



# Sangfor HCI Migration Guide

Version aCloud 5.8.3

Revise history						
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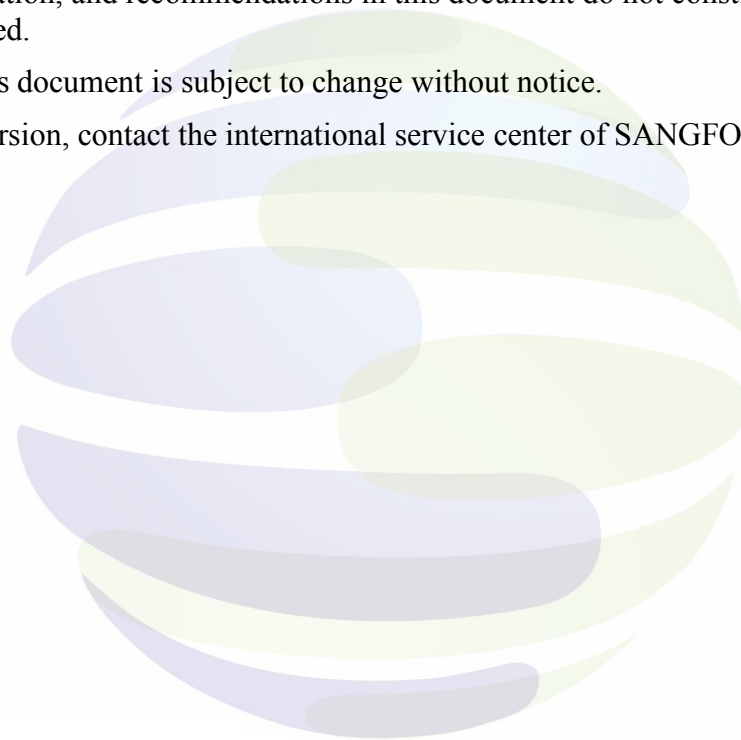
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# 1 Introduction

## 1.1 Reader Object

Reader object

This configuration guidance document is mainly applicable to the following engineers:

- ✓ Network or application manager
- ✓ On-site technical support and maintenance personnel
- ✓ Network management for network configuration and maintenance

## 1.2 Abbreviations and conventions

HCI in this article refers to the SANGFOR HCI device.

## 1.3 Feedback

If you find any questions of this documents, please feel free to give us feedback, email: [tech.support@sangfor.com](mailto:tech.support@sangfor.com).

# 2 Foreword

Migrate physical hosts - clone existing physical hosts or Windows/Linux operating systems on VMware or Citrix virtual machines to the SANGFOR HCI platform over the network.

# 3 P2V windows system migration

## 3.1 Migration instructions

P2V windows system migration is to clone the physical host with windows operating system to the SANGFOR HCI platform through the network.

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## 3.2 Migration requirement

### Physical host:

Hardware	Requirement	Description
<b>CPU</b>	Only support 64 bit AMD or Intel CPU	32 bit CPU need special treatment
<b>Memory</b>	More than 2GB	
<b>Network Card</b>	At least one 1GB NIC	Able to connect HCI system
<b>Hard Disk</b>	HCI platform available disk space is greater than the disk space usage in the system to be migrated.	Support disk type:  1. Simple Volume: Supports Optimized Copy  2. Dynamic disk - simple volume: need to use IOS to migrate, support optimized copy  3 Dynamic disk (spanned volume, Raid-5 volume): need to use ISO to migrate, does not support optimized copy

### HCI

HCI platform available disk space is greater than the disk space usage in the system to be migrated.

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### 3.3 Preparation before Migration

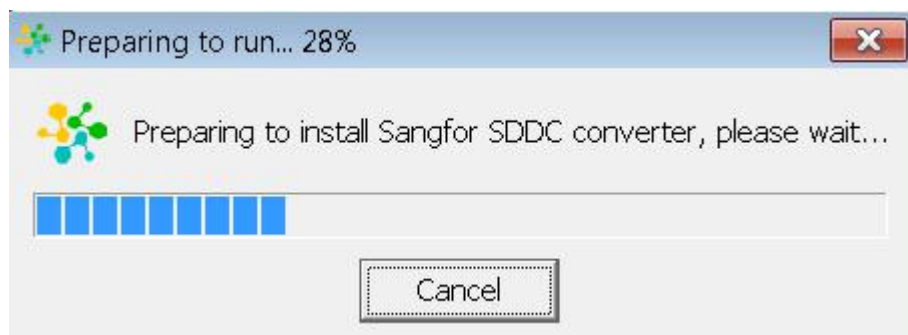
1. If there is a firewall between the host to be migrated and the HCI platform, the TCP and UDP ports of 4000-40010 and 10809-10900 need to be released.
2. The route between the host to be migrated and the HCI platform is reachable.
3. If you are using SANGFOR Converter to migrate, you need to copy the SANGFOR Converter exe file to the customer's physical machine in advance.
4. If you use ISO image to boot the migration, you need to prepare the boot disk in advance.
5. Before starting the migration, it is recommended that you restart the hosts to be migrated to avoid migration failures due to physical file system problems.

