

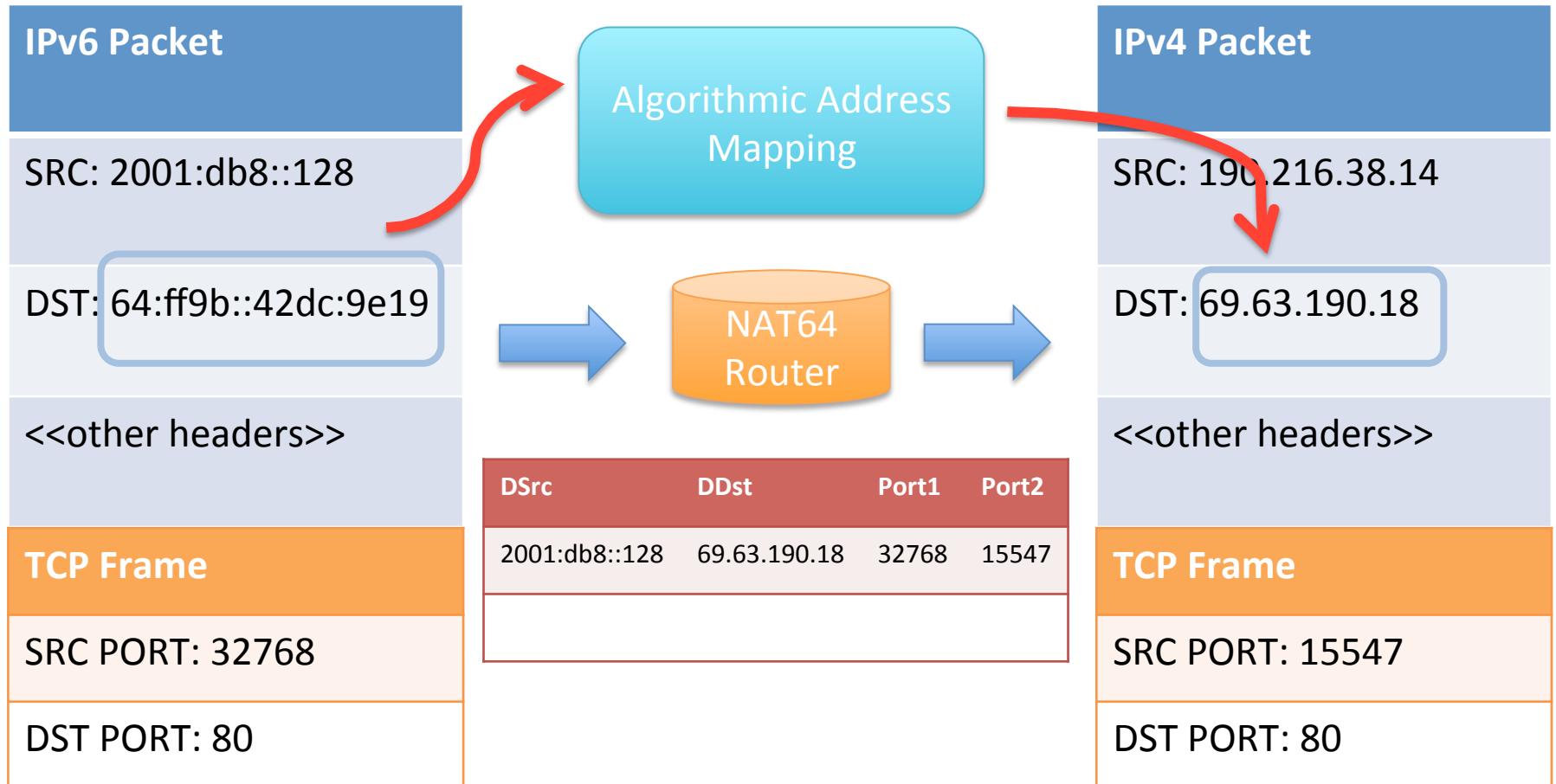
# An experiment with stateless NAT64

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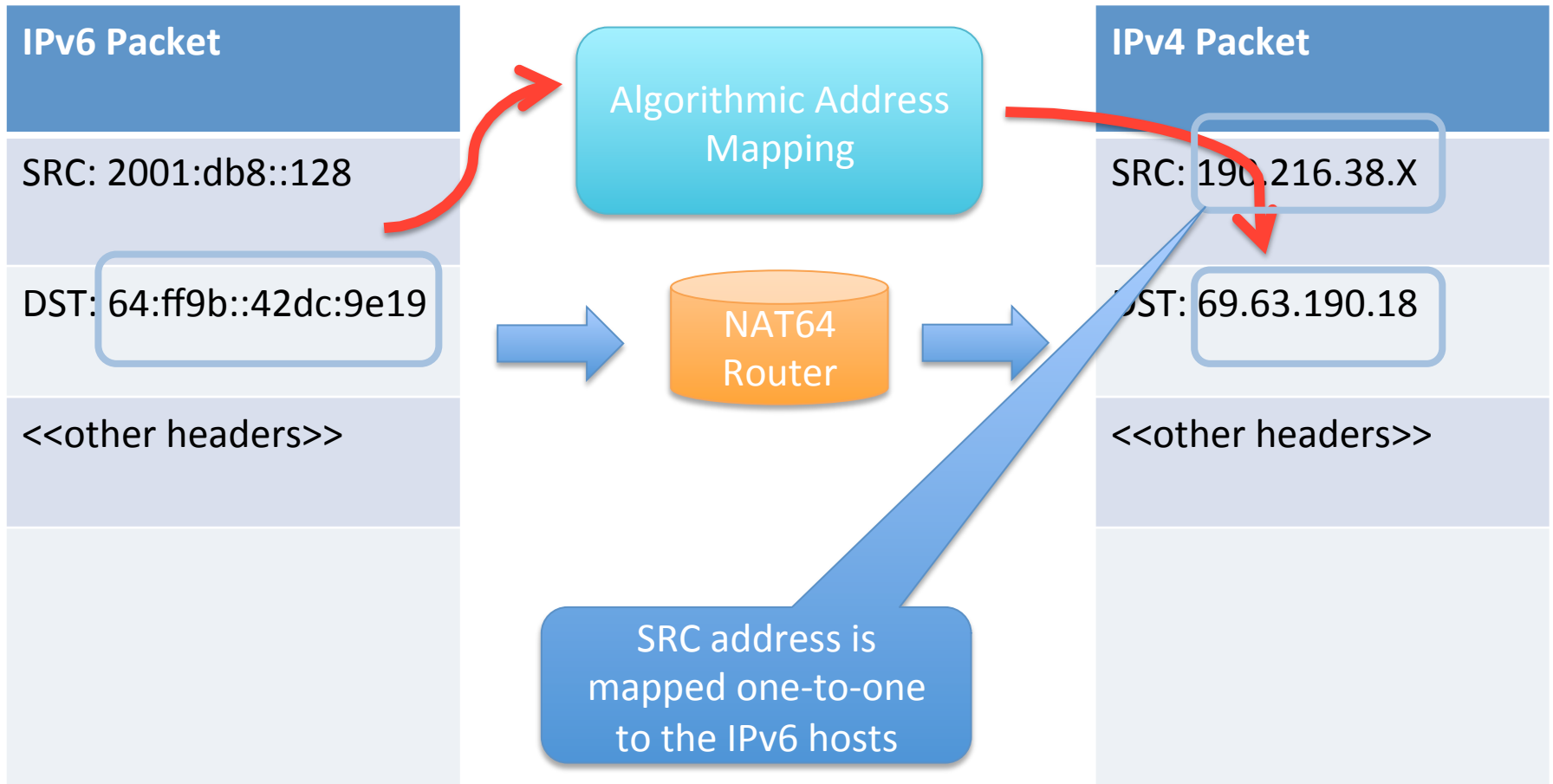
# NAT64

- We all know what it is...
  - Connect IPv6-only clouds with IPv4-only clouds
  - Translate protocol headers including addresses
  - Source IPv4 address for translated packet
    - Multiplexed using TCP / UDP port numbers: Stateful NAT64
    - One-to-one mapping: Stateless NAT64
  - Destination IPv4 address is embedded / encoded in IPv6 destination address

# Stateful NAT64



# Stateless NAT64



# Introducing TAYGA

- TAYGA is a user-mode, stateless NAT64 implementation
  - Uses the TUN driver
- Mapping between IPv6 hosts and IPv4 hosts is one-to-one
  - You need to have as many IPv4 addresses as hosts you want to have
- <http://www.litech.org/tayga/>

