IPv6 Knowledge and how to use it on HCP

正文

收起

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IPv6 is the latest version of the Internet Protocol (IP) and is designed to eventually replace the curre nt version, IPv4. It was developed to address the growing need for IP addresses as more and more devices are being connected to the internet.

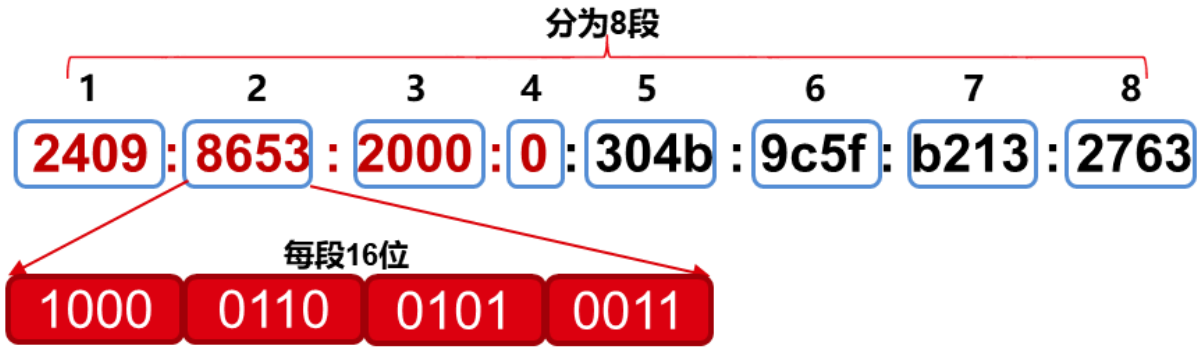
One of the main differences between IPv4 and IPv6 is the length of the IP address. IPv4 uses 32-bit addresses, while IPv6 uses 128-bit addresses. This allows for a significantly larger number of unique IP addresses, making it possible to assign a unique address to every device connected to the intern et.

In addition, IPv6 includes features such as built-in security (IPsec), improved QoS (Quality of Servic e) capabilities, and better support for mobile devices.

IPv6 adoption has been increasing in recent years, and it is now widely supported by modern operati ng systems and networking equipment. While IPv4 is still in use and will continue to be for some tim e, the transition to IPv6 is expected to continue as the number of connected devices continues to gro w.

1. **IPv6 address format**

The address length will be longer than IPV4. The length of ipv6 address is 128 bits.



Instructions about IPV6 address

• IPv6 的地址会有字母 : A,B,C,D,E,F

The ipv6 address is not pure numbers combination, it may contains letters, such as A,B,C,D,E,F

• ::表示有多个 0 值得 16 位组， 一个地址中只能出现一次

:: is used for indicate this arrange has many 0, but one ipv6 address has only one ::

• 回环地址: 0:0:0:0:0:0:0:1 ->::1

The ipv6 loopback address is 0:0:0:0:0:0:0:1 , we can change it to another format also ::1

• link-local address 链路本地地址 FE80::/10 这个概念类似于 ipv4 中，当 DHCP 分配失败时自动生成的 169.254.XXX.XXX 这样的地址，源地址或目的地址中含有 link-local address 的报文，路由器都不应当转发它。这样的报文只能在一个 LAN 中互通，只能在本地链路使用，不能在子网间路由

there are link-local ipv6 address , it will be show FE80:: /10 normally, when we use ipv4 address, it the NIC can’t get ip address from router, it will generate a local address, such 169.254.xxx.xxx, there kind of address can’t be used for transmit via router, but it can be used for communicating with other local address. The FE80 ipv6 address has similar function.

