IXP Member connection Best Practice

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Agenda

- Prerequisites
- How to Connect to BKNIX
- Topology Overview
- Logical Connection
- Physical Connection
- Best Connection & Operation Practice (BCOP)
- Case Study

Prerequisites

- Autonomous System (ASN)
  - globally unique AS number for any BGP4/BGP6 peering session
- IP Address Space
  - globally unique and properly assigned by a RIR/LIR

How To Connect to BKNIX

Apply IX Service

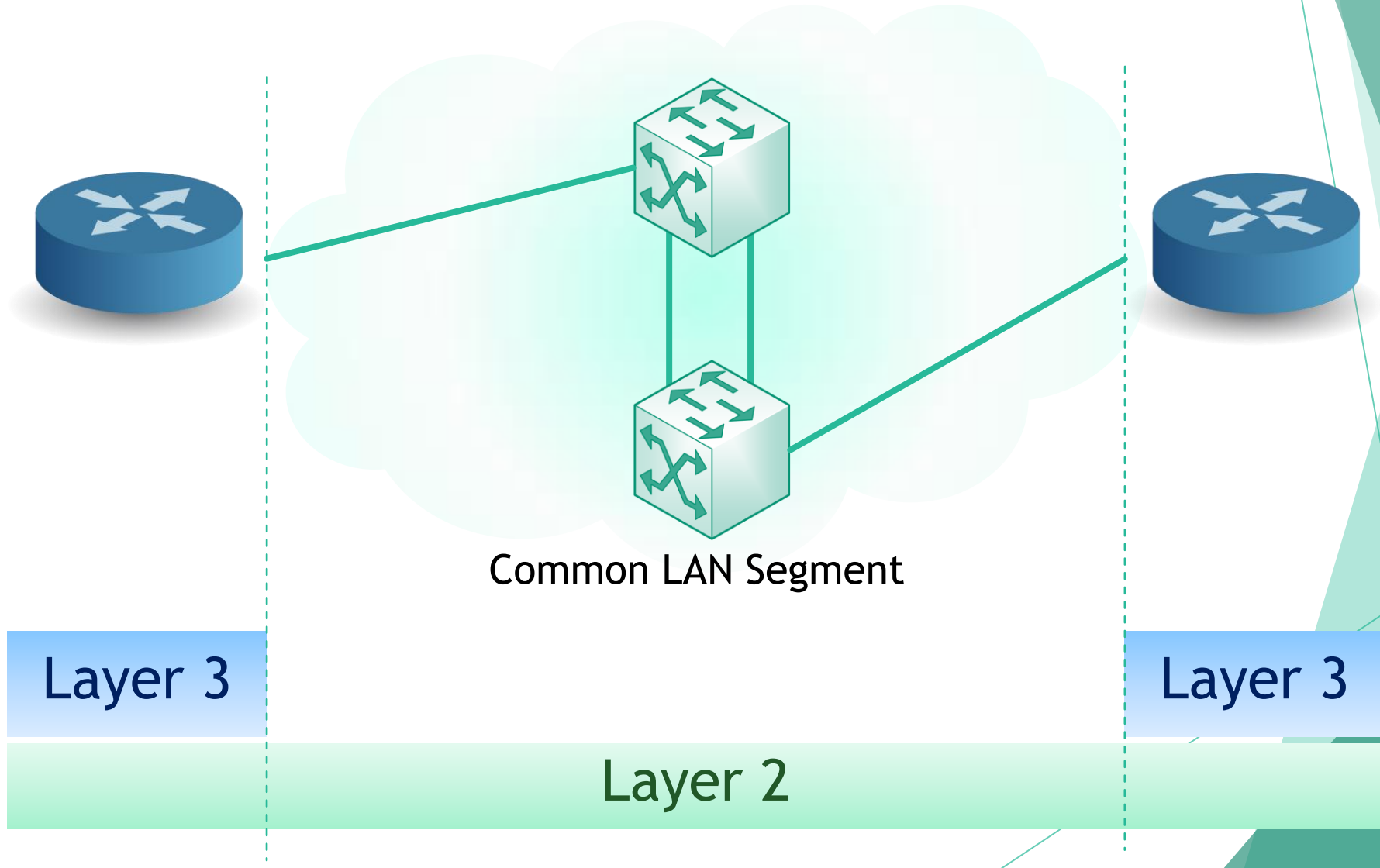
- Please fill in the form and sign BKNIX Connection Agreement (Download) and send back to info@bknix.co.th

- Select Port Bandwidth for your network
  - 1 Gbit/s “GE” (1000BaseSX, 1000BaseLX ,1000BaseEX, 1000BaseZX)
  - 10 Gbit/s “10GE” (10000BaseLR, 10000BaseER, 10000BaseZR)
  - 100 Gbit/s "100GE" (100GE-LR4)

- Provide fiber connection depended on your location
  - **There are 2 main possible scenario**
    - Member who co-locate same BKNIX colocation
    - Member who not co-locate same BKNIX colocation
- Payment
- Start Service

for Complete Information Edition please visit :
https://bknix.co.th/th/index.php?module=howto&content=1

