

# SAIX Technical Requirements

## 1. Purpose of the Document

This document is to provide SAIX technical requirements for member's connectivity.

NOTE: Below is the basic requirements to be SAIX member, and once it is approved by MCIT other prerequisite points can be shared based on the needs.

## 2. Terminologies and Definitions

Terminologies used herein but not otherwise defined shall have the same meanings:

**SAIX:** Refers to **Saudi Arabian Internet Exchange**, where many members can peer together to interconnect their networks.

**MCIT:** Refers to **Saudi Arabia Ministry of Communications and Information Technology**

**Member:** Refers to a beneficiary from the services provided by SAIX, it can be any one has public ASN.

**DSP:** Refers to a licensed **Data Service Provider** in the Kingdom of Saudi Arabia, which is responsible for providing a service data circuits from one point to another point, or data communications through a switched data network, including without limitation: Broadband Services, Virtual Private (VPN) Services, Digital Leased Line Services, Internet Protocol (IP) Services, Asynchronous Transfer Mode (ATM) Services, Frame Relay Services, Wavelength Services International Data Gateway Services, and International Data Transit Traffic Services.

### 3. NOC Contact and Datacenter Location

SAIX NOC team actively monitor the SAIX infrastructure 24/7, Members can report problems and inquiries to NOC via email ([support@saix.sa](mailto:support@saix.sa)) or phone ([+ 966 9200 07537](tel:+966920007537)).

SAIX datacenter is located at King Abdulaziz City for Science and Technology main premises in Riyadh. Map coordinates are (24°43'19.0"N 46°37'55.9"E).

### 4. Technical Requirement

#### 4.1 Layer-1 Requirements

**4.1.1** Members may install L3 device at SAIX datacenter or connect to SAIX datacenter via any licensed DSP located at Kingdom of Saudi Arabia.

**4.1.2** Interface media technology used are Ethernet only. Ethernet interfaces attached to SAIX ports shall be explicitly configured with duplex, speed, and other configuration settings and shall not be auto-sensing.

**4.1.3** Physical Interfaces provided are 1G, 10G and 100G.

**4.1.4** Members shall provide their own devices and SFPs.

**4.1.5** SFPs and fiber provided are single mode or multimode (Defined in advance):

- Single mode connection if one of the peers are outside SAIX datacenter.
- Multimode mode connection if the two peers are inside SAIX datacenter.
- SAIX only provide connectivity that compatible with the following SFP's types:

| SFP         | Type            |
|-------------|-----------------|
| <b>100G</b> | QSFP-100G-SR4-S |
|             | QSFP-100G-LR4-S |
| <b>10G</b>  | SFP-10G-SR      |
|             | SFP-10G-LR      |
| <b>1G</b>   | GLC-SX-MMD      |
|             | GLC-LH-SMD      |

## 4.2 Layer-2 Requirements

**4.2.1** Frames forwarded to SAIX ports shall have one of the following ether types:

- 0x0800 - IPv4
- 0x0806 - ARP
- 0x86dd - IPv6

**4.2.2** Frames forwarded to an individual SAIX port shall have the same registered source MAC address, if more than one address learned by port, SAIX team has the authority to disable the port. If a member has the intention to change the registered source MAC address, he shall submit change request to SAIX support team.

**4.2.3** Frames forwarded to SAIX ports shall not be addressed to a multicast or broadcast MAC destination address, except as follows:

- Broadcast ARP packets.
- Multicast IPv6 Neighbor Discovery (ND) packets.
- If explicitly allowed for that port (e.g. multicast service).

**4.2.4** ARP traffic shall not exceed 20 bps per port/VLAN.

**4.2.5** Allowed Ethernet MTU size = 1600 bytes.

**4.2.6** Member's port default setting will be untagged access port and will be tagged by SAIX based in VLAN requirements.

**4.2.7** Members shall connect to SAIX using VLAN provided by SAIX.

**4.2.8** Member's interfaces connected to SAIX ports shall be a Layer-3 interface. Therefore, PBDUs will not be allowed and SAIX has the right to disable the port for any violations.

