having Boundary Intermediate Systems (BIS) shall implement ATN/OSI MTAs, or ATN/IPS MTAs, or dual-stack MTAs;
- o) States shall work co-operatively to assist each other on a multinational basis to implement the ATN expeditiously and to ensure system inter-operability; and
- p) States shall organize training of personnel to provide necessary capability to maintain and operate the ground-to-ground ATN infrastructure and applications.

Interconnection, Connected to router of: <i>Administration (Location of Router)</i>	Stage	BBIS									
		Australia		China	Hong Kong, China	India	Fiji	Japan	Singapore	Thailand	USA
		Brisbane	Melbourne	Beijing	Hong Kong	Mumbai	Nadi	Fukuoka	Singapore	Bangkok	Salt Lake City
Australia (Brisbane)	A										
	B										
	C										
	D										
Australia (Melbourne)	A										
	B										
	C										
	D										
China (Beijing)	A				Q1/10						
	B				Q1/10						
	C				Q1/10						
	D				TBD						
Hong Kong, China (Hong Kong)	A			Q1/10							
	B			Q1/10							
	C			Q1/10							
	D			TBD							
India (Mumbai)	A							Q3/09			
	B							Q4/09			
	C							Q4/09			
	D							Q1/10			
Fiji (Nadi)	A									Q2/10	
	B									Q3/10	
	C									Q3/10	
	D									Q3/10	
Japan (Fukuoka)	A							Q4/06			
	B							TBD			
	C							TBD			
	D							TBD			
Singapore (Singapore)	A						Q4/06		Q4/06		
	B						TBD		Q4/09		
	C						TBD		Q2/10		
	D						TBD		Q2/10		

Interconnection, Connected to router of: <i>Administration (Location of Router)</i>	Stage	BBIS									
		Australia		China	Hong Kong, China	India	Fiji	Japan	Singapore	Thailand	USA
		Brisbane	Melbourne	Beijing	Hong Kong	Mumbai	Nadi	Fukuoka	Singapore	Bangkok	Salt Lake City
Thailand (Bangkok)	A				TBD				Q4/06		
	B				TBD				Q4/09		
	C				TBD				Q2/10		
	D				TBD				Q2/10		
USA (Salt Lake City)	A						Q2/10				
	B						Q3/10				
	C						Q3/10				
	D						Q3/10				
Russian Federation	A										
	B										
	C										
	D										
Kuwait	A										
	B										
	C										
	D										
Europe	A										
	B										
	C										
	D										
United Kingdom	A										
	B										
	C										
	D										
Italy	A										
	B										
	C										
	D										

Note:

A	Physical connections
B	Router Connection Tests
C	MTA Interoperability Tests
D	AMHS Commission
Q1/09	e.g. 1st Quarter in 2009

