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Núcleo de Informação  
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Comitê Gestor da  
Internet no Brasil



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San José, Costa Rica  
26 de setembro de 2016

The background of the slide is a dark gray circuit board pattern with white lines representing traces and components. The pattern is dense and covers the entire slide area.

# Best Practices to IXP Participants

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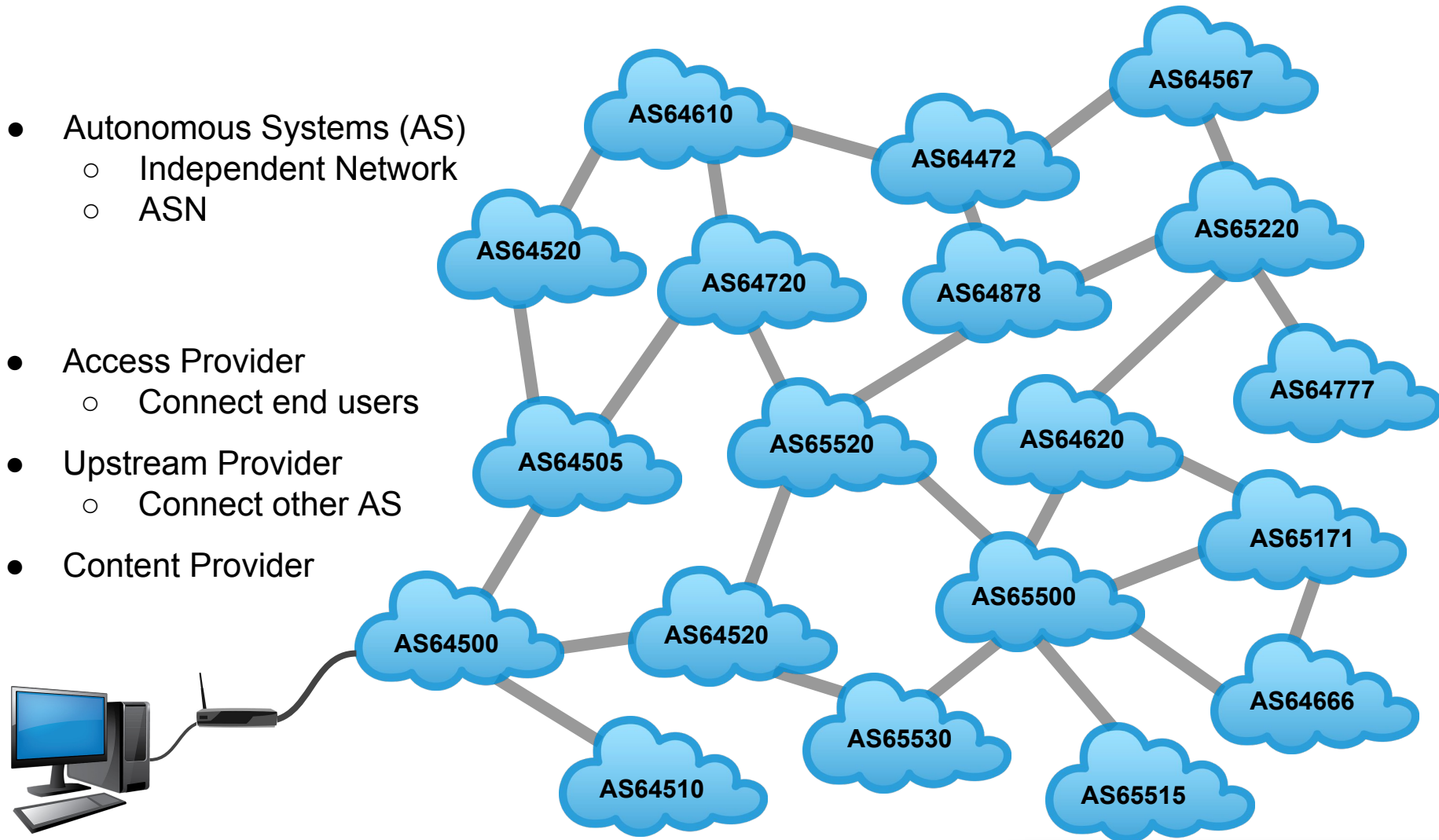
# How to Internet Works?