**4.2.9** CDP, LLDP and VTP protocols are not permitted from SAIX side.

### 4.3 Layer-3 Requirements

**4.3.1** Member's interfaces connected to SAIX ports shall have IP addresses and subnet masks assigned by SAIX. In particular:

- IPV4 & IPV6 addresses are assigned by SAIX and members are not permitted to change the IPs without SAIX approval.
- IPv6 addresses (link & global scope) shall be explicitly configured and not auto-configured.
- IPv6 site-local addresses shall not be used.

**4.3.2** IP packets addressed to SAIX peering LAN directed broadcast address shall not be automatically forwarded to SAIX ports.

### 4.4 Route server information

**4.4.1** SAIX operates BGP route server to facilitate the exchange of BGP announcements between members, they need only to establish a BGP connection with the route server in order to exchange BGP announcements with other members.

**4.4.2** (Optional) Two EBGP sessions at least will be established with two different SAIX Route Servers (RS), to ensure service availability.

**4.4.3** SAIX BGP session parameters:

|                        | IPv4          | IPv6           |
|------------------------|---------------|----------------|
| <b>Peering Network</b> | 45.95.12.0/23 | 2001:1497::/64 |
| <b>RS1</b>             | 45.95.12.5    | 2001:1497::5   |
| <b>RS2</b>             | 45.95.12.6    | 2001:1497::6   |
| <b>ASN</b>             | 20759         |                |

## 4.5 Routing

**4.5.1** Routes exchange across the SAIX network shall be via BGPv4 and/or BGPv6 routing protocols.

**4.5.2** Public AS numbers shall be used in BGP sessions across the SAIX network.

**4.5.3** Bogons or Martians IP address as defined in (RFC1918, RFC5735 and RFC6598) as well as default route will be dropped if the routes pass through SAIX route servers.

**4.5.4** Updates with ASNs in the AS-PATH as defined by (RFC5398, RFC6793, RFC6996, RFC7300 and RFC7607) will be dropped if it passes through SAIX route servers.

**4.5.5** IP address space assigned to SAIX peering LAN shall not be advertised by members to other networks without explicit permission of SAIX. All routes advertised across the SAIX network shall point to the router advertising it unless a written agreement has been made in advance by SAIX and members involved.

**4.5.6** SAIX Route Servers will only accept updates that originated from member's ASNs or their behind customers based on the member's AS-SET.

