AMR-IX | A Community Internet Exchange

Policy Document
Version v1.2

This document is an agreement between the undersigned parties, defining the rights and obligations of participants in the AMR-IX.

Governance

Participation

Participants in the exchange are those parties that are both Signatories to this document and connected to the AMR-IX at OSI layers 1, 2, and 3. No party may connect to the exchange without first signing this document to indicate acceptance of its terms. Parties that have acceded to the terms but are not yet connected to the Exchange shall be referred to as Signatories.

The right to move from Signatory status to Participant status shall be conferred by judgment and action of the Governing Board, which shall not be withheld arbitrarily or for anti-competitive reasons. All networks are welcomed to participate regardless of legal form, regulatory or license status, nationality, or business model; technical capability to connect and willingness to abide by the terms and spirit of this document are the sole criteria for participation.

The Governing Board may withdraw the Participant status of a Signatory temporarily for operational reasons having to do with the technical functioning of the exchange, or permanently for policy reasons of noncompliance with the terms of this document. Defending the collective interest of the Participants in this manner is the principal responsibility of the Governing Board, and all Signatories indemnify and hold harmless the Governing Board, its individual members, and their employers for any damages consequent to the withdrawal of a Signatory's Participant status. Functionally, withdrawal of Participant status shall be accomplished by deactivating a participant's Exchange switch ports.

Any decisions regarding participation made by the Governing Board which are still in effect as of the next Regular Meeting of the Participants shall be ratified or revoked by a majority vote of the Participants at that meeting. All outstanding Governing Board decisions regarding Participant status may be ratified or revoked as a batch in a single vote at the meeting, provided that vote is unanimous. If a Participant's status has been downgraded to Signatory by action of the

Governing Board and that action is ratified by the Participants, the associated signature shall be struck from this document.

Finances and Liability

The Amaravati Internet Exchange Point shall not handle money. It shall not make or receive payments, nor act as a conduit for payments or indebtedness between other parties. Each Participant shall meet its own costs of participation in full, as shall other parties like facility operators and the Governing Board and its members. Neither AMR-IX nor its Participants are liable for any loss resulting from the use of the IX by any of its Participants. However, for operational expenses and personal training, the Amaravati People Foundation may accept donations. No non-signatory party shall have any rights under this document.

Meetings

Regular Meetings shall be held quarterly for the first year, semiannually for the second year, and annually in the third and subsequent years. Appropriate meeting intervals will be set as per the need and preferences of the then members of the IX.

The Governing Board shall notify the participants by email at least one week in advance of any meeting of the Participants. The Governing Board shall provide means for both in-person and remote participation.

The Governing Board shall be responsible for organizing the agenda of each regular meeting, reporting on any outstanding issues, and presenting any decisions which require ratification by the Participants. Meetings shall include a social period to encourage Participants to meet potential new peers, and may optionally include an educational session as well.

Following each meeting, draft minutes shall be publicly posted on the AMR-IX website and emailed to the Participants within one week, and the draft minutes shall be ratified or corrected by the Participants no later than the next Regular Meeting, whereupon they shall be publicly posted permanently to the AMR-IX website and emailed to the Participants.

All meetings shall be open to the public, but governance decisions shall be made by a vote of the Participants, with one vote per controlling entity among the Participants. Specifically, if multiple Participants share a common controlling entity, those Participants shall collectively be entitled to a single vote in any governance decision. While non-Participant parties, such as host facility operators, government representatives, and delegates from other IXPs, are welcome to attend meetings, they do not vote in governance decisions.

Governing Board

The Governing Board shall consist of five individuals, two lifetime members from AP Foundation and the rest elected by the Participants to represent the collective interests of all of the the Participants, and one appointed non-voting individual serving on behalf of the host facility operators. The elected members of the Governing Board stand and act in their individual capacity, not representing their employers.