• IPv6 地址有两个组成部分： 前缀+ 接口标识

前缀是地址中具有固定值的位数部分或表示网络标识的位数部分。IPv6 的子网标识、路由器和地址范围前缀表示法与 IPv4 采用的 CIDR 标记法相同，其前缀可书写为：地址/前缀长度

例如：2409 : 8653 : 2000 : 0 : 304b : 9c5f : b213 : 2763/ 64 ,代表前 64 位为前缀

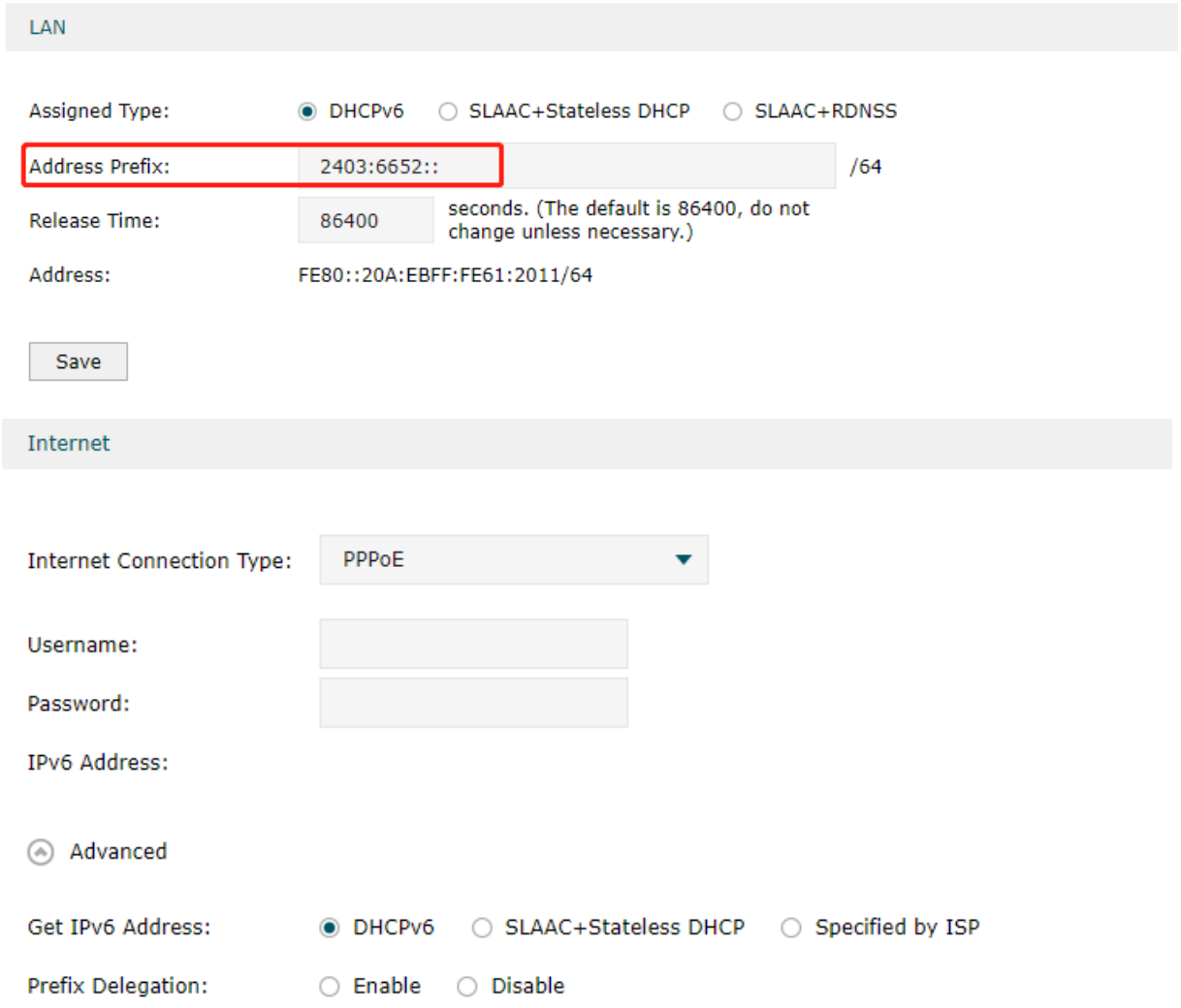
后 64 位则为 Interface ID， 接口标识

The IPv6 address consists of two parts: the prefix and the interface identifier.