# Configuring TAYGA

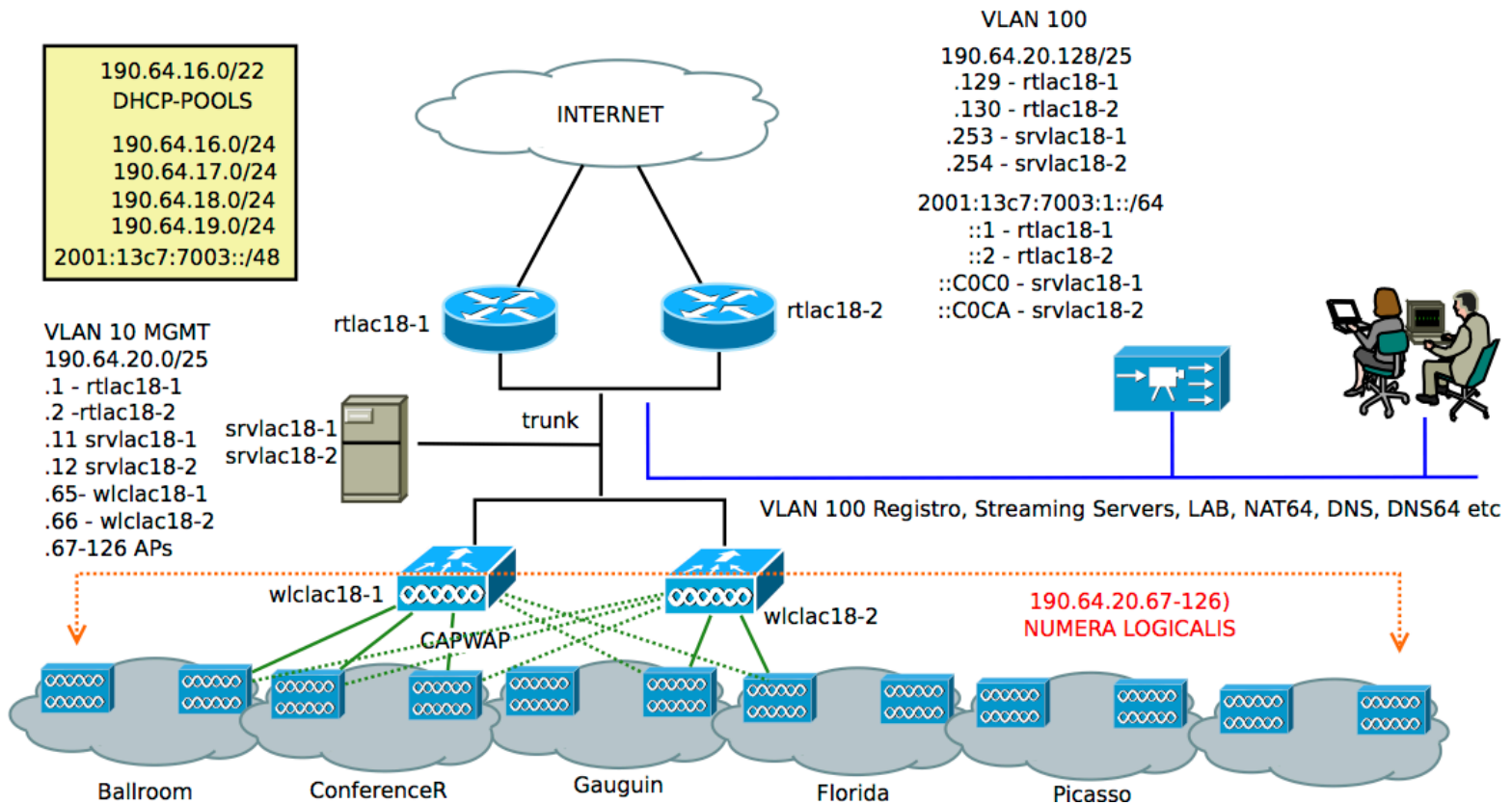
- {Taken from TAYGA's website}
- Compile:
  - The usual ./configure && make && make install
- Create /usr/local/etc/tayga.conf:

```
tun-device nat64
ipv4-addr 192.168.255.1
prefix 64:ff9b::/96
dynamic-pool 192.168.255.0/24
data-dir /var/db/tayga
```
- Create tun device and configure static routes and addresses

# The Experiment

- LACNIC 18, Montevideo, Uruguay in October 2012
- 350 attendees, ~550 devices
- Multiple SSIDs
  - Dual-Stack, IPv6-Only+NAT64