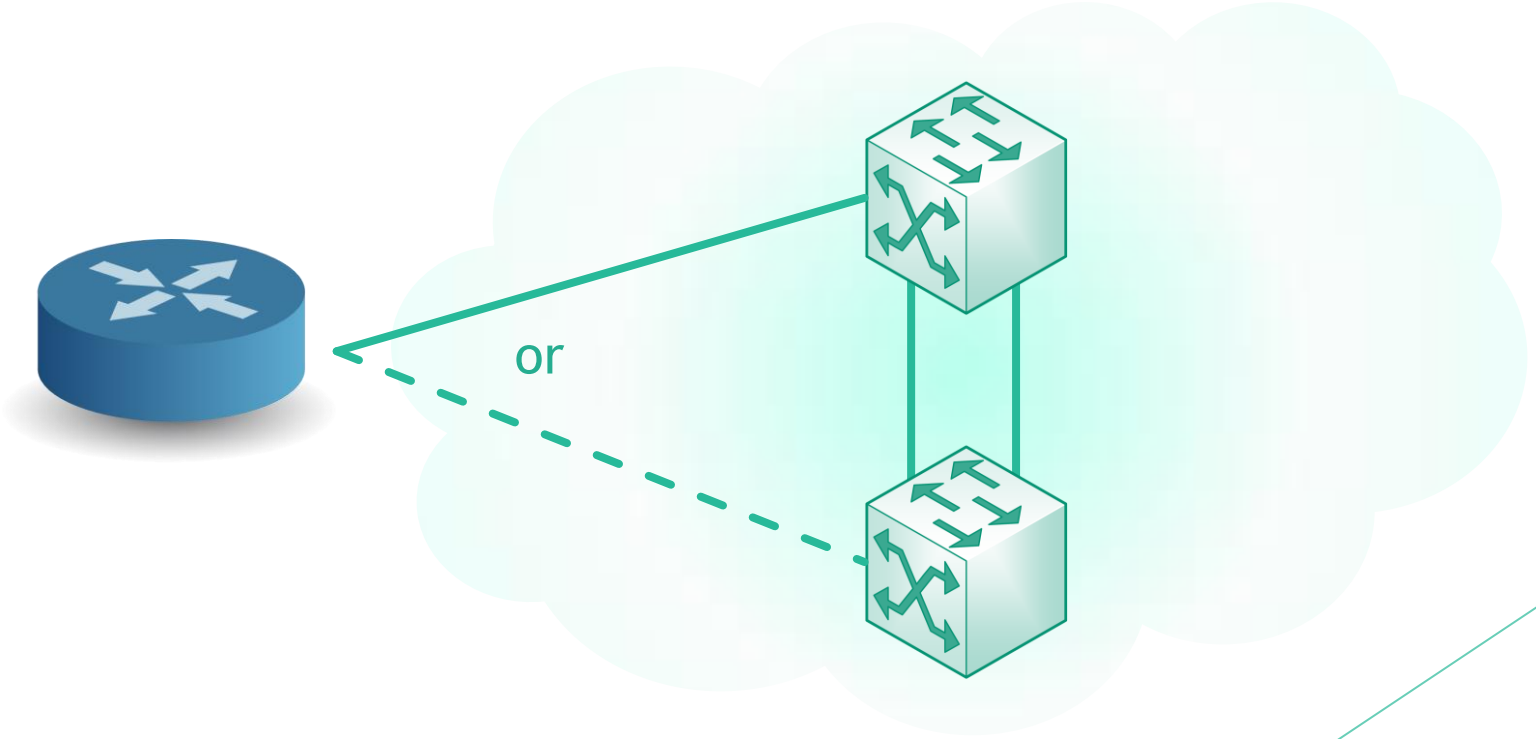
Topology Overview



Logical Connection

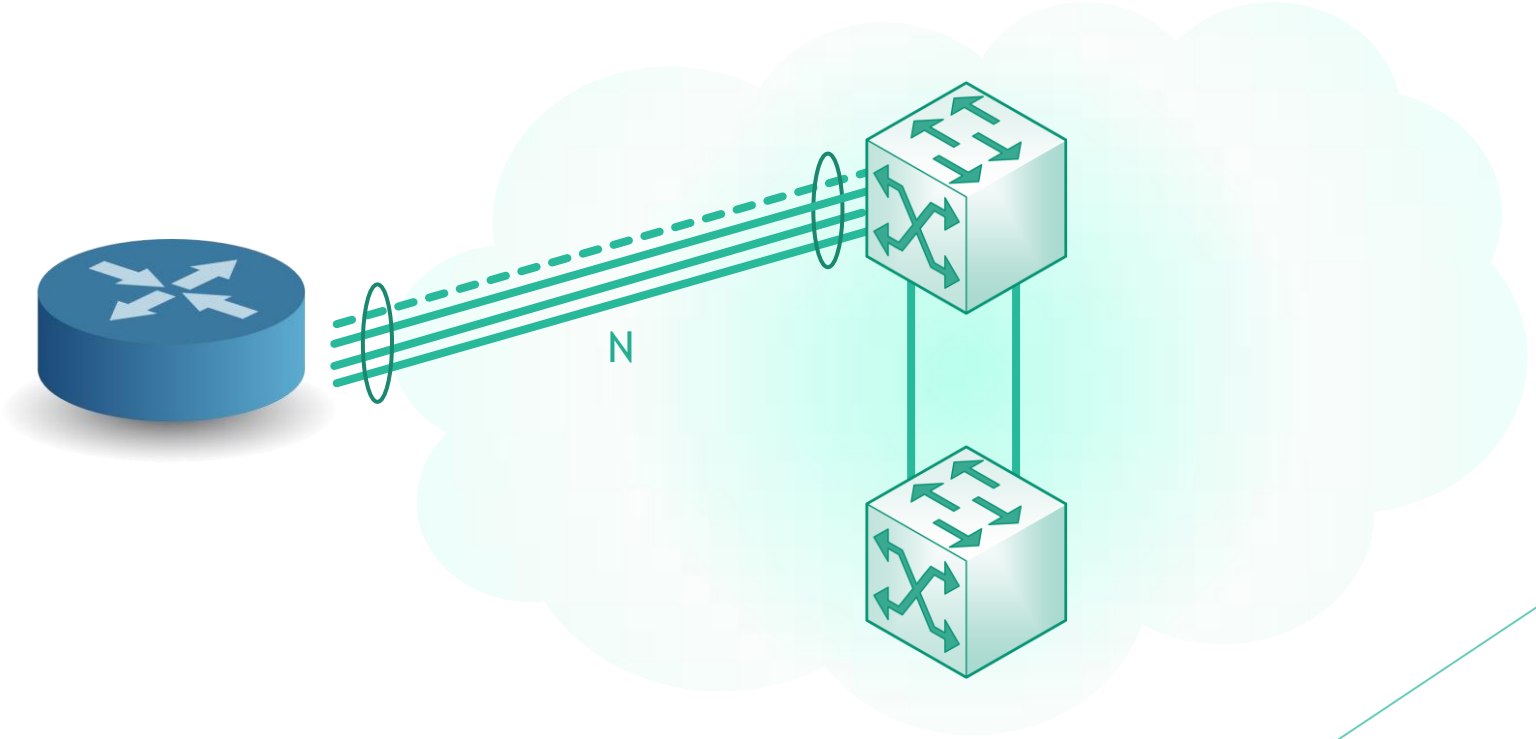
- 1 Connection on 1 Node

Bandwidth	1G, 10G ,100G
Redundancy Level	No
Redundancy Type	No



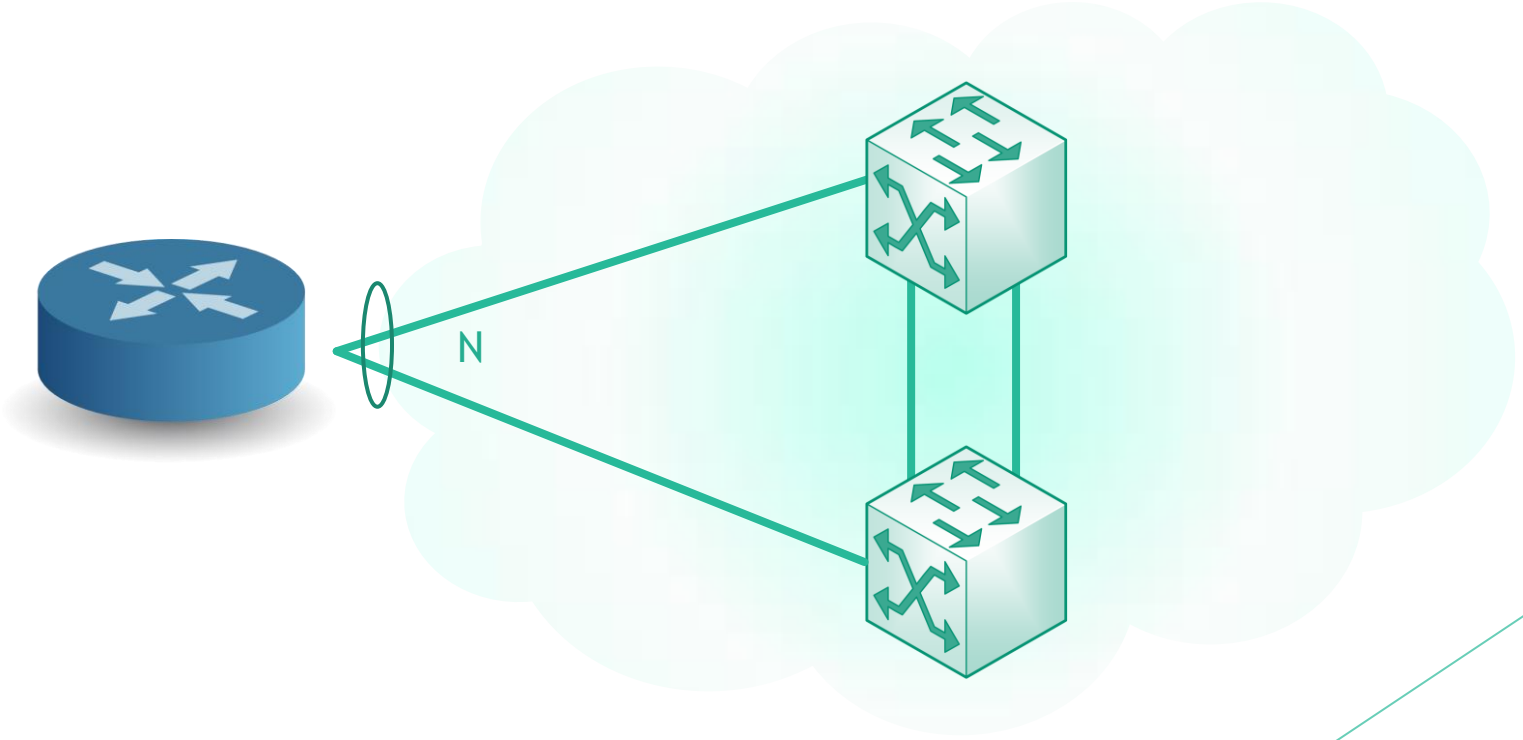
- Multiple Connection on 1 Node
