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WORKING GROUP TWO

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ATNP/WG2 Actions 5/11 and 5/12

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SUMMARY

This paper presents the results of actions 5/11 and 5/12 and comprises proposed changes to the Routing Policies specified in the ATN Draft SARPs in support of "off backbone" Homes and to fix a defect recognised at the last WG2 meeting.

DOCUMENT CONTROL LOG

SECTION	DATE	REV. NO.	REASON FOR CHANGE OR REFERENCE TO CHANGE
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1. Introduction

Actions 5/11 and 5/12 both concered defects identified in the routing policy requirements section. This paper provides a marked up copy of this section showing where changes are proposed.

2. Proposed Marked-up Text

3.7 Policy Based selection of Routes for Advertisement to Adjacent RDs

Note.— In general, the selection of routes for advertisement to adjacent Routing Domains is performed according to local routing policy rules. This specification mandates such routing policy rules for support of air-ground routing only. Routing Policy rules for support of ground-ground routing are a local matter.

3.7.1 Routing Policy Requirements for Members of an ATN Island Backbone RDC

An ATN RD that is a member of an ATN Island Backbone RDC shall implement a Routing Policy that is compatible with the policy statements given in this section and its subordinate sections.

Note.— The routing policies expressed in this section do not constrain RD policies as much as define whether an RD's policies define it as being in the backbone or not.

3.7.1.1 Adjacent ATN RDs within the Backbone RDC

Note 1.— These policy statements apply to the routes advertised by an ATN Router in a RD that is a member of a Backbone RDC, to an adjacent ATN Router in a different RD, which is also a member of the same ATN Island Backbone RDC.

Each ATN Router that is in an RD that is a member of an ATN Island's Backbone RDC, shall provide the following routes to each adjacent ATN RD within the same Backbone RDC, and for the Security RIB-Att :

a) A route to NSAPs and NETs contained within the RD; the route's destination shall be one or more NSAP Address prefixes common to all NSAP Addresses and NETs in the RD. If restrictions on distribution scope are applied by local routing policy, then they shall not prevent distribution of this route to any member of the same ATN Island RDC.

   Note 2.— The well known discretionary attribute DIST_LIST_INCL may also be present. For example, to restrict the scope of the information to members of the ATN Backbone RDC only. The RDIs of other RDs and RDCs may also be present at the discretion of the local Administrative Domain, and by bilateral agreement.

   Note 3.— The objective of this rule is to ensure that a member of a backbone RDC will tell all its neighbours within the backbone about itself.

b) The selected route to every Mobile RD for which a route is available.

   Note 4.— The objective of this rule is to ensure that a member of a backbone RDC will inform all other backbone RDC members within the island about all routes to all mobiles that it has available.

c) The selected route to every Fixed ATN RD in the same ATN Island, for which a route is available.

   Note 5.— The objective of this rule is to ensure that a member of a backbone RDC will tell other members of the same backbone RDC about all fixed RDs that it knows about.

d) Each selected route to a Mobile RD's "home".

Note 6.— The objective of this rule is to ensure that a member of a backbone RDC will tell all fixed RDs about all the "homes" that it knows about.

Note 7.— Such a route can be characterised by an NSAP Address Prefix which ends at the VER field and the VER field takes either the value 041h or the value 0c1h.

3.7.1.2 All other ATN RDs within the ATN Island

Note 1.— These policy statements apply to the routes advertised by an ATN Router in an RD that is a member of a Backbone RDC to an adjacent ATN Router in a different RD, which is also a member of the same ATN Island RDC, but which is not a member of that ATN Island's Backbone RDC.

An ATN Router that is in an RD that is a member of an ATN Island Backbone RDC shall provide the following routes to each adjacent ATN RD within the ATN Island RDC, which are not members of the ATN Island's Backbone RDC, and for the Security RIB-Att :

a) A route to NSAPs and NETs contained within the RD; the route's destination shall be one or more NSAP Address prefixes common to all NSAP Addresses and NETs in the RD. If restrictions on distribution scope are applied by local routing policy, then they shall not prevent distribution of this route to any member of the same ATN Island RDC.