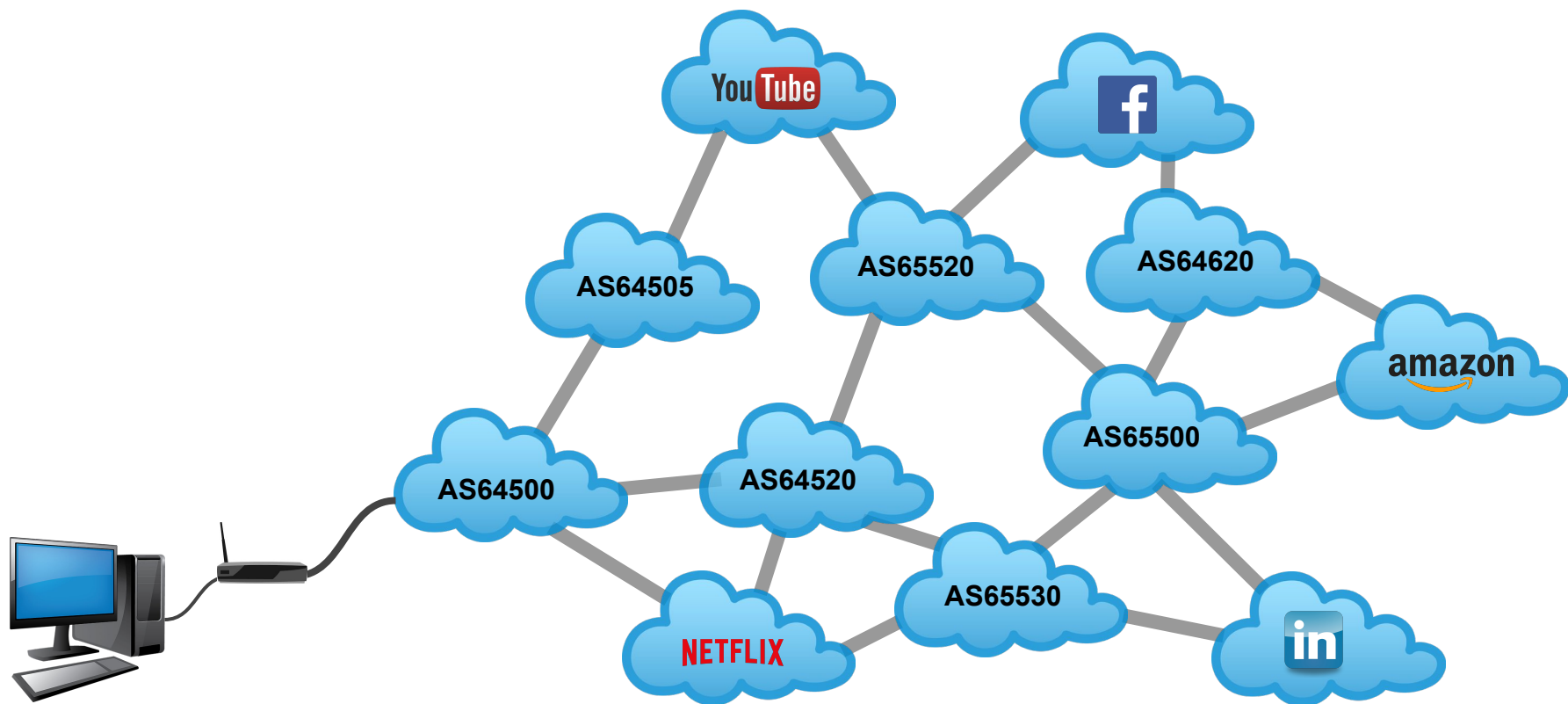
# Network of Networks

- Autonomous Systems (AS)
  - Independent Network
  - ASN
- Access Provider
  - Connect end users
- Upstream Provider
  - Connect other AS
- Content Provider