- LAG

Bandwidth	Nx1G, Nx10G, Nx100G
Redundancy Level	Access
Redundancy Type	Active - Active



- Multiple Connection on Multiple Node
- MC-LAG

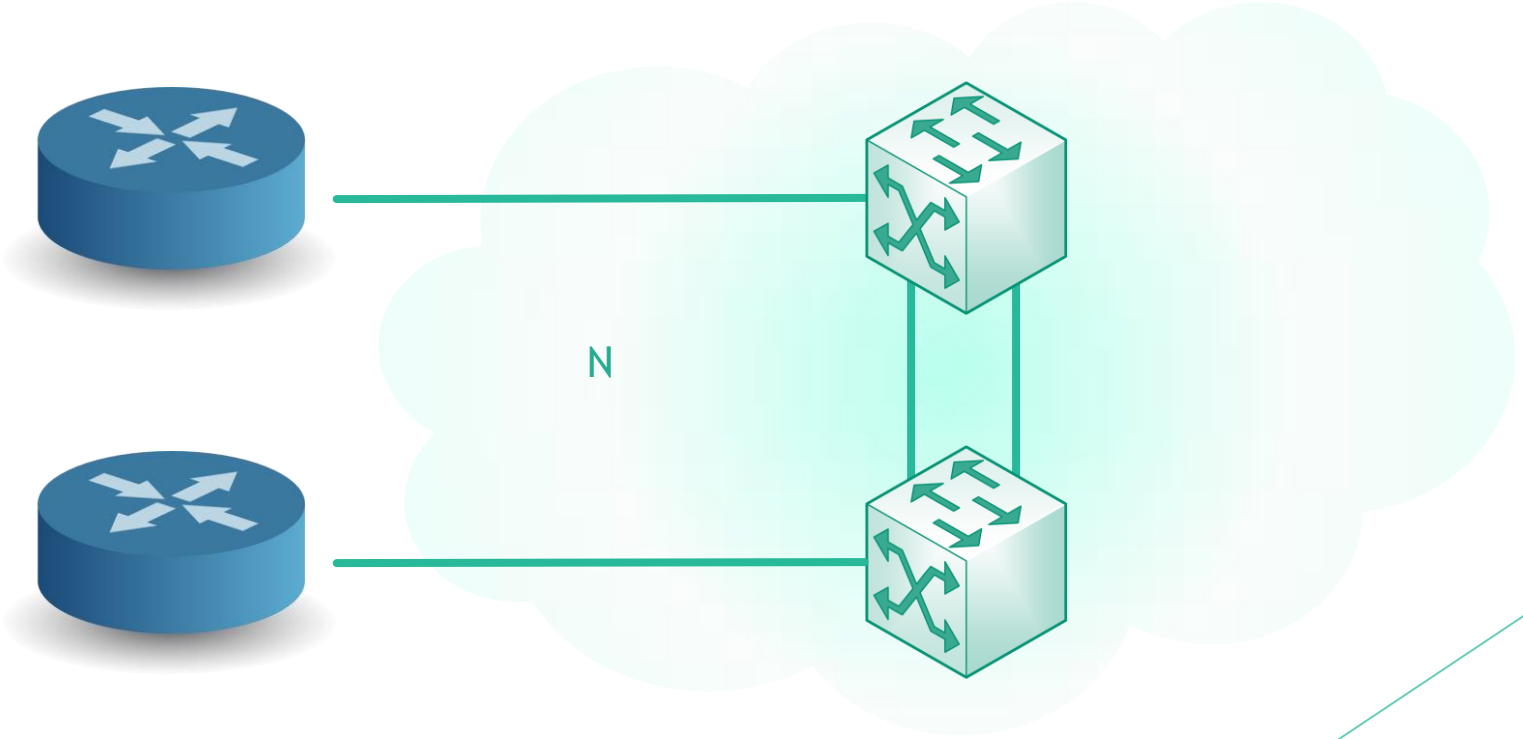
Bandwidth	(N/2)x1G, (N/2)x10G, (N/2)x100G
Redundancy Level	Core + Access
Redundancy Type	Active - Standby



