Clone and OS Customization

Clone and OS Customization Process
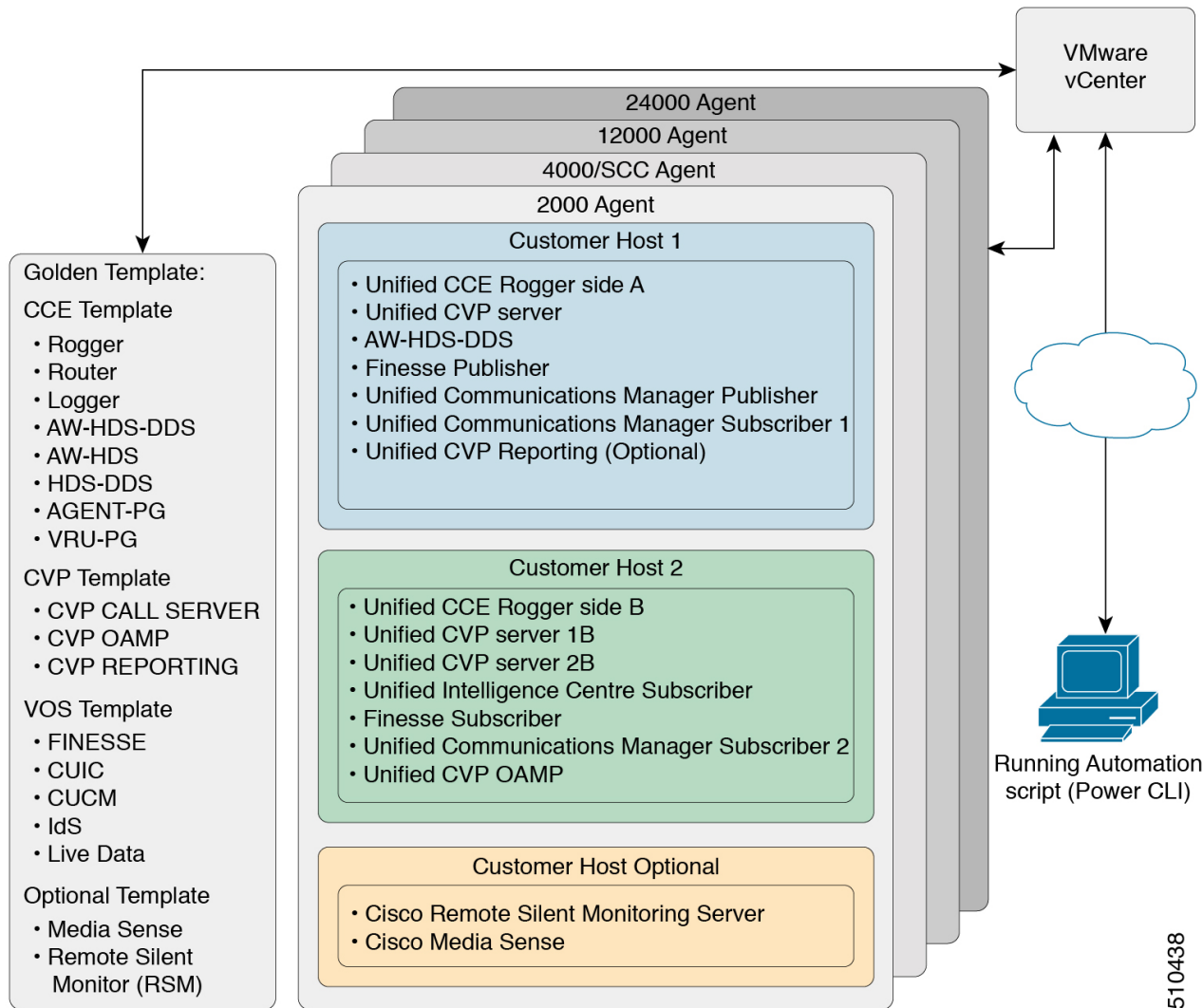
Automated Cloning and OS Customization

For the following automation software and download information see, *Automation Software* section in *Cisco HCS for Contact Center Installing and Upgrading Guide* http://www.cisco.com/c/en/us/support/unified-communications/hosted-collaboration-solution-contact-center/products-installation-guides-list.html