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
SAM	1	Argentina	10.0.0.0 / 19	Primera	10 . 0 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 0 . 31 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	2	Chile	10.0.32.0 / 19	Primera	10 . 0 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 0 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	3	Brasil	10.0.64.0 / 19	Primera	10 . 0 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 0 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	4	Uruguay	10.0.96.0 / 19	Primera	10 . 0 . 96 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 0 . 127 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	5	Paraguay	10.0.128.0 / 19	Primera	10 . 0 . 128 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 0 . 159 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	6	Bolivia	10.0.160.0 / 19	Primera	10 . 0 . 160 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 0 . 191 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	7	Peru	10.0.192.0 / 19	Primera	10 . 0 . 192 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 0 . 223 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	8	Ecuador	10.0.224.0 / 19	Primera	10 . 0 . 224 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
-				-	-	-	-	-	-	
Ultima				10 . 0 . 255 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
9	Colombia	10.1.0.0 / 19	Primera	10 . 1 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 1 . 31 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
10	Venezuela	10.1.32.0 / 19	Primera	10 . 1 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 1 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
11	Guyana	10.1.64.0 / 19	Primera	10 . 1 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 1 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 0 0	0 0 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Host's
SAM	12	Surinam	10.1.96.0 / 19	Primera	10 . 1 . 96 . 1	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1
				Última	10 . 1 . 127 . 254	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	13	Guyana Francesa (France)	10.1.128.0 / 19	Primera	10 . 1 . 128 . 1	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1
				Última	10 . 1 . 159 . 254	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	-	VACANTE	10.1.160.0 / 19	Primera	10 . 1 . 160 . 1	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1
				Última	10 . 1 . 191 . 254	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	-	VACANTE	10.1.192.0 / 19	Primera	10 . 1 . 192 . 1	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 1
				Última	10 . 1 . 223 . 254	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	-	VACANTE	10.1.224.0 / 19	Primera	10 . 1 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1
				Última	10 . 1 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 0 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	-	VACANTE	10.2.0.0 / 19	Primera	10 . 2 . 0 . 1	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1
				Última	10 . 2 . 31 . 254	0 0 0 0 1 0 1 0 . 0 0 0 0	0 0 1 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	128 (ULTIMA)	RESERVADA	10.15.224.0 / 19	Primera	10 . 15 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 0 0	1 1 1 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1
				Última	10 . 15 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 0 0	1 1 1 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Host's
NACC	1	Antigua y Barbuda	10.16.0.0 / 19	Primera	10 . 16 . 0 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 0 0	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 31 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	2	Bahamas	10.16.32.0 / 19	Primera	10 . 16 . 32 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 0 1	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 63 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	3	Barbados	10.16.64.0 / 19	Primera	10 . 16 . 64 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 1 0	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 95 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	4	Belize	10.16.96.0 / 19	Primera	10 . 16 . 96 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 1 1	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 127 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	5	Canada	10.16.128.0 / 19	Primera	10 . 16 . 128 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 0 0	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 159 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	6	Costa Rica	10.16.160.0 / 19	Primera	10 . 16 . 160 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 0 1	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 191 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	7	Cuba	10.16.192.0 / 19	Primera	10 . 16 . 192 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 1 0	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 223 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	8	Republica Dominicana	10.16.224.0 / 19	Primera	10 . 16 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 1 1	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 16 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	9	El Salvador	10.17.0.0 / 19	Primera	10 . 17 . 0 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 1 . 0 0 0	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 17 . 31 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	10	Granada	10.17.32.0 / 19	Primera	10 . 17 . 32 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 1 . 0 0 1	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 17 . 63 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	11	Guatemala	10.17.64.0 / 19	Primera	10 . 17 . 64 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 1 . 0 1 0	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 17 . 95 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 0 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Hosts		
NACC	12	Haiti	10.17.96.0 / 19	Primera	10 . 17 . 96 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 17 . 127 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	13	Honduras	10.17.128.0 / 19	Primera	10 . 17 . 128 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 17 . 159 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	14	Jamaica	10.17.160.0 / 19	Primera	10 . 17 . 160 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 17 . 191 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	15	Mexico	10.17.192.0 / 19	Primera	10 . 17 . 192 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 17 . 223 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	16	Nicaragua	10.17.224.0 / 19	Primera	10 . 17 . 224 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 17 . 255 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 0 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	17	Saint Kitts and Nevis	10.18.0.0 / 19	Primera	10 . 18 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 18 . 31 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	18	Santa Lucla	10.18.32.0 / 19	Primera	10 . 18 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 18 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	19	Saint Vincent and the Grenadines	10.18.64.0 / 19	Primera	10 . 18 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
-				-	-	-	-	-	-	
Ultima				10 . 18 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
20	Trinidad y Tobago	10.18.96.0 / 19	Primera	10 . 18 . 96 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 18 . 127 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
21	United States	10.18.128.0 / 19	Primera	10 . 18 . 128 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 18 . 159 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
22	Martinique (France)	10.18.160.0 / 19	Primera	10 . 18 . 160 . 1	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 18 . 191 . 254	0 0 0 0 1 0 1 0 .	0 0 0 1	0 0 1 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
NACC	23	Guadalupe (France)	10.18.192.0 / 19	Primera	10 . 18 . 192 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 18 . 223 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	24	St Martin (France)	10.18.224.0 / 19	Primera	10 . 18 . 224 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 18 . 255 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	25	St. Barthelemy (France)	10.19.0.0 / 19	Primera	10 . 19 . 0 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 31 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	26	Aruba (Netherlands)	10.19.32.0 / 19	Primera	10 . 19 . 32 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 63 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	27	Curacao (Netherlands)	10.19.64.0 / 19	Primera	10 . 19 . 64 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 95 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	28	Bonaire (Netherlands)	10.19.96.0 / 19	Primera	10 . 19 . 96 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 127 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	29	St. Maarten (Netherlands)	10.19.128.0 / 19	Primera	10 . 19 . 128 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 159 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	30	Saba (Netherlands)	10.19.160.0 / 19	Primera	10 . 19 . 160 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 191 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	31	St. Eustatius (Netherlands)	10.19.192.0 / 19	Primera	10 . 19 . 192 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 192 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	32	Anguilla (United Kingdom)	10.19.224.0 / 19	Primera	10 . 19 . 224 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 0 1 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 19 . 255 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 0 1 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
	33	Bermuda (United Kingdom)	10.20.0.0 / 19	Primera	10 . 20 . 0 . 1	0 0 0 0 1 0 1 0	0 0 0 1	0 1 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 20 . 0 . 254	0 0 0 0 1 0 1 0	0 0 0 1 0 1 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Host's
NACC	34	British Virgin Islands (United Kingdom)	10.20.32.0 / 19	Primera	10 . 20 . 32 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 20 . 63 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	35	Cayman Islands (United Kingdom)	10.20.64.0 / 19	Primera	10 . 20 . 64 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 20 . 95 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	36	Montserrat (United Kingdom)	10.20.96.0 / 19	Primera	10 . 20 . 96 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 20 . 127 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	37	Turks and Caicos Islands (United Kingdom)	10.20.128.0 / 19	Primera	10 . 20 . 128 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 20 . 159 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	38	Puerto Rico (United States)	10.20.160.0 / 19	Primera	10 . 20 . 160 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 20 . 191 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	39	Virgin Islands (United States)	10.20.192.0 / 19	Primera	10 . 20 . 192 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 20 . 223 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	40	VACANTE	10.20.224.0 / 19	Primera	10 . 20 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 20 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	0 1 0 0 - 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	-	-	-	-	-	-	-	-
				-	-	-	-	-
				-	-	-	-	-
-	-	-	-	-	-	-	-	
			-	-	-	-	-	
			-	-	-	-	-	
128 (ULTIMA)	RESERVADA	10.31.224.0 / 19	Primera	10 . 31 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 0 1	1 1 1 1 - 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	
			Ultima	10 . 31 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 0 1	1 1 1 1 - 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
APAC	1	Australia	10.32.0.0 / 19	Primera	10 . 32 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 32 . 15 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	2	Bangladesh	10.32.32.0 / 19	Primera	10 . 32 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 32 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	3	Bhutan	10.32.64.0 / 19	Primera	10 . 32 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 32 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	4	Brunel Darussalam	10.32.96.0 / 19	Primera	10 . 32 . 96 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 32 . 127 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	5	Cambodia	10.32.128.0 / 19	Primera	10 . 32 . 128 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 32 . 159 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	6	China	10.32.160.0 / 19	Primera	10 . 32 . 160 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 32 . 191 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	7	Cook Islands	10.32.192.0 / 19	Primera	10 . 32 . 192 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 32 . 223 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	8	Cook Islands	10.32.224.0 / 19	Primera	10 . 32 . 224 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
-				-	-	-	-	-	-	
Ultima				10 . 32 . 255 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
9	Democratic people's Republic of Korea	10.33.0.0 / 19	Primera	10 . 33 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 33 . 31 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
10	Fiji	10.33.32.0 / 19	Primera	10 . 33 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 33 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
11	India	10.33.64.0 / 19	Primera	10 . 33 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 33 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 0 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Host's
APAC	12	Indonesia	10.33.96.0 / 19	Primera	10 . 33 . 96 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 33 . 127 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 0 1 1 1 1 1 1 . 1 1 1 1 1 1 0		
	13	Japan	10.33.128.0 / 19	Primera	10 . 33 . 128 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 33 . 159 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 0 0 1 1 1 1 1 . 1 1 1 1 1 1 0		
	14	Kiribati	10.33.160.0 / 19	Primera	10 . 33 . 160 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 33 . 191 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 0 1 1 1 1 1 . 1 1 1 1 1 1 0		
	15	Lao People's Democratic Republic	10.33.192.0 / 19	Primera	10 . 33 . 192 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 33 . 223 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 1 0 1 1 1 1 . 1 1 1 1 1 1 0		
	16	Malaysia	10.33.224.0 / 19	Primera	10 . 33 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 33 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 0 1 . 1 1 1 1 1 1 1 . 1 1 1 1 1 1 0		
	17	Maldives	10.34.0.0 / 19	Primera	10 . 34 . 0 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 34 . 31 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 0 0 1 1 1 1 . 1 1 1 1 1 1 0		
	18	Marshall Islands	10.34.32.0 / 19	Primera	10 . 34 . 32 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 34 . 63 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 0 1 1 1 1 1 . 1 1 1 1 1 1 0		
	19	Micronesia	10.34.64.0 / 19	Primera	10 . 34 . 64 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 34 . 95 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 1 0 1 1 1 1 . 1 1 1 1 1 1 0		
	20	Mongolia	10.34.96.0 / 19	Primera	10 . 34 . 96 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 34 . 127 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 0 1 1 1 1 1 1 . 1 1 1 1 1 1 0		
	21	Myanmar	10.34.128.0 / 19	Primera	10 . 34 . 128 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 34 . 159 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 1 0 0 1 1 1 1 1 . 1 1 1 1 1 1 0		
	22	Nauru	10.34.160.0 / 19	Primera	10 . 34 . 160 . 1	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 34 . 191 . 254	0 0 0 0 1 0 1 0 . 0 0 1 0 0 0 1 0 . 1 0 1 1 1 1 1 . 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
APAC	34	Timor leste	10.36.32.0 / 19	Primera	10 . 36 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 36 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	35	Tonga	10.36.64.0 / 19	Primera	10 . 36 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 36 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	36	Vanuatu	10.36.96.0 / 19	Primera	10 . 36 . 96 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 36 . 127 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	37	Viet Nam	10.36.128.0 / 19	Primera	10 . 36 . 128 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 36 . 159 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	38	Isla de Pascua (Chile)	10.36.160.0 / 19	Primera	10 . 36 . 160 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 36 . 191 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	39	Polynesia Francesa (Francia)	10.36.192.0 / 19	Primera	10 . 36 . 192 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 36 . 223 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	40	New Caledonia (Francia)	10.36.224.0 / 19	Primera	10 . 36 . 224 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 36 . 255 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	41	Wallis and Futuna Islands (Francia)	10.37.0.0 / 19	Primera	10 . 37 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 37 . 31 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
42	Niue (New Zealand)	10.37.32.0 / 19	Primera	10 . 37 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 37 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
43	Pitcairn Island (United Kingdom)	10.37.64.0 / 19	Primera	10 . 37 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 37 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
44	American Samoa (United States)	10.37.96.0 / 19	Primera	10 . 37 . 96 . 1	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 37 . 127 . 254	0 0 0 0 1 0 1 0 .	0 0 1 0	0 1 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria			
						Región	Estado / Territorio	Host's	
MID	1	Afghanistan	10.48.0.0 / 19	Primera	10 . 48 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-	-
				Ultima	10 . 48 . 31 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	2	Bahrain	10.48.32.0 / 19	Primera	10 . 48 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-	-
				Ultima	10 . 48 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	3	Egypt	10.48.64.0 / 19	Primera	10 . 48 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-	-
				Ultima	10 . 48 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	4	Islamic Republic of Iran	10.48.96.0 / 19	Primera	10 . 48 . 96 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-	-
				Ultima	10 . 48 . 127 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	5	Iraq	10.48.128.0 / 19	Primera	10 . 48 . 128 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-	-
				Ultima	10 . 48 . 159 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	6	Israel	10.48.160.0 / 19	Primera	10 . 48 . 160 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-	-
				Ultima	10 . 48 . 191 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	7	Jordan	10.48.192.0 / 19	Primera	10 . 48 . 192 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-	-
				Ultima	10 . 48 . 223 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	8	Kuwait	10.48.224.0 / 19	Primera	10 . 48 . 224 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
-				-	-	-	-	-	
Ultima				10 . 48 . 255 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
9	Lebanon	10.49.0.0 / 19	Primera	10 . 49 . 0 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	-	
			Ultima	10 . 49 . 31 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
10	Libyan Arab Jamahiriya	10.49.32.0 / 19	Primera	10 . 49 . 32 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	-	
			Ultima	10 . 49 . 63 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
11	Oman	10.49.64.0 / 19	Primera	10 . 49 . 64 . 1	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	-	
			Ultima	10 . 49 . 95 . 254	0 0 0 0 1 0 1 0 .	0 0 1 1	0 0 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Host's
MID	12	Pakistan	10.49.96.0 / 19	Primera	10 . 49 . 96 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 49 . 127 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	13	Qatar	10.49.128.0 / 19	Primera	10 . 49 . 128 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 49 . 159 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	14	Saudi Arabia	10.49.160.0 / 19	Primera	10 . 49 . 160 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 49 . 191 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	16	Sudan	10.49.192.0 / 19	Primera	10 . 49 . 192 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 49 . 223 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	17	Syrian Arab Republic	10.49.224.0 / 19	Primera	10 . 49 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 49 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 0 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	18	United Arab Emirates	10.50.0.0 / 19	Primera	10 . 50 . 0 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 50 . 31 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 1 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	19	Yemen	10.50.32.0 / 19	Primera	10 . 50 . 32 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 1 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 50 . 63 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 1 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	20	VACANTE	10.50.64.0 / 19	Primera	10 . 50 . 64 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 1 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 50 . 95 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	0 0 1 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
128 (ULTIMA)	VACANTE	10.63.224.0 / 19	Primera	10 . 63 . 224 . 1	0 0 0 0 1 0 1 0 . 0 0 1 1	1 1 1 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	
			Ultima	10 . 63 . 255 . 254	0 0 0 0 1 0 1 0 . 0 0 1 1	1 1 1 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
WACAF	1	Benin	10.64.0.0 / 19	Primera	10 . 64 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 64 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	2	Burkina Faso	10.64.32.0 / 19	Primera	10 . 64 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 64 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	3	Cameroon	10.64.64.0 / 19	Primera	10 . 64 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 64 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	4	Cape Verde	10.64.96.0 / 19	Primera	10 . 64 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 64 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	5	Central African Republic	10.64.128.0 / 19	Primera	10 . 64 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 64 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	6	Chad	10.64.160.0 / 19	Primera	10 . 64 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 64 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	7	Congo	10.64.192.0 / 19	Primera	10 . 64 . 192 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 64 . 223 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	8	Cote de Ivoire	10.64.224.0 / 19	Primera	10 . 64 . 224 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 1 1	1 0 0 0 0 . 0 0 0 0 0 0 0 1	
-				-	-	-	-	-	-	
Ultima				10 . 64 . 255 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
9	Democratic Republic of the Congo	10.65.0.0 / 19	Primera	10 . 65 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 65 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
10	Equatorial Guinea	10.65.32.0 / 19	Primera	10 . 65 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 65 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
11	Gabon	10.65.64.0 / 19	Primera	10 . 65 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 65 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 0 0	0 0 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Hosts
WACAF	12	Gambia	10.65.96.0 / 19	Primera	10 . 65 . 96 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 65 . 127 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	13	Ghana	10.65.128.0 / 19	Primera	10 . 65 . 128 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 65 . 159 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	14	Guinea	10.65.160.0 / 19	Primera	10 . 65 . 160 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 65 . 191 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	15	Guinea-Bissau	10.65.192.0 / 19	Primera	10 . 65 . 192 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 65 . 223 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	16	Liberia	10.65.240.0 / 19	Primera	10 . 65 . 240 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 1 1 1	1 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 65 . 255 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 0 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	17	Mali	10.66.0.0 / 19	Primera	10 . 66 . 0 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 66 . 31 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	18	Mauritania	10.66.32.0 / 19	Primera	10 . 66 . 32 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 66 . 63 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	19	Niger	10.66.64.0 / 19	Primera	10 . 66 . 64 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 66 . 95 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	20	Nigeria	10.66.96.0 / 19	Primera	10 . 66 . 96 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 66 . 127 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	21	Sao Tome and Principe	10.66.128.0 / 19	Primera	10 . 66 . 128 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 66 . 159 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	22	Senegal	10.66.160.0 / 19	Primera	10 . 66 . 160 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Ultima	10 . 66 . 191 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0	0 0 1 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Hosts
WACAF	23	Sierra Leone	10.66.192.0 / 19	Primera	10 . 66 . 192 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 66 . 223 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	24	Togo	10.66.224.0 / 19	Primera	10 . 66 . 224 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 66 . 255 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	25	VACANTE	10.67.0.0 / 19	Primera	10 . 67 . 0 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 67 . 31 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	26	VACANTE	10.67.32.0 / 19	Primera	10 . 67 . 32 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				Última	10 . 67 . 63 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0 0 0 1 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
128 (ULTIMA)	RESERVADA	10.79.224.0 / 19	Primera	10 . 79 . 224 . 1	0 0 0 0 1 0 1 0 . 0 1 0 0 1 1 1 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1		
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
Última	-	-	10 . 79 . 255 . 254	0 0 0 0 1 0 1 0 . 0 1 0 0 1 1 1 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0			