- Multiple Connection on Multiple Node with Separate system

Recommend!!

Bandwidth	Nx1G, Nx10G, Nx100G
Redundancy Level	Core + Access
Redundancy Type	Active - Active



Physical Connection

- Fiber Optics Only!!!

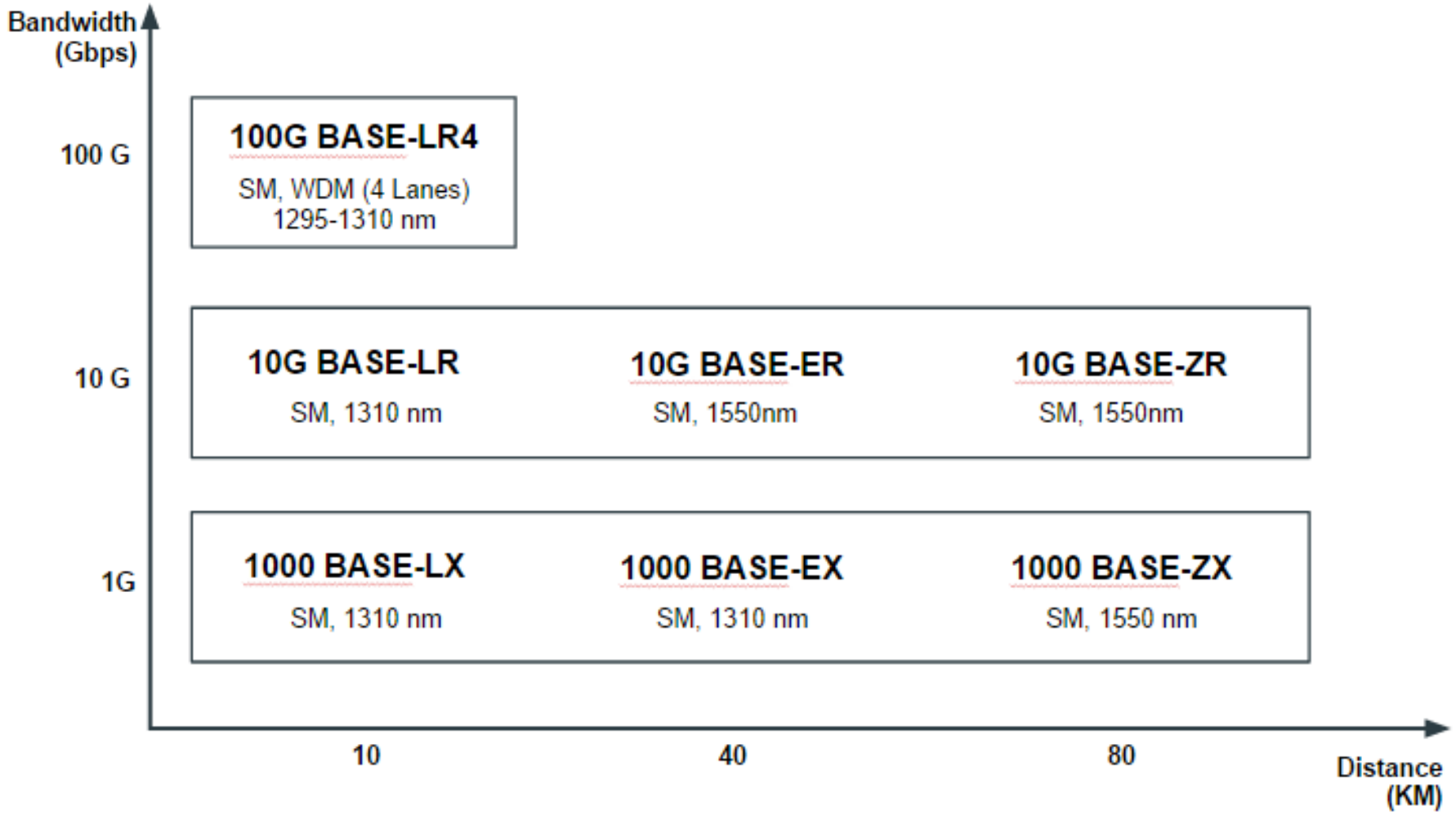
- Member who co-locate same BKNIX colocation
  - Connected device is on a different floor with BKNIX
  - Connected device is on a same floor with BKNIX