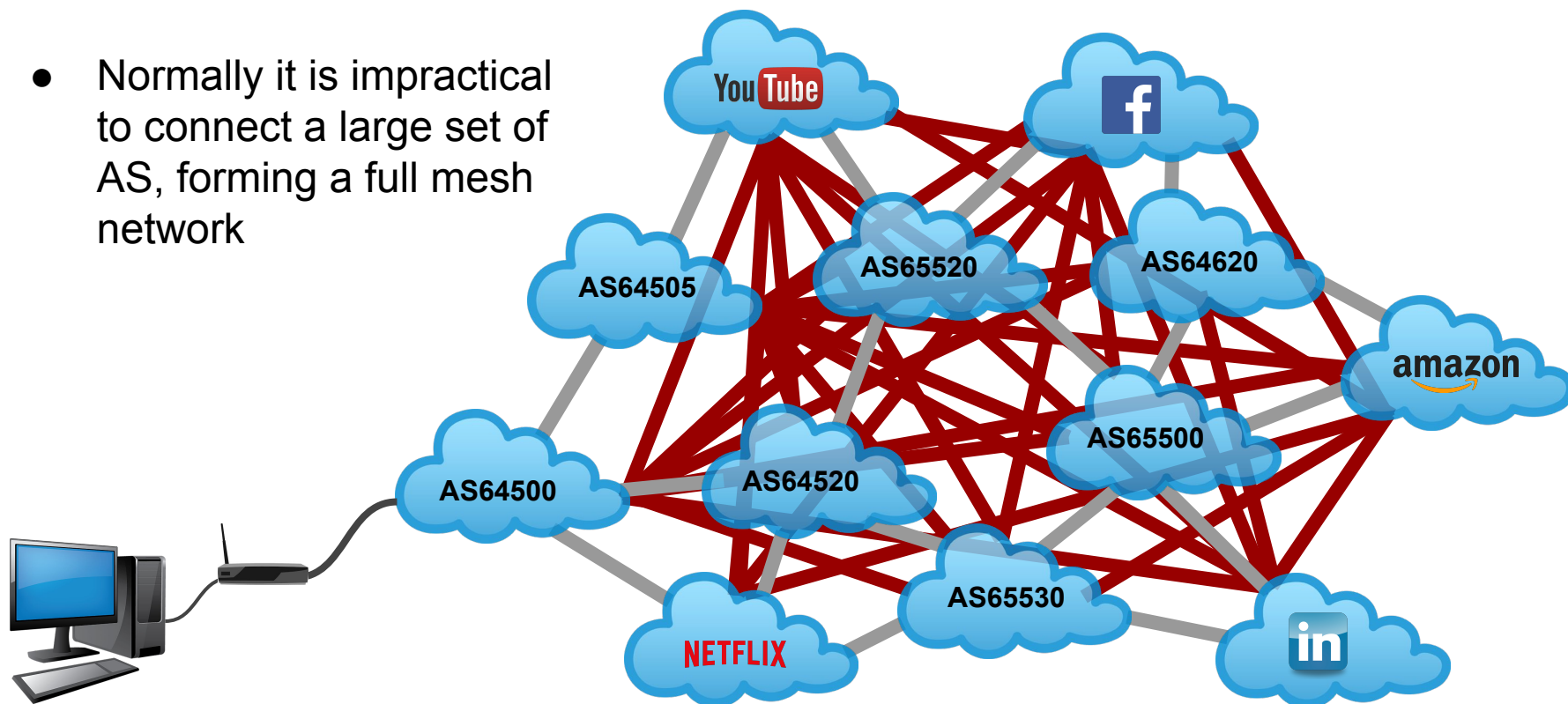
# Multipaths

- The Autonomous Systems use BGP to exchange routing and reachability information on the Internet



