SIP Server HA Deployment Guide

Windows

12/18/2025

Contents

Windows

Complete these steps to set up SIP Server HA on Windows Server 2008 or 2008 R2, using the IP Address Takeover method.

> ## Important
> Genesys recommends using Windows 2008 R2 or later. When using the IP Address Takeover method on Windows 2008 R2, make sure you install the Microsoft Hotfix referenced in http://support.microsoft.com/kb/2811463.

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Ensure that your system meets the deployment prerequisites

There are basic requirements and recommendations for deploying an IP Address Takeover HA configuration of SIP Server in your environment.

- Two separate physical host computers: one for the primary SIP Server and one for the backup SIP Server.

  > ## Important
  > Genesys recommends that you install primary and backup instances of SIP Server on different host computers. However, SIP Server does support HA configurations in which both primary and backup SIP Server instances reside on a single host server.

- Software requirements:

  - For the Windows OS to send a gratuitous ARP packet when a new IP address is assigned on the computer, you must install the Microsoft Hotfix 2811463 for Windows 2008 R2. See

http://support.microsoft.com/kb/2811463/en-us.

- SIP Server must be installed and configured on both host computers.

- LCA release 8.1.2 or higher must be installed and configured on both host computers.

- In deployments where SIP Server uses two NICs, one NIC is used for SIP communication, while the second NIC is used for other kinds of communication with various components. Solution Control Server (SCS) manages and monitors the SIP Server application through the second NIC. When you create a Host object, make sure you specify the hostname or IP address of the second NIC (dedicated to other non-SIP communication).

- Networking requirements:

  - Static IP addresses are required for all network interfaces on both host computers.

  - It is highly recommended that you have primary and backup SIP Server hosts on a dedicated subnet. A dedicated subnet ensures that Virtual IP Address Takeover affects only the Address Resolution Protocol (ARP) table on the subnet router. Without a dedicated subnet, hosts that communicate with SIP Server might fail to update the ARP table during Virtual IP Address Takeover.

  - In deployments where SIP Server uses two NICs, one NIC is used for SIP communication, while the second NIC is used for other kinds of communication with various components. Each host has one NIC connected to a subnet dedicated to SIP communication. The Virtual IP address should be within the range of the network to which the NIC dedicated to SIP communication is connected. The second NIC on both hosts should be connected to a separate network.

Configure the primary SIP Server

1. Stop the SIP Server applications on the primary and backup hosts. Genesys SIP Server applications can be stopped by using the Genesys Solution Control Interface.

2. Open the Configuration Manager.

3. Select the `Applications` folder, and right-click the SIP Server Application object that you want to configure as the primary SIP Server. Select `Properties`.

4. Click the `Options` tab.

   a. Select the **[TServer]** section.

      i. Set the **sip-port** option to the port number that will be used by both the primary and backup SIP Server applications.

      ii. Set the **sip-address** option to the Virtual IP address.

      iii. Set the **control-vip-scripts** option to `true`.

      iv. Set the **sip-vip-script-up** option to the name of the Application object (SIP_SERVER_PRIMARY_VIP_UP) that will be created later for a script that enables the Virtual IP address on the primary SIP Server host.

      v. Set the **sip-vip-script-down** option to the name of the Application object (SIP_SERVER_PRIMARY_VIP_DOWN) that will be created later for a script that disables the Virtual IP address on the primary SIP Server host.

      vi. To enable Virtual IP address monitoring, set the **sip-iptakeover-monitoring** option to `true`.

vii. To enable NIC status monitoring, set the **tlib-nic-monitoring** option to `true`.

viii. To enable SIP NIC status monitoring, in scenarios where a dedicated NIC is used for SIP communication (the two-NIC configuration), configure the **sip-nic-address** option and set the **sip-nic-monitoring** option to `true`.

ix. To enable SIP traffic monitoring, set the **sip-pass-check** option to `true`.

x. Click `Apply` to save the configuration changes.

b. If you are deploying a hot-standby configuration, it is recommended that you enable ADDP for communication between the primary and backup SIP Servers. To enable ADDP, select the **[backup-sync]** section, and configure the following options:

- **sync-reconnect-tout**
- **protocol**
- **addp-timeout**
- **addp-remote-timeout**

In the preceding example, the guideline that is used to configure ADDP settings is to set the **addp-timeout** and **addp-remote-timeout** options to 5 sec or at least two times the established network-latency time, and to set the **sync-reconnect-tou**t option to at least two times the timeout value plus the established network latency.