### 3.4 Migration Steps

#### 3.4.1 Running SANGFOR Converter Migration on Existing Host

Step:

1. Run SANGFOR Converter.exe under the Windows operating system to start the "Virtualization Conversion Tool." Check the agreement "Software License Agreement", then select "Migrate Physical Host" and click "Install Now".



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2. Before installation, the tool will obtain information about the current physical host and check whether the installation environment meets the necessary conditions. If the conditions are not met, a red warning message will be displayed, and will require correction and then rerun the software.
3. If the current operating system has been running for a long time, the restart may cause a self-test, resulting in a failed migration. It is recommended that you restart it before proceeding with the migration.
4. After the installation condition check is passed, you must first configure the connection to the target HCI platform. The tool will automatically discover the HCI platform on the current network segment. You only need to provide the password of the administrator account of the HCI platform to connect successfully. If there is no automatic discovery, you can manually enter its IP to add.

Select [Start Now] to start the migration:



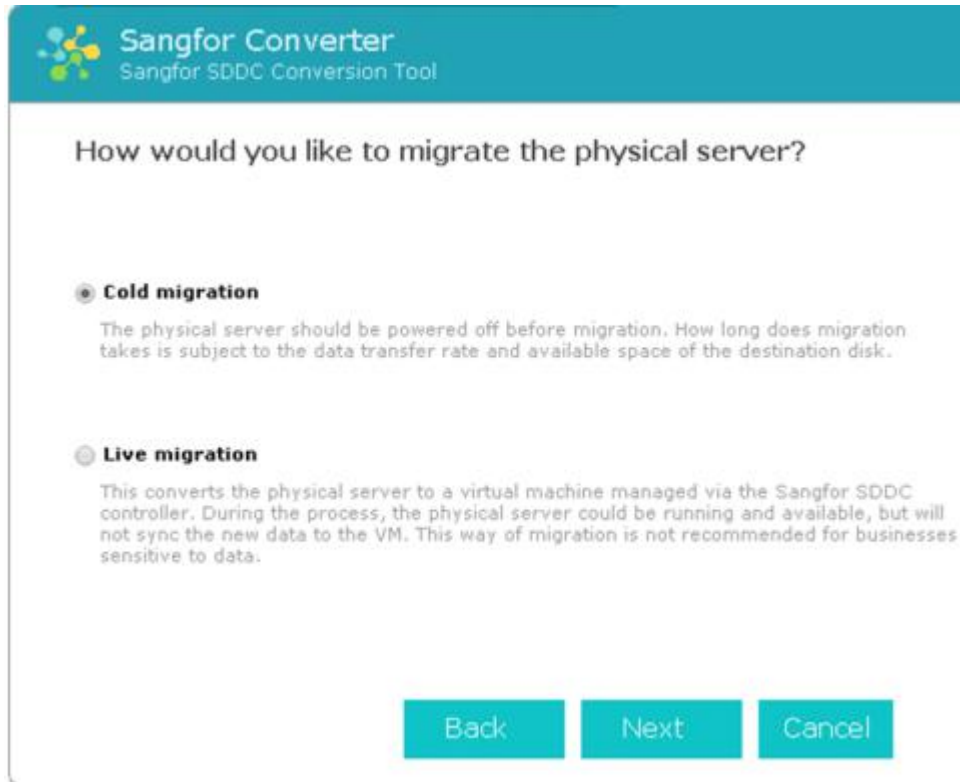
Support Cold Migration & Live Migration:

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### Differences of Cold and Live migration:

Cold Migration	Live Migration
Power off before migration and the data of original system will be identical	Original system will be running but the new generated data will not be synchronize
Faster speed of migration compared to Live Migration	Do not use Live Migration in high disk write environment

- After the connection is successful, the migration tool will clone the current Windows operating system to the target HCI platform and run as a virtual machine. Therefore, you also need to configure the relevant information of the virtual machine on the HCI platform, including the name of the virtual machine, storage and operating location, and hardware configuration.

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Choose the controller in the cluster where the target node resides

If the node is not found below, enter IP address and password manually.

Credentials



192.200.19.6

IP address and password

192.168.1.35

.....

