IPv6 CPE Report
SUMMARY

Author: Alejandro D´Egidio
Coordination and Revision: Guillermo Cicileo
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Purpose

To know which customer-premises equipment (CPE) are used the most and which transition mechanisms are supported the most in the region.

Scope

This study is geared towards the CPE devices used with the following fixed network access technologies:

- ADSL
- DOCSIS
- FTTH

Note: This document is a summary of the LACNIC technical report titled "Report on IPv6 Support in Customer-Premises Equipment - Version 2" (2021)
https://imasd.lacnic.net/reportes/ipv6/informe-cpes-ipv6-2020-v7.docx.pdf

Identified CPE Devices

The following table shows consolidated information about the models of CPE devices with IPv6 support that ISPs use the most in our region:

Technology	Brand	Model
GPON	FiberHome	02FG
LTE	Gemtek	123+130
LTE	Gemtek	152ACN
GPON	Zhone	2428A1-NA
xDSL	D-Link	2730E
xDSL	D-Link	2740E
GPON	Calix	813 G-2 GigaHub
LTE	Huawei	B2268H
LTE	Huawei	B593
Cable	Hitron	CGNV2
Cable	Ubee	DDW365
Cable	Arris	DG-860

Cable	Arris	DG860A
Cable	Cisco	DPC3825
Cable	Cisco	DPC3925
Cable	Cisco	DPC3928
xDSL	D-Link	DS-124
xDSL	D-Link	DSL-224
GPON	Huawei	EchoLife HG8245
GPON	Huawei	EchoLife HG8245H5
GPON	Huawei	EchoLife HG8245Q2
GPON	Huawei	Echolife HG8247H
GPON	Huawei	EchoLife HG8247H5
GPON	Huawei	EchoLife HG8347R
GPON	Huawei	EchoLife HG8546M
GPON	Huawei	Echolife HS8245W
GPON	MikroTik	EG8141
GPON	Huawei	EG8141A5
GPON	Huawei	EG8141V5
GPON	ZTE	F660
GPON	ZTE	F660v6
GPON	ZTE	F660v8
GPON	ZTE	F670
GPON	ZTE	F670E
GPON	ZTE	F680
Cable	Sagemcom	Fast3686
Cable	Sagemcom	Fast3890v2
Cable	Sagemcom	Fast3890v3
GPON	Sagemcom	Fast5670
GPON	CALIX	Gigahub 844
GPON	Huawei	HG8245
GPON	Huawei	HG8245H
GPON	Huawei	HG8245W5
GPON	Huawei	HG8546M
GPON	Nokia	I-240w-A

GPON	Zyxel	PMG5617GA
Cable	Arris	SBG-6700
Cable	Arris	SBG-6850
Cable	Arris	SBG6580
LTE	Observa	SQI4N4
Wireless	MikroTik	SXT Lite5
Cable	Arris	TG1652A
Cable	Arris	TG1672
Cable	Arris	TG2482A
Cable	Arris	TG862A
Cable	Ubee	UBC1310
xDSL	Arcadyan	VRV9519BWAC23
GPON	TP-Link	XN020-G3v
LTE	Tozed	ZLT P11
GPON	Zhone	ZNID2426A
xDSL	ZTE	ZXHN H108N V2.5

Survey Summary

The information provided by the ISPs that participated in the survey can be summarize as follows:

- **Participation:** Given that in 2020 the number of participants increased by 246%, it is very important to highlight and thank ISPs and end users for their participation,
- **Percentage of ISPs providing IPv6:** Of a total of 75 ISPs identified in the survey, 36% provide IPv6 Internet service.
- **Leading supported transition mechanism: DS-Lite** is the leading transition mechanism and is present in **89.7%** of identified CPEs. Despite this, **only 1 ISP reported using** this mechanism.
- **CPE models by manufacturer:** Of a total of 60 CPE models that were identified, **15** are manufactured by Huawei. This means that Huawei owns **25%** of all declared CPE models.
- **Number of ISPs by CPE model:** Huawei has also deployed the highest number of the same CPE models in several ISPs.
- **Number of ISPs by manufacturer:** Huawei is the leader, with presence in 32.7% of ISPs, followed by ZTE with 11.5%.

Survey among CPE Manufacturers

By engaging in direct contact with the leading manufacturers in the market, our goal was to know which CPE models are the most deployed in the region and what transition mechanisms they support.