> ## Important
>
> For more information about ADDP configuration parameters, see the "Backup-Synchronization Section" section in the Framework 8.1 SIP Server Deployment Guide.

c. Click `Apply` to save the configuration changes.

5. Click the `Switches` tab.

a. Ensure that the correct `Switch` object is specified. If necessary, select the correct `Switch` object by using the Add button.

b. Click `Apply` to save the configuration changes.

6. Click the `Server Info` tab.

a. Select the Redundancy Type. You can select either `Hot Standby` or `Warm Standby`.

b. Complete this step if you are deploying a hot-standby configuration. If you are deploying a warm-standby configuration, proceed to Step c.

i. In the `Ports` section, select the port to which the backup SIP Server will connect for HA data synchronization, and click `Edit Port.`

ii. In the `Port Properties` dialog box, on the `Port Info` tab, select the `HA sync` check box.

iii. Click `OK.`

c. For the `Backup Server` option, select the SIP Server Application object that you want to use as the backup SIP Server. If necessary, browse to locate the backup SIP Server Application object.

d. Click `Apply` to save the configuration changes.

7. Click the `Start Info` tab.

    a. Select `Auto-Restart`.

    b. Click `Apply` to save the configuration changes.

8. Click `Apply` and then `OK` to save the configuration changes.

Configure the backup SIP Server

1. Stop the SIP Server applications on the primary and backup hosts. Genesys SIP Server applications can be stopped by using the Genesys Solution Control Interface.

2. Open the Configuration Manager.

3. Select the Applications folder, and right-click the SIP Server Application object that you want to configure as the backup SIP Server. Select `Properties`.

4. Click the `Switches` tab.

    a. Click Add, and select the `Switch` object that you associated with the primary SIP Server Application object.

    b. Click `Apply` to save the configuration changes.

5. Click the `Start Info` tab.

    a. Select `Auto-Restart`.

    b. Click `Apply` to save the configuration changes.

6. Click the `Options` tab.

    a. Select the **[TServer]** section.

       i. Set the **sip-port** option to the same port number that you specified for the primary SIP Server.

      ii. Set the **sip-address** option to the Virtual IP address.

      iii. Set the **control-vip-scripts** option to `true`.

      iv. Set the **sip-vip-script-up** option to the name of the Application object (SIP_SERVER_BACKUP_VIP_UP) that will be created later for a script that enables the Virtual IP address on the backup SIP Server host.

      v. Set the `sip-vip-script-down` option to the name of the Application object (SIP_SERVER_BACKUP_VIP_DOWN) that will be created later for a script that disables the Virtual IP address on the backup SIP Server host.

      vi. To enable Virtual IP address monitoring, set the **sip-iptakeover-monitoring** option to `true`.

      vii. To enable NIC status monitoring, set the **tlib-nic-monitoring** option to `true`.

      viii. To enable SIP NIC status monitoring, in scenarios where a dedicated NIC is used for SIP communication (the two-NIC configuration), configure the **sip-nic-address** option and set the **sip-nic-monitoring** option to `true`.

      ix. To enable SIP traffic monitoring, set the **sip-pass-check** option to `true`.

      x. Click `Apply` to save the configuration changes.

    b. If you are deploying a hot-standby configuration and have configured ADDP communication on the

primary SIP Server, you must configure ADDP also on the backup SIP Server. To enable ADDP, select the **[backup-sync]** section, and configure the following options:

- **sync-reconnect-tout**

- **protocol**

- **addp-timeout**

- **addp-remote-timeout**

In the preceding example, the guideline that is used to configure ADDP settings is to set the **addp-timeout** and **addp-remote-timeout** options to 5 sec or at least two times the established network-latency time, and to set the **sync-reconnect-tout** option to at least two times the timeout value plus the established network latency.

   c. Click Apply to save the configuration changes.