OK Cancel



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**Sangfor Converter**  
Sangfor SDDC Conversion Tool

**Virtual Machine**

Name: Migrated\_win7

Datastore: Datastore\_2\_copy

Run on Node: Node 1

Group: Default Group

**Configuration** | **Advanced**

Low  
Typical  
High  
☒ Custom

Processor: 8 core(s)

Memory: 8GB

Disk: IDE0 200 GB Partitions  
IDE1 200 GB Partitions

NIC: NET0 bridged to Demo

Back Next Cancel

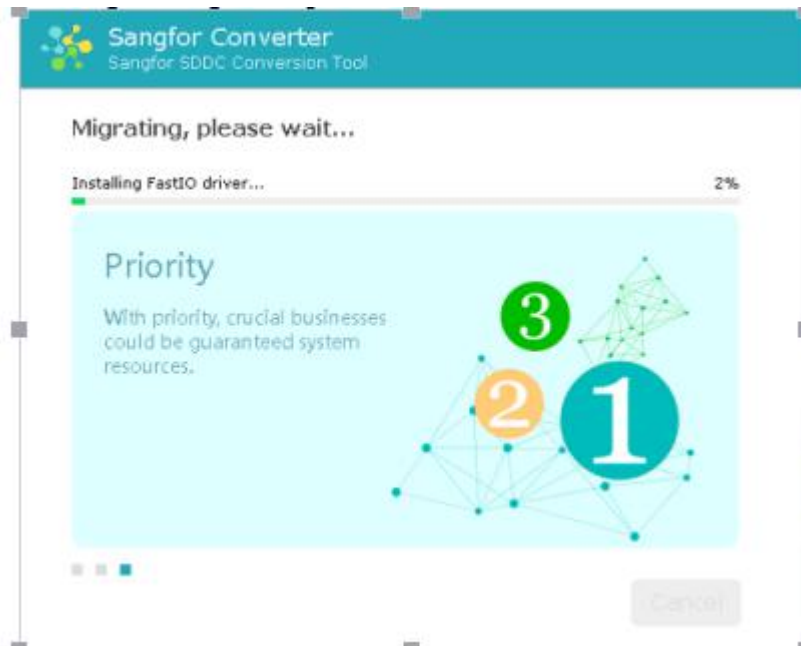
- After the configuration is complete, the current configuration information will be confirmed. After the configuration is confirmed, the installation can be performed. The installation process will only install the migration tools and drivers on the C drive of the Windows system and will not modify the configuration of the current operating system.
- After the installation is complete, you need to restart the Windows operating system to start the migration. At this point you can choose whether to open the original host or virtual machine after the migration is complete.

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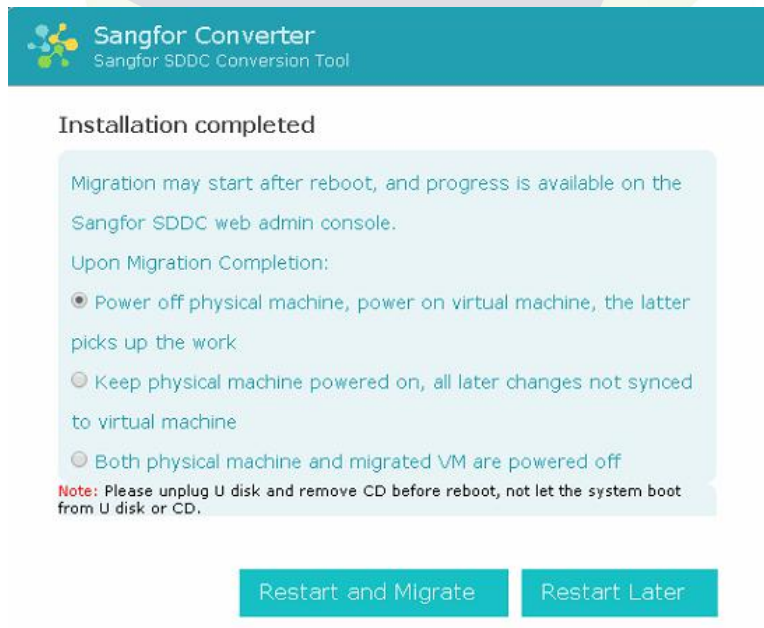
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### 〔Precautions〕

1. The current migration method supports hot migration, but during the hot migration process, the migrated data is no longer synchronized if an update occurs.
2. The business system with large disk write volume prohibits hot migration, otherwise the newly generated data will not be synchronized to the migrated virtual machine;
3. One HCI host can concurrently perform two migration tasks, queuing if more than.



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### 3.4.2 Booting a Migration Using an ISO Image

#### Step:

1. Burn the HCI installation image to a USB flash drive or CD to boot the server. Select "Migrate physical machine (P2V)" after startup.