The Governing Board, including the facility operator representative, shall be collectively responsible for completing all of the necessary work of the exchange, including but not limited to communications with Participants, Signatories, and the public; normal and emergency technical operation of the IX; and facilitation of all governance functions. The Governing Board may delegate the completion of individual tasks or areas of responsibility to other parties, but are themselves ultimately responsible for the completion of all necessary work.

The members of the Governing Board serve as volunteers, without compensation, and are not authorized to indebt the IX, AP Foundation or its Participants in any way.

Election of the Governing Board shall occur by secret ballot annually in conjunction with a Regular Meeting. Members of the Governing Board shall serve staggered three-year terms, such that one of the three elected seats shall be open for election every year. The process shall be started by awarding the highest vote-getter in the initial election a three-year term, the second vote-getter two-year term, and the third vote-getter one year term. After the expiry of these initial terms, all terms shall be for three years.

Operators of the facilities which host the IX shall be collectively entitled to a single non-voting observer seat on the Governing Board, and shall decide among themselves how that seat shall be filled, provided only that the individual shall be competent to do their share of the work of the Governing Board.

Modification of This Policy Document

This policy document shall be modified as needed by the Governing Board. All modifications are subject to ratification by a majority vote of the Participants no later than the next Regular Meeting. Significant modifications to the policy document should generally only be made after discussion among the Participants and arrival at a general consensus. Any modifications which fail to achieve ratification shall be immediately reversed.

Votes of No Confidence

At any time, a Vote of No Confidence may be called by a majority of the Participants, and such vote may concern any Governing Board member, action, or policy. Votes of No Confidence shall be conducted and presided over by an appointee of the Participants, and shall be by public ballot.

Layer 2 Technical Policy

Ethernet Frame Format

AMR-IX requires that participants utilize only Ethernet Version 2, DIX Ethernet, or 802.3 framing for Ethernet frames transmitted across the IX switch fabric.

Ethernet Data Types

While the IX does not prohibit any Ethernet Data Type, 0x0800 (Internet Protocol version 4, or IPv4), 0x86dd (Internet Protocol version 6, or IPv6), and 0x0806 (Address Resolution Protocol, or ARP) are explicitly recognized as the Data Types most frequently used, and any others may be subject to special scrutiny by the Governing Board.

Maximum Transmission Unit

All Participants must explicitly set a Maximum Transmission Unit (MTU) of 1500 bytes on any interface facing the IX switch fabric.

Broadcast Traffic

Broadcast traffic may not be transmitted on AMR-IX switch fabric except for ARP, IPv6 Neighbor Solicitation, and as required for multicast transmission.

Participant Port Congestion Management

Because the commonly-used five-minute average traffic statistics mask congestion-causing microbursts of traffic, Participant ports peaking above 85% average utilization within any five-minute period in any three consecutive days shall receive additional or larger AMR-IX core switch ports as necessary to bring the peak utilization below the upgrade threshold, and the Participant shall be obligated to use those ports to increase interconnection bandwidth to their

network at their own cost. Responsible Participants will proactively monitor traffic levels and anticipate the need for such upgrades.

If port congestion results in packet loss, the Governing Board may release this information in response to requests from other Participants. Members may gather statistics from their router's interface, but will not have access to the IX switch or interfaces

MAC Address Limitation

Participants may utilize a single layer-2 MAC address to connect a single layer-3 router to each port or LAG group allocated to them by the Governing Board. Change of MAC address (such as due to the replacement of Participants' router) may require explicit notification to the Governing Board. Any need for multiple MAC addresses on the same port or LAG group must be addressed through the Switch Fabric Extension policy.

Quarantine

Upon initial connection and subsequently if they deem necessary, the Governing Board may place a Participant's port into a separate "quarantine" VLAN for diagnostic purposes or to verify policy-compliant operation.