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
ESAF	1	Angola	10.80.0.0 / 19	Primera	10 . 80 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	2	Botswana	10.80.32.0 / 19	Primera	10 . 80 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	3	Burundi	10.80.64.0 / 19	Primera	10 . 80 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	4	Comoros	10.80.96.0 / 19	Primera	10 . 80 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	5	Djibouti	10.80.128.0 / 19	Primera	10 . 80 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	6	Eritrea	10.80.160.0 / 19	Primera	10 . 80 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	7	Ethiopia	10.80.192.0 / 19	Primera	10 . 80 . 192 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 223 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	8	Kenya	10.80.224.0 / 19	Primera	10 . 80 . 224 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 80 . 255 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	9	Lesotho	10.81.0.0 / 19	Primera	10 . 81 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	10	Madagascar	10.81.32.0 / 19	Primera	10 . 81 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	11	Malawi	10.81.64.0 / 19	Primera	10 . 81 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
ESAF	12	Mauritius	10.81.96.0 / 19	Primera	10 . 81 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	13	Mozambique	10.81.128.0 / 19	Primera	10 . 81 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	14	Namibia	10.81.160.0 / 19	Primera	10 . 81 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	15	Rwanda	10.81.192.0 / 19	Primera	10 . 81 . 192 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 223 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	16	Seychelles	10.81.224.0 / 19	Primera	10 . 81 . 224 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 81 . 255 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 0 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	17	Somalia	10.82.0.0 / 19	Primera	10 . 82 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 82 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	18	South Africa	10.82.32.0 / 19	Primera	10 . 82 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 82 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	19	Swaziland	10.82.64.0 / 19	Primera	10 . 82 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
-				-	-	-	-	-	-	
Ultima				10 . 82 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
20	Uganda	10.82.96.0 / 19	Primera	10 . 82 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 82 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
21	United Republic of Tanzania	10.82.128.0 / 19	Primera	10 . 82 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 82 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
22	Zambia	10.82.160.0 / 19	Primera	10 . 82 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 82 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 0 1	0 0 1 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Región	Estado / Territorio	Host's
EUR/NAT	1	Albania	10.96.0.0 / 19	Primera	10 . 96 . 0 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 96 . 31 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	2	Algeria	10.96.32.0 / 19	Primera	10 . 96 . 32 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 96 . 63 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	3	Andorra	10.96.64.0 / 19	Primera	10 . 96 . 64 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 96 . 95 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	4	Armenia	10.96.96.0 / 19	Primera	10 . 96 . 96 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 96 . 127 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	5	Austria	10.96.128.0 / 19	Primera	10 . 96 . 128 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 96 . 159 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	6	Azerbaijan	10.96.160.0 / 19	Primera	10 . 96 . 160 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 96 . 191 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0
	7	Belarus	10.96.192.0 / 19	Primera	10 . 96 . 192 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				-	-	-	-	-
				Ultima	10 . 96 . 223 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0
	8	Bosnia and Herzegovina	10.96.224.0 / 19	Primera	10 . 96 . 224 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
-				-	-	-	-	
Ultima				10 . 96 . 255 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
9	Bulgaria	10.97.0.0 / 19	Primera	10 . 97 . 0 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	
			Ultima	10 . 97 . 31 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
10	Croatia	10.97.32.0 / 19	Primera	10 . 97 . 32 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	
			Ultima	10 . 97 . 63 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
11	Czech Republic	10.97.64.0 / 19	Primera	10 . 97 . 64 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
			-	-	-	-	-	
			Ultima	10 . 97 . 95 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0	0 0 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0	

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Hosts		
EUR/NAT	12	Denmark	10.97.96.0 / 19	Primera	10 . 97 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 97 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	13	Estonia	10.97.128.0 / 19	Primera	10 . 97 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 97 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	14	Finland	10.97.160.0 / 19	Primera	10 . 97 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 97 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	15	France	10.97.192.0 / 19	Primera	10 . 97 . 192 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 97 . 223 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	16	Georgia	10.97.224.0 / 19	Primera	10 . 97 . 224 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 97 . 255 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 0 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	17	Germany	10.98.0.0 / 19	Primera	10 . 98 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 98 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	18	Greece	10.98.32.0 / 19	Primera	10 . 98 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 98 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	19	Hungary	10.98.64.0 / 19	Primera	10 . 98 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 98 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
20	Iceland	10.98.96.0 / 19	Primera	10 . 98 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 98 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0		
21	Ireland	10.98.128.0 / 19	Primera	10 . 98 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 98 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0		
22	Italy	10.98.160.0 / 19	Primera	10 . 98 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 98 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 0 1 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0		

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria		
						Region	Estado / Territorio	Hosts
EUR/NAT	23	Kazakhstan	10.98.192.0 / 19	Primera	10 . 98 . 192 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 98 . 223 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	24	Kyrgyzstan	10.98.224.0 / 19	Primera	10 . 98 . 224 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 98 . 255 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	25	Latvia	10.99.0.0 / 19	Primera	10 . 99 . 0 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 31 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	26	Lithuania	10.99.32.0 / 19	Primera	10 . 99 . 32 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 63 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	27	Luxemburgo	10.99.64.0 / 19	Primera	10 . 99 . 64 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 95 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	28	Malta	10.99.96.0 / 19	Primera	10 . 99 . 96 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 127 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	29	Monaco	10.99.128.0 / 19	Primera	10 . 99 . 128 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 159 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	30	Montenegro	10.99.160.0 / 19	Primera	10 . 99 . 160 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 191 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	31	Morocco	10.99.192.0 / 19	Primera	10 . 99 . 192 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 223 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 0	
	32	Netherlands	10.99.224.0 / 19	Primera	10 . 99 . 224 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 99 . 255 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 0 1 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 0	
	33	Norway	10.100.0.0 / 19	Primera	10 . 100 . 0 . 1	0 0 0 0 1 0 1 0 . 0 1 1 0 0 1 0 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 1	
				-	-	-	-	
				Ultima	10 . 100 . 31 . 254	0 0 0 0 1 0 1 0 . 0 1 1 0 0 1 0 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 0	