- Member who not co-locate same BKNIX colocation

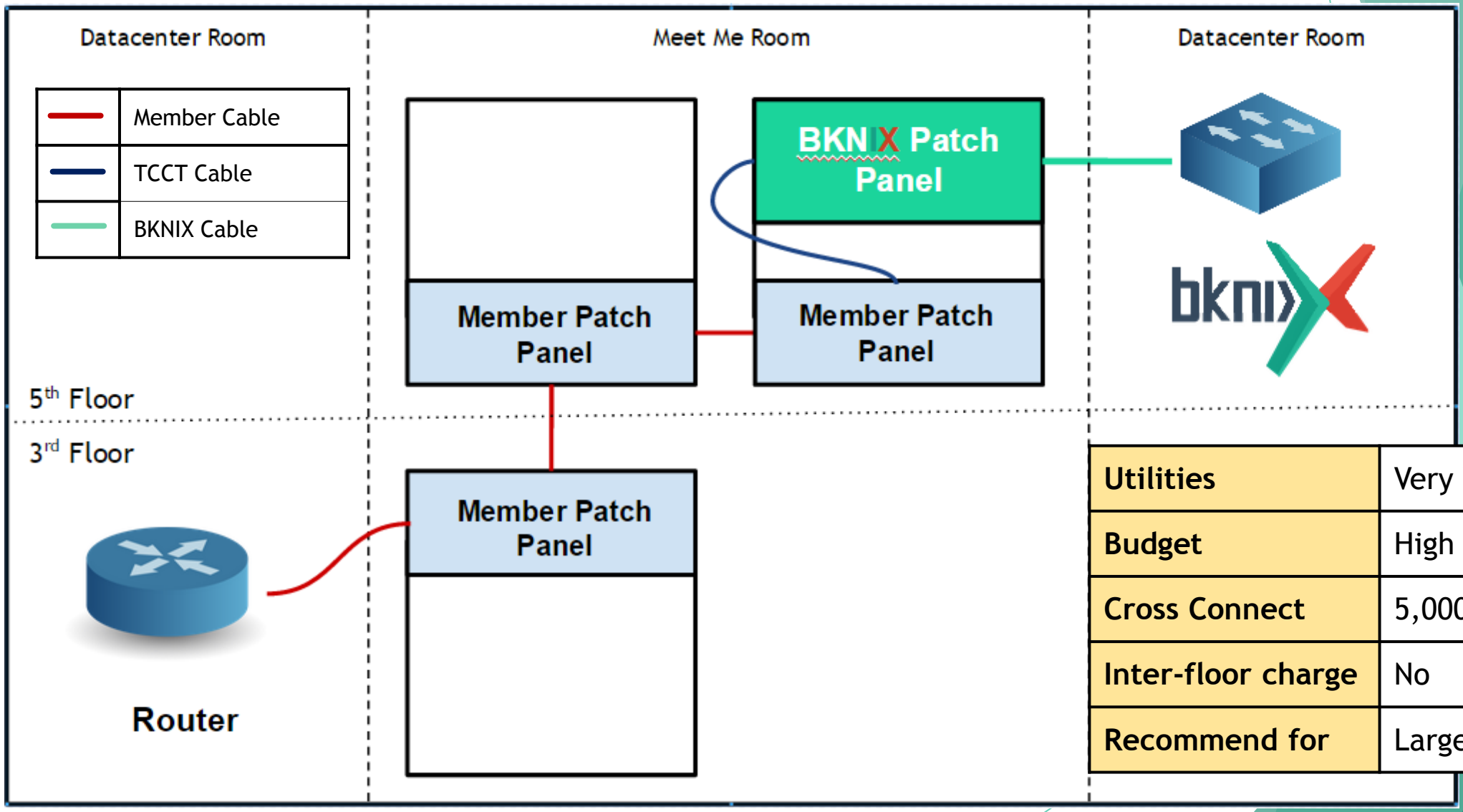
Remark : (1) On this slide we focus on getting dedicated fiber connection for ISP and Member peering service.

(2) Some conditions and prices that appear on this slide is a special offer for BKNIX's Member only.