Switch Fabric Extension

A Participant or facility operator may wish to extend the IX switch fabric through the interconnection of an additional layer-2 switch, typically in another building. The prospective Operator of a switch fabric extension shall present a proposal to the Governing Board including full technical documentation. This proposal shall be published for comment by the Participants and the public for a period of no less than two weeks, following which the Governing Board shall determine whether the Operator may perform the proposed interconnection. Approved extensions shall be allocated a port or LAG group on AMR-IX core switch of sufficient capacity to accommodate immediately projected traffic, and that port shall not have static MAC address limitations imposed. Participants exist in a single class, regardless of whether they connect to the IX core switch or an extension switch. They receive their peering subnet IP addresses directly from the Governing Board, not the Extension switch fabric Operator, and are subject to all of the same rights and responsibilities defined in this document, in addition to any requirements imposed by the Operator of the extension switch through which they're connected.

No more than one switch fabric extension proposal shall be entertained at a time, and any subsequent modifications to the interconnected equipment shall be subject to prior approval by the board. The Operator shall be responsible for maintaining documentation of all layer-2

devices comprising the switch fabric to the Governing Board's satisfaction, and such documentation shall always be available to the Governing Board.

Switch fabric extensions proposals shall be judged on their technical merits and the apparent competence of the proposed Operator. The Governing Board shall not withhold approval for a switch fabric extension for anti-competitive reasons.

Switch Fabric Extension Congestion Management

Because the commonly-used five-minute average traffic statistics mask congestion-causing microbursts of traffic, extension ports peaking above 65% average utilization within any five-minute period in any three consecutive days shall receive additional or larger AMR-IX core switch ports as necessary to bring the peak utilization below the upgrade threshold, and the extension Operator shall be obligated to use those ports to increase interconnection bandwidth to their extension switch at their own cost. Responsible extension Operators will proactively monitor traffic levels and anticipate the need for such upgrades.

If an extension port peaks above 90% utilization, or if there is active packet loss, the Governing Board shall notify Participants connected to the extension switch.

Layer 3 Technical Policy

IPv6 Transport of BGP

Technically, IPv4 routes and IPv6 routes may be exchanged over IPv4 transport, IPv6 transport, or both. In order to reduce complexity the AMR-IX recommends that, where feasible, Participants carry both IPv4 and IPv6 BGP routes over a single IPv6 transport session.

Next Hop Self

In order to prevent the propagation of third-party routes, participants must set NEXT_HOP_SELF on all routes advertised through AMR-IX.

Public Autonomous System Numbers

Participants shall use public Autonomous System Numbers allocated uniquely to them by a Regional Internet Registry. Participants may not use private, reserved-range Autonomous System Numbers.

Routing Aggregation

Participants are encouraged to aggregate their IP prefix announcements into the fewest prefixes feasible, in accordance with best practices. Disaggregation for purposes of "traffic management" places a burden on peers and the rest of the network and creates a detrimental externality.

Prefixes Advertised

All IP prefixes advertised at AMR-IX must be delegated for unique use by a Regional Internet Registry, and the Participant advertising them must have the legal right to do so clearly conferred to them by the current registrant.

No Broadcast Protocols

In order to reduce unnecessary broadcast traffic, Participants must disable Interior Gateway Protocols, service discovery protocols, and other broadcast protocols toward AMR-IX. Participants must filter IP directed broadcast packets addressed to the IX broadcast addresses before they reach the IX peering subnets.

No Pointing default

Participants may not direct traffic to others unless it has been solicited via the routing announcement of a matching prefix directly to the Participant or via a commonly agreed-upon route server.

No Redistribution of the IXP Prefixes

Participants may not propagate the IXP IPv4 or IPv6 peering prefixes in any routing protocol. AMR-IX suggests that Participants set Next-Hop-Self towards peers within their own AS, in order to avoid having to carry the IXP prefixes as next-hops for their iBGP internal peers.

No Transit Through the Switch

While the Participants hope that AMR-IX will serve as a marketplace for diverse Internet services in AMR-IX, the IX switch fabric itself is a constrained and shared resource. In order to avoid a tragedy of the commons, the Participants agree to not provide IP transit service across the switch. Instead, IP transit services should be provided across other media, such as private crossconnects.