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria			
						Región	Estado / Territorio	Host's	
EUR/NAT	34	Poland	10.100.32.0 / 19	Primera	10 . 100 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 100 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	35	Portugal	10.100.64.0 / 19	Primera	10 . 100 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 100 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	36	Republic of Moldova	10.100.96.0 / 19	Primera	10 . 100 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 100 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	37	Romania	10.100.128.0 / 19	Primera	10 . 100 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 100 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	38	Russian federation	10.100.160.0 / 19	Primera	10 . 100 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 100 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	39	San Marino	10.100.192.0 / 19	Primera	10 . 100 . 192 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 100 . 223 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	40	Serbia	10.100.224.0 / 19	Primera	10 . 100 . 224 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 100 . 255 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 0 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	41	Slovakia	10.101.0.0 / 19	Primera	10 . 101 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 101 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	42	Slovenia	10.101.32.0 / 19	Primera	10 . 101 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 101 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	43	Spain	10.101.64.0 / 19	Primera	10 . 101 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 101 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0
	44	Sweden	10.101.96.0 / 19	Primera	10 . 101 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1
				Última	10 . 101 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0

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Región	Nro	Estado / Territorio	Red	Direcciones utilizables	Notación Decimal	Notación Binaria				
						Región	Estado / Territorio	Host's		
EUR/NAT	45	Switzerland	10.101.128.0 / 19	Primera	10 . 101 . 128 . 1	0 0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 0 0	0 0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 101 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	46	Tajikistan	10.101.160.0 / 19	Primera	10 . 101 . 160 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 101 . 191 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	47	The Former Yugoslav Republic of Macedonia	10.101.192.0 / 19	Primera	10 . 101 . 192 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 101 . 223 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	48	Tunisia	10.101.224.0 / 19	Primera	10 . 101 . 224 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 101 . 255 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 0 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	49	Turkey	10.102.0.0 / 19	Primera	10 . 102 . 0 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 102 . 31 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	50	Turkmenistan	10.102.32.0 / 19	Primera	10 . 102 . 32 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 0 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 102 . 63 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 0 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	51	Ukraine	10.102.64.0 / 19	Primera	10 . 102 . 64 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 1 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 102 . 95 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 1 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
	52	United Kingdom	10.102.96.0 / 19	Primera	10 . 102 . 96 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1	
				-	-	-	-	-	-	-
				Ultima	10 . 102 . 127 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 0 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0	
53	Uzbekistan	10.102.128.0 / 19	Primera	10 . 102 . 128 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 1 0 0	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 102 . 159 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	0 1 1 0 . 1 0 0	1 1 1 1 1 . 1 1 1 1 1 1 1 0		
128 (ULTIMA)	RESERVADA	10.111.224.0 / 19	Primera	10 . 111 . 224 . 1	0 0 0 0 1 0 1 0 .	0 1 1 0	1 1 1 1 . 1 1 1	0 0 0 0 0 . 0 0 0 0 0 0 0 1		
			-	-	-	-	-	-	-	
			Ultima	10 . 111 . 255 . 254	0 0 0 0 1 0 1 0 .	0 1 1 0	1 1 1 1 . 1 1 1	1 1 1 1 1 . 1 1 1 1 1 1 1 0		

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Red	Enlace				
	Nro.	Subred	Extremos	Direcciones a utilizar	
10.15.224.0 / 19	1	10.15.224.0 / 30	Argentina-Bolivia	-	10 . 15 . 224 . 0 / 30
				Argentina	10 . 15 . 224 . 1 / 30
				Bolivia	10 . 15 . 224 . 2 / 30
				-	10 . 15 . 224 . 3 / 30
	2	10.15.224.4 / 30	Argentina-Chile	-	10 . 15 . 224 . 4 / 30
				Argentina	10 . 15 . 224 . 5 / 30
				Chile	10 . 15 . 224 . 6 / 30
				-	10 . 15 . 224 . 7 / 30
	3	10.15.224.8 / 30	Argentina-Paraguay	-	10 . 15 . 224 . 8 / 30
				Argentina	10 . 15 . 224 . 9 / 30
				Paraguay	10 . 15 . 224 . 10 / 30
				-	10 . 15 . 224 . 11 / 30
	4	10.15.224.12 / 30	Argentina-Peru	-	10 . 15 . 224 . 12 / 30
				Argentina	10 . 15 . 224 . 13 / 30
				Peru	10 . 15 . 224 . 14 / 30
				-	10 . 15 . 224 . 15 / 30
	5	10.15.224.16 / 30	Argentina-Uruguay	-	10 . 15 . 224 . 16 / 30
				Argentina	10 . 15 . 224 . 17 / 30
				Uruguay	10 . 15 . 224 . 18 / 30
				-	10 . 15 . 224 . 19 / 30
	6	10.15.224.20 / 30	Argentina-AFI	-	10 . 15 . 224 . 20 / 30
				Argentina	10 . 15 . 224 . 21 / 30
				AFI (Johannesburgo)	10 . 15 . 224 . 22 / 30
				-	10 . 15 . 224 . 23 / 30
	7	10.15.224.24 / 30	Brasil-Colombia	-	10 . 15 . 224 . 24 / 30
				Brasil	10 . 15 . 224 . 25 / 30
				Colombia	10 . 15 . 224 . 26 / 30
				-	10 . 15 . 224 . 27 / 30
	8	10.15.224.28 / 30	Brasil-Guyana	-	10 . 15 . 224 . 28 / 30
				Brasil	10 . 15 . 224 . 29 / 30
				Guyana	10 . 15 . 224 . 30 / 30
				-	10 . 15 . 224 . 31 / 30
	9	10.15.224.32 / 30	Brasil-Guyana Francesa	-	10 . 15 . 224 . 32 / 30
				Brasil	10 . 15 . 224 . 33 / 30
				Guyana Francesa	10 . 15 . 224 . 34 / 30
				-	10 . 15 . 224 . 35 / 30

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Red	Enlace				
	Nro.	Subred	Extremos	Direcciones a utilizar	
10.15.224.0 / 19	10	10.15.224.36 / 30	Brasil-Peru	-	10 . 15 . 224 . 36 / 30
				Brasil	10 . 15 . 224 . 37 / 30
				Peru	10 . 15 . 224 . 38 / 30
				-	10 . 15 . 224 . 39 / 30
	11	10.15.224.40 / 30	Brasil-Surinam	-	10 . 15 . 224 . 40 / 30
				Brasil	10 . 15 . 224 . 41 / 30
				Surinam	10 . 15 . 224 . 42 / 30
				-	10 . 15 . 224 . 43 / 30
	12	10.15.224.44 / 30	Brasil-Venezuela	-	10 . 15 . 224 . 44 / 30
				Brasil	10 . 15 . 224 . 45 / 30
				Venezuela	10 . 15 . 224 . 46 / 30
				-	10 . 15 . 224 . 47 / 30
	13	10.15.224.48 / 30	Brasil-AFI (tentativo)	-	10 . 15 . 224 . 48 / 30
				Brasil	10 . 15 . 224 . 49 / 30
				AFI (Dakar)	10 . 15 . 224 . 50 / 30
				-	10 . 15 . 224 . 51 / 30
	14	10.15.224.52 / 30	Brasil-EUR (tentativo)	-	10 . 15 . 224 . 52 / 30
				Brasil	10 . 15 . 224 . 53 / 30
				EUR (Madrid)	10 . 15 . 224 . 54 / 30
				-	10 . 15 . 224 . 55 / 30
	15	10.15.224.56 / 30	Brasil-NAM	-	10 . 15 . 224 . 56 / 30
				Brasil	10 . 15 . 224 . 57 / 30
				NAM(Atlanta)	10 . 15 . 224 . 58 / 30
				-	10 . 15 . 224 . 59 / 30
	16	10.15.224.60 / 30	Brasil-Argentina	-	10 . 15 . 224 . 60 / 30
				Brasil	10 . 15 . 224 . 61 / 30
				Argentina	10 . 15 . 224 . 62 / 30
				-	10 . 15 . 224 . 63 / 30
	17	10.15.224.64 / 30	Brasil-Bolivia	-	10 . 15 . 224 . 64 / 30
				Brasil	10 . 15 . 224 . 65 / 30
				Bolivia	10 . 15 . 224 . 66 / 30
				-	10 . 15 . 224 . 67 / 30
	18	10.15.224.68 / 30	Brasil-Paraguay	-	10 . 15 . 224 . 68 / 30
				Brasil	10 . 15 . 224 . 69 / 30
				Paraguay	10 . 15 . 224 . 70 / 30
				-	10 . 15 . 224 . 71 / 30

