“TALE OF A NEW BANGLADESHI NIX”

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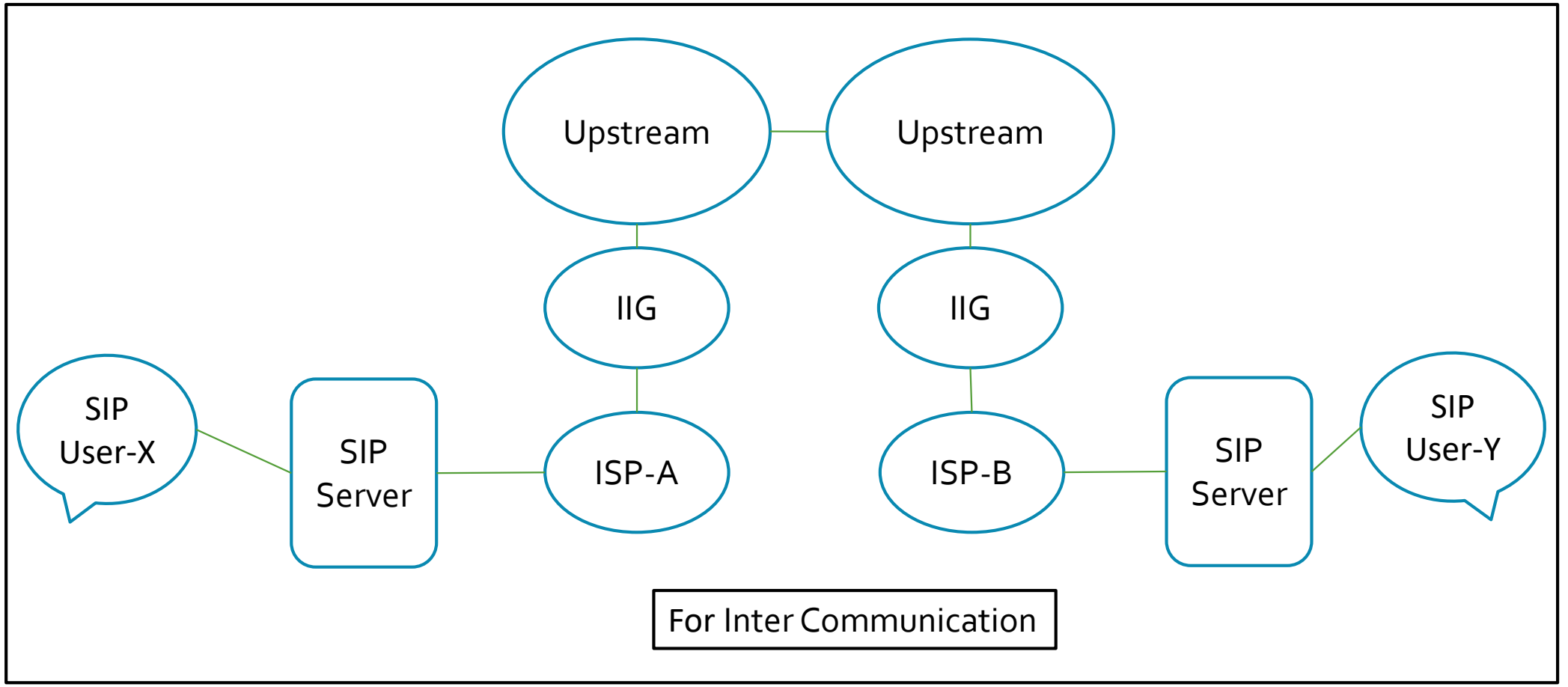
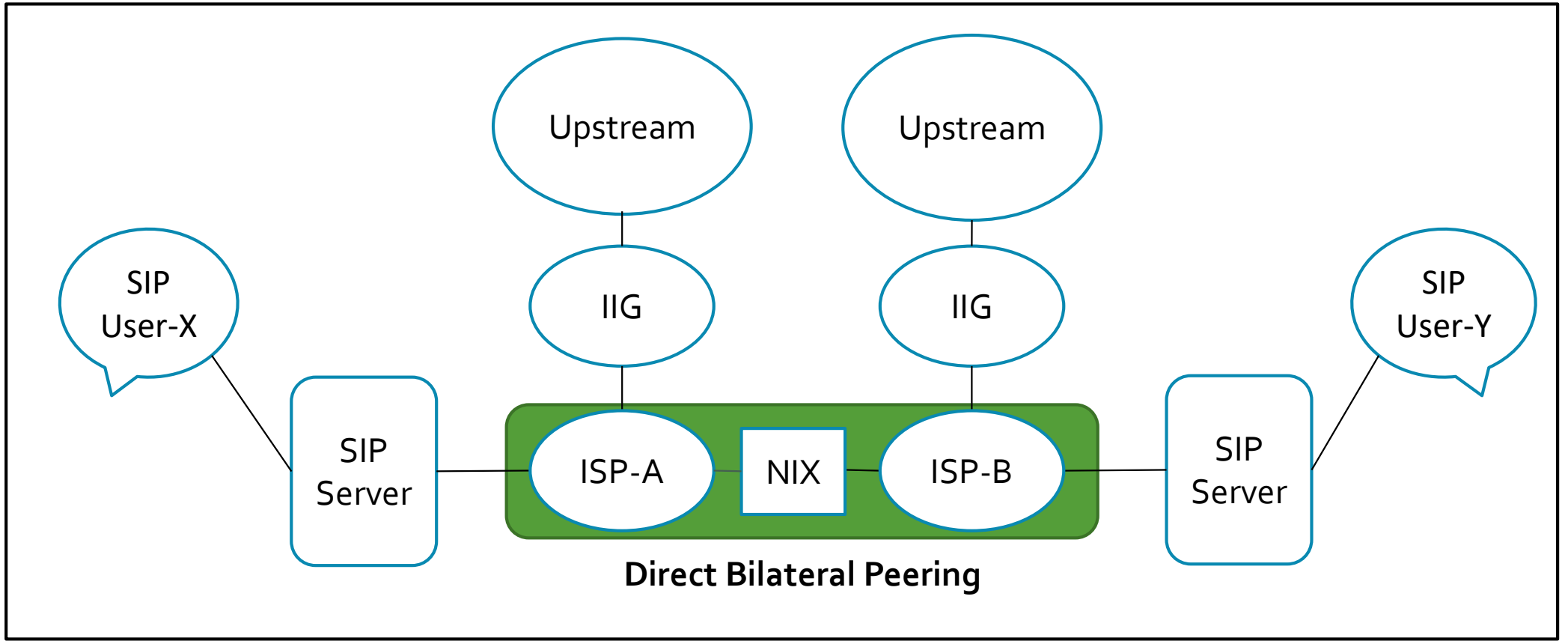
Before Setting up NIX? Just an Example…



