

192.168.1.1

2001:db8:168::1

雙協定時代 網路問題分析

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專注內網管理

5 年

系統開發

10 年

產業經驗

100+

成功導入

問題一

IPv6很難管

某單位要開始用IPv6

申請
IPv6
網段



Switch
設定
Prefix



設備
取得
IPv6

SLAAC

IPv6

導入完成

IPv6 位址

2001:b030:5:13:f5bf:b796:b88c:988

臨時 IPv6 位址

2001:b030:5:13:c8cd:c96c:4370:879

連結-本機 IPv6 位址：

fe80::f5bf:b796:b88c:9880%14

預設閘道

fe80::f2f7:55ff:febc:ab44%14

SLAAC

對外是用臨時 IPv6

臨時 IPv6 位址 **會換**

不建議用SLAAC

Switch 備援機制

記得都要關

問題二

DHCPv6

不可靠？

某單位要開始用IPv6

SLAAC



DHCPv6

DHCPv6 會派 重複的IPv6給設備

93	20.611777	fe80::f2f7:55ff:febc:ab47	fe80::90bf:3acb:f9:ca6	DHCPv6 197 Reply	XID: 0x31ff45	IAA: 2001:b030:2030:116:3210:d0ae:4ace:e035
142	25.880208	fe80::f2f7:55ff:febc:ab47	fe80::1d30:32e2:3382:2316	DHCPv6 208 Reply	XID: 0x992253	IAA: 2001:b030:2030:116:3210:d0ae:4ace:e035

Ethernet II, Src: Cisco_bc:ab:47 (f0:f7:55:bc:ab:47), Dst: Vmware_a2:4f:b7 (00:50:56:a2:4f:b7)
Internet Protocol Version 6, Src: fe80::f2f7:55ff:febc:ab47, Dst: fe80::90bf:3acb:f9:ca6
DHCPv6

Message type: Reply (7)

Identity Association for Non-temporary Address

IA Address

Option: IA Address (5)

Length: 24

Value: 2001b030203001163210d0ae4acee035000a8c00000fd200

IPv6 address: 2001:b030:2030:116:3210:d0ae:4ace:e035

Ethernet II, Src: Cisco_bc:ab:47 (f0:f7:55:bc:ab:47), Dst: Vmware_99:99:99 (00:50:56:99:99:99)
Internet Protocol Version 6, Src: fe80::f2f7:55ff:febc:ab47, Dst: fe80::1d30:32e2:3382:2316
DHCPv6

Message type: Reply (7)

Identity Association for Non-temporary Address

IA Address

Option: IA Address (5)

Length: 24

Value: 2001b030203001163210d0ae4acee035000a8c00000fd200

IPv6 address: 2001:b030:2030:116:3210:d0ae:4ace:e035

DHCP

MAC

DHCPv6

DUID / IAID

✓ Client Identifier
Option: Client Identifier (1)
Length: 14
Value: 0001000123570586005056a24fb7
DUID: 0001000123570586005056a24fb7

✓ Identity Association for Non-temporary Address
Option: Identity Association for Non-tempora
Length: 12
Value: 0e0050560000000000000000
IAID: 0e005056
T1: 0
T2: 0

✓ Client Identifier
Option: Client Identifier (1)
Length: 14
Value: 0001000123570586005056a24fb7
DUID: 0001000123570586005056a24fb7

✓ Identity Association for Non-temporary Address
Option: Identity Association for Non-tempora
Length: 12
Value: 0e0050560000000000000000
IAID: 0e005056
T1: 0
T2: 0

DUID / IAID

設計上是不會重複的
但是...

Acronis / Ghost

系統備份還原

會造成重複

問題三

IPv6很難記

某單位要開始用IPv6

192.168.16.11

2001:b030:2030:116:
3210:d0ae:4ace:e035

192.168.16.11

2001:b030:2030:116::16:11

所以手動設定？

DHCPv6

跟IPv4產生連結

問題四

防火牆擋

IPv6

某單位要開始用IPv6

IPv6通訊怪怪的

DHCP拿不到IPv6

防火牆可以設定
不回應ICMPv6封包
不取得DHCPv6 IP

檔案(F) 動作(A) 檢視(V) 說明(H)



GCB Windows7 Firewall [PDXIS_DC.PDXIS.COM] 原則

- 電腦設定
 - 原則
 - 軟體設定
 - Windows 設定
 - 名稱解析原則
 - 指令碼 - (啟動/關機)
 - 安全性設定
 - 帳戶原則
 - 本機原則
 - 事件記錄檔
 - 受限群組
 - 系統服務
 - 登錄
 - 檔案系統
 - 有線網路 (IEEE 802.3) 原則
 - 具有進階安全性的 Windows 防火牆
 - 具有進階安全性的 Windows 防火牆
 - 輸入規則
 - 輸出規則
 - 進階安全性規則

名稱	程式	通訊協定	本機通訊埠
✓ DHCPv6In	任一		
✓ 核心網路功能 - IPv6 的動態主機設定通訊協定 (DHCPV6-In)	%SystemRoot%\system32\svchost.exe	UDP	546
✓ 核心網路功能 - 動態主機設定通訊協定 (DHCP-In)	%SystemRoot%\system32\svchost.exe	UDP	68

防火牆的設定

要把IPv6

考慮進去

問題五

IPv6 首碼長度

某單位要IPv6想換DHCPv6

找不到合適的產品

首碼長度 112

新增領域精靈

領域首碼

您必須提供首碼才能建立領域。您還可以選擇為領域提供喜好設定值。

輸入領域分配位址的 IPv6 首碼，以及領域的喜好設定值。

首碼



RFC 7421

最多切64

問題六

真的沒用IPv6?

某單位每天不定時網路癱瘓

沒有新設備

沒有改變網路架構

只有IPv4








Nc	Time	Source	Destination	Protocol	Length	Info
	0.000000	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.000621	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.001195	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.001801	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.003067	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.005492	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.013252	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.013763	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.014363	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.018223	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.018454	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.019051	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.019679	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.020245	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.020843	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.023237	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.024437	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.025032	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.026729	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.029722	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.031515	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.032611	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.033811	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.034411	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.039794	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report
	0.040888	fe80::6e0b:84ff:fe41:6a24	ff02::1:ff3d:66ba	ICMPv6	86	Multicast Listener Report

Multicast Listener Discovery / MLD

目的是讓IPv6 router有能力發現每個連接的.....

設定(C)...

這個連線使用下列項目(O):

-  FortiClient NDIS 6.3 Packet Filter Driver
-  網際網路通訊協定第 4 版 (TCP/IPv4)
-  Microsoft Network Adapter 多工器通訊協定
-  Microsoft LLDP 通訊協定驅動程式
-  網際網路通訊協定第 6 版 (TCP/IPv6)
-  Link-Layer Topology Discovery Responder
-  Link-Layer Topology Discovery Mapper I/O Driver

IPv6

進入我們的網路