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Red	Enlace				
	Nro.	Subred	Extremos	Direcciones a utilizar	
10.15.224.0 / 19	19	10.15.224.72 / 30	Brasil-Uruguay	-	10 . 15 . 224 . 72 / 30
				Brasil	10 . 15 . 224 . 73 / 30
				Uruguay	10 . 15 . 224 . 74 / 30
	20	10.15.224.76 / 30	Chile-PAC	-	10 . 15 . 224 . 75 / 30
				-	10 . 15 . 224 . 76 / 30
				Chile	10 . 15 . 224 . 77 / 30
				PAC(Christchurch)	10 . 15 . 224 . 78 / 30
	21	10.15.224.80 / 30	Chile-Peru	-	10 . 15 . 224 . 79 / 30
				-	10 . 15 . 224 . 80 / 30
				Chile	10 . 15 . 224 . 81 / 30
				Peru	10 . 15 . 224 . 82 / 30
	22	10.15.224.84 / 30	Colombia-NAM	-	10 . 15 . 224 . 83 / 30
				-	10 . 15 . 224 . 84 / 30
				Colombia	10 . 15 . 224 . 85 / 30
				NAM (Atlanta)	10 . 15 . 224 . 86 / 30
	23	10.15.224.88 / 30	Colombia-Ecuador	-	10 . 15 . 224 . 87 / 30
				-	10 . 15 . 224 . 88 / 30
				Colombia	10 . 15 . 224 . 89 / 30
				Ecuador	10 . 15 . 224 . 90 / 30
	24	10.15.224.92 / 30	Colombia-Peru	-	10 . 15 . 224 . 91 / 30
				-	10 . 15 . 224 . 92 / 30
				Colombia	10 . 15 . 224 . 93 / 30
				Peru	10 . 15 . 224 . 94 / 30
	25	10.15.224.96 / 30	Colombia-Venezuela	-	10 . 15 . 224 . 95 / 30
				-	10 . 15 . 224 . 96 / 30
				Colombia	10 . 15 . 224 . 97 / 30
				Venezuela	10 . 15 . 224 . 98 / 30
	26	10.15.224.100 / 30	Ecuador-Peru	-	10 . 15 . 224 . 99 / 30
				-	10 . 15 . 224 . 100 / 30
				Ecuador	10 . 15 . 224 . 101 / 30
				Peru	10 . 15 . 224 . 102 / 30
	27	10.15.224.104 / 30	Ecuador-Venezuela	-	10 . 15 . 224 . 103 / 30
				-	10 . 15 . 224 . 104 / 30
Ecuador				10 . 15 . 224 . 105 / 30	
Venezuela				10 . 15 . 224 . 106 / 30	
-	10 . 15 . 224 . 107 / 30				

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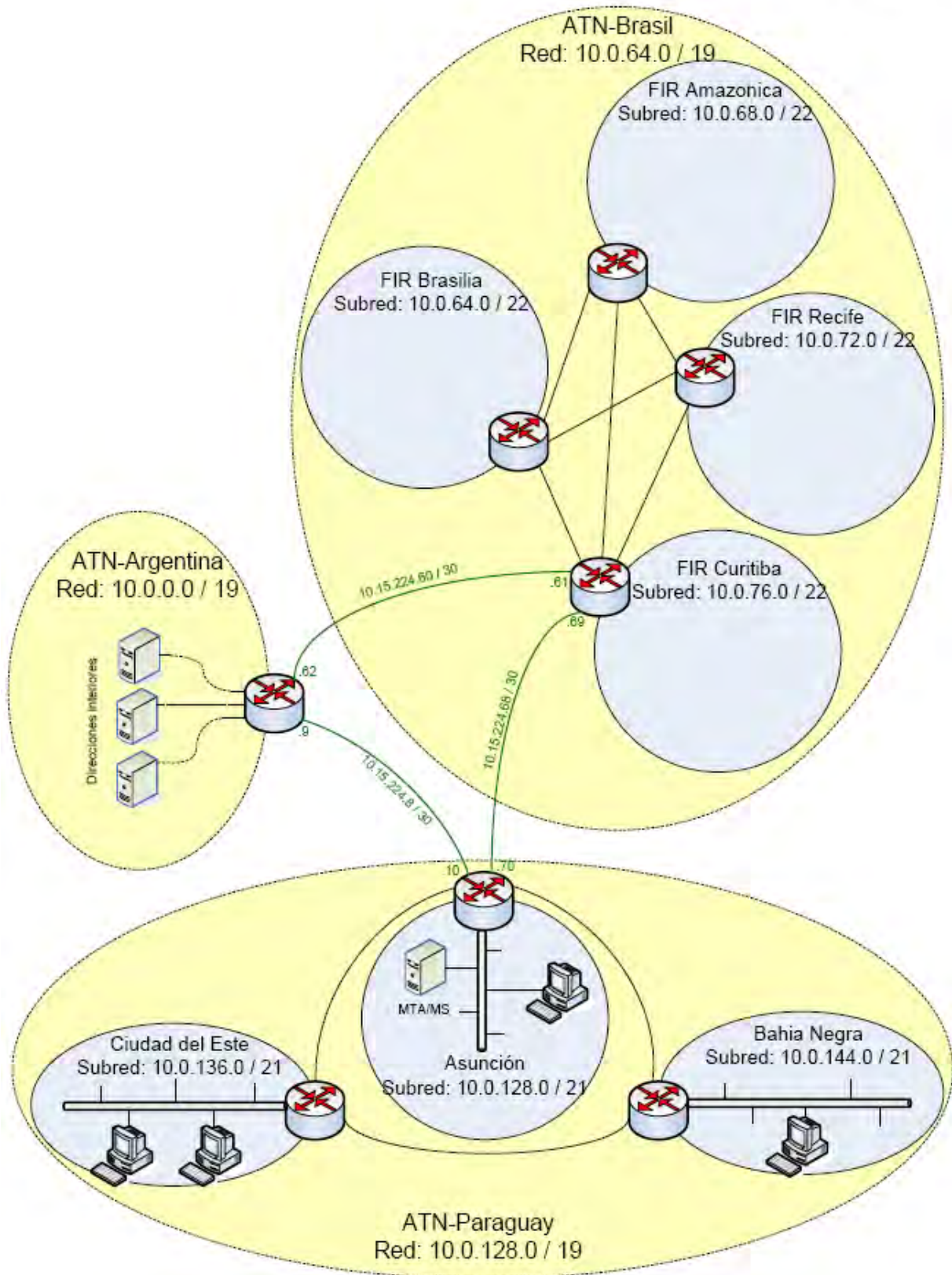
Red	Enlace				
	Nro.	Subred	Extremos	Direcciones a utilizar	
10.15.224.0 / 19	28	10.15.224.108 / 30	Guyana Francesa-Surinam	-	10 . 15 . 224 . 108 / 30
				Guyana Francesa	10 . 15 . 224 . 109 / 30
				Surinam	10 . 15 . 224 . 110 / 30
				-	10 . 15 . 224 . 111 / 30
	29	10.15.224.112 / 30	Guyana-C-CAR	-	10 . 15 . 224 . 112 / 30
				Guyana	10 . 15 . 224 . 113 / 30
				C-CAR (Piarco)	10 . 15 . 224 . 114 / 30
				-	10 . 15 . 224 . 115 / 30
	30	10.15.224.118 / 30	Guyana-Surinam	-	10 . 15 . 224 . 116 / 30
				Guyana	10 . 15 . 224 . 117 / 30
				Surinam	10 . 15 . 224 . 118 / 30
				-	10 . 15 . 224 . 119 / 30
	31	10.15.224.120 / 30	Guyana-Venezuela	-	10 . 15 . 224 . 120 / 30
				Guyana	10 . 15 . 224 . 121 / 30
				Venezuela	10 . 15 . 224 . 122 / 30
				-	10 . 15 . 224 . 123 / 30
	32	10.15.224.124 / 30	Peru-NAM	-	10 . 15 . 224 . 124 / 30
				Peru	10 . 15 . 224 . 125 / 30
				NAM (Atlanta)	10 . 15 . 224 . 126 / 30
				-	10 . 15 . 224 . 127 / 30
	33	10.15.224.128 / 30	Peru-Bolivia	-	10 . 15 . 224 . 128 / 30
				Peru	10 . 15 . 224 . 129 / 30
				Bolivia	10 . 15 . 224 . 130 / 30
				-	10 . 15 . 224 . 131 / 30
	34	10.15.224.132 / 30	Peru-Colombia	-	10 . 15 . 224 . 132 / 30
				Peru	10 . 15 . 224 . 133 / 30
				Colombia	10 . 15 . 224 . 134 / 30
				-	10 . 15 . 224 . 135 / 30
	35	10.15.224.138 / 30	Peru-Venezuela	-	10 . 15 . 224 . 136 / 30
				Peru	10 . 15 . 224 . 137 / 30
				Venezuela	10 . 15 . 224 . 138 / 30
				-	10 . 15 . 224 . 139 / 30
	36	10.15.224.140 / 30	Surinam-Venezuela	-	10 . 15 . 224 . 140 / 30
				Surinam	10 . 15 . 224 . 141 / 30
				Venezuela	10 . 15 . 224 . 142 / 30
				-	10 . 15 . 224 . 143 / 30