Surveyed Manufacturers

The survey was sent to various manufacturers, and responses were obtained from the following:
- ZTE
- Sagemcom
- Technicolor
- Huawei

Information Provided by the Manufacturers

ZTE

Manufacturer	Technology	Model	Transition mechanism
ZTE	GPON	F660v7	Dual Stack
ZTE	GPON	F670Lv1.1	DS-Lite / Dual Stack
ZTE	GPON	F680v6	DS-Lite / Dual Stack
ZTE	GPON	F680V9	DS-Lite / Dual Stack
ZTE	GPON	F688v9	DS-Lite / Dual Stack
ZTE	xDSL	H168N	Dual Stack
ZTE	ETH	H198A	Dual Stack
ZTE	ETH	H196A	Dual Stack
ZTE	xDSL	H168A	Dual Stack

As can be observed, ZTE already includes DS-Lite in their most modern devices.

Sagemcom

Manufacturer	Technology	Model	Transition mechanism
Sagemcom	Cable	Fast 3686	Dual Stack
Sagemcom	Cable	Fast 3890	Dual Stack / 464XLAT
Sagemcom	GPON	Fast 5657	Dual Stack / 464XLAT
Sagemcom	Cable	Fast 3896	Dual-Stack Lite

Sagemcom is using 464XLAT as an IPv4aaS transition mechanism in its latest generation CPEs for both GPON and Cable.

Technicolor

MODEL	Desc.	Easy Mesh Support	IPv6 Support	DS-Lite	Lightweight 4over6 (lw4o6)	464XLAT	MAP-T	MAP-E
CGA4233	DOCSIS 3.1 802.11n/ac Gateway	YES	YES	YES	YES	NO	Roadmap	Roadmap
CGA4331	DOCSIS 3.1 802.11ax Gateway	YES	YES	YES	YES	NO	Roadmap	Roadmap
FGA2232	2.5G GPON 802.11n/ac Gateway	YES	YES	YES	NO	YES	YES	YES
FGA5330	10G GPON 802.11ax Gateway	YES	YES	YES	NO	YES	YES	YES

Technicolor is the manufacturer with the largest number of transition mechanisms in its different models of CPE devices.

Huawei

	Uplink	IPv4/IPv6 Dual Stack	DS-Lite	MAP-T
HGW ONT	PON/Fiber	HG8145V5, HG8245W5-8T, HG8245W5-6T, HG8245W5, HG8245Q2, HG8245Q, HG8145X6, HN8245X6s-8N, HG8245X6-8N, HG8245H, HG8247H, HG8247Q, HN8245Q, HG8245U, H8010H, HG8040H	HG8145V5, HG8245W5-8T, HG8245W5-6T, HG8245W5, HG8245Q2, HG8245Q, HG8145X6, HN8245X6s-8N, HG8245X6-8N, HG8245H, HG8247H, HG8247Q, HN8245Q, HG8245U (to enable with customization)	On the roadmap. Will be supported in 2021H2 and will be customized on the latest models: HG8145X6, HN8245X6s-8N, HG8245X6-8N
xDSL CPE	xDSL/copper	DG8045, DN8245V, HG531	DG8045, DN8245V, HG531	

Detailed Information Provided by the Manufacturers

The following table was prepared once the information provided by CPE manufacturers had been collected and consolidated.

Manufacturer	Technology	Model	Transition mechanism
Technicolor	Cable	DPC3848	DS-Lite
Technicolor	Cable	CGA4233	DS-Lite
Technicolor	Cable	CGA4233	lw4o6
Technicolor	Cable	CGA4331	DS-Lite
Technicolor	Cable	CGA4331	lw4o6
Technicolor	GPON	TG1700	DS-Lite
Technicolor	GPON	FGA2230/2	DS-Lite
Technicolor	GPON	FGA2230/2	464XLAT
Technicolor	GPON	FGA2230/2	MAP-T
Technicolor	GPON	FGA2230/2	MAP-E
Technicolor	GPON	FGA5330	DS-Lite
Technicolor	GPON	FGA5330	464XLAT
Technicolor	GPON	FGA5330	MAP-T
Technicolor	GPON	FGA5330	MAP-E
Technicolor	xDSL	TG582	DS-Lite
Technicolor	xDSL	TG588	DS-Lite
Technicolor	xDSL	TG589	DS-Lite
Technicolor	xDSL	TG789	DS-Lite
Technicolor	xDSL	DGA1200	DS-Lite
Technicolor	Cable	DPC3941	DS-Lite
Technicolor	Cable	DPC3925	DS-Lite
Technicolor	Cable	DPC3928	DS-Lite
Technicolor	Cable	DPC3828	DS-Lite
Technicolor	Cable	DPC3825	DS-Lite
Technicolor	Cable	TC8305	DS-Lite
ZTE	GPON	F670Lv1.1	DS-Lite
ZTE	GPON	F680v6	DS-Lite
ZTE	GPON	F680V9	DS-Lite
ZTE	GPON	F688v9	DS-Lite