- Media and Wavelength specification for BKNIX Available Port types

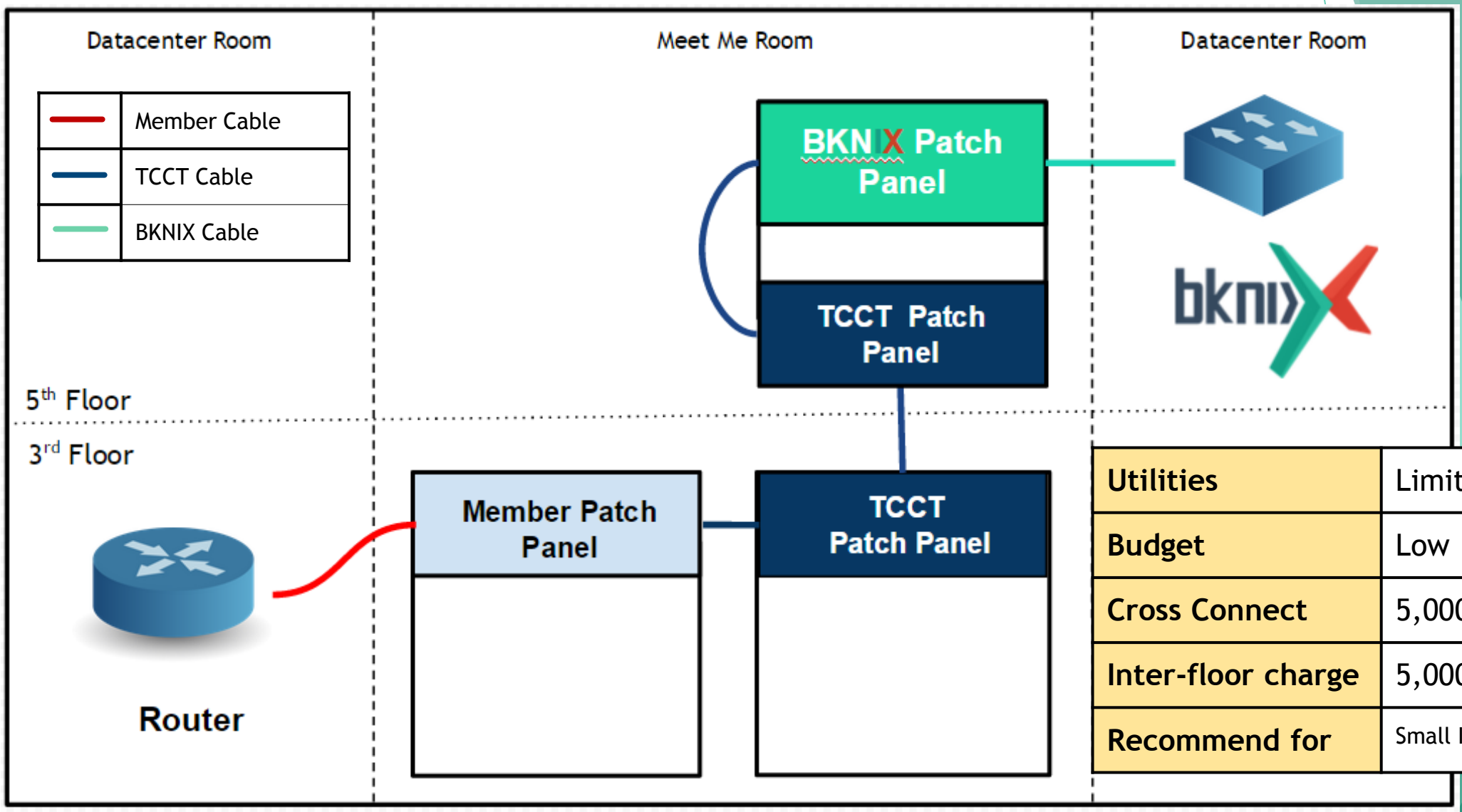


- Connected device is on a different floor with BKNIX



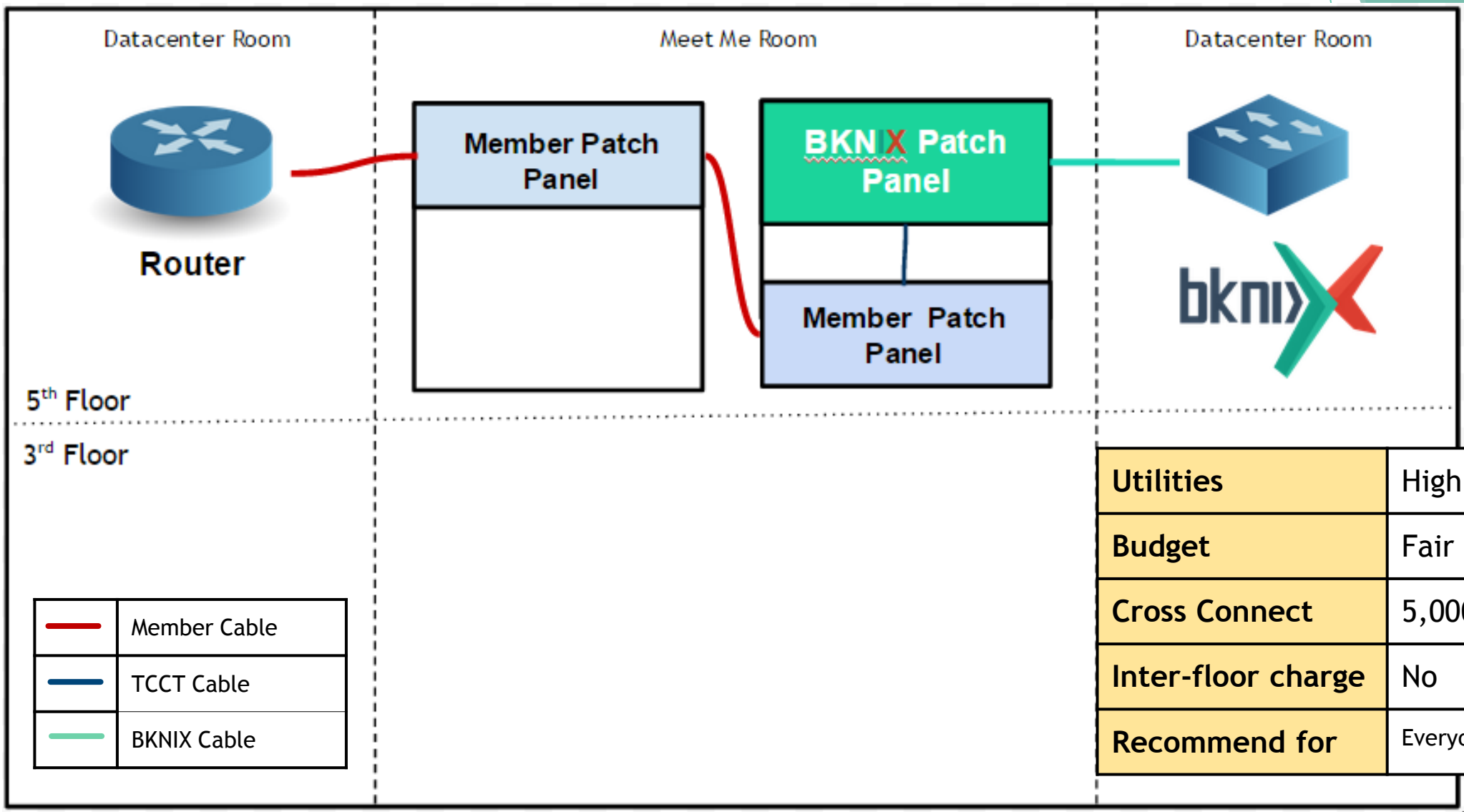
Utilities	Very Versatile
Budget	High
Cross Connect	5,000 Baht
Inter-floor charge	No
Recommend for	Large, Medium ISP

- Connected device is on a different floor with BKNIX



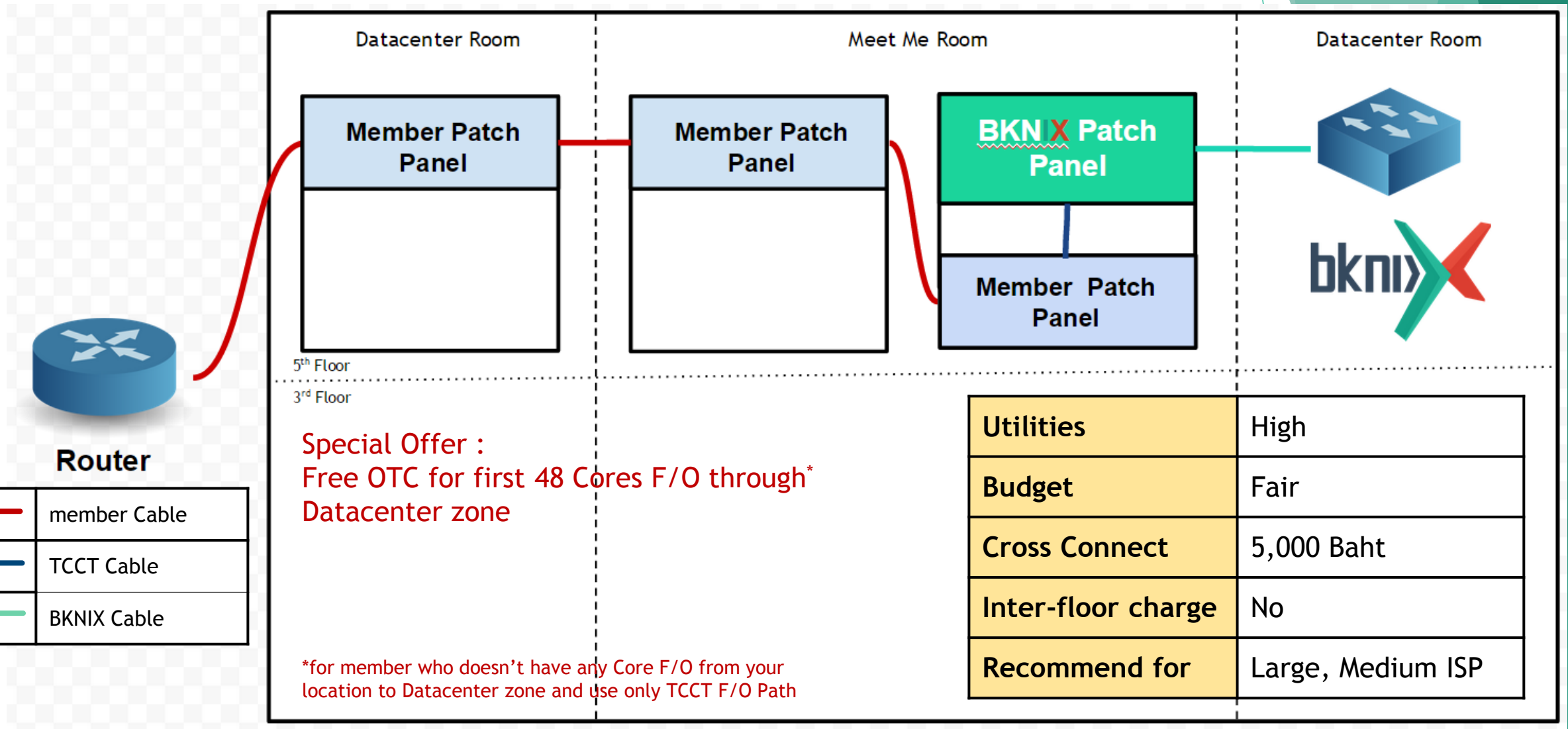
Utilities	Limited
Budget	Low
Cross Connect	5,000 Baht
Inter-floor charge	5,000 Baht
Recommend for	Small ISP or Small Business