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Red	Enlace				
	Nro.	Subred	Extremos	Direcciones a utilizar	
10.15.224.0 / 19	37	10.15.224.144 / 30	Venezuela-CAM	-	10 . 15 . 224 . 144 / 30
				Venezuela	10 . 15 . 224 . 145 / 30
				CAM (San Juan)	10 . 15 . 224 . 146 / 30
				-	10 . 15 . 224 . 147 / 30
	38	10.15.224.148 / 30	Venezuela-EUR	-	10 . 15 . 224 . 148 / 30
				Venezuela	10 . 15 . 224 . 149 / 30
				EUR (Madrid)	10 . 15 . 224 . 150 / 30
				-	10 . 15 . 224 . 151 / 30
	39	10.15.224.152 / 30	Venezuela-Trinidad y Tobago	-	10 . 15 . 224 . 152 / 30
				Venezuela	10 . 15 . 224 . 153 / 30
				Trinidad y Tobago	10 . 15 . 224 . 154 / 30
				-	10 . 15 . 224 . 155 / 30
	40	10.15.224.156 / 30	VACANTE	-	10 . 15 . 224 . 156 / 30
				-	10 . 15 . 224 . 157 / 30
				-	10 . 15 . 224 . 158 / 30
				-	10 . 15 . 224 . 159 / 30
	41	10.15.224.160 / 30	VACANTE	-	10 . 15 . 224 . 160 / 30
				-	10 . 15 . 224 . 161 / 30
				-	10 . 15 . 224 . 162 / 30
				-	10 . 15 . 224 . 163 / 30
42	10.15.224.164 / 30	VACANTE	-	10 . 15 . 224 . 164 / 30	
			-	10 . 15 . 224 . 165 / 30	
			-	10 . 15 . 224 . 166 / 30	
			-	10 . 15 . 224 . 167 / 30	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
2048 (última)	10.15.31.252 / 30	VACANTE	-	10 . 15 . 31 . 252 / 30	
			-	10 . 15 . 31 . 253 / 30	
			-	10 . 15 . 31 . 254 / 30	
			-	10 . 15 . 31 . 255 / 30	



Bloque de Direcciones de Paraguay

Estado / Territorio	Red	Subred		Direcciones utilizables	
		Nro.	ID	Nro.	Notacion Decimal
PARAGUAY	10.0.128.0 / 19	1	Asuncion 10.0.128.0 / 21	1	10 . 0 . 128 . 1 / 21
				2	10 . 0 . 128 . 2 / 21
				3	10 . 0 . 128 . 3 / 21
				4	10 . 0 . 128 . 4 / 21
				5	10 . 0 . 128 . 5 / 21
				6	10 . 0 . 128 . 6 / 21
				7	10 . 0 . 128 . 7 / 21
				8	10 . 0 . 128 . 8 / 21
				-	-
				-	-
				-	-
				-	-
				-	-
				-	-
		2042	10 . 0 . 135 . 250 / 21		
		2043	10 . 0 . 135 . 251 / 21		
		2044	10 . 0 . 135 . 252 / 21		
		2045	10 . 0 . 135 . 253 / 21		
		2046	10 . 0 . 135 . 254 / 21		
		2	Ciudad del Este 10.0.136.0 / 21	1	10 . 0 . 136 . 1 / 21
				2	10 . 0 . 136 . 2 / 21
				3	10 . 0 . 136 . 3 / 21
				4	10 . 0 . 136 . 4 / 21
				5	10 . 0 . 136 . 5 / 21
				6	10 . 0 . 136 . 6 / 21
				7	10 . 0 . 136 . 7 / 21
				8	10 . 0 . 136 . 8 / 21
				-	-
-	-				
-	-				
-	-				
-	-				
-	-				
2042	10 . 0 . 143 . 250 / 21				
2043	10 . 0 . 143 . 251 / 21				
2044	10 . 0 . 143 . 252 / 21				
2045	10 . 0 . 143 . 253 / 21				
2046	10 . 0 . 143 . 254 / 21				

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/4 Update
1	ATN Implementation Coordination	D. Efficiency	GPI-17, GPI-19, GPI-22	(1) Review of implementation problems and develop co-ordinated solutions (2) Coordinate/compile the regional implementation schedule	Expedite implementation activities, ensure system compatibility through out the region	(1) Co-ordination Report (2) Waterfall schedule	(1)Ongoing/Semi-annually until (2010)- (2) Schedule 09/2009	P.K. Kapoor (India)	All members	(1)Updated the information in the ATN Router and AMHS planning tables and the implementation status.(2) Waterfall schedule relivered by January 2010
2	ATN Operational Procedures	D. Efficiency	GPI-17, GPI-19, GPI-22	(1) Contact Person for AMC EUROCONTROL 2) Support ICAO Regional Office for data validation	Make available real time and quality assurance addresses for ATN message delivery	(1) Interim Database	(1) (2007)	Robert Hallman (USA)	Thailand, Hong Kong China, Japan	Host AMC Training in 2010
				(2) Develop the operational database management procedures		(2) Operational Procedures	(2) (2007)			Completed
3	ATN Certification & Validation Process	D. Efficiency	GPI-17, GPI-19, GPI-22	(1) Develop conformance procedures and checklist for AMHS and ATN routers	Expedite implementation activities, ensure global system compatibility	(1) Checklist	(1) (2007)	Sin Hie Sng (Singapore)	China, Hong Kong China, Indonesia,ROK,USA,	Completed
				(2) Develop validation process document		(2) Conformance Document	(2) 2007			Completed and forward to CNS/MET SG and APANPIRG/20 for review and adoption
						(3) Update to Conformance Document	(3) Ongoing until 2010			Document need to be kept up-to-date to reflect defect report from States

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/4 Update
4	(1) ATN Documentation (2) Review all documents adopted by ATNICG and ATNTTF	D. Efficiency	GPI-17, GPI-19, GPI-22	(1) Study DIR objects/attributes proposed in ACP and follow development within other groups (2) Update document tree/establish tracking table for suspended dates (3) Standardized Report form and Guidance Material	Expedite implementation activities, ensure global system compatibility	(1) Directory Report (2) Tracking table/Updated documentation tree (3) AMC report (4) Report Form and Report Guidance	(1) Annually until (2010) (3) Periodically (4) 2010	Chonlawit B. (Thailand)	USA	Update the database.
				(2) Development AIDC documentation (including ICD) and follow development within other groups		(2) AFTN AIDC/ATN Gateway Specification ATN AIDC ICD	(2) 2008 (ACP-dependent)	(Thailand)	Thailand	Postpone development of ATN-based AIDC ICD. Awaiting new format developed by OPMET Panel.
				(3) Update of AMHS ICD to comply with SARPs 3rd Edition		(3) Updated AMHS ICD	(3) (2007)		Japan	Provided to ATNICG/2 for endorsement. Adopted by APANPIRG/18. Completed.
5	ATN Performance	D. Efficiency	GPI-17, GPI-19, GPI-22	(1) Develop/establish/adapt/monitor/identify/analyse performance indicators 2) Develop Performance Measurement specifics	Assure QOS, service continuity, timely delivery of services	(1) AMHS performance report	(1) Annually until (2010)	Japan	Republic of Korea, India	Review and update at ATNICG WG/6
6	ATN Service Enhancements	D. Efficiency	GPI-17, GPI-19, GPI-22	(1) Review the impact of the implementation of Directory Services in the Region	Enhancing the service	(1) Report on directory	(1) Annually until (2010)	Fiji	USA, Thailand, New Zealand, Japan, Australia	Coordinate with ACP for update ICAO Doc 9880
				(2) Development of profiles for the directory access and exchange protocols (Ref. Decision 7/9)	Enhancing the operation	(2) Report on profiles	(2) (2011)	Fiji		

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/4 Update
				(3a) Study IPv4 vs. IPv6 implementation, operational and transition impacts (3b) Investigation 9880 standard	Inbter-regional network compatibility	(3) Report (4) Report	(3) 2011 (4) 2009/2010 (WG/6 and ATNICG/5)	Singapore	Australia, China, India, Fiji, HongKong, China, Japan, and USA	Open
				(4) Study for transition to BUFR code	Enhancing the service	(4) Report on the impact of BUFR code to ATN	(4) (2007)	Japan	New Zealand, USA,	Closed. BUFR code is no longer considered. Awaiting OPMET Panel for Meteorological message format.
				(5) Study for transition of AFTN-based AIDC as an alternative to ATN based AIDC to ATN environment	Improving the service and lowering the operating cost	(5) Report on the impact of transition of AFTN-AIDC to ATN-AIDC AFTN AIDC/ATN Gateway Specification	(5) (2008)	Thailand	India, Indonesia, New Zealand, USA,	A Draft specification of AFTN AIDC/ATN Gateway was presented.
		D. Efficiency	GPI-17, GPI-19, GPI-22	Analyze Common Address Prefix Proposal	Improving the service and routing efficiency	Report on common prefix based analysis conducted	End of 2008	Mark Brown (Japan)	Australia, Fiji, HongKong China, New Zealand and USA	Action Items developed at ATNICG/2 for follow-up at WG meetings.
7	Security	B. Security	GPI-17, GPI-19, GPI-22	(1) Develop ATN System Security policy	Safe and Secure Inter and Intra Regional Communication and service infrastructure	(1) Policy Document	(1) Annually until (2010)	Vidyut Patel (USA)	Australia, Hong Kong China	Adopted by APANPIRG/19
			(2) Develop ATN System Security Guidance		(2) Guidance Document	(2) (2008)	On-Going review and update			
			(3) Develop ATN System Security Solution for Initial and Enhanced Services		(3) Security, Technical, Management and Operational Control	(3) (2008)	On-Going review and update			