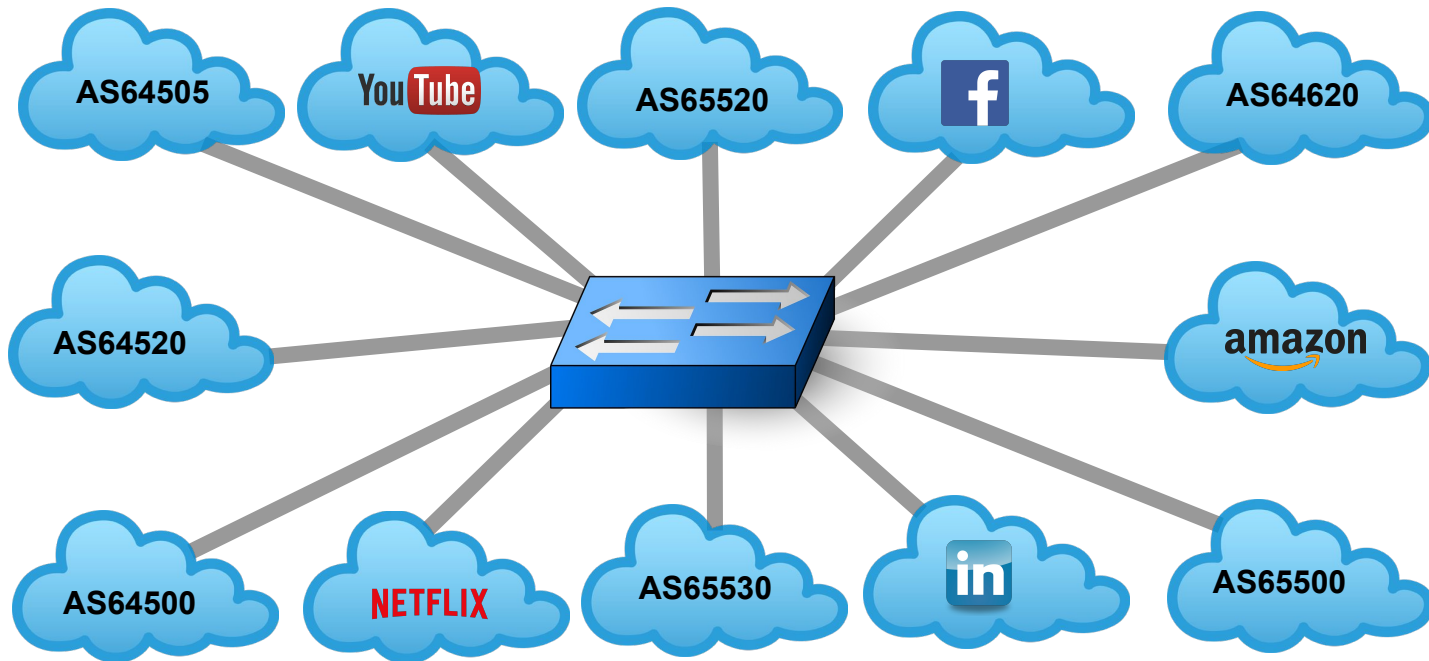
# Multipaths

- The Autonomous Systems use BGP to exchange routing and reachability information on the Internet
- Normally it is impractical to connect a large set of AS, forming a full mesh network