   Note 2.— The well known discretionary attribute DIST_LIST_INCL may also be present. For example, to restrict the scope of the information to members of the ATN Island only. The RDIs of other RDs and RDCs may also be present at the discretion of the local Administrative Domain, and by bilateral agreement.

   Note 3.— The objective of this rule is to ensure that a member of a backbone RDC will tell all RDs within the island about itself.

b) The selected route to every Fixed ATN RD in the same ATN Island for which a route is available.

   Note 4.— The objective of this rule is to ensure that an ATN Router located in an RD that is a member of a backbone RDC, will tell all RDs within the island about all the fixed RDs it knows about.

c) A route to all AINSC mobiles and all ATSC Mobiles. The well known discretionary attribute DIST_LIST_INCL shall be present, and shall contain the RDI of the ATN Island RDC as its value.

   Note 5.— The objective of this rule is to tell the rest of the Island that each RD in the Backbone RDC provides a default route to all aircraft.

   Note 6.— The distribution scope of the route is limited because the ATN Island defines the domain of the default route provider. This route is invalid outside of the ATN Island.

   Note 7.— This route is formally the result of aggregating all the routes to mobile systems and routes to "Home" RDs, known to the ATN Router.

d) <u>A route to each Mobile RD for which the adjacent RD is advertising a route to the Mobile RD's "home".</u>

   <u>Note 8.— The objective of this rule is to ensure that a member of a backbone RDC will tell all adjacent off Backbone RDs about all routes to mobile RDs which have "home" routes advertised.</u>

3.7.1.3 Mobile RDs

Note 1.— These policy statements apply to the routes advertised by an ATN Router in an RD that is a member of a Backbone RDC to an adjacent ATN Router in a Mobile RD.

When IDRP is being used to exchange routing information with an airborne router, an ATN Router in an RD that is a member of a Backbone RDC shall provide to each adjacent Mobile RD a route to NSAPs and NETs contained within the RD for the Security RIB-Att; the route's destination shall be one or more NSAP Address prefixes common to all NSAP Addresses and NETs in the RD.

Note 2.— The objective of this rule is to ensure that an RD that is a member of a backbone RDC will tell all adjacent mobiles about itself.

Recommendation.— *An ATN RD that is a member of a Backbone RDC should also provide to each adjacent Mobile RD, and for the Security RIB-Att and for which a suitable route exists:*

a) *An aggregated route to NSAPs and NETs contained within the local ATN Island RDC;*

Note 3.— The objective of this rule is to ensure that an RD that is a member of a backbone RDC provides to each connected mobile RD, a route to all fixed ATN RDs within the island.

b) *An aggregated route to NSAPs and NETs contained within all other ATN Islands for which a route is available.*

Note 4.— The objective of this rule is to ensure that an RD that is a member of a backbone RDC will be willing to provide to each connected mobile RD routing information to the backbone of other ATN islands.

3.7.1.4 ATN RDs in other ATN Islands

Note 1.— These policy statements apply to the routes advertised by an ATN Router in an RD that is a member of a Backbone RDC to an adjacent ATN Router in a different RD, which is a member of a different ATN Island's ATN Island Backbone RDC.

An ATN Router in an RD that is a member of a Backbone RDC shall provide the following routes to each adjacent ATN Router that is a member of a Backbone RDC in another ATN Island, and for the Security RIB-Att :

a) An aggregated route to NSAPs and NETs contained within the ATN Island RDC.

Note 2.— The objective of this rule is to ensure that an RD that is a member of a backbone RDC will tell all adjacent RDs that are members of backbone RDCs in different ATN Islands about the local ATN Island.

b) A route to the common NSAP Address Prefix for each group of Mobile RDs for which the "home" exists on the RD's ATN Island.

Note 3.— The objective of this rule is to ensure that a backbone RD will tell all adjacent RDs that are member of a backbone RD in different islands about routes to mobiles whose "home" is in that island.

Note 4.— The "home" identified above needs not correspond to a geographical notion of a home.