Sagemcom	Cable	Fast 3890	464XLAT
Sagemcom	GPON	Fast 5657	464XLAT
Sagemcom	Cable	Fast 3896	464XLAT
Huawei	GPON	HG8145V5	DS-Lite
Huawei	GPON	HG8245W5-8T	DS-Lite
Huawei	GPON	HG8245W5-6T	DS-Lite
Huawei	GPON	HG8245W5	DS-Lite
Huawei	GPON	HG8245Q2	DS-Lite
Huawei	GPON	HG8245Q	DS-Lite
Huawei	GPON	HG8145X6	DS-Lite
Huawei	GPON	HG8145X6	MAP-T
Huawei	GPON	HN8245X6s-8N	DS-Lite
Huawei	GPON	HN8245X6s-8N	MAP-T
Huawei	GPON	HG8245X6-8N	DS-Lite
Huawei	GPON	HG8245X6-8N	MAP-T
Huawei	GPON	HG8245H	DS-Lite
Huawei	GPON	HG8247H	DS-Lite
Huawei	GPON	HG8247Q	
Huawei	GPON	HN8245Q	DS-Lite
Huawei	GPON	HG8245U	DS-Lite
Huawei	GPON	H8010H	
Huawei	GPON	HG8040H	
Huawei	xDSL	DG8045	DS-Lite
Huawei	xDSL	DN8245V	DS-Lite
Huawei	xDSL	HG531	DS-Lite

Information Provided by the Manufacturers – Summary

- **Supported transition mechanisms:** A look at all models of CPE devices shows that all transition mechanisms are supported, yet few models of CPE support multiple transition mechanisms.
- **Leading transition mechanism:**
  - DS-Lite is the leading transition mechanism, used in 68.6% of all identified models of CPE.
  - 464XLAT and MAP-T are beginning to appear in more models of CPE, with each of these mechanisms currently in use in 9.3% of CPE models.
- **Transition mechanisms by manufacturer:**
  - **Technicolor** is the manufacturer that supports the highest number of transition mechanisms.
    - **GPON**: Currently recommended GPON CPE devices support all required transition mechanisms except lw4o6.
    - **Cable:** Their recommended CPE devices support DS-Lite and lw4o6, and support for MAP-T and MAP-E is in their Roadmap.
  - **Sagemcom**: Their latest generation **GPON and Cable** CPE devices **include 464XLAT** as a transition mechanism.
  - **ZTE**: Their **new models already support DS-Lite** as a transition mechanism.

Information Provided by the Manufacturers – Conclusion

Conclusion obtained after analyzing the information provided by the manufacturers:

- **Leading transition mechanism:** We observed that **DS-Lite** is present in almost 69% of the CPE devices reported by manufacturers, and this allows ISPs in the region to focus their recommendations and training actions on this mechanism.

Conclusions

After this study on the deployment of IPv6-ready CPE devices in the region and the transition mechanisms they support, having surveyed various ISPs and manufacturers, we can conclude the following:

- **IPv6 deployment status**: Just 36% of the ISPs that completed the survey confirmed that they are offering IPv6 to their customers.
- **Leading transition mechanism:** Just as in the 2019 report, the leading transition mechanism is **DS-Lite**. However, this report highlights the growth of **464XLAT** and **MAP-T**.
- **Manufacturers with the greatest presence:** The following manufacturers were observed to have the greatest presence among ISPs:
    - **Huawei**: 37%
    - **ZTE**: 11.5%
    - **Arris**: 9.6%
- **Most innovative manufacturer: Technicolor** appears to be the most innovative manufacturer, as it supports most of the expected transition mechanisms.