What the situation was like Before setting up NIX?

- No shorter, no more direct routes for Internet traffic than NIX.
- Costs significantly more than NIX
- Maintenance is not easy.
- QoS Measurement.

The Current Scenario with NIX



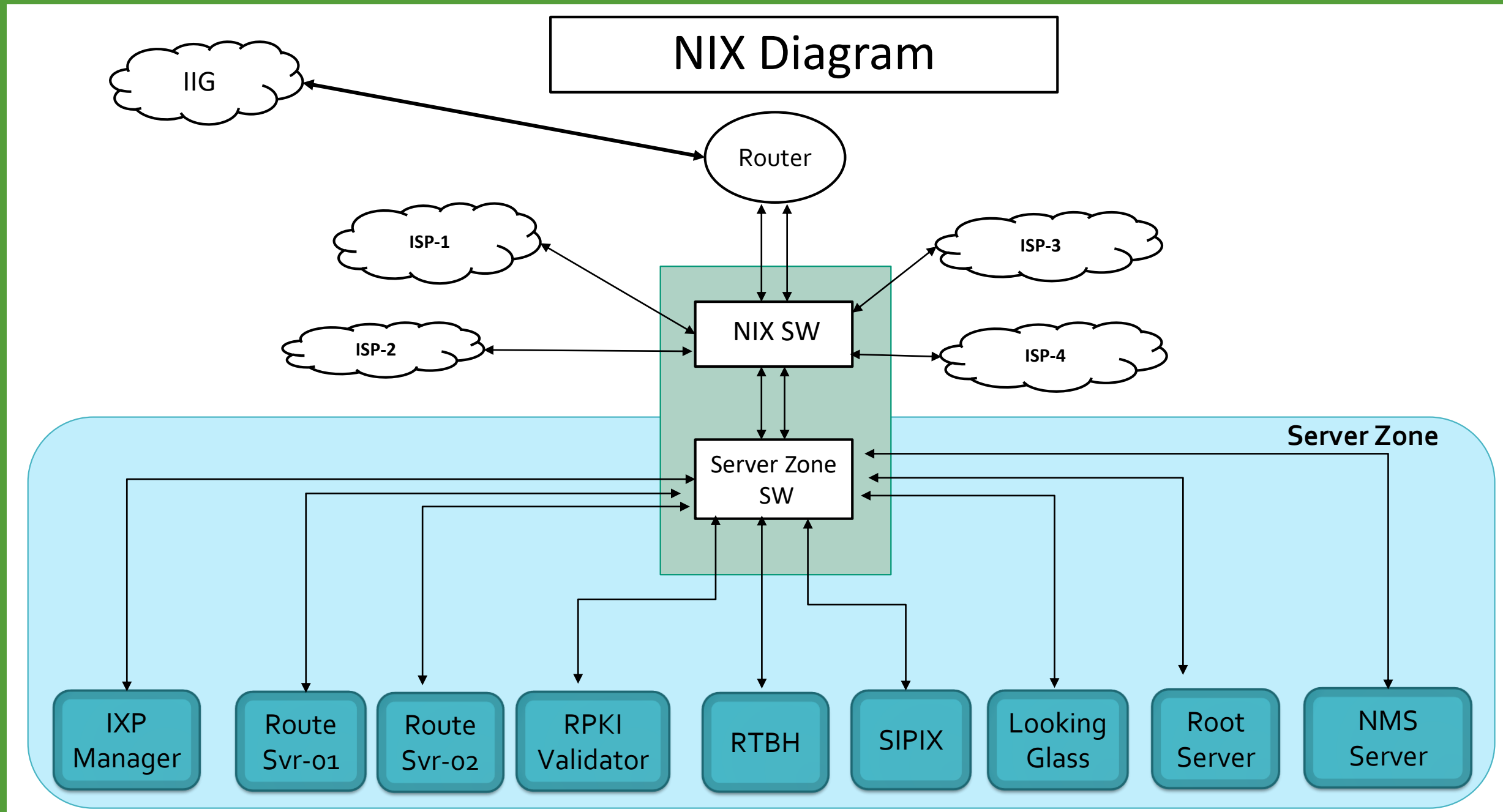
How the current NIX helped improve the situation?