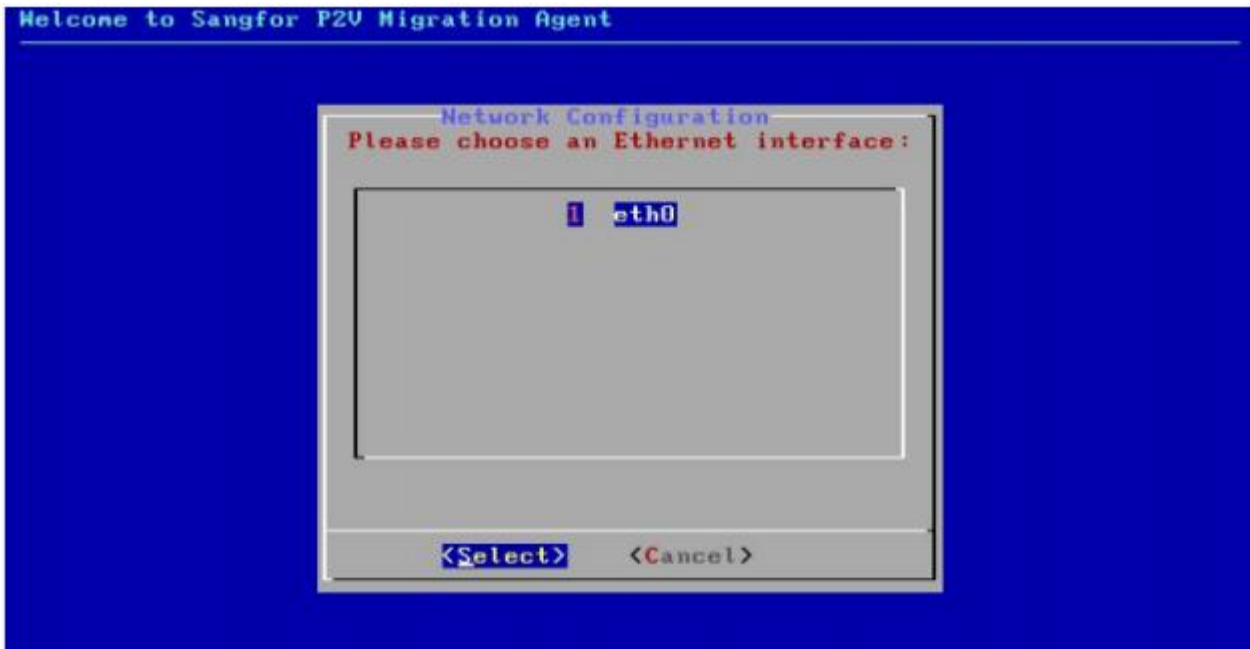
2. Read the migration instructions.
3. Before the migration, check the current host hardware conditions and meet the necessary conditions to migrate.
4. The migration needs to be transmitted over the network and the physical network card needs to be connected.
5. Select a physical NIC and configure the IP address to be able to connect to the target HCI platform for migration.

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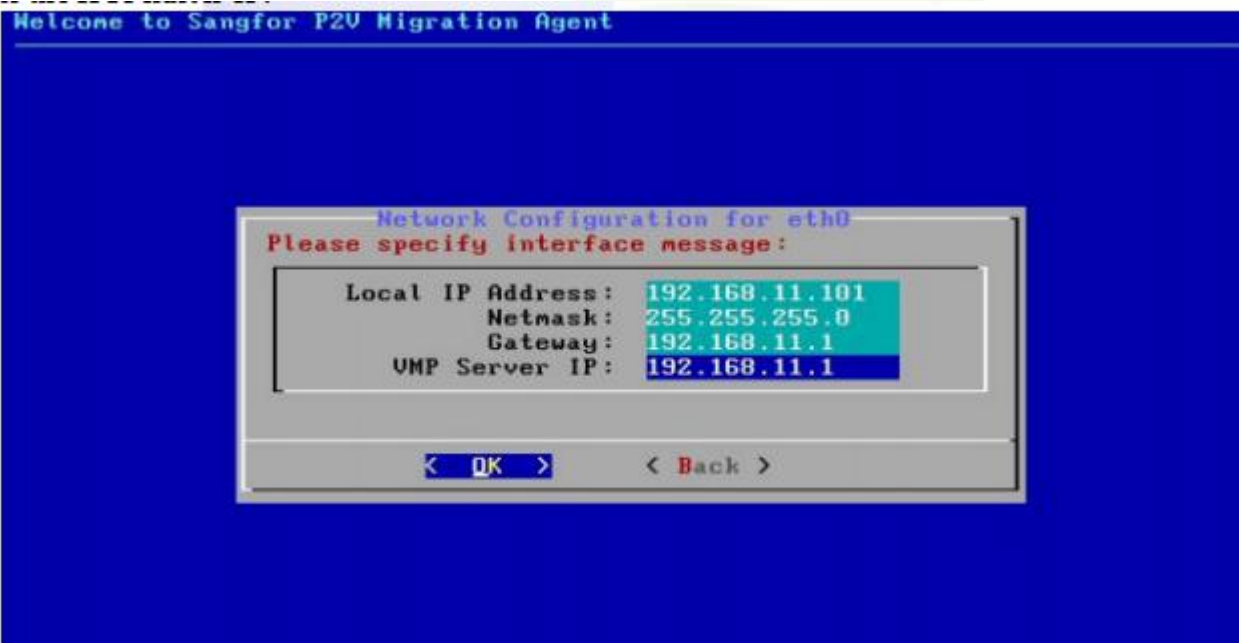
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6. After the configuration is complete, the VM network needs to be reconfigured after the migration is complete.



7. After the migration preparation is completed, the current host enters the state to be migrated, and the console prompts the login target HCI platform to start the migration.