The prefix is the fixed-length part of the address that represents the network identifier, and is similar to the network portion of the IPv4 address. The subnet identifier, router, and address range prefix notation in IPv6 uses the same CIDR notation as in IPv4, and can be written as: address/prefix length.

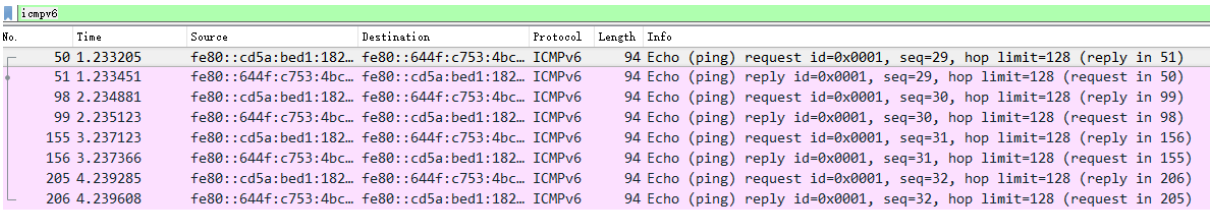
For example, 2409:8653:2000:0:304b:9c5f:b213:2763/64 represents the first 64 bits as the prefix, and the remaining 64 bits as the interface identifier.

In the public network the prefix of ipv6 will be assigned by ISP, but if we test ipv6 in local network, we can use router to assign the prefix, we can define the prefix number free.



About capturing ipv6 data via wireshark

The wireshark command changed, such as icmp command can be used for capturing ping data on ipv4 network, but for ipv6 network, the command should be changed to icmpv6, more command inst ruction on ipv6, please search on google.



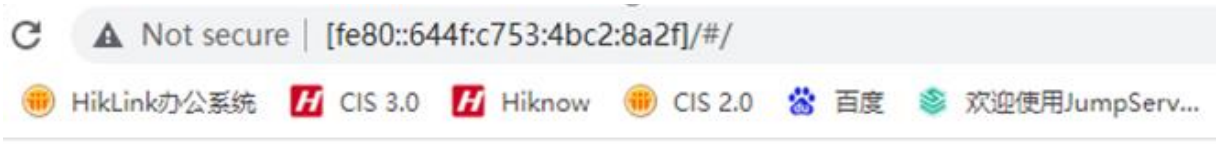
icmpv6

No.	Time	Source	Destination	Protocol	Length	Info
50	1.233205	fe80::cd5a:bed1:182…	fe80::644f:c753:4bc…	ICMPv6	94	Echo (ping) request id=0x0001, seq=29, hop limit=128 (reply in 51)
51	1.233451	fe80::644f:c753:4bc…	fe80::cd5a:bed1:182…	ICMPv6	94	Echo (ping) reply id=0x0001, seq=29, hop limit=128 (request in 50)
98	2.234881	fe80::cd5a:bed1:182…	fe80::644f:c753:4bc…	ICMPv6	94	Echo (ping) request id=0x0001, seq=30, hop limit=128 (reply in 99)
99	2.235123	fe80::644f:c753:4bc…	fe80::cd5a:bed1:182…	ICMPv6	94	Echo (ping) reply id=0x0001, seq=30, hop limit=128 (request in 98)
155	3.237123	fe80::cd5a:bed1:182…	fe80::644f:c753:4bc…	ICMPv6	94	Echo (ping) request id=0x0001, seq=31, hop limit=128 (reply in 156)
156	3.237366	fe80::644f:c753:4bc…	fe80::cd5a:bed1:182…	ICMPv6	94	Echo (ping) reply id=0x0001, seq=31, hop limit=128 (request in 155)
205	4.239285	fe80::cd5a:bed1:182…	fe80::644f:c753:4bc…	ICMPv6	94	Echo (ping) request id=0x0001, seq=32, hop limit=128 (reply in 206)
206	4.239608	fe80::644f:c753:4bc…	fe80::cd5a:bed1:182…	ICMPv6	94	Echo (ping) reply id=0x0001, seq=32, hop limit=128 (request in 205)

How to login HCP via ipv6.