7. Click Apply and then OK to save the configuration changes.

Create Virtual IP address control scripts for Windows 2008 R2 and later

1. On the primary SIP Server host computer, create a batch file that is named HA_IP_ON.bat, and enter the following commands into the file:
   [+] Commands for '''HA_IP_ON.bat'''

```
@set VirtualIP=10.10.11.103
@set vipMask=255.255.255.0
@set VirtualInterface="Local Area Connection"
@echo ******************** HA_IP_ON ********************* >> Takeover.log
@echo %time% >> Takeover.log
@rem check if Virtual IP released on Backup host
FOR /L %%A IN (1,1,6) DO (
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover1.log
@if not errorlevel 1 goto ready
)
:ready
@rem Add VirtualIP
@netsh interface ip delete arpcache
netsh interface ip add address name=%VirtualInterface% addr=%VirtualIP% mask=%vipMask%
store=active skipassource=true >> Takeover.log
@rem check if VirtualIP added succesefully if not do it again
@cscript.exe check_ip.vbs localhost %VirtualIP% //Nologo >> Takeover.log
@if errorlevel 1 goto done
netsh interface ip delete address name=%VirtualInterface% addr=%VirtualIP% >>
Takeover.log
netsh interface ip add address name=%VirtualInterface% addr=%VirtualIP% mask=%vipMask%
store=active skipassource=true >> Takeover.log
@if errorlevel 1 (
@echo %VirtualIP% not added to %VirtualInterface% >> Takeover.log
@goto done
)
:done
@echo %time% >> Takeover.log
```

[+] Commands for '''HA_IP_ON.bat''' for IPv6

```
@set VirtualIP=10.10.11.103
@set VirtualIPv6=fde6:bed:c179:43f5:3:3:3:c
@set vipMask=255.255.255.0
@set VirtualInterface="Local Area Connection 4"
@echo ******************** HA_IP_ON ********************* >>Takeover.log
@if not defined VirtualIP goto done
@echo %time% >> Takeover.log
@rem check if Virtual IP released on Backup host
FOR /L %%A IN (1,1,6) DO (
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover1.log
@if not errorlevel 1 goto ready
)
:ready
@rem Add VirtualIP
@netsh interface ip delete arpcache
netsh interface ip add address name=%VirtualInterface% addr=%VirtualIP% mask=%vipMask%
store=active skipassource=true >> Takeover.log
@rem check if VirtualIP added succesefully if not do it again
@cscript.exe check_ip.vbs localhost %VirtualIP% //Nologo >> Takeover.log
@if errorlevel 1 goto done
netsh interface ip delete address name=%VirtualInterface% addr=%VirtualIP% >>
Takeover.log
netsh interface ip add address name=%VirtualInterface% addr=%VirtualIP% mask=%vipMask%
store=active skipassource=true >> Takeover.log
@if errorlevel 1 echo %VirtualIP% not added to %VirtualInterface% >>Takeover.log
:done
@echo %time% >> Takeover.log
@if not defined VirtualIPv6 goto donev6
@echo %time% >> Takeover.log
@rem check if Virtual IPv6 released on Backup host
@cscript.exe ping.vbs %VirtualIPv6% //Nologo >> Takeover.log
@if not errorlevel 1 goto readyv6
@cscript.exe ping.vbs %VirtualIPv6% //Nologo >> Takeover.log
@if not errorlevel 1 goto readyv6
@cscript.exe ping.vbs %VirtualIPv6% //Nologo >> Takeover.log
:readyv6
@rem Add VirtualIPv6
@netsh interface ip delete arpcache
@netsh int ipv6 delete destinationcache
netsh interface ipv6 add address interface=%VirtualInterface% address=%VirtualIPv6%
store=active skipassource=true >> Takeover.log
@rem check if VirtualIPv6 added succesefully if not do it again
@cscript.exe check_ip.vbs localhost %VirtualIPv6% //Nologo >> Takeover.log
@if errorlevel 1 goto donev6
netsh interface ipv6 delete address interface=%VirtualInterface% address=%VirtualIPv6%
>> Takeover.log
netsh interface ipv6 add address interface=%VirtualInterface% address=%VirtualIPv6%
store=active skipassource=true >> Takeover.log
@if errorlevel 1 echo %VirtualIPv6% not added to %VirtualInterface% >>Takeover.log
:donev6
@echo %time% >> Takeover.log
```

Important

- The `store=active` parameter of `netsh interface ip add address` is only available when you deploy the IP Address Takeover method on Windows Server 2008 R2.