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8. After the server to be migrated enters the migration preparation interface, log in to the HCI WebUI and the list of hosts to be migrated is displayed.
9. Configure the hardware configuration and running configuration information of the migrated virtual machine.
10. After the configuration is complete, start the migration. Click View Details to display the current migration speed. If the migration is slow, you can display the migration bottleneck.

#### 【Precautions】

1. The current migration method only supports cold migration.
2. One aCloud host can concurrently perform two migration tasks, other will be in queue if exceed.
3. If the customer does not want to install the migration tool in their original operating system, this method can be used for migration.
4. After the migration, you need to install the performance optimization tool on the VM.

### 3.5 Migration speed and time

The following is the actual test speed, for reference:

System to be migrated: System installed with SSD

Target system: three HCI integrated machines set up two copies of virtual storage aSAN environment

Migration size: 60G

Migration Environment: 1 GB Network

Migration Method	Average speed of migration	Estimated Time
SANGFOR Converter cold migration	60MB/s	17 minute
SANGFOR Converter hot migration	60MB/s	17 minute
ISO migration	60MB/s	17 minute

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### 3.6 Emergency recovery

#### **Emergency recovery on "running SANGFOR Converter Migration on the original host"**

1. When Windows migration uses the exe program to install, HCI startup items are added. When you start up, you can see the interface for selecting the startup item. At this time, you can use the keyboard arrow keys (↑ and ↓) to select the startup operating system. For example, the original system is Windows 7. You can choose to boot from the original operating system.
2. After starting the original operating system, go to the control panel to uninstall the migration tool.

#### **Emergency recovery on "ISO image boot migration"**

1. Since this method uses the installation CD to boot, no changes are made to the original host operating system. To stop the migration, you can eject the installation CD directly and restart the host to restore the original status.

### 3.7 Service Verification

#### **Verify customer business after successful migration:**

1. Close the original physical host, enable the migrated virtual machine, and operate the virtual machine from HCI or remote desktop to check whether the migrated virtual machine network is normal.
2. Verify that the services on the virtual machine are working properly.
3. Shut down the virtual machine and enable the original host to confirm that the original host is working properly

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### 3.8 FAQ

1. The Windows service that is needed by the SANGFOR Converter tool to perform migration:  
Volume Shadow Copy;
2. The online migration of SANGFOR Converter will take a snapshot of the current disk, and subsequent data generated will not be migrated.
3. The SANGFOR Converter tool supports the migration of external FC storage, and is optional. However, ISO migration does not migrate external storage because the FC storage can be mounted to the operating system when the SANGFOR Converter tool is migrated. However, when the ISO migration is performed, will not mount external storage.

## 4 P2V Linux Migration

P2V Linux system migration is to clone the physical host with LINUX operating system to the SANGFOR HCI platform through the network.

### 4.1 Migration requirement

Physical Host:

Hardware	Requirement	Description
CPU	Only support 64 bit AMD or Intel CPU	32 bit CPU need special treatment
Memory	More than 2GB	
Network Card	At least one 1GB NIC	Able to connect HCI system

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## HCI:

HCI platform available disk space is greater than the disk space usage in the system to be migrated.

## 4.2 Preparation before Migration

1. If there is a firewall between the host to be migrated and the HCI platform, the TCP and UDP ports of 4000-40010 and 10809-10900 need to be released.
2. The route between the host to be migrated and the HCI platform is reachable.
3. If you are using SANGFOR Converter to migrate, you need to copy the SANGFOR Converter exe file to the customer's physical machine in advance.
4. If you use ISO image to boot the migration, you need to prepare the boot disk in advance. If you need to create the boot disk yourself, refer to section 4.1 of the "Sangfor HCI Configuration Guide".
5. Before starting the migration, it is recommended that you restart the hosts to be migrated to avoid migration failures due to physical file system problems.

## 4.3 Migration Step

### 4.3.1 Booting a Migration Using an ISO Image

#### Step:

1. Burn the HCI installation image to a USB flash drive or CD to boot the server. Select "Migrate physical machine (P2V)" after startup.
2. Read the migration instructions.

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3. Before the migration, check the current host hardware conditions and meet the necessary conditions to migrate.
4. The migration needs to be transmitted over the network and the physical network card needs to be connected.
5. Select a physical NIC and configure the IP address to be able to connect to the target HCI platform for migration.
6. After the configuration is complete, the VM network needs to be reconfigured after the migration is complete.
7. After the migration preparation is completed, the current host enters the state to be migrated, and the console prompts the login target HCI platform to start the migration.
8. After the server to be migrated enters the migration preparation interface, log in to the HCI console and the list of hosts to be migrated is displayed.
9. Configure the hardware configuration and running configuration information of the migrated virtual machine.
10. After the configuration is complete, start the migration. Click View Details to display the current migration speed. If the migration is slow, you can display the migration bottleneck.