# IXP: Internet Exchange Point

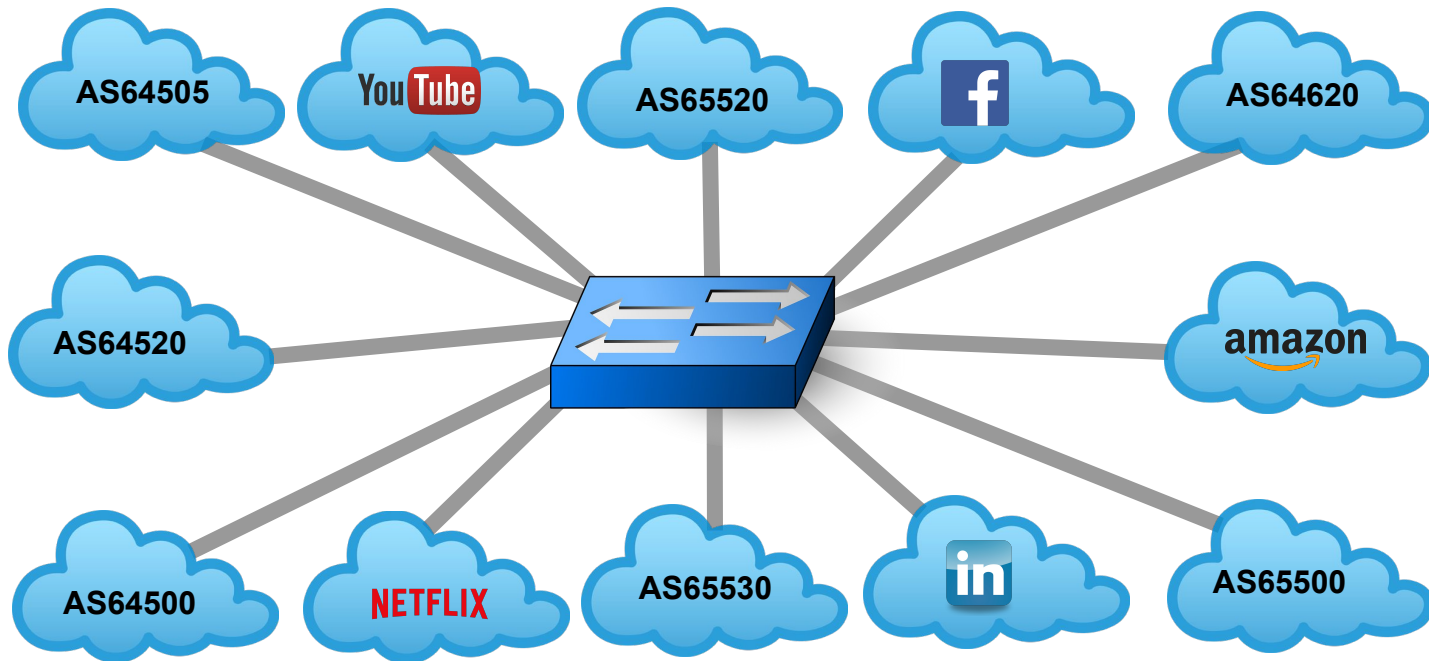
- The IXP are part of the Internet infrastructure, where many different AS can connect to exchange traffic (peering)
- The IXP provides a direct connection, usually layer 2, allowing many AS exchange traffic directly





# IXP: Internet Exchange Point

- Usually is possible offer or hire services (such as Upstream) in an IXP
- Connect many AS directly make Internet communication more simple and reduce the hops to specific destinations. This improves quality, reduces costs and increase network resilience



# How to take advantages of an IXP

- Advertise a shorter prefix to IXP
- Increase the LocalPref value to prefix received by IXP
- Get to know the communities applied by IXP
- Some IXP use LACP in the great capacity ports activation



# Pay attention with hired link



- The specifications of the hired link/transport are compatible with IXP that you will connect?
- What the link must support?
  - VLAN Tag?
  - MTU?
  - MAC Address limit?
  - ...?



# Pay attention with your garbage



- Avoid strange things are sent to IXP:
  - BPDUs (spanning-tree protocols)
  - Vendor Lan Protocol Family (CDP, MNDP, EDP, LLDP...)
  - IGP (OSPF, ISIS)
  - RA IPv6
  - Proxy ARP
  - Open recursive DNS
  - NTP monlist enabled



# Pay attention with your garbage



- Avoid strange things are advertised by your BGP to IXP:
  - Default route
  - Bogons
  - Prefix other than their or your customers
  - Do not advertise the IXP's IP block to third parties





# Pay attention with another's garbage



- In BGP you must reject:
  - Default route
  - Bogons
  - Prefixes its own AS
  - You should filter the Upstream Providers prefixes
  
- Filter also the traffic (ACL):
  - Bogons
  - Packets destined for IP blocks that are not of your AS (avoid others use your AS as a Upstream)



# Thanks

[www.ceptro.br](http://www.ceptro.br) / [www.ix.br](http://www.ix.br)

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