



IPTV SOLUTIONS

IPTV NETWORK REQUIREMENTS

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1 INTRODUCTION

In Network, normally coexist different services and protocols working together without altering between them to the correct operation of each. In this case, IPTV system uses different network services and protocols among there are some, such as video (Transport Stream), which need to be prioritized or simply separated from the others to not affect performance.

Among the services and protocols used by IPTV system the video services is that more quality of service requires, so there is essential to separate system services.

With this objective has been defined network topology combined star and tree technology based in VLAN (Virtual Local Area Network) that achieved the separation of services by creating different VLAN.

Below is the structure and network addressing desired for IPTV system, as well as the characteristics or minimum specifications for network electronics.

2 MINIMUM SPECIFICATIONS FOR EDGE SWITCH

- Managed Layer2.
- IGMP Snooping enabled multicast filtering.
- 24/48 Ports. Required 1000BASE-TX
- 2 slots SFP for GBIC modules of optical fiber Gigabit Ethernet 1000BASE-T
- Layer2 services:
 - Management VLAN IEEE 802.1Q
 - QoS (Quality of Service) traffic prioritization.
 - QoS based on port. (Basic)
 - IEEE 802.1p based on priorities. (Advanced)
- Rack mount.

3 MINIMUM SPECIFICATIONS FOR CORE SWITCH

- Managed Layer2 with inter-VLAN static routing.
- IGMP Querier, IGMP Snooping enabled multicast filtering.
- 24/48 Ports Gigabit Ethernet 1000BASE-T.
- 4 slots SFP for GBIC modules of optical fiber Gigabit Ethernet 1000BASE-T
- Layer2 services:
 - Management VLAN IEEE 802.1Q
 - QoS (Quality of Service) traffic prioritization.
 - QoS based on port. (Basic)
 - IEEE 802.1p based on priorities. (Advanced)
- Layer3 basic services
 - Inter-VLAN static routing.
- Rack mount.

4 NETWORK DESIGN BASED ON VLAN

Aspects to consider when configuring and installing the network based on VLAN:

- Separation of traffic by VLAN. Video VLAN must be defined to separate the video traffic from the rest of traffic working in the same installation.

5 IP ADDRESSING

For the VLAN which composes the system the following network addresses and gateway are specified:

VLAN IPTV

Server

- Server Default IP of VLAN IPTV is: 172.23.202.1/16
- Server IP for intranet (Client LAN): **Must be defined by network administrator**

Default dynamic IP on DHCP: from 172.23.0.128 to 172.23.0.254 (portable)

Default static IP assigned in DHCP for STB: from 172.23.x.1 to 172.23.x.254 (Not use 172.23.202.20 because is the default Gateway for IPTV Server).

Default static IP for the rest of network equipment: 172.23.1.x (headend/streamer/switches...)

Default multicast addressing range from 239.255.0.0 to 239.255.255.254

Multicast addressing range for STB management: 225.10.10.10 & 225.50.50.x (x depending of STB model).

6 TRAFFIC FLOWS FOR IPTV

Intra IPTV

- Video Traffic
 - Traffic from the headend to STB.
 - Multicast traffic.
- Traffic Data
 - Data traffic from the server to STB
 - Except this, the rest of data traffic will be Unicast
 - **VERY IMPORTANT: IGMP snooping must be supported for Ethernet network. IGMP Querier must be managed from IPTV VLAN.**
 - **Unknown Multicast Filtering.** Switches must permit multicast traffic required by STBs through IGMP and to filter the rest of traffic. This characteristic is known as “unregistered multicast port filtering”.

The services used between Server and STB are the following:

SERVER. <-> STB

- DHCP
- NTP (Unicast)
- HTTP (80)
- Multicast (STB management)
- Telnet (SERVER-->STB)
- Management tools STB . **Protocol TCP. Port 54321**

7 REMOTE ACCESS FOR IPTV

- The Router configuration for access control of the system must be as follow:
 - For VPN access, to permit connections to 22 port of IP 17 2.23.202.1 using inter-VLAN routing.
 - VLAN Intra net access: to permit access of 22 port of IP designed by network administrator.

8 INTERNET ACCESS THROUGH IPTV SERVER

- To enable all the services which IPTV software offers, the system must access to internet through the IPTV server. The connection to internet can be done as follows:
 - DHCP router with internet access.
 - Internet VLAN routing to IPTV VLAN.