- Connected device is on a same floor with BKNIX



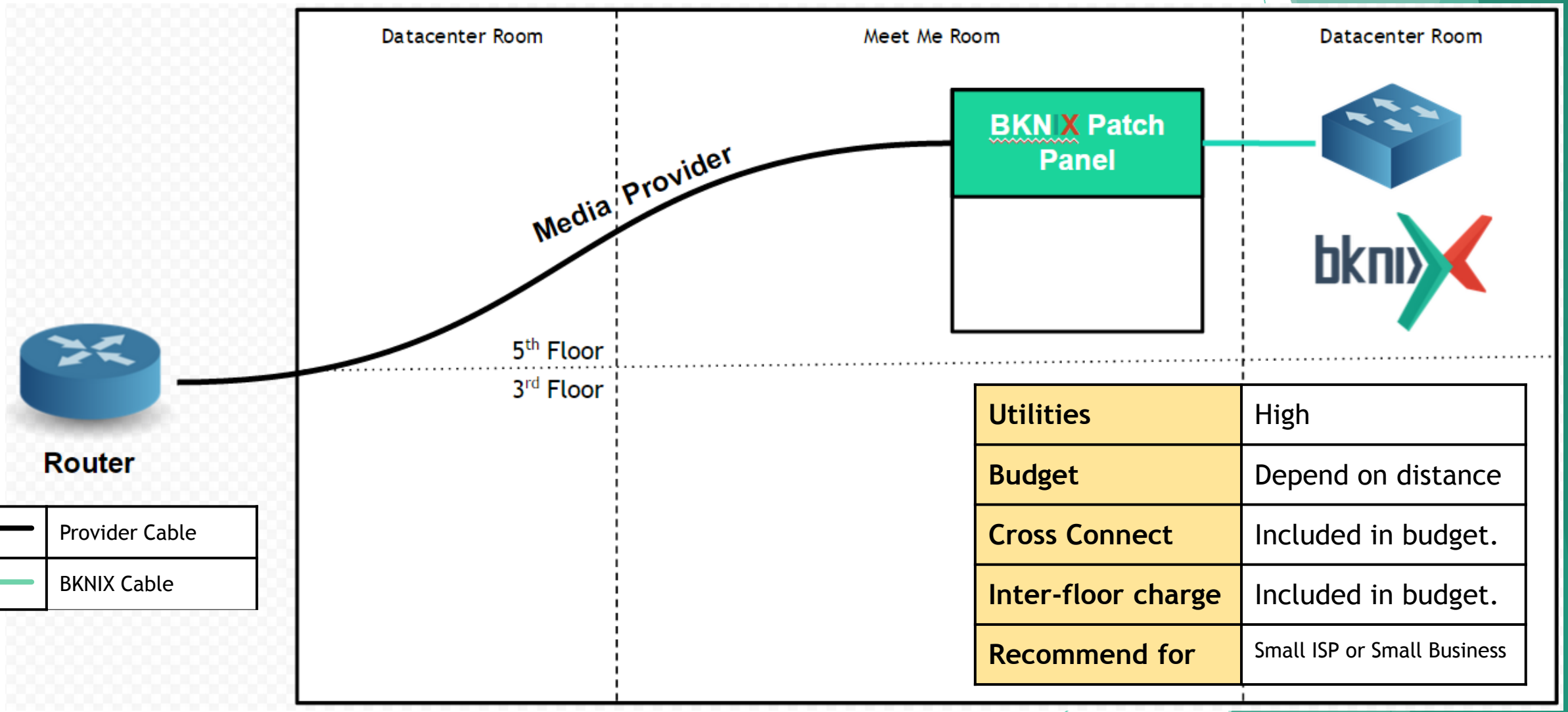
Utilities	High
Budget	Fair
Cross Connect	5,000 Baht
Inter-floor charge	No
Recommend for	Everyone

Member who not co-locate same BKNIX colocation



Utilities	High
Budget	Fair
Cross Connect	5,000 Baht
Inter-floor charge	No
Recommend for	Large, Medium ISP

- Member who not co-locate same BKNIX colocation



Utilities	High
Budget	Depend on distance
Cross Connect	Included in budget.
Inter-floor charge	Included in budget.
Recommend for	Small ISP or Small Business