- Provide a more affordable alternative to sending local Internet traffic abroad.
- Reduced latency with a better quality of experience.
- High-speed data transfer.
- Enhanced Routing efficiency.
- More Cost Effective
- Better performance, better QoS
- Drop the Undesirable Traffic
- Route Origin Validation

Non Technical Challenges

- **Collaboration and Building Trust:**
  Building an IXP is major part of social engineering and minor part of technical engineering.
- **Neutral Location and Management:**
  IXP must be placed as neutral place as possible, with the operator independent of outside influence.
- **Enabling Environment:**
  Efficient operation of IXP is easier in markets where more communications liberalization has taken place..

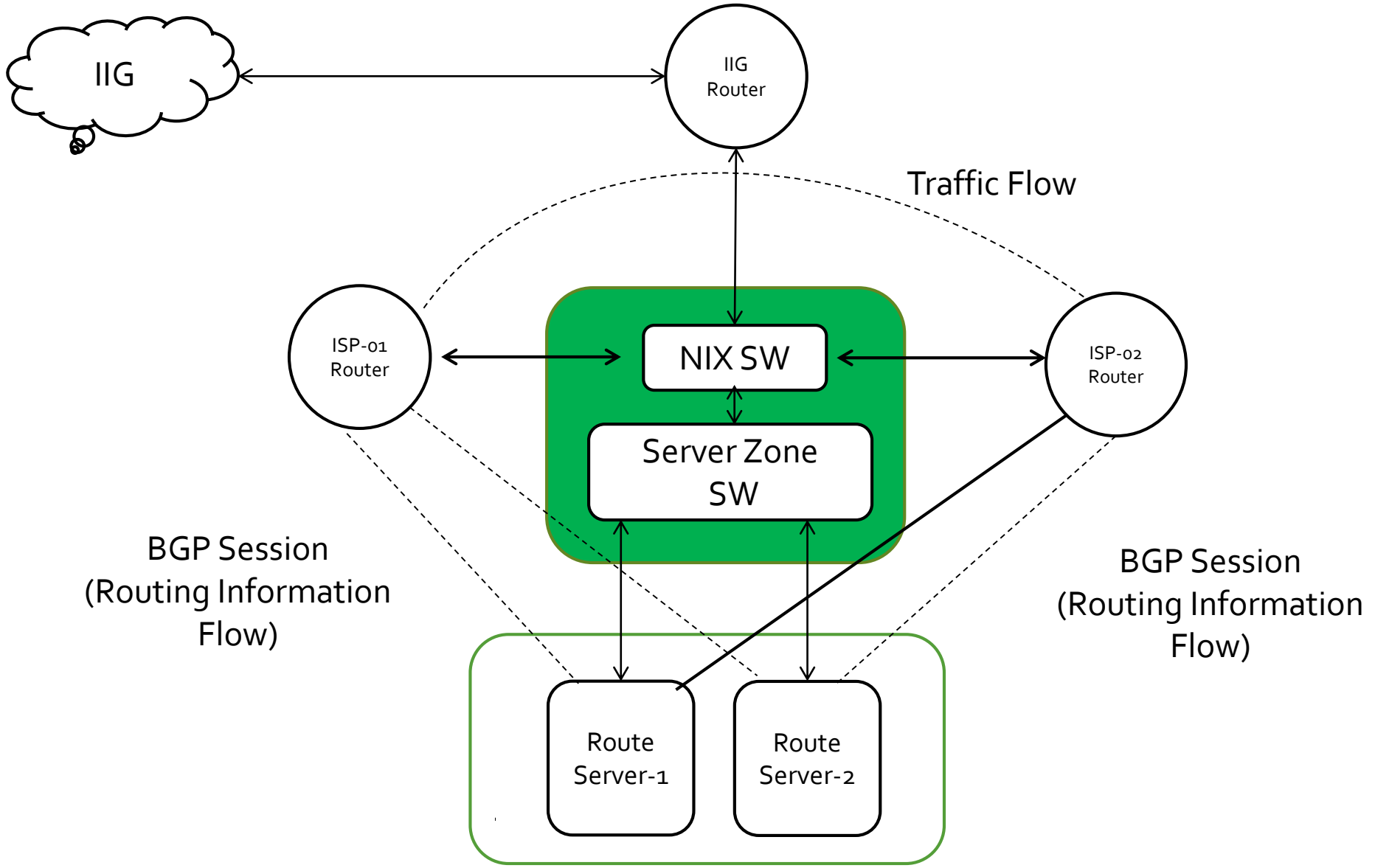
Brief Story of the NIX Deployment Journey……


NIX Diagram
IIG
Router
ISP-1
ISP-2
ISP-3
ISP-4
NIX SW
Server Zone SW
Server Zone
IXP Manager
Route Svr-01
Route Svr-02
RPKI Validator
RTBH
SIPIX
Looking Glass
Root Server
NMS Server

We have deployed Route Server for Multilateral Peering

By connecting to a route server, there is no need to establish individual BGP sessions with each network; on the contrary, the route server allows for multilateral peering. One connection enables traffic exchange with all participants peering with the route server.