- GoldenTemplateTool

- PowerCLI

- OVF Tool

• WinImage

Automated Cloning and OS Customization Using Golden Templates

Sequence	Task	Done
1	Download Golden Template Automation Tool, on page 3	
2	Complete Automation Spreadsheet, on page 4	
3	Run Automation Script, on page 5	
4	OS Customization Process, on page 6	

Download Golden Template Automation Tool

Golden Template Tool is required for automated cloning of Golden Templates and deploying the customized Virtual machines in a customer instance. To download and extract the Golden Template Tool, see Automated Cloning and OS Customization, on page 2 to the root of the **C: drive** on your system. You can browse the automation scripts using VMware vSphere PowerCLI.

The extracted content includes the following:

- The *automation spreadsheet*s, which is the interface to the scripts.

- The *scripts* folder that contains five scripts. The deployVM.PS1 file is the primary automation script, which calls the other four scripts.

- The *Archive, Log, OVF, PlatformConfigRepository,* and *Report* folders are empty until you run the automation script for export.

After you run the script for the first time:

- *Archive* holds the prior versions of the automation spreadsheet, saved with a date and a time stamp.

- *Log* holds all the log files saved with a date and a time stamp.

- *OVF*, when the tool runs the Export operation, a sub folder is created for each virtual machine. The folders take their names from the GOLDEN_TEMPLATE_NAME cells in the spreadsheet. These folders are used to import the virtual machines to the customer ESXi host.

- *PlatformConfigRepository* is populated with three subfolders that holds XML files generated as part of the golden template process.

- *Report* holds all automation reports, saved with a date and a time stamp.

Related Topics

Automated Cloning and OS Customization, on page 2

Complete Automation Spreadsheet

Fill the information provided in the table to complete the automation spreadsheet for cloning process. Deploy VM automation script requires this information to clone the virtual machines to the customer instance.

The table describes the values of each virtual server and associated properties:

Column	Domain-based VM	Workgroup-based VM	VOS-based VM
CREATEVM	YES	YES	YES
CUSTOMIZATION	YES	YES	YES
OPERATION			
SOURCE_HOST_IP	10.10.0.10	10.10.0.10	10.10.0.10
SOURCE_DATASTORE_NAME	Datastore-A0	Datastore-A0	Datastore-A0
SOURCE_VMNAME			
OVF_NETWORK1			
OVF_NETWORK2			
GOLDEN_TEMPLATE_NAME	GT-Rogger	GT-CVP-Server	GT-CUCM
NEW_VM_NAME	CCE-RGR-SIDE-A	CVP-SVR-SIDE-A	UCM-SUB-SIDE-A
DEST_HOST_IP	10.10.1.10	10.10.1.11	10.10.1.12
DEST_DATASTORE_NAME	Datastore-A1	Datastore-A3	Datastore-A6
PRODUCT_VERSION			10.0.1
COMPUTER_NAME	CCE-RGR-SIDE-A	CVP-SVR-SIDE-A	UCM-SUB-SIDE-A
WORK_GROUP	NO	YES	
WORK_GROUP_NAME		WORKGROUP	
DOMAIN_NAME	HCSCC.COM		HCSCC.COM (Optional)
TIME_ZONE_LINUX_AREA			America
TIMEZONE_LINUX_LOCATION			Los Angeles
TIME_ZONE_WINDOWS	(GMT-08:00)	(GMT-08:00)	
DOMAIN_USER	HCSCC\administrator		
DOMAIN_PASSWORD	●●●●●●●●		
PRODUCT_KEY	XXXX-XXXX-XXXX-XXXX	XXXX-XXXX-XXXX-XXXX	
OWNER_NAME	HCS	HCS	
ORGANIZATION_NAME	CISCO	CISCO	CISCO
ORGANIZATION_UNIT			HCS
ORGANIZATION_LOCATION			San Jose