Note 5.— The "home" is typically identified by an NSAP Address Prefix that identifies all the RD's belonging to the organisation responsible for the Mobile RD (i.e. aircraft),

or all the Mobile RDs belonging to the organisation. The former is only possible if all such Fixed RDs are part of the same ATN Island RDC.

c) A route to each Mobile RD for which the adjacent RD is advertising a route to the Mobile RD's "home".

Note 6.— The objective of this rule is to ensure that a member of a backbone RDC will tell all adjacent RDs in different islands about all routes to mobile RDs which have "home" routes advertised.

d) A route to each Mobile RD for which there is no known home.

Note 7.— The objective of this rule is to ensure that an RD that is a member of a backbone RDC will tell all adjacent RDs that are members of backbone RDCs in different ATN Islands about all of the Mobile RDs that they know about.

3.7.2 Routing Policy Requirements for a Mobile RD

When IDRP is being used to exchange routing information with an airborne router, a Mobile RD shall provide to each ATN RD to which it is currently connected, a route to NSAPs and NETs contained within the Mobile RD for the Security RIB-Att .

Note 1.— The objective of this rule is to ensure that a mobile RD will tell adjacent RDs about itself.

Note 2.— This policy statement applies to the routes advertised by an ATN Router in a Mobile RD to an adjacent ATN Air/Ground Router in a Fixed ATN RD.

3.7.3 Routing Policy Requirements for an ATN TRD that is not a Member of the ATN Island Backbone RDC

An RD that is a member of an ATN Island RDC, and is a TRD, but which is not a member of that ATN Island's Backbone RDC shall implement a Routing Policy that is compatible with the policy statements given in this section and its subordinate sections.

Note.— An ATN RD that operates as a transit routing domain is referred to in this section as an ATN TRD.

3.7.3.1 Adjacent ATN RDs that are Members of the ATN Island's Backbone RDC

Note 1.— These policy statements apply to the routes advertised by an ATN Router in an ATN TRD to an adjacent ATN Router in an RD which is a member of the local ATN Island's Backbone RDC.

When an ATN TRD that is not itself a member of a Backbone RDC is adjacent to an RD that is a member of an ATN Backbone RDC, then it shall provide the following routes to each such adjacent ATN RD, and for the Security RIB-Att :

a) A route to NSAPs and NETs contained within the RD; the route's destination shall be one or more NSAP Address prefixes common to all NSAP Addresses and NETs in the RD.

Note 2.— The well known discretionary attribute DIST_LIST_INCL may also be present. For example, to restrict the scope of the information to members of the ATN Island only. The RDIs of other RDs and RDCs may also be present at the discretion of the local Administrative Domain, and by bilateral agreement.

Note 3.— The objective of this rule is to ensure that an ATN TRD that is not itself a member of the Backbone RDC, will tell all adjacent ATN RDs which are members of the Backbone RDC about itself.

b) The selected route to every Mobile RD for which a route is available.

Note 4.— The objective of this rule is to ensure that a ATN TRD that is not itself a member of the Backbone RDC, will tell all adjacent ATN RDs which are members of the Backbone RDC about all mobiles it knows about.

c) The selected route to every Fixed ATN RD in the ATN Island for which a route is available.

Note 5.— The objective of this rule is to ensure that a ATN TRD that is not itself a member of the Backbone RDC, will tell all adjacent ATN RDs which are members of the Backbone RDC about all fixed RDs it knows about in the same ATN Island.

d) A route to each "Home" that the ATN TRD itself provides for Mobile RDs. This route has as its destination, the common NSAP Address Prefix(es) for those Mobile RDs.

Note 6. - The objective of this rule is to support the operation of the Home Domain concept on any ATN TRD directly connected to a Backbone RD.

3.7.3.2 Adjacent ATN RDs within the same ATN Island and which are not Members of the ATN Island's Backbone RDC

Note 1.— These policy statements apply to the routes advertised by an ATN Router in an ATN TRD to an adjacent ATN Router in an ATN RD on the same ATN Island.