# The Network

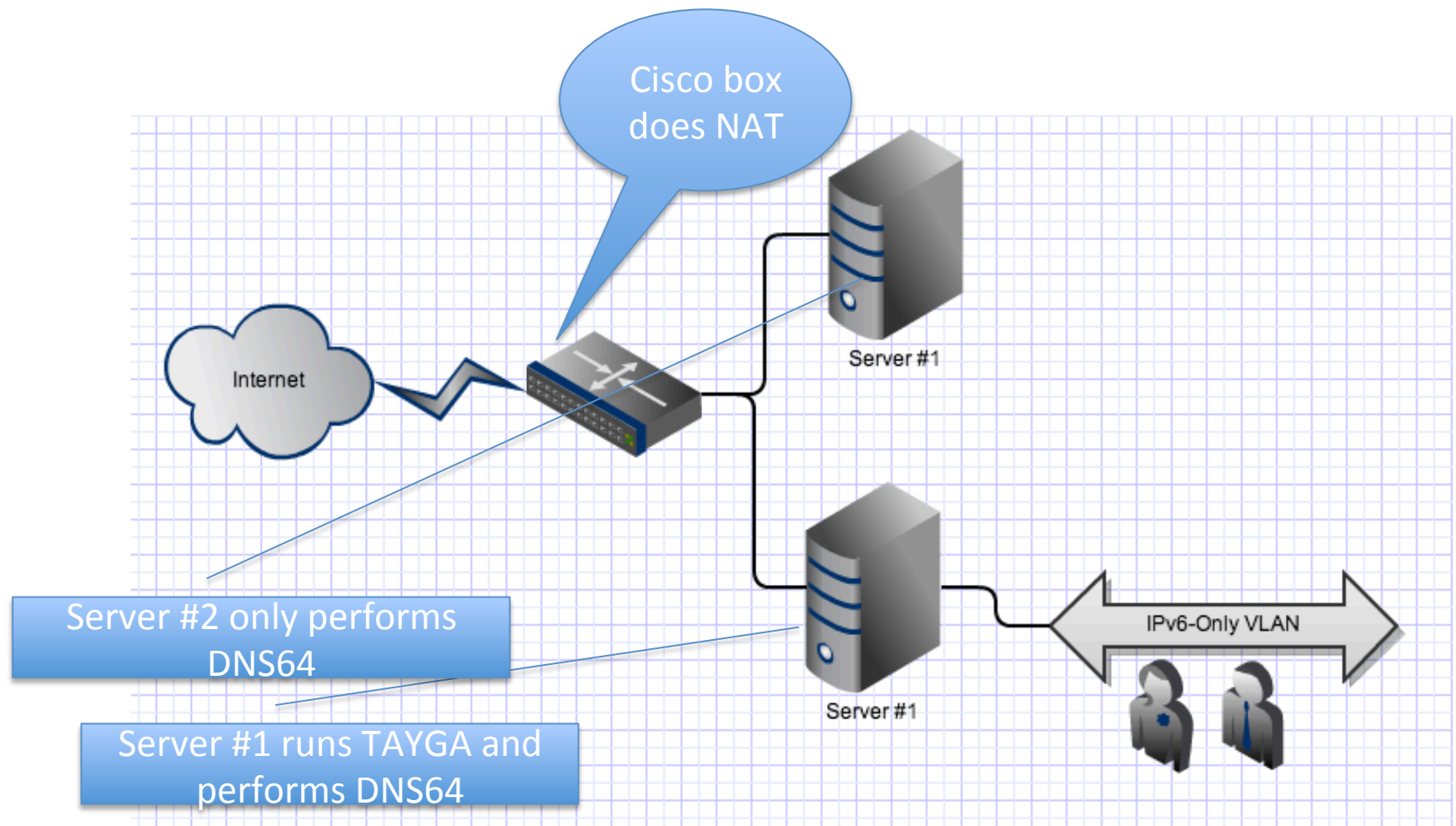




# Network Setup

- NAT64 to a private IPv4 pool
- Stateful NAT44 configured in the Cisco boxes
  - Could have used the servers themselves with *iptables -j MASQUERADE*

# Network Setup (ii)



# DNS64

- Implemented with BIND 9.8
- DNS64 synthetic answers restricted to the IPv6-only VLAN
- Very simple configuration:

```
dns64 64:ff9b::/96 {  
    clients <lacnic18pfx>:b0b0::/64;  
}
```

# Some Results

- Number of users
  - Not many, 10-12 devices peak
- Performance
  - No noticeable degradation compared to the dual stack SSID
- What works and what doesn't
  - Skype
  - Dropbox
  - Some users reported Twitter not working, couldn't confirm

## Some results (ii)

- The good about it:
  - No kernel modules needed
  - No unnecessary or possibly conflicting\*\* IOS upgrades to perform on the Cisco boxes
  - Easier troubleshooting / user tracking as every NAT64ed hosts has its own IPv4 address
    - Stateful NAT performed at network's edge

**THANKS !**