Column	Domain-based VM	Workgroup-based VM	VOS-based VM
ORGANIZATION_STATE			*CA*
ORGANIZATION_COUNTRY			*USA*
NTP_SERVER			*10.81.254.131*
NIC_NUM	*2*	*1*	*1*
IP_ADDRESS_NIC1	*10.10.10.10*	*10.10.10.20*	*10.10.10.30*
SUB_NET_MASK_NIC1	*255.255.255.0*	*255.255.255.0*	*255.255.255.0*
DEFAULT_GATEWAY_NIC1	*10.10.10.1*	*10.10.10.1*	*10.10.10.1*
DNS_IP_NIC1	*10.10.10.3*	*10.10.10.3*	*10.10.10.3*
DNS_ALTERNATE_NIC1			
IP_ADDRESS_NIC2	*192.168.10.10*		
SUB_NET_MASK_NIC2	*255.255.255.0*		
DEFAULT_GATEWAY_NIC2	*192.168.10.1*		
DNS_IP_NIC2	*192.168.10.3*		
DNS_ALTERNATE_NIC2			
VM_NETWORK1			
VM_NETWORK2			

Run Automation Script

Before you begin

Download and install VMware vSphere PowerCLI on the client computer.

Note Ensure WinImage (32-bit) is installed in the following location: C:\Program Files (x86)\WinImage

Note If you import any of the VOS VMs and have an unlicensed copy of WinImage, displays the popup for each VOS platform. Click **OK** to continue the import process.

Procedure

Step 1 Sign-in as an administrator and open **VMware vSphere PowerCLI (32-bit)** application.

Step 2 Enter the **get-executionPolicy** command to determine the restricted execution policy.

Step 3 If the policy is restricted, enter **set-executionPolicy** command. At the Supply Values prompt, enter **Unrestricted**, then enter **Y**.

Change the execution policy to run unsigned scripts on your local computer and signed scripts from other users.

Step 4   Enter the **CD < GoldenTemplate directory>** command.

Step 5   Run the automation script using the following syntax:

Syntax:	*Example:*

<Path to the script> <Path of the spreadsheet> <vCenter IP / Hostname> <vCenter User> <Password to connect to vCenter>	`.\scripts\DeployVM.PS1`
	`C:\GoldenTemplate\GoldenTemplate_VMDataSheet.xls`
	testvCenter testuser testpassword

This starts the script that parses and validates the data, creates entries in the `GoldenTemplate` directory. Displays the completion percentage on the screen and generates the `Status Report` in the `Report` folder.

Click the Log File link in the Status report to debug error conditions and to consult Cisco Support.

Figure 1: Status Report of Golden Template Tool

Status Report of Golden Template Tool

VM NAME	OPERATION	HOST IP	DATASTORE NAME	STATUS	DESCRIPTION
40PG-CUCM-Cust9-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-CUCM-Cust9-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust9-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust9-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-CUCM-Cust10-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-CUCM-Cust10-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust10-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust10-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully

Log File

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Related Topics

OS Customization Process

Sequence	Task	Done
Windows Customization Process		
1	Validate Network Adapter Settings and Power On, on page 7	
2	Edit Registry Settings and Restart VM, on page 7	
VOS Customization Process		
1	Configure DNS Server	

Sequence	Task	Done
2	Configure Host in DNS Server	
3	Validate Network Adapter Settings and Power On, on page 7	

Validate Network Adapter Settings and Power On

Perform this procedure for all Windows VMs.

Procedure

Step 1 Select the Virtual Machine in the vSphere client. Right-click the VM and choose **Edit settings**.

Step 2 On the **Hardware** tab, select each Network adapter. Make sure that **Connect at power on** in the Device Status group is checked:

Step 3 Power on the virtual machine.

> **Important** Do not press Ctrl-Alt-Delete. If you press Ctrl-Alt-Delete after powering on, the customization does not take effect. You must complete it manually.

Step 4 Wait for the VM to restart and to apply customization. This can take five to ten minutes.

Recover from Pressing Ctrl-Alt-Del During Power-On

Validate Network Adapter Settings and Power On initializes the customization process. Although you are prompted to press **Ctrl-Alt-Delete** after powering on, doing do prevents the customization from taking effect. DO NOT press **Ctrl-Alt-Del**. If you inadvertently press **Ctrl-Alt-Del**, you have the following option to restore the customization.

Procedure

Step 1 Get the GoldenTemplate_VMDataSheet.xls from the `C:/GoldenTemplateTool/Archive`.

Step 2 Copy and paste the GoldenTemplate_VMDataSheet.xls to `C:/GoldenTemplateTool`.

Step 3 In the GoldenTemplate_VMDataSheet.xls select `No` in all the rows for the column CREATEVM except for those which needs to re-deploy.