- Verify that the `skipassource=true` parameter of `netsh interface ip add address`

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> is available when you deploy the IP Address Takeover method on your Windows Server.

2. In the first line of the HA_IP_ON.bat script, replace the VirtualIP value of 10.10.11.103 with your Virtual IP address.

3. In the second line of the HA_IP_ON.bat script, replace the vipMask value of 255.255.255.0 with your Virtual IP mask.

4. In the third line of the HA_IP_ON.bat script, ensure that the VirtualInterface value is set to the NIC connection name that is defined in the Windows Network Connections dialog box.

5. On the primary SIP Server host computer, create a batch file that is named HA_IP_OFF.bat, and enter the following commands into the file:
   [+] Commands for '''HA_IP_OFF.bat'''

```
@set VirtualIP=10.10.11.103
@set VirtualInterface="Local Area Connection"
@echo ******************** HA_IP_OFF ********************* >> Takeover.log
@echo %time% >> Takeover.log
netsh interface ip delete address name=%VirtualInterface% addr=%VirtualIP% >>
Takeover.log
@netsh interface ip delete arpcache
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover.log
@echo %time% >> Takeover.log
```

   [+] Commands for '''HA_IP_OFF.bat''' for IPv6

```
@set VirtualIP=10.10.11.103
@set VirtualIPv6=fde6:bed:c179:43f5:3:3:3:c
@set VirtualInterface="Local Area Connection 4"

@echo ******************** HA_IP_OFF ********************* >>Takeover.log

@if not defined VirtualIP goto done

@echo %time% >> Takeover.log
netsh interface ip delete address name=%VirtualInterface% addr=%VirtualIP% >>
Takeover.log
@netsh interface ip delete arpcache
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover.log
:done
@echo %time% >> Takeover.log

@if not defined VirtualIPv6 goto donev6

@echo %time% >> Takeover.log
netsh interface ipv6 delete address interface=%VirtualInterface% address=%VirtualIPv6%
>> Takeover.log
@netsh interface ip delete arpcache
@netsh int ipv6 delete destinationcache
@cscript.exe ping.vbs %VirtualIPv6% //Nologo >> Takeover.log
:donev6
@echo %time% >> Takeover.log
```

6. In the first line of the HA_IP_OFF.bat script, replace the VirtualIP value of 10.10.11.103 with your Virtual IP address.

7. In the second line of the `HA_IP_OFF.bat` script, ensure that the `VirtualInterface` value is set to the NIC connection name that is defined in the Windows Network Connections dialog box.

8. Follow the steps in this procedure to create the same two scripts on the backup SIP Server host.

9. On the primary SIP Server host computer, create an accessory script that is named `Ping.vbs`, and enter the following commands into the script:
   [+] Commands for Ping.vbs

```
rem ping host and return 1 if ping successful 0 if not
On Error Resume Next
if WScript.Arguments.Count > 0 then
  strTarget = WScript.Arguments(0)
  Set objShell = CreateObject("WScript.Shell")
  Set objExec = objShell.Exec("ping -n 2 -w 1000 " & strTarget)
  strPingResults = LCase(objExec.StdOut.ReadAll)
  If InStr(strPingResults, "reply from") And Not CBool(InStr(strPingResults,
"unreachable")) Then
    WScript.Echo strTarget & " responded to ping."
    wscript.Quit 1
  Else
    WScript.Echo strTarget & " did not respond to ping."
    wscript.Quit 0
  End If
Else
  WScript.Echo "target is not specified."
  wscript.Quit -1
End If
```