An ATN TRD shall provide the following routes to each adjacent ATN RD within the ATN Island RDC, other than other ATN RDs which are members of the Backbone RDC, and for the Security RIB-Att

a) A route to NSAPs and NETs contained within the RD for the Security RIB-Att; the route's destination shall be one or more NSAP Address prefixes common to all NSAP Addresses and NETs in the RD.

Note 2.— The well known discretionary attribute DIST_LIST_INCL may also be present. For example, to restrict the scope of the information to members of the ATN Island only. The RDIs of other RDs and RDCs may also be present at the discretion of the local Administrative Domain, and by bilateral agreement, including the RDI of the Backbone RD or RDC, when the adjacent RD is providing the local RD's route to the Backbone.

Note 3.— The objective of this rule is to ensure that an ATN TRD that is not itself a member of the Backbone RDC, will tell all adjacent RDs within the island about itself.

b) The selected route to every Fixed RD in the same ATN Island for which a route is available.

Note 3.— The objective of this rule is to ensure that an ATN TRD that is not itself a member of the Backbone RDC, will tell all adjacent RDs within the island about all fixed ATN RDs in the same ATN Island that it knows about.

c) If the RD is currently advertising the preferred route to all AINSC and ATSC Mobiles, then every route to an AINSC Mobile and an ATSC Mobile that is known to the local RD shall be advertised to this RD, subject only to constraints imposed by any DIST_LIST_INCL and DIST_LIST_EXCL path attributes.

Note 4.- The objective of this rule is to ensure that the provider of the default route to all aircraft (i.e. the Backbone) is kept informed of the actual location of every aircraft adjacent to the Island.

d) The preferred route to all mobiles, except when the RD is the source of this route.

Note 5. - The objective of this rule is to ensure propagation of the default route to all mobiles throughout the ATN Island.

e) A route to each Mobile RD for which the adjacent RD is advertising the preferred route to the Mobile RD's "home".

Note 6.— The objective of this rule is to ensure routes to mobile RDs are propagated to off backbone Homes.

f) A route to each "Home" that the ATN TRD itself provides for Mobile RDs. This route has as its destination, the common NSAP Address Prefix(es) for those Mobile RDs.

Note 7. - The objective of this item is to ensure that all RDs in the ATN Island are aware that the identified "Homes" are located here.

3.7.3.3 Mobile RDs

Note 1.— These policy statements apply to the routes advertised by an ATN Router in an ATN TRD to an adjacent ATN Router in a Mobile RD.

When IDRP is being used to exchange routing information with the airborne router, an ATN TRD shall provide to each adjacent Mobile RD a route to NSAPs and NETs contained within the RD for the Security RIB-Att ; the route's destination shall be one or more NSAP Address prefixes common to all NSAP Addresses and NETs in the RD.

Note 2.— The objective of this rule is to ensure that an ATN TRD will tell adjacent mobile RDs about itself.

Recommendation.— *An ATN TRD should also provide to each adjacent Mobile RD, and for the Security RIB-Att and for which a suitable route exists:*

a) *an aggregated route to NSAPs and NETs contained within the local ATN Island RDC;*

b) *an aggregated route to NSAPs and NETs contained within all other ATN Islands for which a route is available.*

Note 3.— The objective of this rule is to encourage an RD to provide to each adjacent mobile RD routing information to: a) all fixed RDs within the island, and b) other ATN islands.

3.7.4 The Routing Policy for a Fixed ATN ERD

A Fixed ATN ERD shall provide to each ATN RD to which it is currently connected, a route to NSAPs and NETs contained within the RD, for the Security RIB-Att .

Note 1—. The well known discretionary attribute DIST_LIST_INCL may be present, unless the RD permits routes to destinations within itself to be advertised by other ATN RDs without restriction to any other ATN RD, or non-ATN RD.

Note 2.— These policy statements apply to the routes advertised by an ATN Router in a fixed ATN ERD to an adjacent ATN Router in an ATN RD.

Note 3.— An ERD does not advertise routes to destinations in any other RD, to another RD.