Step 4 Else, you can enter that data manually for the VM.

Edit Registry Settings and Restart VM

Perform this procedure for all Windows VMs.

Procedure

Step 1 Select **Start** > **All Programs** > **Administrative Tools** > **Computer Management**.

Step 2 On the left panel, expand **Computer Management (Local)** > **System Tools** > **Local Users and Groups** > **Users**.

Step 3 On the right panel, right-click the administrator and select **Set Password**.

Step 4 Click **Proceed** at the warning message, then enter the new password.

Step 5 Click **OK**.

Step 6 Access the Registry Editor (**Start** > **Run** > **regedit**).

Step 7 Select **HKEY_LOCAL_MACHINE** > **SOFTWARE** > **Microsoft** > **Windows NT** > **Current Version** > **Winlogon**.

    a) Set **AutoAdminLogon** to **0**.

    b) Remove these keys if they exist: **DefaultDomainName** and **DefaultUserName**.

Step 8 Restart the machine. If the machine is in the domain, log in to the domain.

Step 9 Enter **NET TIME /DOMAIN:<domain>** command to synchronize time with the domain controller.

Automated Cloning and OS Customization Using OVF

Sequence	Task	Done
1	Download Golden Template Automation Tool, on page 3	
2	Complete Automation Spreadsheet for Export, on page 8	
3	Run Automation Script for Export, on page 9	
4	Transport to Desired Location, on page 10	
5	Ensure Readiness of the Location, on page 10	
6	OS Customization Process, on page 6	

Complete Automation Spreadsheet for Export

Prerequisite:

Before the Export process, ensure that the VM has only one Network Adapter to export.

When you complete the automation spreadsheet to export, fill only the columns so that the export automation script creates export *OVFs* in the *OVF* subfolder of the GoldenTemplate directory.

Table 1: Required Columns for Automation Spreadsheet for Export

Column	Description	Example
CREATEVM	Select **NO** to skip VM creation.	NO

Column	Description	Example
OPERATION	Select **ExportServer** to specify the operation you are performing with the script.	ExportServer
SOURCE_HOST_IP	The IP address of the physical server hosting the VM to be exported.	xx.xx.xxx.xxx
SOURCE_DATASTORE_NAME	The name of the Datastore defined in VMware.	datastore1(3)
SOURCE_VMNAME	The name of the VM that will be exported cannot contain spaces or special characters. Maximum of 32 characters.	TemplateRoggerA
GOLDEN_TEMPLATE_NAME	New Name for the Exported VM cannot contain spaces or special characters. Maximum of 32 characters.	CustomerRoggerA

Leave all the other columns blank.

Run Automation Script for Export

The export script processes the data in the export spreadsheet and validates that the required fields are present in the correct format.

The script creates a folder from which you can import the OVF at the desired location.

Note Run the script from the `GoldenTemplate` directory.

Before you begin

Download and install VMware vSphere PowerCLI on the client computer.

Procedure

Step 1 Launch **VMware vSphere PowerCLI (32-Bit)** as administrator.

Step 2 Enter **get-executionPolicy** command to determine whether the Restricted Execution policy is in effect or is unrestricted.

Step 3 If the policy is restricted, enter **set-executionPolicy** command. At the Supply Values prompt, enter **Unrestricted** and then enter **Y**. This changes the execution policy, so that you can run unsigned scripts that you write on your local computer and signed scripts from other users

Step 4 Enter **cd < GoldenTemplate directory>** command.

Step 5 Enter the command to run the automation script using the following syntax:

Syntax:	Example:

\<Path to the script\> \<Path of the spreadsheet\> \<vCenter IP / Hostname\> \<vCenter User\> \<Password to connect to vCenter\>	`.\scripts\DeployVM.PS1`
	`C:\GoldenTemplate\GoldenTemplate_VMDataSheet.xls`
	testvCenter testuser testpassword

This starts a script that parses the data, validates the data, and creates entries in the `OVF` folder in the `GoldenTemplate` directory.

Script is run despite errors. Errors get displayed on the screen and stored in the log file.

Script takes several hours to complete.

After completion, script generates a status report in the `Report` folder. The status report has a link to the Log file. Use this file to debug error conditions and to consult with Cisco Support.

