“TALE OF A NEW BANGLADESHI NIX”

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Before Setting up NIX? Just an Example…

For Inter Communication
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

- **SIP User-X**
- **SIP User-Y**
- **ISP Server**
- **SIP Server**
- **ISP-A**
- **ISP-B**
- **NIX**
- **IIG**
- **Upstream**

**Direct Bilateral Peering**
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........
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

IIG

IIG Router

ISP-01 Router

NIX SW

Server Zone SW

ISP-02 Router

Route Server-1

Route Server-2

BGP Session (Routing Information Flow)

BGP Session (Routing Information Flow)

Traffic Flow
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
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?

ISP-01
ISP-02
ISP-03
ISP-04
ISP-05
ISP-06
ISP-07
RS-1
RS-2
RTBH
NIX SW

DDoS Detection Tool
Attack Source
Target
Challenge-02: Route Origin Validation

**Validate** BGP prefixes advertised by networks constituting the Internet.
**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 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 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