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/4 Update
				(4) Co-ordinate and monitor ACP working group and other regions including Directory Service, PDRs (to be reviewed in January)		(4) Report	(4) Semi-Annually until (2010)		Thailand	On-Going review and update
				(5) Develop ATN System Security Check List based on Security Control and Regional Incident Response Plan and Contingency Plan		(5) Check List, Regional Incident Response Plan and Contingency Plan	(5) (2009)			Forward to CNS.MET SG and APANPIRG for review and adoption
8	ATN Service Enhancements (supporting amended ICAO Flight Plan and ATS Message Formats)	D - Efficiency	GPI - 17, GPI - 19, GPI - 22	1) Review the impact of the implementation of Amendment 1 to 15th Edition of Doc. 4444 effective 15 Nov. 2012 (PANS ATM Chapter 4 and Appendix 3 relating to the ICAO Flight Plan and associated ATS Message formats to the AFS	Enhancing the service	1) Report on capability of existing and planned AFS systems to the revised ICAO Flight Plan and ATS Message Format	1) Annually until 2011	USA	Fiji India Hong Kong New Zealand Singapore USA	Pending result from ICAO Flight Plan and ATS Message TF
				2) Identify the new requirements for AMHS/AFTN to support new message format	Enhancing the operation	2) Report on impact of New ATS message format in AMHS	2) 2010	Thailand	Fiji India Hong Kong New Zealand Singapore USA	On-going task-Report at ATNICG/4 (pending the input from CNS/MET SG)
				3) Identify the link control procedure using the AMHS to support the revised ATS message format to the ATC automation system	Enhancing the service	3) Report whether special link control procedure is required	3) 2010	Thailand	Fiji India Hong Kong New Zealand Singapore USA	On-going task

No.	PERFORMANCE OBJECTIVE	ICAO Strategic Objective	Associated GPI	Tasks/Strategy	Benefits	Deliverables	Target Date	Leader	Supporting Members	ATNICG/4 Update
	<p>The ATN PERFORMANCE OBJECTIVE</p> <p>The APAC ATN ground-to-ground infrastructure will be fully operational 53 percent at 23 locations by December 2007.</p> <p>(GPI-22) COMMUNICATION NETWORK INFRASTRUCTURE</p> <p>Related ATM objectives: AMSS; HF data; VHF data; SSR Mode S; ATN</p> <hr/> <p>Scope: To evolve the aeronautical mobile and fixed communication infrastructure, supporting both voice and data communications, accommodating new functions as well as providing the adequate capacity and quality of service to support ATM requirements.</p> <p>(GPI-19) METEOROLOGICAL SYSTEMS</p> <p>Objective: To improve the availability of meteorological information in support of a seamless global ATM system.</p> <p>(GPI-17) IMPLEMENTATION OF DATA LINK APPLICATIONS</p> <p>Scope: Increase the use of data link applications</p> <p>Related ATM objectives: Application of data link; Functional integration of ground systems; with airborne systems; ATS inter-facility data communication (AIDC)</p>									

**Aeronautical Telecommunication Network Implementation Coordination Group
Sixth Working Group Meeting (ATNICG WG/6)
Hua Hin, Prachuab Khri Khan, Thailand
22-25 September 2009**

Attachment 1 to the Report

LIST OF PARTICIPANTS

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/-EMAIL
CHINA (3)		
Mr. Wang Tian Yu	Engineer CNS Division of ATMB, CAAC No. 12 Dongsanhuan Middle Road Chaoyang District, Beijing <u>PEOPLE'S REPUBLIC OF CHINA</u>	Tel: +86 (10) 8778 6968 Fax: +86 (10) 8778 6910 E-mail: wangtian-yu@atmb.net.cn
Mr. Xin Quan	Engineer Aero-Infor Technology Co., Ltd. ATMB, CAAC 802 Tower B Technology Fortune Center No. 8 Xueging Road, Haidian District Beijing 100192 <u>PEOPLE'S REPUBLIC OF CHINA</u>	Tel: +86 (10) 8273 5133 Fax: +86 (10) 8273 5111 E-mail: xinguan@ait.cn
Mr. Lu Yu	Engineer Aero-Infor Technology Co., Ltd. ATMB, CAAC 802 Tower B Technology Fortune Center No. 8 Xueging Road, Haidian District Beijing 100192 <u>PEOPLE'S REPUBLIC OF CHINA</u>	Tel: +86 (10) 8273 5174 Fax: +86 (10) 8273 5111 E-mail: luyu@ait.cn
Hong Kong, China (2)		
Mr. Chan Wai – ming, Steven	Senior Aeronautical Communications Supervisor Civil Aviation Department 2/F, Air Traffic Control Complex Hong Kong International Airport <u>HONG KONG, CHINA</u>	Tel: +852 2910 6211 Fax: +852 2910 1160 E-mail: wmchan@cad.gov.hk
Mr. Lau Moon-yuen, Stanley	Electronics Engineer Civil Aviation Department 3/F, Dragonair House, 11 Tung Fai Road Hong Kong International Airport <u>HONG KONG, CHINA</u>	Tel: +852 2591 5025 Fax: +852 2845 7160 E-mail: smylau@cad.gov.hk
FIJI ISLANDS (2)		
Mr. Kelepi Dainaki	Team Leader CNS/ATM Support Airports Fiji Limited Private Mail Bag Nadi Airport <u>FIJI ISLANDS</u>	Tel: +679 673 1514 Fax: +679 673 1123 E-mail: kelepid@afl.com.fj

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/-EMAIL
Mr. David Gibson	Team Leader LFIS Airports Fiji Limited Private Mail Bag Nadi Airport <u>FIJI ISLANDS</u>	Tel: +679 673 1514 Fax: +679 673 1123 E-mail: davidg@afl.com.fj
INDIA (1)		
Mr. Praful Kumar Kapoor	General Manager (COM) Airports Authority of India Rajiv Gandhi Bhawan Safdarjung Airport New Delhi 110003 <u>INDIA</u>	Tel: +91 (11) 2462 0287 Fax: +91 (11) 2462 0287 E-mail: pk Kapoor@aai.aero
INDONESIA (3)		
Mr. Farid Wajdi	Chief of Aeronautical Radio Frequency Management DGCA Indonesia Jl. Merdeka Barat No. 8 Gedung Karya – Dephub, 23 rd Floor Jakarta Pusat 10110 <u>INDONESIA</u>	Tel: +62 (21) 350 6451 Ext. 111 Fax: +62 (21) 350 7569 E-mail: farid_aismap@yahoo.com
Mr. Trisna Metria	Technical Staff Aeronautical Telecommunication DGCA Indonesia Jl. Merdeka Barat No. 8 Gedung Karya – Dephub, 23 rd Floor Jakarta Pusat 10110 <u>INDONESIA</u>	Tel: +62 (21) 350 6451 Ext. 111 Fax: +62 (21) 350 7569 E-mail: trisnametria@yahoo.com
Mr. Abraham Theodorus	AP. II Soekarno-hatta International Airport Tangerang Banten <u>INDONESIA</u>	Tel: +62 (21) 550 6158 Fax: +62 (21) 550 6129 E-mail: yong_tid@yahoo.com theodorus@angkasapura2.co.id
JAPAN (2)		
Mr. Masamichi Mizutamari	Special Assistant to the Director Operations and Flight Inspections Division ATS Department Civil Aviation Bureau <u>JAPAN</u>	Tel: Fax: E-mail: mizutamari-m22h@mlit.go.jp
Dr. Tetsuo Mizoguchi	Professor Hosei University 3-7-2 Kajino, Tokyo 184-8584 <u>JAPAN</u>	Tel: +81 422 387 4358 Fax: +81 422 387 6028 E-mail: mizo@hosei.ac.jp
MALAYSIA (1)		
Mr. Mani Vannan A.L. Ketena Samy	DCA Malaysia <u>MALAYSIA</u>	Tel: Mobile : 012 347 0329 Fax : E-mail: mani@dca.gov.my
NEW ZEALAND (1)		

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/-EMAIL
Mr. Ian Dore	Software Team Leader Airways New Zealand P.O. Box 14131 Christchurch, 8544 <u>NEW ZEALAND</u>	Tel: +64 27 444 9808 (Mobile) +64 (3) 358 1697 Fax: +64 (3) 358 1566 E-mail: ian.dore@airways.co.nz
PHILIPPINES (2)		
Mr. William I. Astrologo	Airways Communication Supervisor/Chief, AICD Civil Aviation Authority of the Philippines Air Traffic Service 4F, CAAP Main Building Pasay City 1300 <u>PHILIPPINES</u>	Tel: +63 (2) 879 9282 Fax: +63 (2) 879 9282 E-mail: w_astrologo@yahoo.com
Mr. Jose J. Luna	Chief Airways Communicator/Chief, Manila AFS Civil Aviation Authority of the Philippines Manila AFS 2F, Airways Facility Complex MIA Road, Pasay City 1300 <u>PHILIPPINES</u>	Tel: +63 (2) 879 9191 Fax: +63 (2) 879 9191 E-mail: jet_luna@hotmail.com
REPUBLIC OF KOREA (3)		
Mr. Kim Ki Hyoun	Assistant Director 244-2 Flight Inspection Center in Gimpo International Airport Okoc-dong, Gangseo-gu Seoul 157-711 <u>REPUBLIC OF KOREA</u>	Tel: +82 (2) 2660 2162, 2166 Fax: +82 (2) 2662 0881 E-mail: kimhwalove@mltm.go.kr
Mr. Kang Jiseok	Manager Korea Airports Corporation 274, Gwahae Dong Gangseo Gu, Seoul 157 711 <u>REPUBLIC OF KOREA</u>	Tel: +82 (2) 2660 2867 Fax: +82 (2) 2660 2320 E-mail: thin@airport.co.kr
Mr. Oh Sang Joon	Principal Engineer Samsung SDS 274, Gwahae Dong Gangseo Gu, Seoul 157 711 <u>REPUBLIC OF KOREA</u>	Tel: +82 (70) 7010 3995 Fax: +82 (70) 7010 3999 E-mail: sangjoon.oh@samsung.com
SINGAPORE (3)		
Ms. Sng Sin Hie	Executive Engineer (Comms/Nav aids) Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1, Singapore 918141 <u>SINGAPORE</u>	Tel: +65 6541 2408 Fax: +65 6542 2447 E-mail: sng_sin_hie@caas.gov.sg
Mr. Ng Him Yick	Engineer Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1, Singapore 918141 <u>SINGAPORE</u>	Tel : +65 6541 2790 Fax: +65 6542 2447 E-mail: ng_him_yick@caas.gov.sg