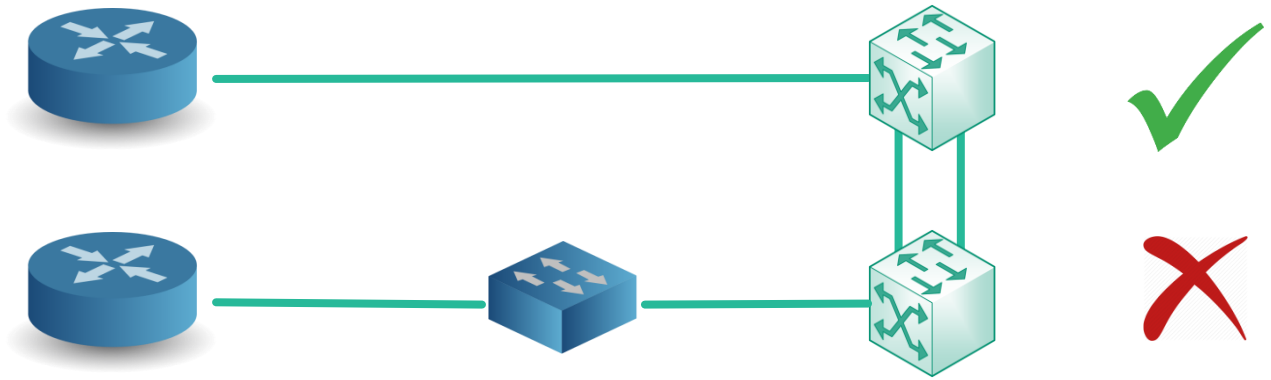
Best Connection & Operation Practice (BCOP)

- Cause we’re on share infrastructure
- Everyone trust each other to do Good
- May be found in various variations depend on each IXP
- Base on BKNIX Infrastructure and most common IXP
  - Physical Layer
  - Data Link and Network Layer
  - Transport Layer

Physical Layer

- Member shouldn’t extend Layer 2 network (Loop prevent)
- Member should connect directly from a Layer 3 interface

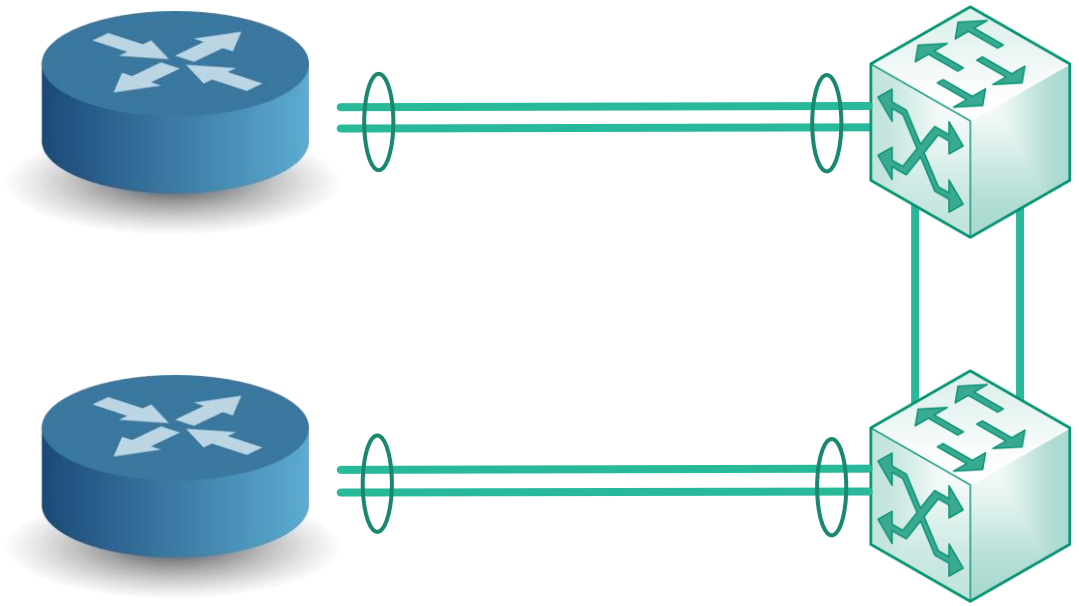
  (No Layer 2 equipment)



- If not possible, should done by MPLS transport

  (transparent Layer 2 connection)

- Separate Peering device on each LAN segment for Full Redundancy
  - LAG on same identical interface



Data Link and Network Layer

- Individual LAN for each address family
  - VLAN 99 for IPv4 peering LAN
  - VLAN 100 for IPv6 peering LAN
  - Member doesn’t need to support dual-stack

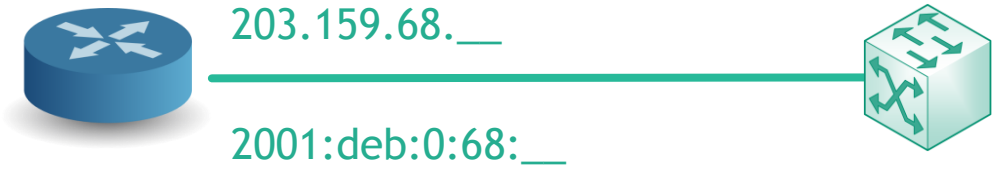
VLAN
99/100

- Allow only one MAC address per interface
  - One Src-MAC of your router interface
  - Enable MAC Security

- Quarantine VLAN
  - No Exchange traffic
  - Set Up fake peers
  - For testing, investigate abnormal packets

- Ethertypes allow only in exchange
  - 0x0800 – IPv4
  - 0x0806 – ARP
  - 0x86dd – IPv6
- Protocol shouldn’t run on connected interface
  - Spanning Tree 802.1D
  - Proxy ARP
  - Discovery protocol (CDP, LLDP)
  - IP Directed-broadcast
  - IP Redirects
  - Interior Gateway Protocol (IGP)

- IP Address
  - Assigned IP address must be configured on connected interface



Transport Layer

- BGP
  - Don’t announcing IPv4/6 peering subnet (203.159.68.0/23 & 2001:deb:0:68::/64)
  - Setting up BGP Configuration on both sides ; before establish the connection
  - Please set your maximum prefixes for your router
- Route Server
  - Peer **both** route servers although the result is same
- Routing Registry
  - To verify routing information
  - Update and freshen your in data Routing Registry
- PeeringDB
  - Same as Routing Registry

Reference(s)

- IXP Best Common Operational Practices.2014. Available at: https://www.euro-ix.net/documents/1391-euro-ix-ixp-bcops-221014-pdf Accessed April 5, 2015.
- Michael Smith, Florian Hibler. *BEST CURRENT OPERATIONAL PRACTICES: NANOG BCOP Wikipedia. 2001.* Available at: http://bcop.nanog.org/images/b/b1/BCOP-Exchange_Points_v2.pdf, 2015.

Question ?