Operational View of a Route Server



How **Challenges** we have faced during the **“Route Server”** Deployment

⇨ Route Server Selection: **Router** or **Linux Server**

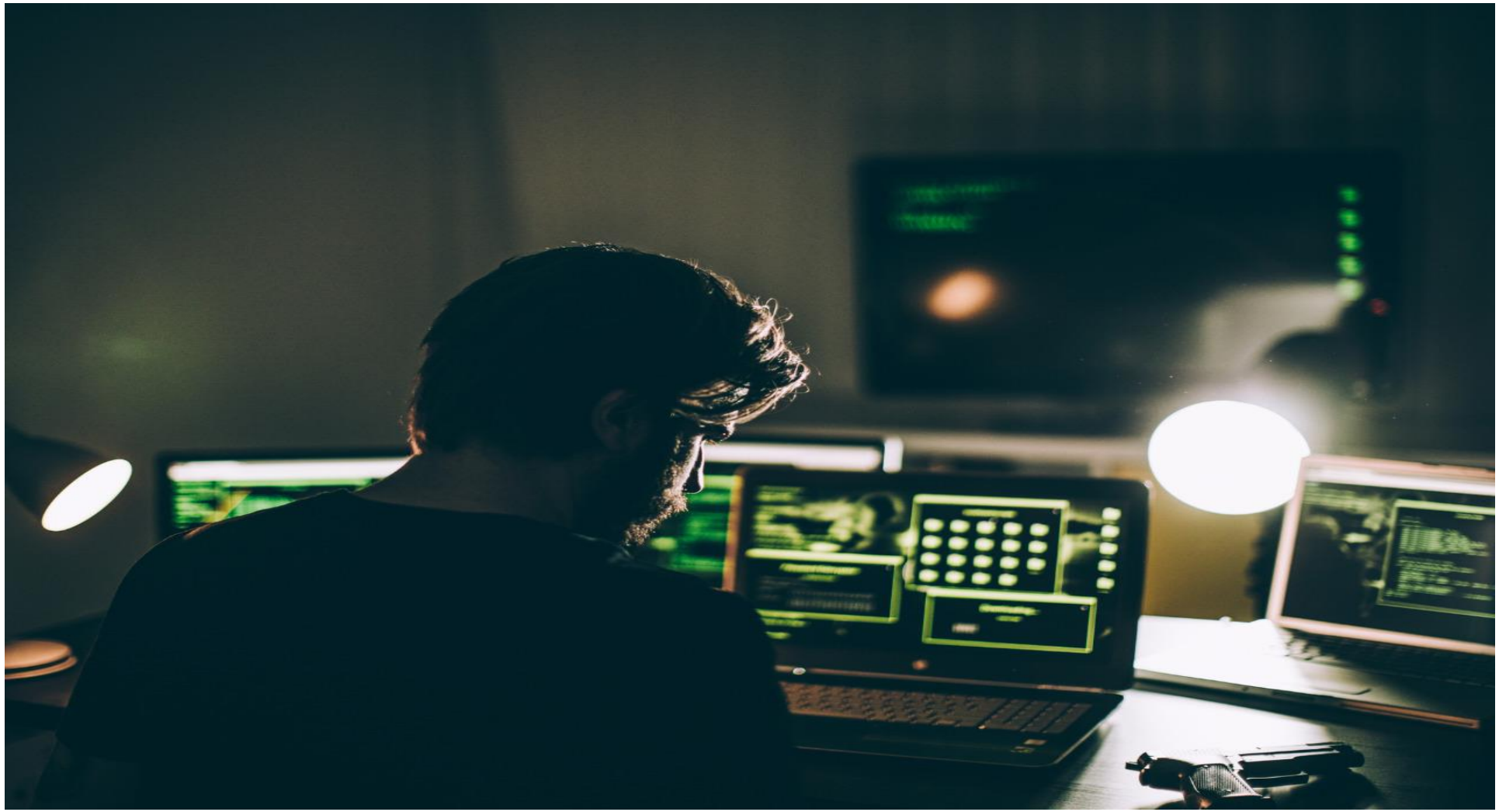
⇨ “Open source” **Routing** daemon Selection:

- BIRD
- GoBGP
- OpenBGPd:
- FRR (fork of Quagga)
- Quagga (LINX fork)

BIRD is used in several Internet Exchanges, such as the London Internet Exchange (LINX), LONAP, DE-CIX and MSK-IX as a Route Server, where it replaced Quagga because of its **scalability issues**.

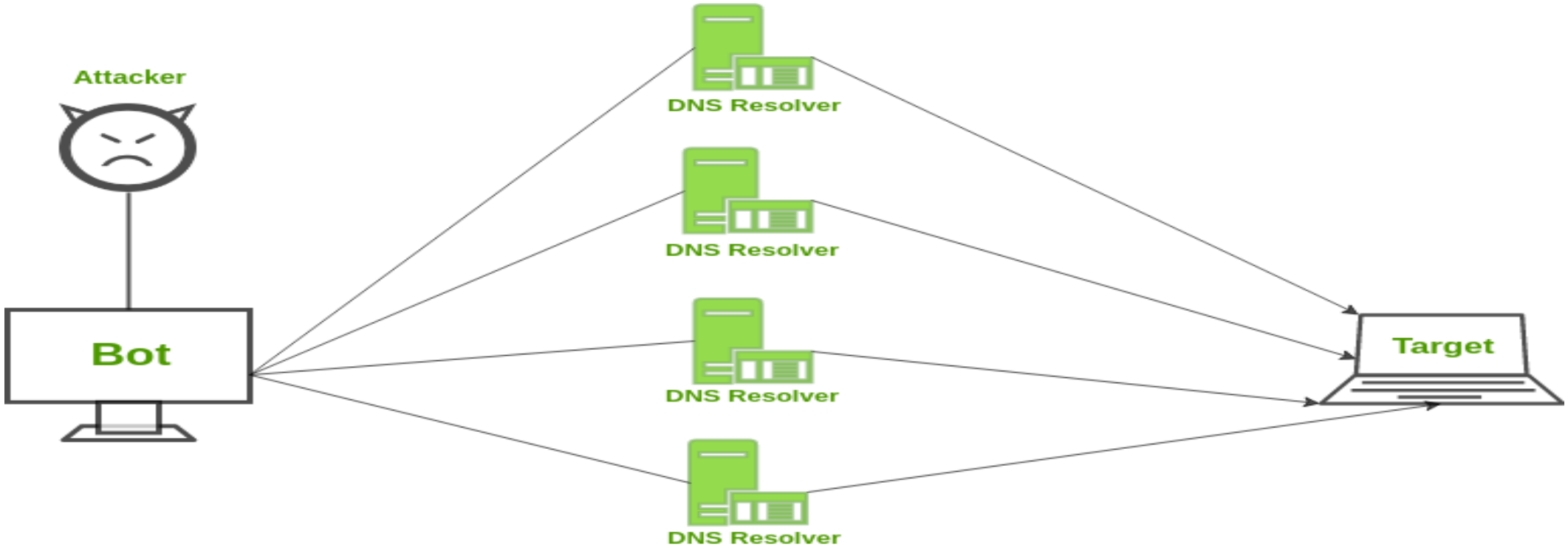
⇨ **BIRD Version** Selection:

- Version 1.6, 1.7, 2.0.7, 2.0.8, 2.0.9, 2.0.10 (**27.6.2022 - New release)**



Challenges to ensure the Security……

Challenge-01: Drop the Undesirable Traffic



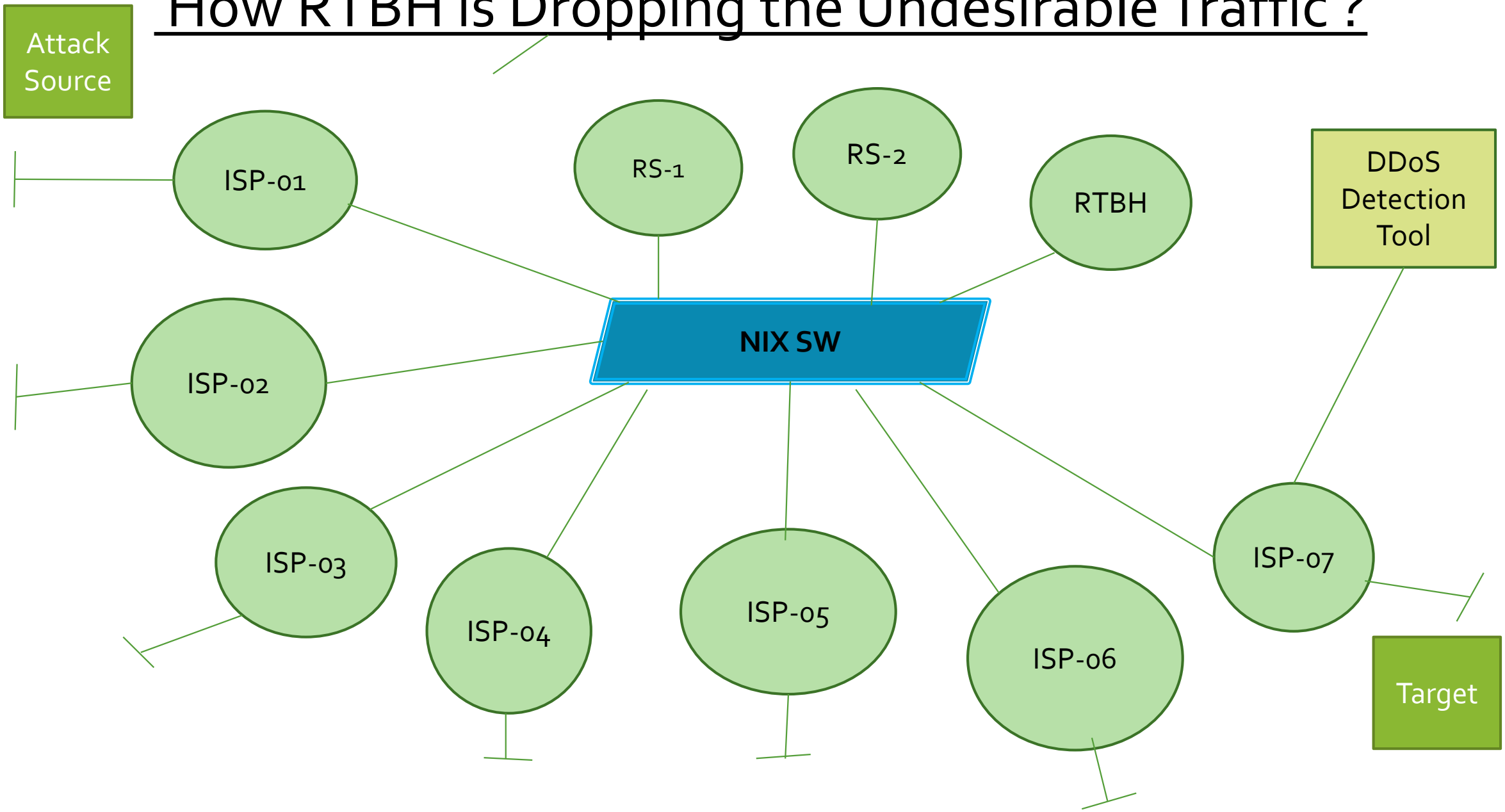
DDoS Attack

To Overcome the Challenge for Drop the Undesirable Traffic

Expected Solution:

1. BGP Flow Spec Implementation
2. RTBH Implementation

How RTBH is Dropping the Undesirable Traffic ?