#### 〔Precautions〕

1. The current migration method only supports cold migration.
2. One aCloud host can concurrently perform two migration tasks, other will be in queue if exceed.
3. If the customer does not want to install the migration tool in their original operating system, this method can be used for migration.

## 4.4 Migration speed and time

The following is the actual test speed, for reference:

System to be migrated: System installed with SSD

Target system: three HCI integrated machines set up two copies of virtual storage aSAN environment

Migration size: 60G

Migration Environment: 1 GB Network

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Migration Method	Average speed of migration	Estimated Time
ISO migration	60MB/s	17 minute

## 4.5 Emergency recovery

### Emergency recovery on "ISO image boot migration"

Since this method uses the installation CD to boot, no changes are made to the original host operating system. To stop the migration, you can eject the installation CD directly and restart the host to restore the original status.

## 4.6 Service Verification

### Verify customer business after successful migration:

1. Close the original physical host, enable the migrated virtual machine, and operate the virtual machine from HCI or remote desktop to check whether the migrated virtual machine network is normal.
2. Verify that the services on the virtual machine are working properly.
3. Shut down the virtual machine and enable the original host to confirm that the original host is working properly.

## 4.7 FAQ

1. After the Linux host is migrated, the system fails to work. You can try to edit the VM and turn off the Use FastIO Disk option in Advanced - Debug Options.
2. Eth0 network adapter lost in a cloned or derived Linux system virtual machine or a virtual machine with optimization tools installed.

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## 5 V2V System Migration

### 5.1 Migration Instruction

The V2V system migration is to clone the VMWare or Windows/Linux operating system on the Citrix virtual machine to the SANGFOR HCI platform through the network.

### 5.2 Preparation before Migration

1. If there is a firewall between the host to be migrated and the HCI platform, the TCP and UDP ports of 4000-40010 and 10809-10900 need to be released.
2. The route between the host to be migrated and the HCI platform is reachable.
3. If use the export OVA method to migrate, shut down the virtual machine before the migration.
4. Delete the vmtools tool on the original virtual machine.

### 5.3 Migration Step

#### 5.3.1 Running SANGFOR Converter Migration on Existing Host

Step:

1. Run SANGFOR Converter.exe under the Windows operating system to start the "Virtualization Conversion Tool." Check the agreement "Software License Agreement", then select "Migrate Physical Host" and click "Install Now".
2. Before installation, the tool will obtain information about the current physical host and check whether the installation environment meets the necessary conditions. If the conditions are not met, a red warning message will be displayed, and will require correction and then rerun the software.
3. If the current operating system has been running for a long time, the restart may cause a self-test, resulting in a failed migration. It is recommended that you restart it before proceeding with the migration.
4. After the installation condition check is passed, you must first configure the connection to the target HCI platform. The tool will automatically discover the HCI platform on the current network

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segment. You only need to provide the password of the administrator account of the HCI platform to connect successfully. If there is no automatic discovery, you can manually enter its IP to add.

5. After the connection is successful, the migration tool will clone the current Windows operating system to the target HCI platform and run as a virtual machine. Therefore, you also need to configure the relevant information of the virtual machine on the HCI platform, including the name of the virtual machine, storage and operating location, and hardware configuration.
6. After the configuration is complete, the current configuration information will be confirmed. After the configuration is confirmed, the installation can be performed. The installation process will only install the migration tools and drivers on the C drive of the Windows system and will not modify the configuration of the current operating system.
7. After the installation is complete, you need to restart the Windows operating system to start the migration. At this point you can choose whether to open the original host or virtual machine after the migration is complete.

#### 〔Precautions〕

1. The current migration method supports hot migration, but during the hot migration process, the migrated data is no longer synchronized if an update occurs.
2. The business system with large disk write volume prohibits hot migration, otherwise the newly generated data will not be synchronized to the migrated virtual machine;
3. After the migration, install the performance optimization tool on the VM.

### 5.3.2 Export OVA method

**Steps (VMware ESXi platform as example, similar to Citrix XenServer):**

1. In the VMW are ESXi platform, first power off the virtual machine, then select "Export OVF Template" from the "File" menu;
2. In the export configuration, select the export format as "single file (OVA)";
3. Log in to the HCI console, click on the VM, click Add, select Import VM, configure its storage location and operating location, and start importing.

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## 5.4 Emergency recovery

### Emergency recovery on "running SANGFOR Converter Migration on the original host"

1. When Windows migration uses the exe program to install, HCI startup items are added. When you start up, you can see the interface for selecting the startup item. At this time, you can use the keyboard arrow keys (↑ and ↓) to select the startup operating system. For example, the original system is Windows 7. You can choose to boot from the original operating system.
2. After starting the original operating system, go to the control panel to uninstall the migration tool.

### Emergency recovery method using "Export OVA method"

Since this method does not make any changes to the original virtual machine, you may directly delete the newly imported virtual machine on the HCI platform and start the original virtual machine.