10. On the primary SIP Server host computer, create an accessory script that is named `Check_ip.vbs`, and enter the following commands into the script:
   [+] Commands for Check_ip.vbs

```
rem check if IP address (arg0 ) can be found on host (arg1 )
On Error Resume Next
if WScript.Arguments.Count > 0 then
  strComputer = WScript.Arguments(0)
  targetIPAddress = WScript.Arguments(1)
  Set objWMIService = GetObject("winmgmts:" _
   & "{impersonationLevel=impersonate}!\\" & strComputer & "\root\cimv2")
  Set colNicConfigs = objWMIService.ExecQuery _
   ("SELECT * FROM Win32_NetworkAdapterConfiguration WHERE IPEnabled = True")
  WScript.Echo "Computer Name: " & strComputer & " ip " & targetIPAddress
  For Each objNicConfig In colNicConfigs
    For Each strIPAddress In objNicConfig.IPAddress
      If InStr(strIPAddress, targetIPAddress) Then
        WScript.Echo targetIPAddress & " is found on " & objNicConfig.Description
        wscript.Quit 1
      End If
    Next
  Next
  WScript.Echo targetIPAddress & " not found."
  wscript.Quit 0
Else
  WScript.Echo "target not specified."
  wscript.Quit -1
End If
```

11. Place accessory scripts `Ping.vbs` and `Check_ip.vbs` in the same directory as the `HA_IP_ON.bat` and `HA_IP_OFF.bat` files on both the primary and backup SIP Server hosts.

Create Virtual IP address control scripts for Windows 2008

1. On the primary SIP Server host computer, create a batch file that is named HA_IP_ON.bat, and enter the following commands into the file:
   [+] Commands for '''HA_IP_ON.bat'''

```
@set VirtualIP=10.10.11.103
@set vipMask=255.255.255.0
@set VirtualInterface="Local Area Connection"
@set GatewayIP=10.10.11.104
@set InterfaceForArping="\Device\NPF_{85FEBE1C-9EEF-4E61-974B-1158DB270F6E}"
@echo ******************** HA_IP_ON ********************* >> Takeover.log
@echo %time% >> Takeover.log
@rem check if Virtual IP released on Backup host
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover.log
@if not errorlevel 1 goto ready
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover.log
@if not errorlevel 1 goto ready
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover.log
:ready
@rem Add VirtualIP
@netsh interface ip delete arpcache
netsh interface ip add address name=%VirtualInterface% addr=%VirtualIP% mask=%vipMask%
>> Takeover.log
@rem check if VirtualIP added succesefully if not do it again
@cscript.exe check_ip.vbs localhost %VirtualIP% //Nologo >> Takeover.log
@if errorlevel 1 goto done
netsh interface ip delete address name=%VirtualInterface% addr=%VirtualIP% >>
Takeover.log
netsh interface ip add address name=%VirtualInterface% addr=%VirtualIP% mask=%vipMask%
>> Takeover.log
@if errorlevel 1 (
@echo %VirtualIP% not added to %VirtualInterface% >> Takeover.log
@goto done
)
@rem Use arping command for windows 2008 (IPV4 only) to update ARP cache of hosts (SIP-
Server, Gateway etc)
@rem SYNOPSIS: arping [-abhpqrRd0uv] [-S host/ip] [-T host/ip] [-s MAC] [-t MAC] [-c
count] [-i interface] [ -w us ] <host|-B>
@rem Manual: http://www.habets.pp.se/synscan/docs/arping.8.html
@rem We recommend placing the SIP-Server and RM in different subnet - uncomment below to
use apring to send ARP to Gateway
@rem If multiple Gateways used (HA pair) - then you need to send for each Gateway
separately
@arping.exe -c 3 -i %InterfaceForArping% -S %VirtualIP% %GatewayIP% >> IPTakeOver.log
:done
@echo %time% >> Takeover.log
```

2. In the first line of the HA_IP_ON.bat script, replace the VirtualIP value of 10.10.11.103 with your Virtual IP address.

3. In the second line of the HA_IP_ON.bat script, replace the vipMask value of 255.255.255.0 with your Virtual IP mask.

4. In the third line of the HA_IP_ON.bat script, ensure that the VirtualInterface value is set to the NIC connection name that is defined in the Windows Network Connections dialog box.

5. In the fourth line of the HA_IP_ON.bat script, replace the GatewayIP value of 10.10.11.104 with your Gateway IP address.