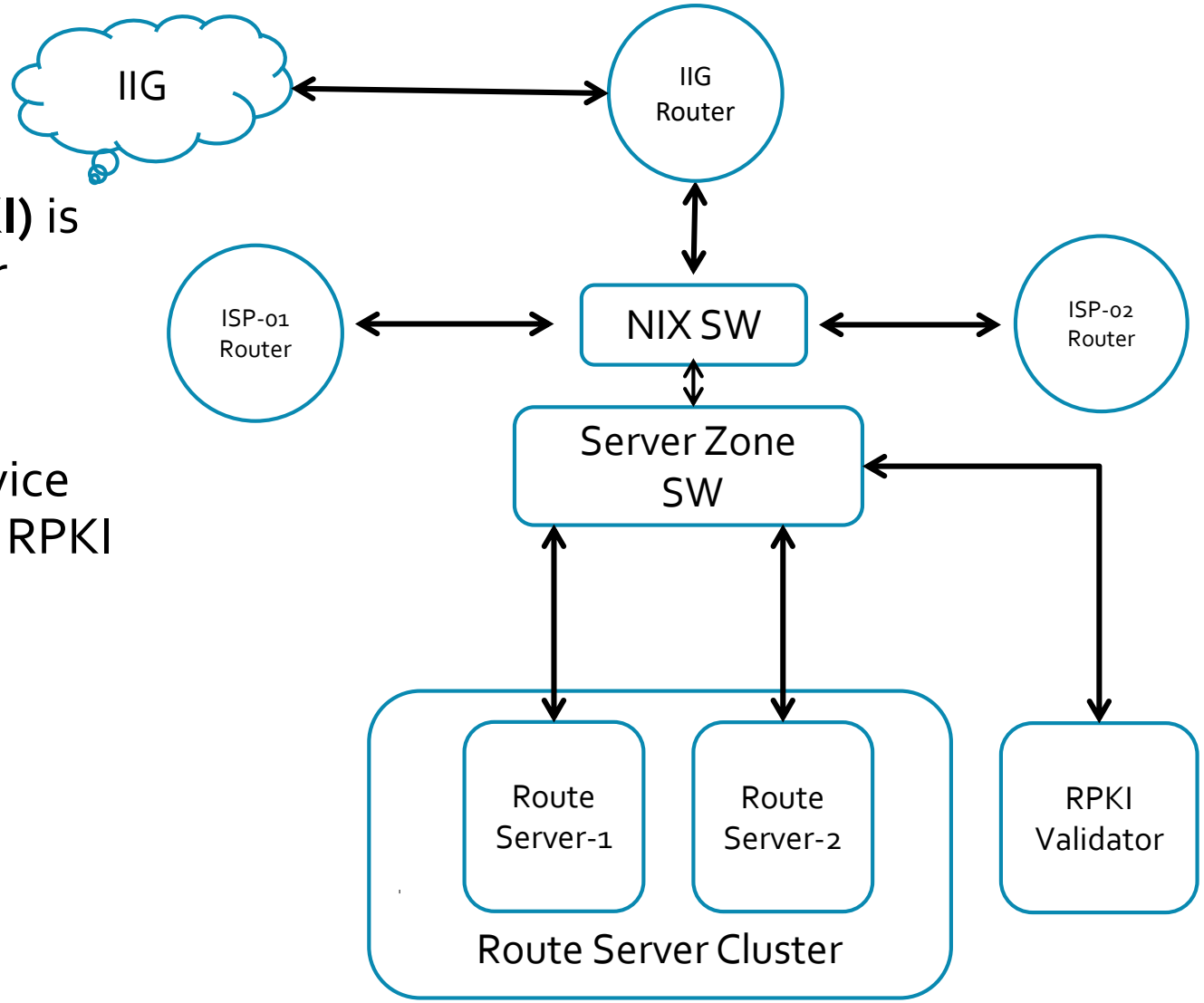
Challenge-02: Route Origin Validation

Validate BGP prefixes advertised by networks constituting the Internet.

RPKI Validator Deployment

Resource Public Key Infrastructure (RPKI) is an opt-in service that provides security for Internet routing.