## 5.5 Service Verification

### Verify customer business after successful migration

1. Close the original physical host, enable the migrated virtual machine, and operate the virtual machine from HCI or remote desktop to check whether the migrated virtual machine network is normal.
2. Verify that the services on the virtual machine are working properly.
3. Shut down the virtual machine and enable the original host to confirm that the original host is working properly.

## 5.6 FAQ

1. The Windows service that is needed by the SANGFOR Converter tool to perform migration: Volume Shadow Copy;
2. The online migration of SANGFOR Converter will take a snapshot of the current disk, and subsequent data generated will not be migrated.

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## 6 VMware Integration

### 6.1 Background

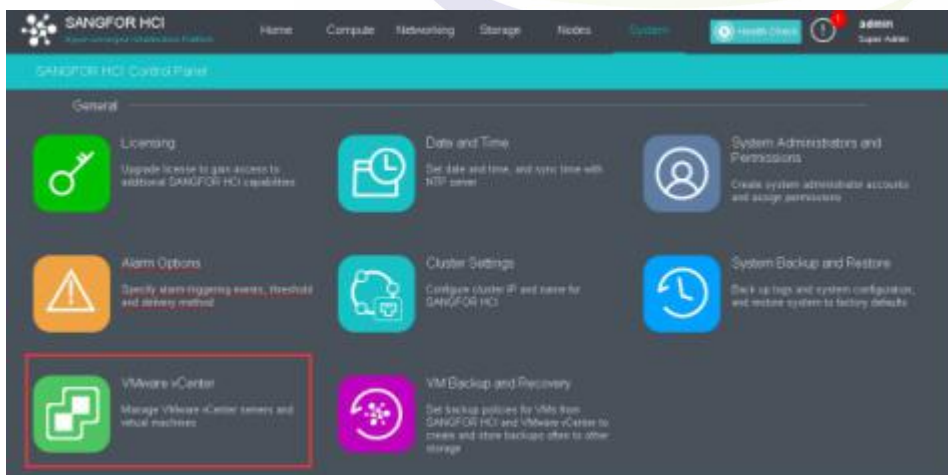
VMware ESXi is a bare-metal hypervisor that installs directly onto a physical server. It usually deployed in most of the customer environment as first choice of virtualization. However, it always a headache to manage different party of hypervisor in a time. Hence, Sangfor HCI 5.8.3 started to integrate most of VMware function as part of features in HCI

### 6.2 Theory

The vSphere API is exposed as a Web service, running on VMware vCenter server systems. VMware allow third party corporation to communicate with vCenter through provided API. While Sangfor HCI 5.8.3 utilized VMware API to integrate basic management function of vCenter in a better and friendly user interface.

### 6.3 Configuration

#### 6.3.1 Add vCenter server to HCI



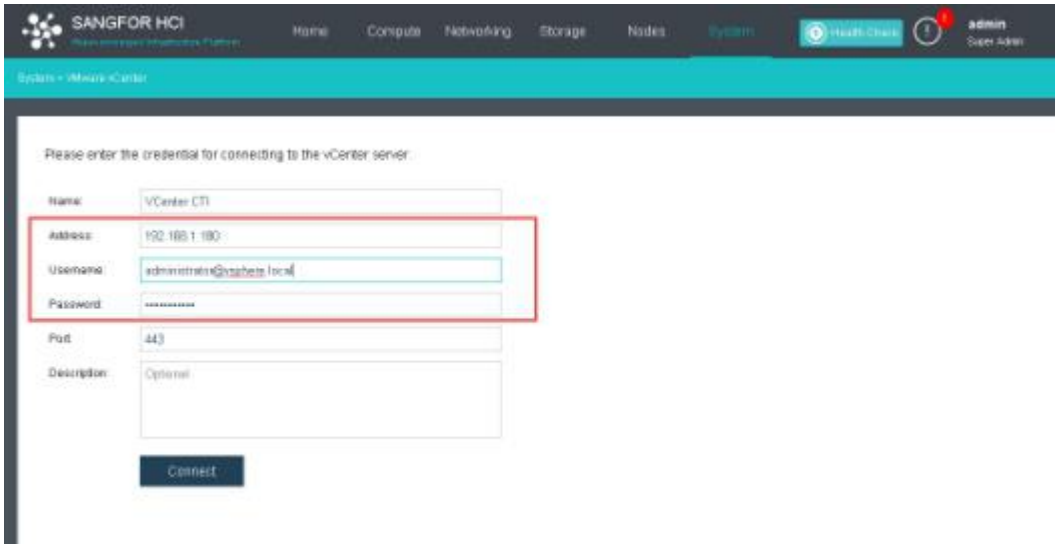
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## Fill in necessary vCenter information