6. In the fifth line of the `HA_IP_ON.bat` script, replace the `InterfaceForArping` value of `\Device\`
`NPF_{85FEBE1C-9EEF-4E61-974B-1158DB270F6E}` with the value that is received by following these
steps:

   a. By using Regedit, navigate to `HKLM\SYSTEM\CurrentControlSet\Control\Network\`.

   b. Identify the key set that has a value of `{Default}` and contains the `Network Adapters` Data.

   c. If the virtual interface is set to `Local Area Connection`, then search for the listed adapter with the
     value name that contains the Local Area Connection Data. The Key value that contains `Local Area`
     `Connection` is the reference to the physical device identifier.

   d. Add `\Device\NPF_` to the Key, and set this value to `InterfaceForArping`.

For example, from the `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\`
`Network\{4D36E972-E325-11CEBFC1-08002BE10318}\{85FEBE1C-9EEF-4E61-974B-1158DB270F6E}` key, take the
`{85FEBE1C-9EEF-4E61-974B-1158DB270F6E}` portion, and add `Device\NPF_` to the key in front. This will produce the following
result: `\Device\NPF_{85FEBE1C-9EEF-4E61-974B-1158DB270F6E}`

> ## Important
>
> The value of Network Adapter ID varies on different hosts. You must complete these steps on both primary
> and backup hosts.

7. On the primary SIP Server host computer, create a batch file that is named `HA_IP_OFF.bat`, and enter
the following commands into the file:
[+] Commands for '''HA_IP_OFF.bat'''

```
@set VirtualIP=10.10.11.103
@set VirtualInterface="Local Area Connection"
@echo ******************** HA_IP_OFF ********************* >> Takeover.log
@echo %time% >> Takeover.log
netsh interface ip delete address name=%VirtualInterface% addr=%VirtualIP% >>
Takeover.log
@netsh interface ip delete arpcache
@cscript.exe ping.vbs %VirtualIP% //Nologo >> Takeover.log
@echo %time% >> Takeover.log
```

8. In the first line of the `HA_IP_OFF.bat` script, replace the `VirtualIP` value of `10.10.11.103` with your
Virtual IP address.

9. In the second line of the `HA_IP_OFF.bat` script, ensure that the `VirtualInterface` value is set to the
NIC connection name that is defined in the Windows Network Connections dialog box.

10. Follow the steps in this procedure to create the same two scripts on the backup SIP Server host.

11. On the primary SIP Server host computer, create an accessory script that is named `Ping.vbs`, and enter
the following commands into the script:
[+] Commands for Ping.vbs

```
rem ping host and return 1 if ping successful 0 if not
On Error Resume Next
if WScript.Arguments.Count > 0 then
  strTarget = WScript.Arguments(0)
  Set objShell = CreateObject("WScript.Shell")
  Set objExec = objShell.Exec("ping -n 2 -w 1000 " & strTarget)
  strPingResults = LCase(objExec.StdOut.ReadAll)
  If InStr(strPingResults, "reply from") And Not CBool(InStr(strPingResults,
```

```
  "unreachable")) Then
      WScript.Echo strTarget & " responded to ping."
      wscript.Quit 1
    Else
      WScript.Echo strTarget & " did not respond to ping."
      wscript.Quit 0
    End If
  Else
    WScript.Echo "target is not specified."
    wscript.Quit -1
  End If
```

12. On the primary SIP Server host computer, create an accessory script that is named `Check_ip.vbs`, and enter the following commands into the script:
    [+] Commands for Check_ip.vbs

```
rem check if IP address (arg0 ) can be found on host (arg1 )
On Error Resume Next
if WScript.Arguments.Count > 0 then
  strComputer = WScript.Arguments(0)
  targetIPAddress = WScript.Arguments(1)
  Set objWMIService = GetObject("winmgmts:" _
   & "{impersonationLevel=impersonate}!\\" & strComputer & "\root\cimv2")
  Set colNicConfigs = objWMIService.ExecQuery _
   ("SELECT * FROM Win32_NetworkAdapterConfiguration WHERE IPEnabled = True")
  WScript.Echo "Computer Name: " & strComputer & " ip " & targetIPAddress
  For Each objNicConfig In colNicConfigs
    For Each strIPAddress In objNicConfig.IPAddress
      If InStr(strIPAddress, targetIPAddress) Then
        WScript.Echo targetIPAddress & " is found on " & objNicConfig.Description
        wscript.Quit 1
      End If
    Next
  Next
  WScript.Echo targetIPAddress & " not found."
  wscript.Quit 0
Else
    WScript.Echo "target not specified."
    wscript.Quit -1
End If
```

13. Place accessory scripts `Ping.vbs` and `Check_ip.vbs` in the same directory as the `HA_IP_ON.bat` and `HA_IP_OFF.bat` files on both the primary and backup SIP Server hosts.