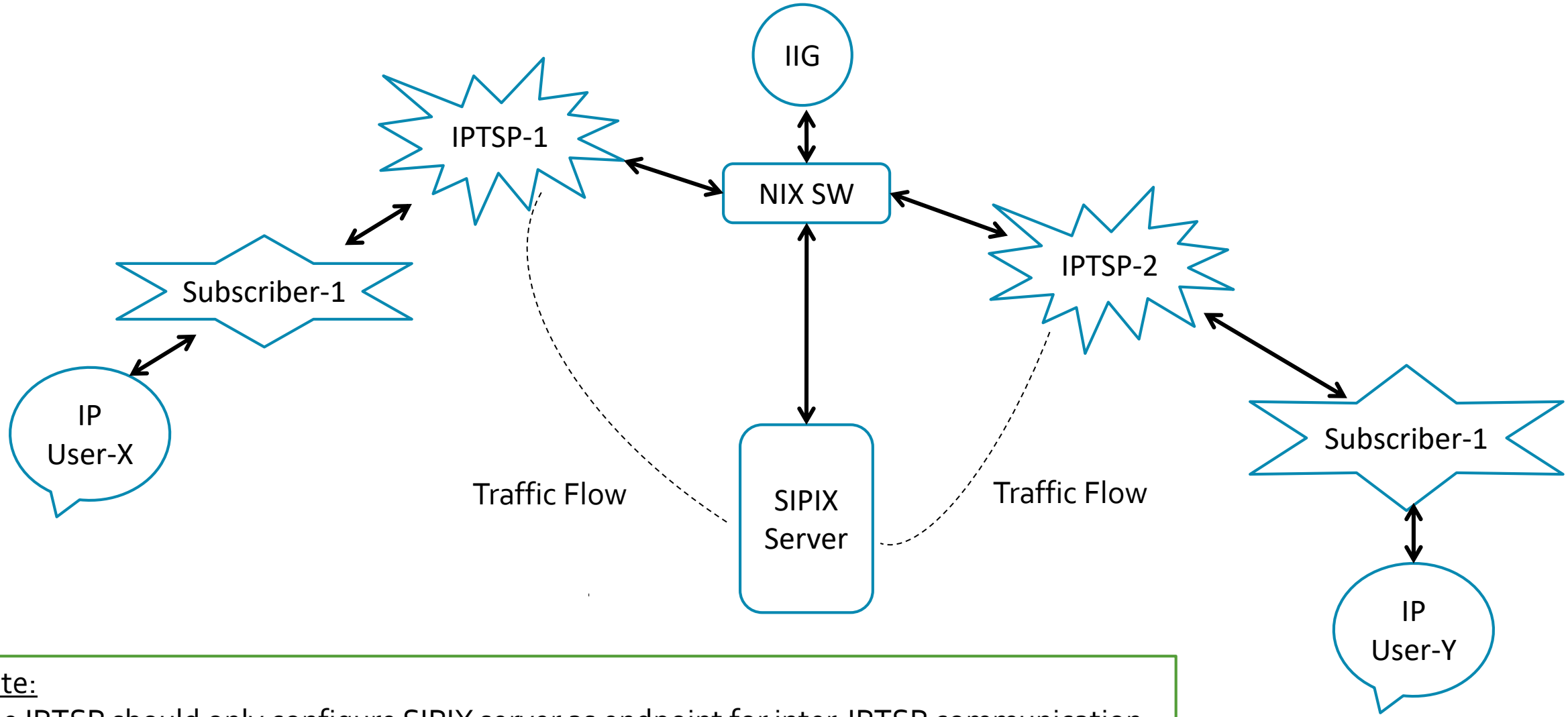
Routinator is a full-featured RPKI Relying Party software package that runs as a service which periodically downloads and verifies RPKI data



IPTSP

Buildup the Inter Communication
Between
IPTSP to IPTSP for Call Forwarding

SIPIX Diagram for Inter Communication



Note:
One IPTSP should only configure SIPIX server as endpoint for inter-IPTSP communication.

Major Challenges What We have faced for SIPIX

Challenges:

- Unlimited concurrent calls.
- Minimum Call Setup Time.
- Ensure High Voice Quality all time.
- Ensure High Availability

What Initiatives we have taken against the Challenges

- Unlimited concurrent calls is depends on No. of Cores & RAM.
  I have allocate more Core and RAM for the SIPIX Server as required.

- Minimum Call Setup Time is depends on Optimized Routing.
  We have worked to do the same as required.

- To Ensure High Voice Quality all time, We have provided **G711 Codec.**

- To Ensure High Availability, we are working for the same.

Root Servers

Root Servers are responsible for directing each domain name lookup request to its respective nameserver.

Root Server Anycast Instances Deployment

Deployment Challenges:

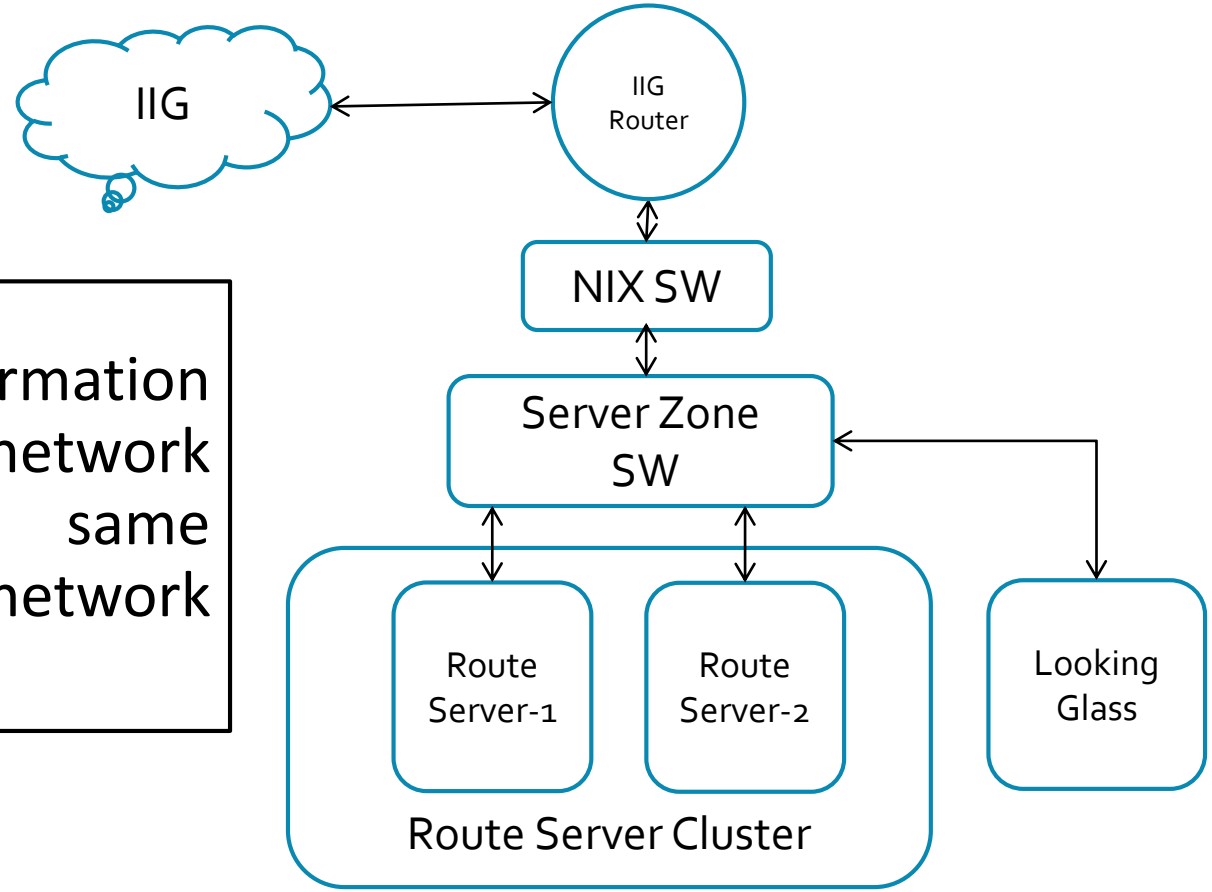
1. Meet the Requirements of the Operators for the ROOT Instance.
2. Availability of the Equipment's as need for deployment.
3. Deployment Plan for the Anycast Root DNS for the Specific Region.