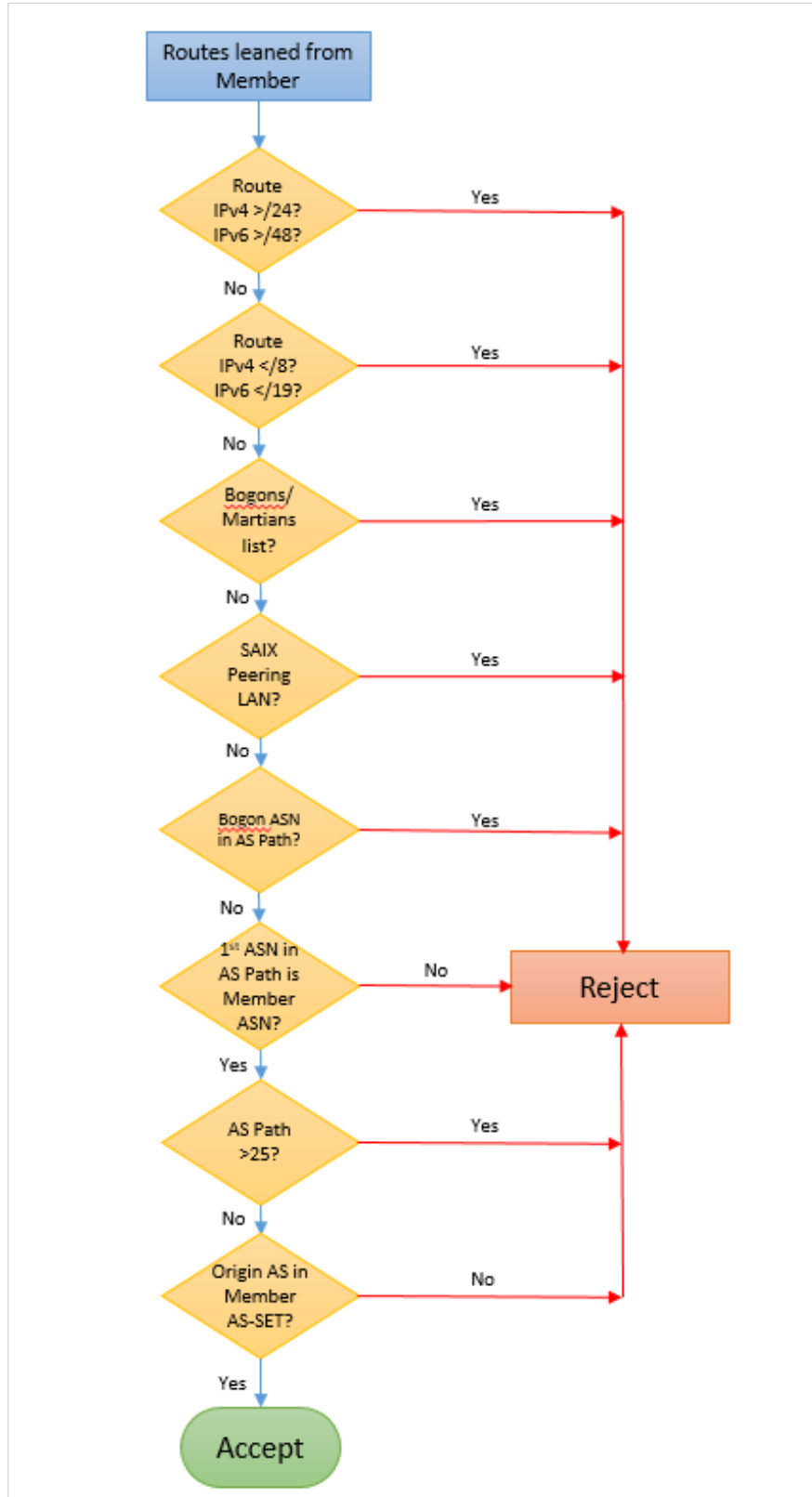
**4.5.7** Maximum number of allowed routes will be defined and agreed in advance based on the expected numbers for each member. The peering sessions will be disabled once the maximum number are exceeded.

**4.5.8** Due to route-server functionality, Members that will peers with SAIX Route Servers have to disable the default behavior for BGP which deny incoming updates received from EBGPeers that don't list their AS number as the first segment in the AS\_PATH attribute (ex. CISCO IOS "no bgp enforce-first-as").

**4.5.9** Traffic shall be forwarded to members when permission has been given by the receiving members by advertising a route across the SAIX network:

- Through the route servers.
- Through direct peering between members.

**4.5.10** SAIX only accept routes that passing specific conditions and the following flow chart is the SAIX **Route-Acceptance Policy**.



## 4.6 BGP Operational Communities

**4.6.1** Member shall tag their routes on BGP announcement using SAIX **BGP Operational Communities**, as per the following:

- Use community 20759:20759 for allowing the route servers to redistribute member's routes to all (other) peers.
- Use community 0:20759 to have the route servers not redistribute member's routes to any peer, the same behavior if prefix without any tagged community.
- Use communities (20759:20759) (0:PEER-AS1) (0:PEER-AS2) for allowing the route servers to redistribute member's routes to all (other) peers except PEER-AS1&2.
- Use communities (0:20759) (20759:PEER-AS1) (20759:PEER-AS2) for allowing the route servers to redistribute member's routes only to PEER-AS1&2.
- As per requirements new communities will be shared.