No Transport Through the Switch

Participants shall not routinely exchange traffic between ports under their own control.

General

Confidentiality

Members of the Governing Board will necessarily be privy to confidential information of the Participants occasionally including, among other things, the content and volume of Participants' traffic and port error statistics. The Governing Board and its individual members shall not collect or store such information except where necessary to perform their duties, shall treat its confidentiality with at least the same duty of care that they would their own similar information, and shall never utilize this information for other purposes, such as the competitive advantage of their employer. The Board may gather statistics or conduct any other analysis of the IX facilities for planning purposes. The Board may publish graphs of traffic over the IX facilities, but the graphs must be an aggregate of a minimum of three networks and not allow for any one member's traffic to be easily discernible. The Board shall keep confidential all per-port (per-member) usage statistics.

Public Documentation

The Governing Board shall publish this policy document in current and historical versions, and other documents of the IX, including meeting minutes, aggregate traffic statistics, contact information, technical documentation about the operation of the exchange, and instructions for parties contemplating participation. Any document shall be considered "published" if it has been posted to AMR-IX web site and the Participants have been notified by email.

Contact and Peering Information

Each Participant shall maintain current and accurate information publicly available on the IX website, for peering, network operations, and security/abuse. Contact information shall include, at a minimum, an email address and a telephone number, both of which reach a responsible person during the Participant's operational hours. If the Participant's operational hours are not 24/7, or the Participant fails to respond to urgent communications promptly during operational hours, the Governing Board may temporarily deactivate the Participant's exchange switch ports as they deem necessary in their sole judgment to preserve the health of the exchange.

Communication

Each Participant is obligated to subscribe to, and monitor, AMR-IX participant mailing list. Official communications between the Governing Board and the Participants shall be made through the mailing list, or noticed on the mailing list and published on the web site. All messages sent to the IX participant mailing list shall be publicly and permanently archived on the IX website.

Publicity

Only the Governing Board and its delegates may speak officially on behalf of the IX. Signatories or Participants who wish to mention the IX in communications with the press are requested to coordinate with the Governing Board in advance as a matter of courtesy. Particular care should be taken in discussing any outage or service disruption, as statements may easily be construed as relevant to the status or operations of other Participants. No right is granted to Participants to use other Participants' names, logos, or other information in public communication.

Law Enforcement Coordination

The Governing Board shall have responsibility for operational coordination with law enforcement, and shall abide by the laws of the land as then in effect and law enforcement requests that are properly formed and presented under those laws. The Board may conduct packet sniffing or monitoring activities only for maintenance or security matters, or in response to and as required by a lawful order that comes from a court with jurisdiction over the IX. If the IX is compelled by law to disclose any information of a Member, the IX shall provide the Member with prior notice of such compelled disclosure (to the extent legally permitted) and provide reasonable assistance, at the Member's cost, if the Member wishes the IX to contest the disclosure.

Counterparts, Versions, and Precedence

This document may be executed in one or more counterparts, each of which shall be deemed an original and all of which, taken together, shall constitute one and the same document. The master copy of this document shall be maintained on the IX web site, and takes precedence over any prior versions. It forms the whole agreement between the parties and replaces any previous arrangement, understanding or agreement between them relating to the matters addressed in this document.

Intellectual Property

This document is published under a Creative Commons Attribution-ShareAlike 4.0 International License, which is included by reference. In turn, this document is derived in part from the Packet Clearing House Internet Exchange Point Policy Documents reference and in part from the Seattle Internet Exchange Point policy document.

Governing Law

This document is governed by the laws of Andhra Pradesh and is subject to the jurisdiction of the courts of Amaravati.

Agreed

On behalf of

Organization:

by Signature:

Printed Name:

Title:

on Date:

On behalf of

Organization:

by Signature:

Printed Name:

Title:

on Date: