



Internet for All



# Internet Society Kolkata - Anupam Agrawal



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# Our Mission

- To promote the open development, evolution, and use of the Internet for the benefit of all people throughout the world.

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# The Internet Society at Work

**Provides**  
leadership in  
policy issues

**Advocates**  
open Internet  
Standards

**Promotes**  
Internet  
technologies  
that matter

**Develops**  
Internet  
infrastructure

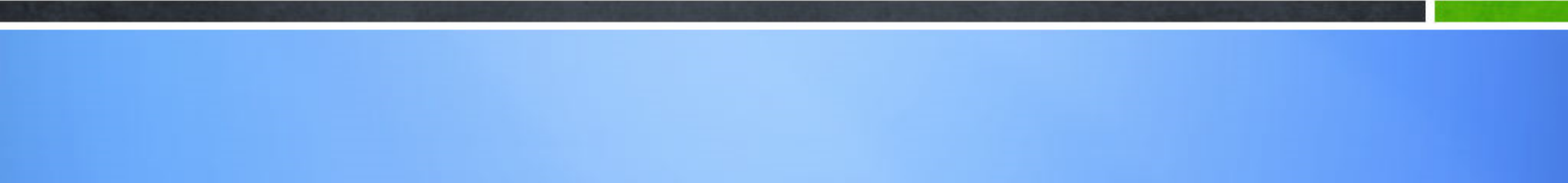
**Undertakes**  
outreach that  
changes lives

**Recognizes**  
industry leaders



The Digital Goal for All of Us

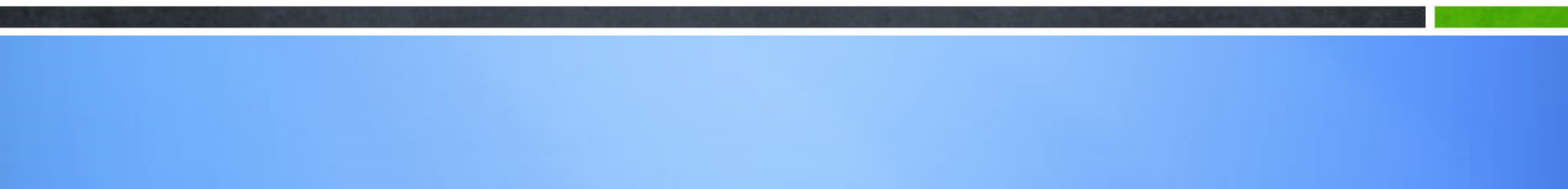
# **Connect More & Grow More**





It will only happen through

# Digital Infrastructure



# What do I mean by Digital Infrastructure

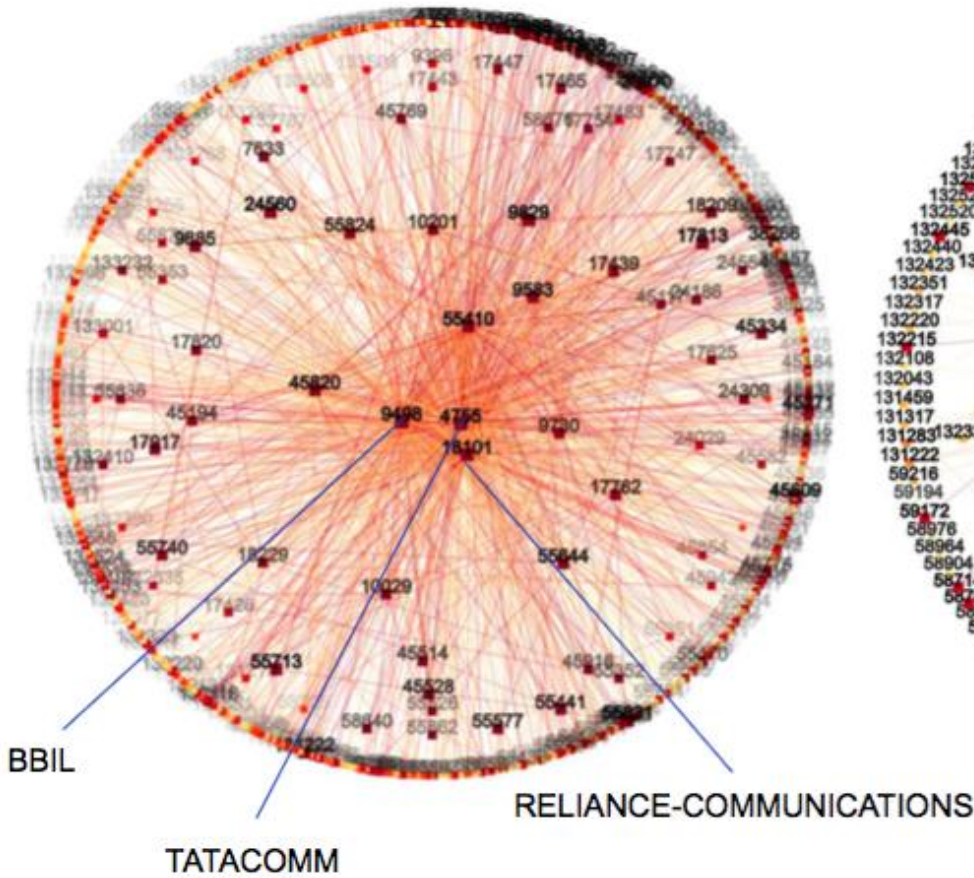
	Layer	Data unit	Function <sup>[3]</sup>	
Host layers	7. Application	Data	High-level APIs, including resource sharing, remote file access, directory services and virtual terminals	} Layer 3 and below
	6. Presentation		Translation of data between a networking service and an application; including character encoding, data compression and encryption/decryption	
	5. Session		Managing communication sessions, i.e. continuous exchange of information in the form of multiple back-and-forth transmissions between two nodes	
	4. Transport	Segments	Reliable transmission of data segments between points on a network, including segmentation, acknowledgement and multiplexing	
Media layers	3. Network	Packet/Datagram	Structuring and managing a multi-node network, including addressing, routing and traffic control	
	2. Data link	Bit/Frame	Reliable transmission of data frames between two nodes connected by a physical layer	
	1. Physical	Bit	Transmission and reception of raw bit streams over a physical medium	

The Open Systems Interconnection (OSI) model

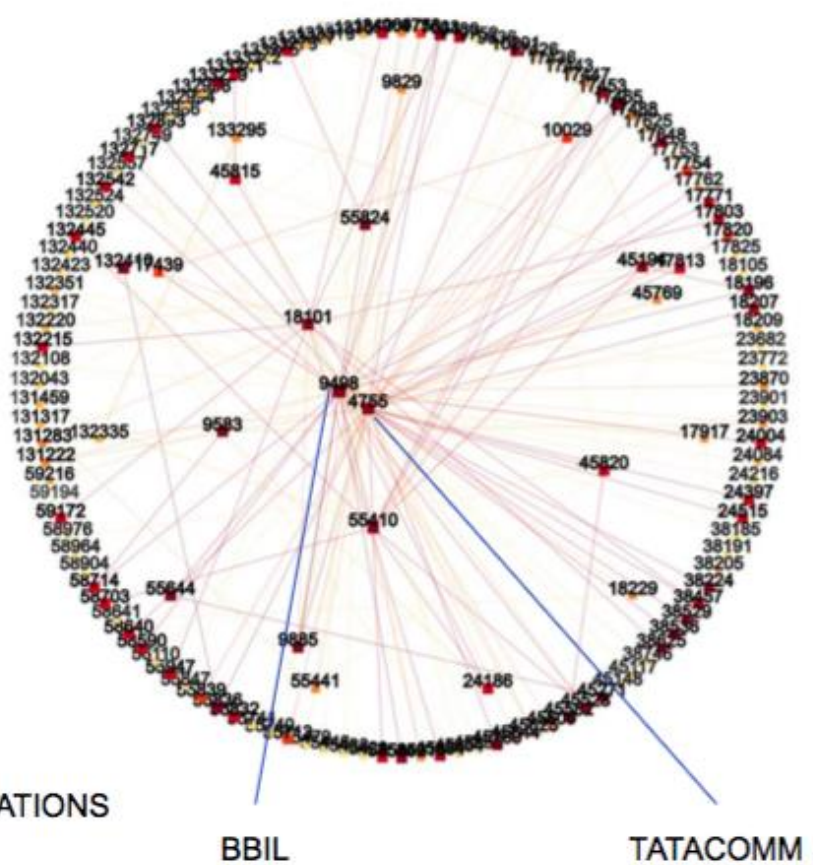



# Indian Internet Infrastructure

IPv4



IPv6



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- The first networks in India are predominantly service providers and academics
  - The newer networks are mostly from corporates
  - Core networks are established
  - Edge networks are growing



## Looking Ahead

## Global Trends

- As more organisations interconnect with upstreams, downstreams and peers, the number of advertised ASNs will continue to grow
- Opportunities to reduce cost, improve resiliency and performance will be available to those with awareness of this rich network ecosystem
- New technologies such as SDN and network virtualisation will drive innovations and change the way networks are interconnected, so expect to see a more dynamic ecosystem in the future

# Digital Connectivity with a difference



**Internet Exchange Points**  
**SOC – Security Operations Centre**



**Content Development Networks**  
**Highly Used Services**



**Better Bandwidth Management**  
**Research & Development**





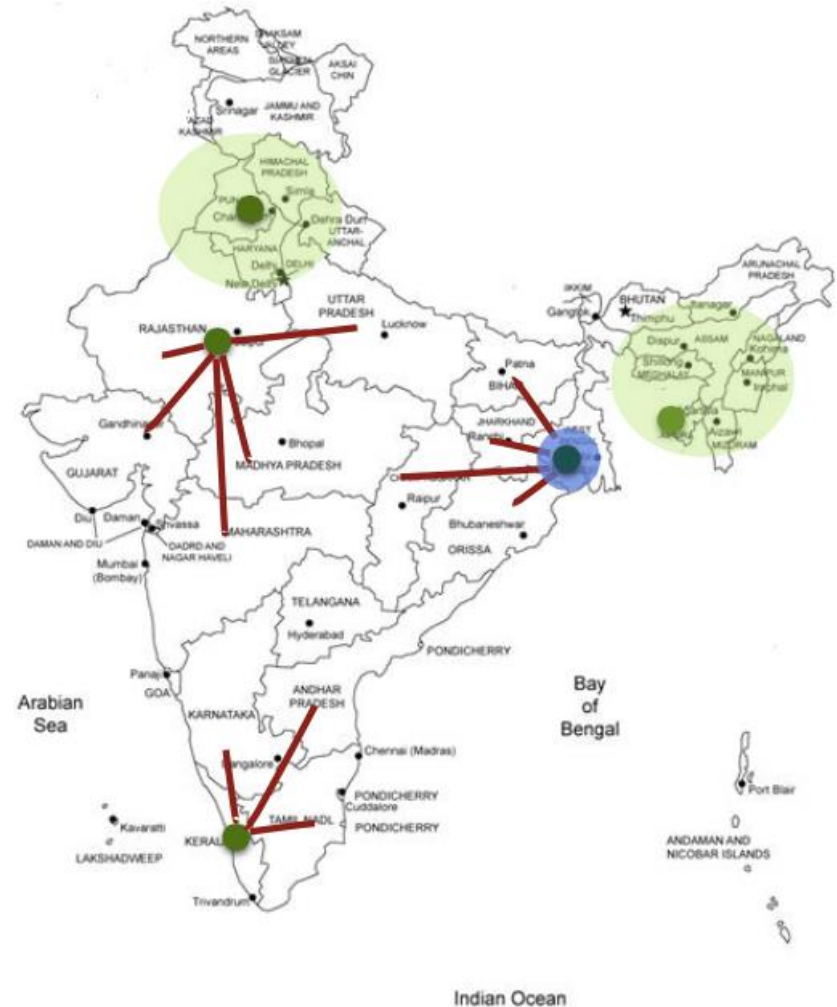
# Data Center & Hosting

Internet Exchange Points, Data Centers, Hosting



## Salient Features

- Each NOC capable of handling 10G traffic, can be upgraded based on future demands
- Centralized compliance and security management
- Certified and experienced in-house incident response team.
- **Agartala can be the next IXP Location**
- **Host L Root Instance**



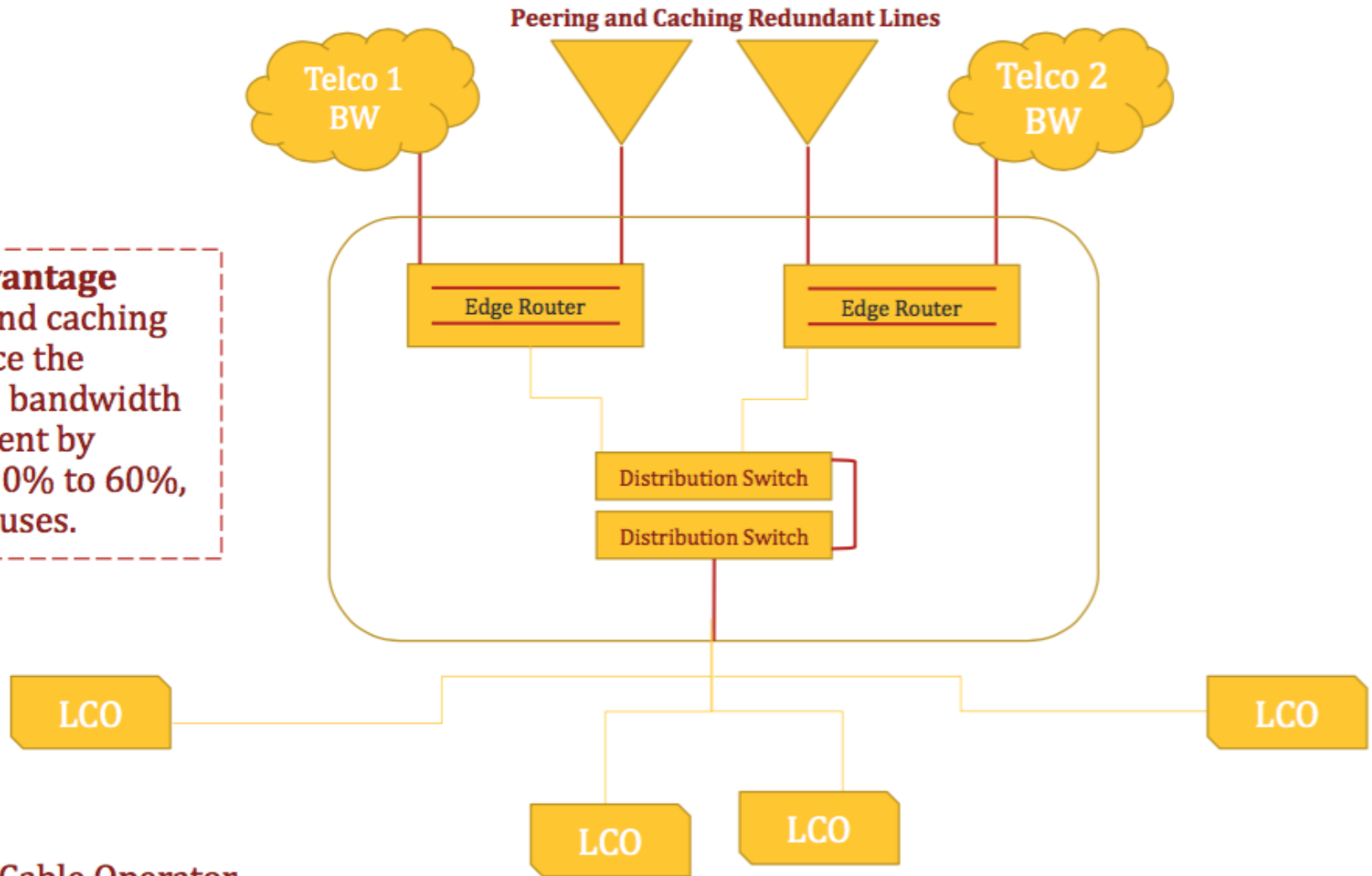


# Local Content

This can be done through Peering & Caching

# Peering & Caching

**Advantage**  
Peering and caching will reduce the upstream bandwidth requirement by Approx. 50% to 60%, based on uses.



LCO: Local Cable Operator





# Traffic Engineering

Better Bandwidth Management & End User Involvement





# End User advantage

## **Standards**

- » Training at the Root Level
- » IICB Program

## **Research & Development**

- » DNS
- » Security – Both Products and Services  
(Example – TLS, IDN,



Every Year **10,00,00,000** users are  
**added in India** How many You can Add How many  
you can support?



## **Get in Touch....**

Email : [anupam@isockolkata.in](mailto:anupam@isockolkata.in)

Number : 9903992838

Your Engagement is important for us