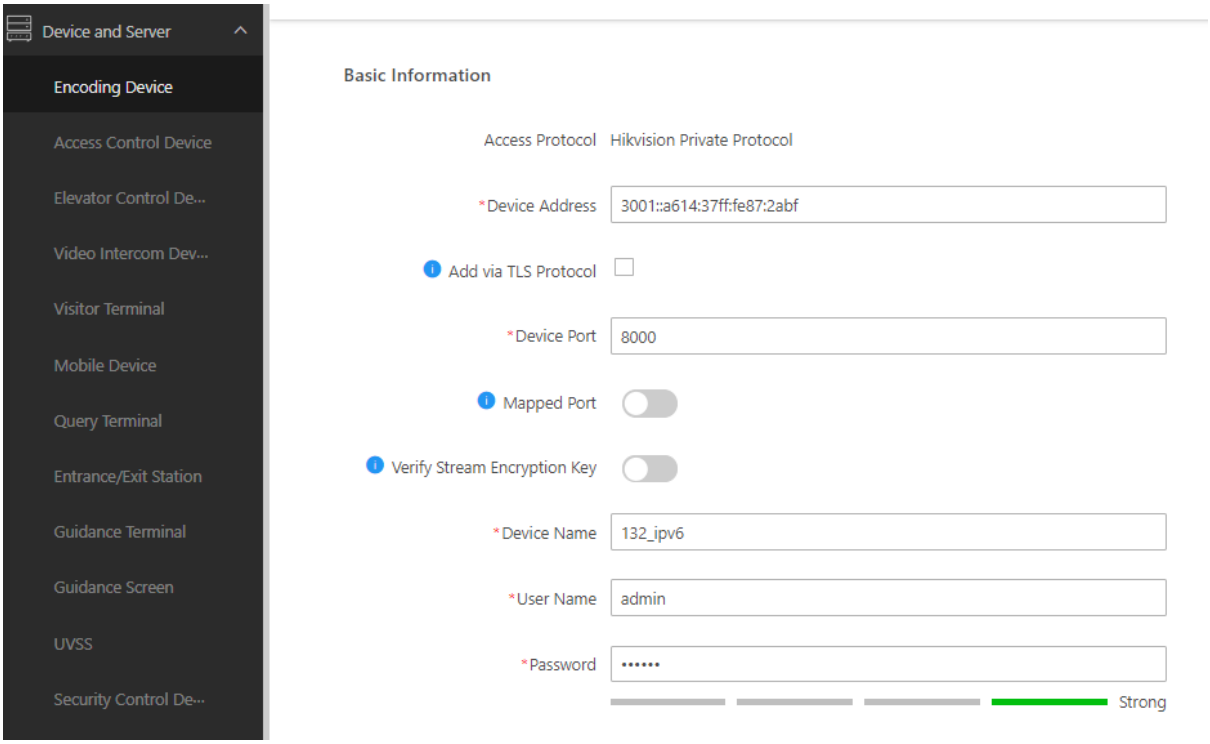
http://[fe80::644f:c753:4bc2:8a2f]

通过 IPv6 地址登录 HCP 平台，记得用中括号



HCP：

- HCP support IPv4 and IPv6 simultaneously
- Web, APP, CS client can login via IPV6
- Supported add OpenAPI via ipv6
- HCP Service can support ipv6：SYS 、BeeAgent 、OpenAPI、 Nginx、 Postgresql


Device and Server
Encoding Device
Access Control Device
Elevator Control De...
Video Intercom Dev...
Visitor Terminal
Mobile Device
Query Terminal
Entrance/Exit Station
Guidance Terminal
Guidance Screen
UVSS
Security Control De...
Basic Information
Access Protocol
Hikvision Private Protocol
*Device Address
3001::a614:37ff:fe87:2abf
Add via TLS Protocol
*Device Port
8000
Mapped Port
Verify Stream Encryption Key
*Device Name
132_ipv6
*User Name
admin
*Password
Strong