Figure 2: Status Report of Golden Template Tool

Status Report of Golden Template Tool

VM NAME	OPERATION	HOST IP	DATASTORE NAME	STATUS	DESCRIPTION
40PG-CUCM-Cust9-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-CUCM-Cust9-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust9-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust9-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-CUCM-Cust10-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-CUCM-Cust10-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust10-Pub	CREATE VM from A Template	aurora-f1-ch10-b3.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully
40PG-Finesse-Cust10-Sub	CREATE VM from A Template	aurora-f1-ch10-b6.cisco.com	Solidfire-HCS-40PG-3	Success	VM deployed successfully

Log File

Related Topics

Transport to Desired Location

After the successful completion of export process, the *OVF* files can be transferred to any desired location.

You can also transfer the GoldenTemplate directory to a USB device.

Note In that case, you would complete the import spreadsheet and run the import script from the USB drive.

Ensure Readiness of the Location

Before completing the import spreadsheet and running the import script, the environment must be set up with the following:

- the ESXihost or vCenter

• the datastores

Manual Cloning and OS Customization

Create Customization File for Windows Based Components

Complete the following procedure to create the customization file for windows based components .

Procedure

Step 1   In VMware vSphere Client, choose View > Management > Customization Specification Manager.

Step 2   Click **New**.

Step 3   On the New Customization Specification page, complete the new customization specification:

a)   From the Target Virtual Machine OS menu, choose Windows.

b)   Under the Customization Specification Information, enter a name for the specification and an optional description and click **Next**.

Step 4   On the Registration Information page, specify the registration information for this copy of the guest operating system. Enter the virtual machine owner's name and organization and click **Next**.

Step 5   On the Computer Name page, click the most appropriate computer name option that identifies this virtual machine on the network.

Step 6   On the Windows License page, specify the Windows licensing information for this copy of the guest operating system:

a)   Enter your product volume license key.

b)   Check **Include Server License information** (required to customize a server guest operating system).

c)   Click **Per server** to specify the server license mode. Enter 5 as the maximum number of connections you want the server to accept. Click **Next**.

Step 7   On the Administrator Password page, enter a password for the administrator account and confirm the password by reentering it. Click **Next**.

Step 8   On the Time Zone page, choose the time zone for the virtual machine and click **Next**.

Step 9   On the Run Once page, click **Next**.

Step 10   On the Network page, choose the type of network settings to apply to the guest operating system and click **Next**:

a)   Typical settings allow the vCenter server to configure all network interfaces from a DHCP server.

b)   Custom settings require you to manually configure the network settings.

Step 11   On the Workgroup or Domain page, click Windows Server Domain and enter the destination domain, the username, and the password for a user account that has permission to add a computer to the specified domain.

Step 12 On the Operating System Options page, check Generate New Security ID (SID) to generate a new security identity and click **Next**.

Step 13 On the Ready to complete page, review your Customization File Summary, and then click **Finish**.

Deploy Virtual Machine from the Golden Template

Complete the following procedure to deploy the virtual machine from the golden template. Use the deployment checklists to record the hosts, IP addresses, and SAN locations for your deployment.

Procedure

Step 1 Right-click the template and choose Deploy Virtual Machine from this template.

Step 2 Enter a virtual machine name, choose a location, and click **Next**.

Step 3 On the Host/Cluster page, specify the host on which you want to store the template. Make sure that the host/cluster is valid. Click **Next**.

Step 4 Click **Advanced**. Specify a valid datastore for the virtual machine that complies with the Cisco HCS for CC for Contact Center component you deploy.

Step 5 Click **Next**.

Step 6 Make sure that the data store RAID levels for the component that you install comply with conditions specified in the table of SAN Configuration for your deployment model.

Step 7 Click **Thick provisioned Lazy Zeroed** to allocate a fixed amount of storage space to the virtual disk. Click **Next**.

Step 8 Click **Customize** using an existing customization specification and click **Next**.

Step 9 Select the customization file created in the Customization File for the Template.

Step 10 Review the settings for the new virtual machine. Click **Finish**.

Generate Answer File for VOS Product Virtual Machines

Complete the following procedure to generate an answer file for VOS product Virtual machines.

Procedure

Step 1 Open the link http://www.cisco.com/web/cuc_afg/index.html.