Initiatives for the Deployment:

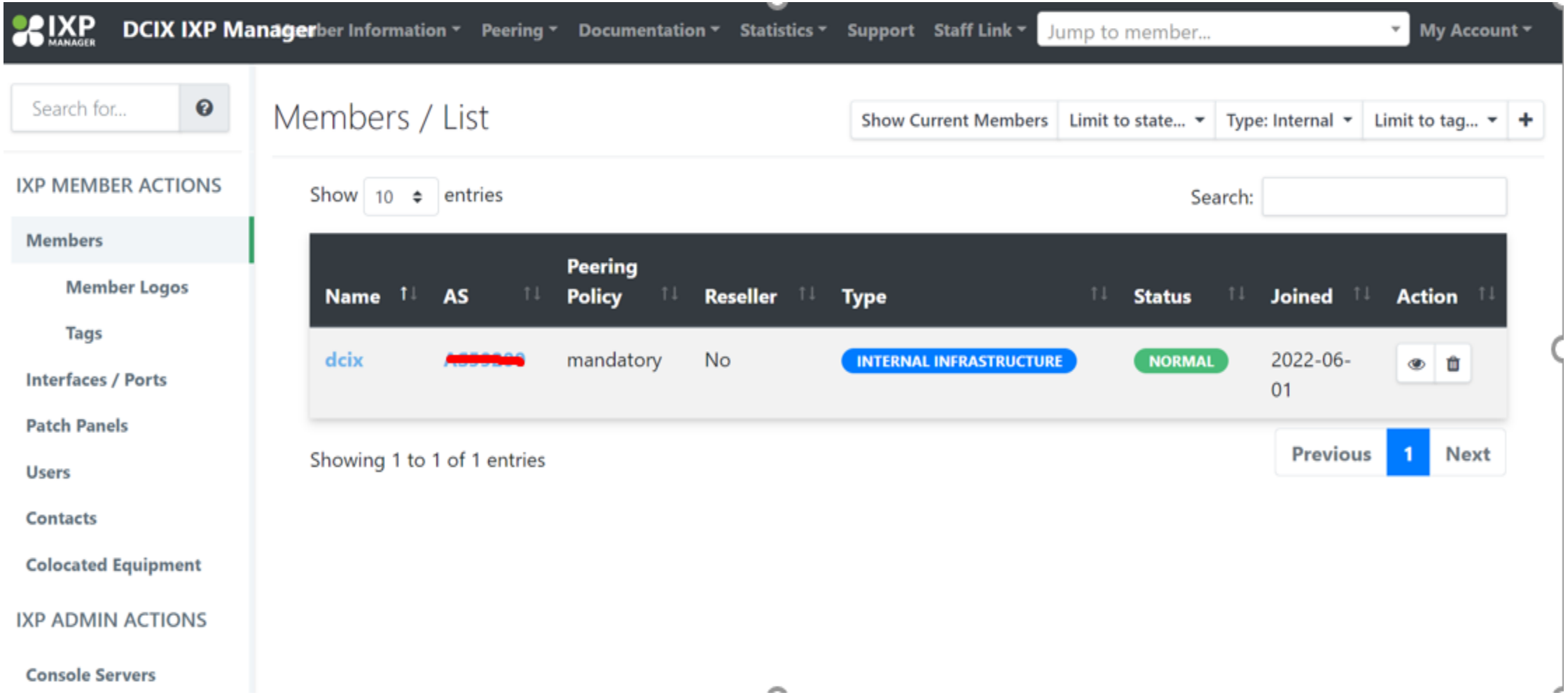
1. We have communicated with Some DNS Operator for the Anycast Root Instance Deployment.
2. After getting the green signal from the operator, we have provided the required information.
3. Hope that, we will get the Root Server instance with in short possible time.

Looking Glass
(Providing Routing Transparency)

Looking Glass provides you with information relative to backbone routing and network efficiency, providing you with the same transparency that customers on our network receive directly.



Full stack Management system for IXPs



What we would like to do on next?

- Deploy **Root DNS Server Instances** mapping
- Deploy DNS TLD Server Instance
- Establish Multi PoP Connectivity
- Add Content Re-distribution/Caching Service
- Add Domain Hosting Service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Any
Questions