Test Virtual IP address control scripts

1. Run the `HA_IP_OFF.bat` script on the backup SIP Server host.

2. Run the `HA_IP_ON.bat` script on the primary SIP Server host.

3. Verify that the Virtual IP interface is running on the primary host by using the `ipconfig` command—for example:
   [+] Example ipconfig command

```
C:\GCTI\SWITCHOVER\1NIC>ipconfig
Windows IP Configuration

Ethernet adapter Local Area Connection:
```

```
    Connection-specific DNS Suffix  . :
    IP Address. . . . . . . . . . . : 10.10.11.103
    Subnet Mask . . . . . . . . . . : 255.255.255.0
    IP Address. . . . . . . . . . . : 10.10.11.101
    Subnet Mask . . . . . . . . . . : 255.255.255.0
    Default Gateway . . . . . . . . : 10.10.11.104
```

4. Verify that the Virtual IP interface is not running on the backup SIP Server host—for example:
   [+] Example ipconfig command

```
C:\GCTI\SWITCHOVER\1NIC>ipconfig
Windows IP Configuration

Ethernet adapter Local Area Connection:
    Connection-specific DNS Suffix  . :
    IP Address. . . . . . . . . . . : 10.10.11.102
    Subnet Mask . . . . . . . . . . : 255.255.255.0
    Default Gateway . . . . . . . . : 10.10.11.104
```

5. Run the HA_IP_OFF.bat script on the primary SIP Server host.

6. Run the HA_IP_ON.bat script on the backup SIP Server host.

7. Verify that the Virtual IP interface is running on the backup SIP Server host by using the ipconfig command. Output should appear similar to the following:
   [+] Example ipconfig command

```
Ethernet adapter Local Area Connection:
    Connection-specific DNS Suffix  . :
    IP Address. . . . . . . . . . . : 10.10.11.103
    Subnet Mask . . . . . . . . . . : 255.255.255.0
    IP Address. . . . . . . . . . . : 10.10.11.102
    Subnet Mask . . . . . . . . . . : 255.255.255.0
    Default Gateway . . . . . . . . : 10.10.11.104
```

8. Verify that the Virtual IP interface is not running on the primary SIP Server host by using the ipconfig command. Output should appear similar to the following:
   [+] Example ipconfig command

```
Ethernet adapter Local Area Connection:
    Connection-specific DNS Suffix  . :
    IP Address. . . . . . . . . . . : 10.10.11.101
    Subnet Mask . . . . . . . . . . : 255.255.255.0
    Default Gateway . . . . . . . . : 10.10.11.104
```

