Chapter 30: SNTP

Contents

Chapter 30 SNTP

30.1 SNTP Overview

The Simple Network Time Protocol Version 4 (SNTPv4), which is a subset of the Network Time Protocol (NTP) used to synchronize computer clocks in the Internet. In common, there is at least one server in the network, it provides reference time for clients, finally, all clients in the network synchronized local clocks.

30.1.1 SNTP Operation Mechanism

SNTPv4 can be worked in four modes: unicast, multicast, broadcast and anycast.In unicast mode, client actively sends a request to server, and server sends reply packet to client according to the local time structure after receiving requirement.

In broadcast and multicast modes, server sends broadcast and multicast packets to clientperiodically, and client receives packet from server passively.

In anycast mode, client actively sends request to local broadcast or multicast address, and all servers in the network will reply to the client. Client will choose the server whose reply packet is first received to be the server, and drops packets from others. After choosing the server, workingmode is the same as that of the unicast.

In all modes, after receiving the reply packet, client resolves this packet to obtain current

standard time, and calculates network transmit delay and local time complementary, and thenadjusts current time according them.

30.2 Configure SNTP Client

30.2.1 SNTP Client Configuration List

Configuration Task	Description	Detailed Configuration
Enable SNTP client	Required	30.2.2
Modify SNTP client mode	Optional	30.2.3
Configure SNTP sever IP address	Optional	30.2.4
Modify broadcast transfer delay	Optional	30.2.5
Configure multicast TTL	Optional	30.2.6
Configure interval polling	Optional	30.2.7
Configure overtime retransmit	Optional	30.2.8
Configure valid sever list	Optional	30.2.9
Configure MD5 authentication	Optional	30.2.10
Display and maintain SNTP client	Optional	30.2.11

30.2.2 Enable SNTP Client

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Enable SNTP client	**sntp client**	

Disable SNTP client	**undo sntp client**	

30.2.3 Modifying SNTP Client Operating Mode

Administrators can modify SNTP operating mode according to the network ---------- unicast, multicast, broadcast or anycast.

Operation	Command	Remarks
Enter globally configuration mode	**system-view**	
modifying SNTP client Operation mode	**sntp client mode** { **broadcast** | **unicast** | **multicast** | **anycast** [**key** *key*] }	Broadcast modeby default

30.2.4 Configure SNTP Sever Address

SNTP client must configure appointed SNTP sever in the unicast way. You can also use belowCommands to configure key when connecting to SNTP server by authentication.

Operation	Command	Remarks
Enter globally configuration mode	**system-view**	
configure SNTP sever address	**sntp server** *IP* [**key** *key*]	

30.2.5 Modifying Broadcast Transfer Delay

When SNTP client works in the broadcast or multicast way, it needs to use broadcast transfer delay. In the broadcast way, the local time of SNTP client equals the time receiving from severadds transferring time. Administrators modify the transferring time according to the actual bandwidth in the network.

Operation	Command	Remarks

Enter globally configuration mode	**system-view**	
configure broadcast transfer delay	**sntp client broadcastdelay** *time*	3ms by default

30.2.6 Configure Multicast TTL

To restrict the pass range of multicast message, SNTP client needs configure the sendingmulticast TTL when working both in the any cast and in the request way of forwarding the multicast address.

Operation	Command	Remarks
Enter globally configuration	**system-view**	
Configure multicast TTL	**sntp client multicast ttl** *ttl*	255 by default

30.2.7 Configure Interval Polling

Configure interval polling is necessary when SNTP client works in the uticast or any cast way.SNTP client adjusts the local system time by each interval polling requesting to sever.

Operation	Command	Remarks
Enter globally configuration mode	**system-view**	
Enter port configuration mode	**interface ethernet** *device/slot/port*	
Configure interval polling	**sntp client poll-interval** *time*	1000s by default

30.2.8 Configure Overtime Retransmist

This Command is effective in unicast and any cast operating mode. SNTP request packet is UDP packet, overtime retransmission system is adopted because the requirement packet cannotbe guaranteed to send to the destination. Use above Commands to configure retransmit times

and the interval.

Operation	Command	Remarks
Enter globally configuration mode	**system-view**	
configure overtime retransmit	**sntp client retransmit-interval** *time*	5s by default,
configure overtime retransmit times	**sntp client retransmit** *times*	By default 0, means do not retransmit

30.2.9 Configure Valid Servers

In broadcast and multicast mode, SNTP client receives protocol packets from all servers withoutdistinction. When there is malice attacking server (it will not provide correct time), local time cannot be the standard time. To solve this problem, a series of valid servers can be listed to filtrate source address of the packet.

Operation	Command	Remarks
Enter globally configuration mode	**system-view**	
configure valid servers	**sntp client valid-server** *IP mask*	

30.2.10 Configure MD5 Authentication

To enhance the safety, MD5 authentication can be setup between SNTP sever and SNTP clientwhich only receives the authenticated message. MD5 authentication configures as below:

Operation	Command	Remarks
Enter globally configuration mode	**system-view**	
Startup MD5 authentication	**sntp client authenticate**	

Configure authentication keys	**sntp client authentication-key** *key-number* **md5** *value*	

30.2.11 Display and Maintain SNTP Client

After finishing above configuration, you can use below Commands to display SNTP clientconfiguration.

Operation	Command	Remarks
Display and maintain SNTP client	**display sntp client**	