Introduction to Peering 1.0

What is Peering?

Peering is the direct interconnection between two networks for the exchange of traffic. It's a fundamental concept in how the internet is structured and how data flows between different networks.

Basic Network Structure

In the internet ecosystem, we typically have:

- Content Providers: Organizations that provide content and services
- Internet Service Providers (ISPs): Organizations that provide internet access to users
- Users: End consumers of internet services

Traditional Connectivity Model

Initially, when a content provider or ISP starts operations, they connect to the internet through a transit provider. The transit provider acts as an intermediary, routing traffic between the content provider/ISP and the rest of the internet. This creates a structure where:

1. Content Provider connects to Transit Provider
2. Transit Provider connects to ISPs
3. ISPs connect to Users

As networks grow and traffic increases, this model may become less efficient and more costly.

The Case for Peering

When a content provider or ISP becomes successful and generates significant traffic, peering becomes an attractive option. Peering allows networks to bypass transit providers and connect directly to each other.

Types of Peering

Public Peering

- Done at Internet Exchange Points (IXPs)
- Multiple networks connect to a shared switching infrastructure
- Preferred when traffic to individual peers is low, but aggregate traffic creates an economic incentive
- Uses Layer 2 switches to facilitate connections

Private Peering

- Established using private links or in colocation facilities ("carrier houses")
- Offers better control of traffic flows
- Preferred when traffic volume with a specific network is high
- Often implemented through "Meet Me Rooms" or patch panels in colocation facilities
- Uses cross-connections to directly link networks

Benefits of Peering

For Users:

- Lower latency
- Higher reliability
- Better performance

For Network Operators:

- Lower costs
- Higher reliability
- More predictable routing
- Better performance for customers
- No third parties involved
- Mutually beneficial relationship with partners

The Business Case for Peering

While technical considerations are important, peering is fundamentally a business decision. When presenting the case for peering to executives, focus on economic benefits first, rather than technical aspects like BGP routing or latency improvements.

Cost Considerations

Peering Costs:

- Transport to colocation facility or IXP
- Colocation facilities fees
- IXP fees
- Hardware (router, port, cards)

Transit Costs:

- Cost per use (typically measured as $ per Mbps)
- Various measurement methods (Average, P95, Cost per Mbit, Committed spend)

Cost Comparison:

- Peering costs are mostly fixed regardless of traffic volume
- Transit costs scale with usage
- This creates a break-even point where peering becomes more cost-effective than transit

Conclusion

- Peering is a business decision implemented with technology
- It can bring savings in interconnection costs while improving user experience
- The optimal peering strategy depends on your specific needs and traffic patterns
- A careful cost-benefit analysis is essential to determine when and how to implement peering

The decision of "to peer or not to peer" should be driven by a solid business case that demonstrates the economic advantages of direct network interconnection.