Create Application objects for Virtual IP address control scripts

1. In the Configuration Manager, select Environment > Applications.

2. Right-click and select New > Application.

3. Select the Third Party Server template from the Application Templates folder, and click OK.

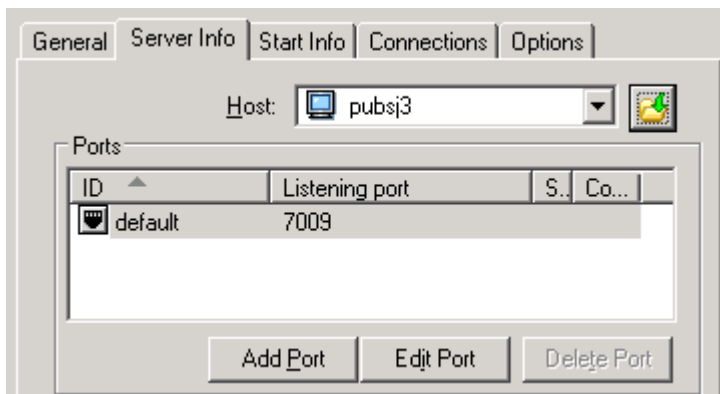4. On the General tab, enter a name for the Application object—for example, SIP_SERVER_PRIMARY_VIP_UP.
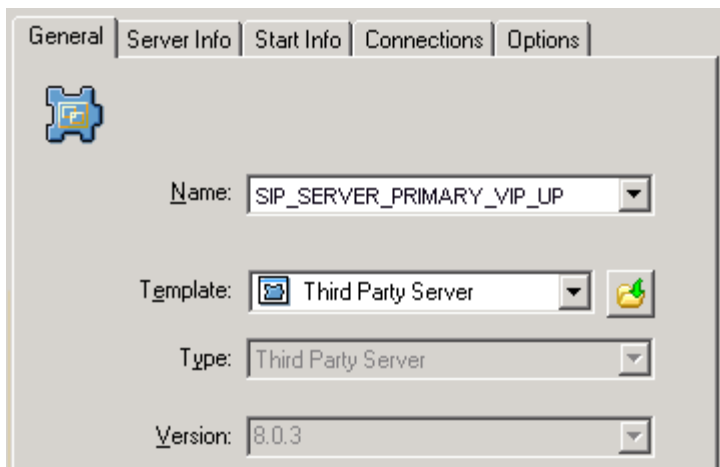
Configuring the Application Object for the Script, General Tab: Sample Configuration

> **Important**
>
> You can use the suggested Application object names, or you can specify your own.

5. Select the `Server Info` tab.

   a. Select the host name of the SIP Server on which the corresponding Virtual IP address control script is located.

   b. If necessary, specify a valid communication-port number by using the Edit Port option.

Configuring the Application Object for the Script, Server Info Tab: Sample Configuration

6. Select the `Start Info` tab.

   a. Set the `Working Directory` to the location of the Virtual IP address control script, and enter the name of the script in the `Command Line` field. For example, for the `SIP_SERVER_PRIMARY_VIP_UP` Application object, enter the script name that enables the Virtual IP address (`HA_IP_ON.bat`). For the `SIP_SERVER_PRIMARY_VIP_DOWN` Application object, enter the script name that disables the Virtual IP address (`HA_IP_OFF.bat`).
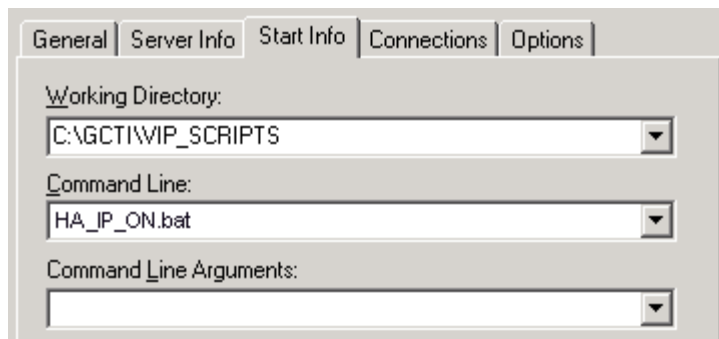
Configuring the Application Object for the Script, Start Info Tab: Sample Configuration

    b. If you are configuring an Application object that disables the Virtual IP address (SIP_SERVER_PRIMARY_VIP_DOWN and SIP_SERVER_BACKUP_VIP_DOWN), set the `Timeout Startup` value to 8.

3. Repeat the steps in this procedure to create an Application object for each of the four Virtual IP address control scripts.

Verify the HA configuration

1. Test 1: Manual switchover

    a. Establish a call between two SIP endpoints.

    b. Perform a manual switchover by using the SCI. In the SCI, verify that the SIP Server roles have changed.

    c. Verify that hold, retrieve, and transfer functions can be performed on the call that was established before the switchover.

    d. Release the call.

5. Test 2: Manual switchback

    a. Establish a call between two SIP endpoints.

    b. Perform a manual switchover again by using the SCI. In the SCI, verify that the SIP Server roles have changed.

    c. Verify that hold, retrieve, and transfer functions can be performed on the call that was established before the switchover.

    d. Release the call.

5. Test 3: Stop primary SIP Server

    a. Establish a call between two SIP endpoints.

    b. Stop the primary SIP Server. Use the SCI to verify that the backup SIP Server goes into primary mode.

    c. Verify that hold, retrieve, and transfer functions can be performed on the call that was established before the switchover.

d. Release the call.