Step 2 Configure the following cluster-wide parameters:

a) Under Hardware, select **Virtual Machine** for **Primary Node Installed On**.

b) Under Product, select the product name and the product version.

c) Under Administrator credentials, enter the administrator username and password, and confirm the password.

d) Under Security Password, enter a password and confirm password.

e) Under the Application user credentials, enter the application username, password, and confirm the password.

Use the same System Application or Administrator credentials for all nodes.

f) Under Certificate information, enter the organization name, unit, location, state, and country for the Unified CM and Unified Intelligence Center.

g) Under SMTP, check the box **Configure SMTP host** and enter the SMTP location.

Step 3 Configure the following primary node parameters:

a) Under NIC Interface Settings, check the check box **Use Auto Negotiation**.

Note	Do not change the MTU settings.

b) Under Network Information, enter the IP address, hostname ,IP mask, and gateway information.

Do not select the option **Use DHCP for IP Address Resolution**.

c) Under DNS, select the option **Configure Client DNS**, and enter Primary DNS IP and DNS name.

d) Under Timezone, select the option **Use Primary Time Zone Settings**.

e) Under Network Time Protocol, check **Use Network Time Protocol** and enter the IP address, NTP server name, or NTP Server Pool name for at least one external NTP server.

Step 4 Configure the following secondary node parameters:

a) Under NIC Interface Settings, check the check box **Use Auto Negotiation**.

Note	Do not change the MTU settings.

b) Under Network Information, enter the IP address, hostname, IP mask, and gateway information.

Do not select the option **Use DHCP for IP Address Resolution**.

c) Under DNS, select the option **Configure Client DNS**, and enter primary DNS IP and DNS name.

d) Under Timezone, check **Use Primary Time Zone Settings** check box.

e) Under List of Secondary Nodes, click **Add Secondary Node**.

Step 5 Click **Generate Answer files & License MAC** to download the answer file for publisher and first subscriber.

Note	For Unified CM, where an answer file for a second subscriber is required, close and open the answer file generator web page and enter the details for the publisher and second subscriber. Download the answer file for the second subscriber only, because you already downloaded the publisher file along with the first subscriber.

Step 6 Perform steps given in section for mounting the answer files to VM.

Related Topics

Copy Answer Files to Virtual Machines

Golden Template automation tool generates answer files for unattended installations. Individual answer files get copied to the *C:\GoldenTemplateTool_lO\PlatformConfigRepository* directory. These answer files are then converted to a floppy diskette file format and are used in addition to your VOS product DVD during the installation process.

Before you begin

Download and then install WinImage 8.5 on the client computer from which the automation scripts will be run. http://winimage.com/download.htm

Procedure

Step 1   Copy the generated Answer file to the folder and rename it to platformConfig.xml

Example:

Copy CUCM_PUB_SideA_platformConfig.xml to other location and rename it to platformConfig.xml

Step 2   Launch WinImage and select **File** > **New** > **1.44 MB** and click **OK**

Step 3   Drag and drop *platformConfig.xml* into WinImage

Step 4   When prompted to inject the file, click **Yes**.

Step 5   Select **File** > **Save As**

Step 6   From the **Save as type** list, choose **Virtual floppy image**. Provide the file name as *platformConfig.flp* and click **Save**

Step 7   Open vSphere infrastructure client and connect to the vCenter. Go to the customer ESXi host where the VMs are deployed

Step 8   Navigate to the **Configuration** tab. In the storage section, right click on the Datastore and choose **Browse Datastore**, create a folder named <Product_Node>

Example:

CUCM_PUB .

Step 9   **Upload** the *platformConfig.flp* file to the folder <Product_Node>.

Example:

CUCM_PUB .

Step 10   Navigate to the <Product_Node> Virtual Machine*(Ex; CUCM_PUB_SideA)*. Right-click and choose **Edit Settings**

Step 11   On the Hardware tab, click **Floppy drive 1**, choose the radio button **Use The Existing Floppy Image in Datastore**.

Step 12   Mount the **platformConfig.flp** from the <Product_Node> folder *(Ex: CUCM_PUB)* on the data store and click **OK**

Step 13   Ensure that the Device status shows **Connect at Power On** checked for the Network adapter and for the Floppy drive and click **OK**.