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/-EMAIL
Mr. Ng Kim Hong	Engineer ST Electronics Ltd. 24 Ang Mo Kio Street 65 Singapore 569061 <u>SINGAPORE</u>	Tel: +65 6546 7975 Fax: E-mail: ngkhon@stee.stengg.com
THAILAND (11)		
Mr. Pongpinit Damrongsongporn	Electrical Engineer Department of Civil Aviation 71 Soi Ngamdu-Plee Rama VI Road Tungmahamek Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 287 3194 Fax: E-mail: pongpinit_d@aviation.go.th
Mr. Kanapas Siriram	Engineering Manager Aeronautical Radio of Thailand Ltd. 102 Soi Ngamduplee, Thungmahamek Sathorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9078 Fax: +66 (2) 287 8620 E-mail: kanapas.si@aerothai.co.th
Sub. Lt. Prinya Viyasilpa	Engineering Manager Aeronautical Radio of Thailand Limited 102 Ngamduplee, Tungmahamek Satorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9151 Fax: +66 (2) 287 8620 E-mail : pinde@aerothai.co.th
Mr. Sutthisan Thansuwanwong	Engineering Manager Aeronautical Radio of Thailand Limited 102 Ngamduplee, Tungmahamek Satorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9151 Fax: +66 (2) 287 8620 E-mail: sutthisan.th@aerothai.co.th
Mr. Yorkiat Chaiiad	Engineering Manager Aeronautical Radio of Thailand Limited 102 Ngamduplee, Tungmahamek Satorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9158 Fax: +66 (2) 287 8620 E-mail: yorkiat.ch@aerothai.co.th
Mrs. Jittima Asawachaiporn	General Administrative Manager Aeronautical Radio of Thailand Ltd. 102 Ngamduplee, Tungmahamek Sathorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9082 Fax: +66 (2) 287 8538 E-mail: jittima.as@aerothai.co.th
Ms. Sujin Promduang	General Administrative Manager Aeronautical Radio of Thailand Ltd. 102 Soi Ngamduplee, Thungmahamek Sathorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9083 Fax: +66 (2) 287 3131 E-mail: sujin@aerothail.co.th
Mr. Worapoj Yodjabog	General Administrative Manager Aeronautical Network Management Center Aeronautical Radio of Thailand Limited 102 Ngarmduplee, Tungmahamek Sathorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 287 8407 Fax: +66 (2) 287 3131 E-mail: worapoj.yo@aerothai.co.th

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/-EMAIL
Mr. Chonlawit Banphawatthanaruk	Executive Officer, Systems Engineering Aeronautical Radio of Thailand Ltd. 102 Soi Ngamduplee, Thungmahamek Sathorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9578 Fax: +66 (2) 287 8620 E-mail: chonlawit.ba@aerothai.co.th
Mr. Pramuk Rungrojaree	Executive Officer, Systems Engineering Aeronautical Radio of Thailand Ltd. 102 Soi Ngamduplee, Thungmahamek Sathorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 285 9578 Fax: +66 (2) 287 8620 E-mail: pramuk.ru@aerothai.co.th
Mr. Amornsak Thorasin	Executive Officer, Systems Engineering Aeronautical Radio of Thailand Limited 102 Ngamduplee, Tungmahamek Satorn, Bangkok 10120 <u>THAILAND</u>	Tel: +66 (2) 287 8195 Fax: +66 (2) 287 8620 E-mail: amornsak.th@aerothai.co.th
USA (6)		
Mr. Robert Hallman	Facility Manager Federal Aviation Administration 2150 West 700 North, Building # 2 Salt Lake City, Utah 84116 <u>USA</u>	Tel: +1 (801) 320 2165 Fax: +1 (801) 320 2117 E-mail: robert.hallman@faa.gov
Mr. Vidyut Patel	Manager Information Security Team Federal Aviation Administration William J. Hughes FAA Technical Center Atlantic City, NJ 08405 <u>USA</u>	Tel: +1 (609) 485 5046 Fax: +1 (609) 485 5630 E-mail: vidyut.patel@faa.gov
Mr. Hoang N. Tran	AMHS Programme Manager Federal Aviation Administration 800 Independence Avenue, SW Washington, D.C. 20591 <u>USA</u>	Tel: +1 (202) 493 5995 Fax: +1 (202) 493 5945 E-mail: hoang.tran@faa.gov
Mr. Tom McParland	Contractor, BCI 304 Harper Drive, Suite 203 Moorestown, NJ 08057 <u>USA</u>	Tel: +1 (609) 425 4410 Fax: +1 (856) 582 5777 E-mail: tmcparland@bcisse.com
Mr. Joe Knecht	Communications Infrastructure Engineering Team Federal Aviation Administration William J. Hughes Technical Center Atlantic City, NJ 08405 <u>USA</u>	Tel: +1 (609) 485 5077 Fax: E-mail: joe.knecht@faa.gov
Ms. Dulce Maria Roses	Programme Manager, International Telecommunications Federal Aviation Administration Telecommunication Service Group Miami, FL 33166 <u>USA</u>	Tel: +1 (305) 716 1830 Fax: E-mail: dulce.roses@faa.gov
COMSOFT (1)		

STATE/NAME	DESIGNATION/ADDRESS	TEL/FAX/-EMAIL
Mr. Merkle Hans-Jörg	Technical Advisor COMSOFT GmbH 9497-129 Wachhausstrasse 5a 76227 Karlsruhe <u>GERMANY</u>	Tel: +49 721 9497 245 Fax: +49 721 9497 129 E-mail: Hans-Joerg.Merkle@comsoft.aero
ICAO (1)		
Mr. Sujan K. Saraswati	Regional Officer CNS International Civil Aviation Organization 252/1, Vibhavadee Road Ladyao, Chatuchak Bangkok 10900 <u>THAILAND</u>	Tel: +66 (2) 537-8189 Ext. 155 Fax: +66 (2) 537-8199 E-mail: ssaraswati@bangkok.icao.int



International Civil Aviation Organization

**Aeronautical Telecommunication Network
Implementation Coordination Group – Sixth
Working Group Meeting (ATNICG WG/6)**

Hua Hin, Prachuab Khiriri Khan, Thailand
22 - 25 September 2009



LIST OF WORKING AND INFORMATION PAPERS

WP/IP No.	Agenda Item	Subject	Presented by
WP/1	-	Provisional Agenda	Secretariat
WP/2	6	Changes to User Methods of Accessing WAFS Products via the Washington World Area Forecast Center (WAFC)	USA
WP/3	6	CAR/SAM Proposed Regional IP Addressing	USA
WP/4	3	Proposal for Enhancements to Asia/Pacific AMHS Manual and Utilization of Manual for Regional Interoperability Testing	USA
WP/5	6	Discuss the Aeronautical Fixed Service (AFS) Evolution and Modernization Strategy	USA
WP/6	13	IPv6 Network Mobility in Aeronautical Communications	Secretariat
WP/7	7	Short-term Procedure for AMHS Address Coordination & other Services	Secretariat
WP/8	11	System Configuration Management in the Asia/Pacific Region	Japan
WP/9	5	Issues on Implementation of ATN/IPS in the Asia/Pacific ATN Ground Network	Japan
WP/10	1	Review of APANPIRG/20 and CNS/MET SG/13 Outcomes on AFS Related Issues	Secretariat
WP/11	12	ATNICG TOR and Subject/Tasks List and PFF for APAC Objective 8	Secretariat
WP/12	7	IPv6 Address Allocation Procedures	Secretariat
WP/13	10	Security Considerations with the Transition to IPS	USA
WP/14	7	Application of Asia/Pacific ATN Security Guidance to the ATS Messaging Management Centre (AMC) System	USA

WP/IP No.	Agenda Item	Subject	Presented by
WP/15	1	Report on Fourth Meeting Aeronautical Telecommunication Network (ATN) Implementation Co-ordination Group (ATNICG/4)	Secretariat
WP/16	3	Proposed AMHS Implementation Plan	Hong Kong, China
WP/17	7	The Proposed Asia/Pacific AMC Procedure	Thailand

LIST OF INFORMATION PAPERS

IP/1	-	Meeting Bulletin	Secretariat
IP/2	6	Final Report of the 5 th CAR/SAM CNS ATN Task Force Working	USA
IP/3	3	AMHS Interoperability Tests between Hong Kong and Macao	Hong Kong, China