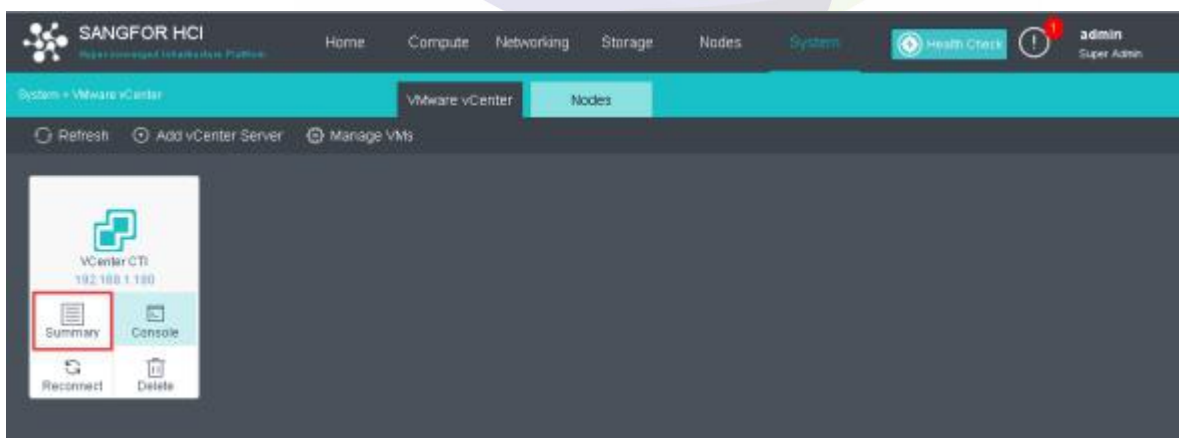
**Name:** Naming of added vCenter

**Address:** vCenter server IP address

**Username:** Username of vCenter (Default vCenter username: **administrator@vsphere.local**)

**Port:** Port that configured at vCenter (Default: **443**)

## Verify VMware vCenter connection



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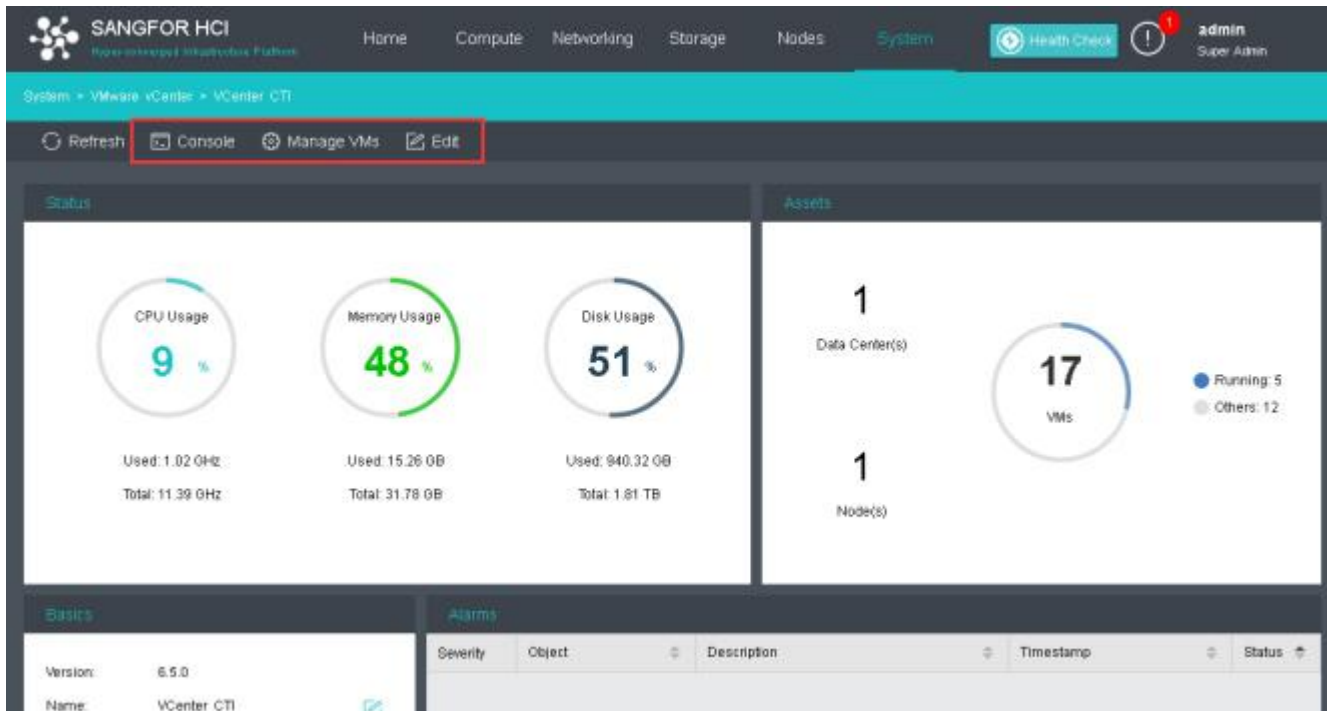
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Once VMware vCenter is added, it will show a new panel in option of VMware vCenter. Mouse over to following panel will show summary, console, reconnect and delete option.

**Summary:** Shows detail information of vCenter such as Memory, Hard drive usage, CPU usage, deployed VMs and etc.



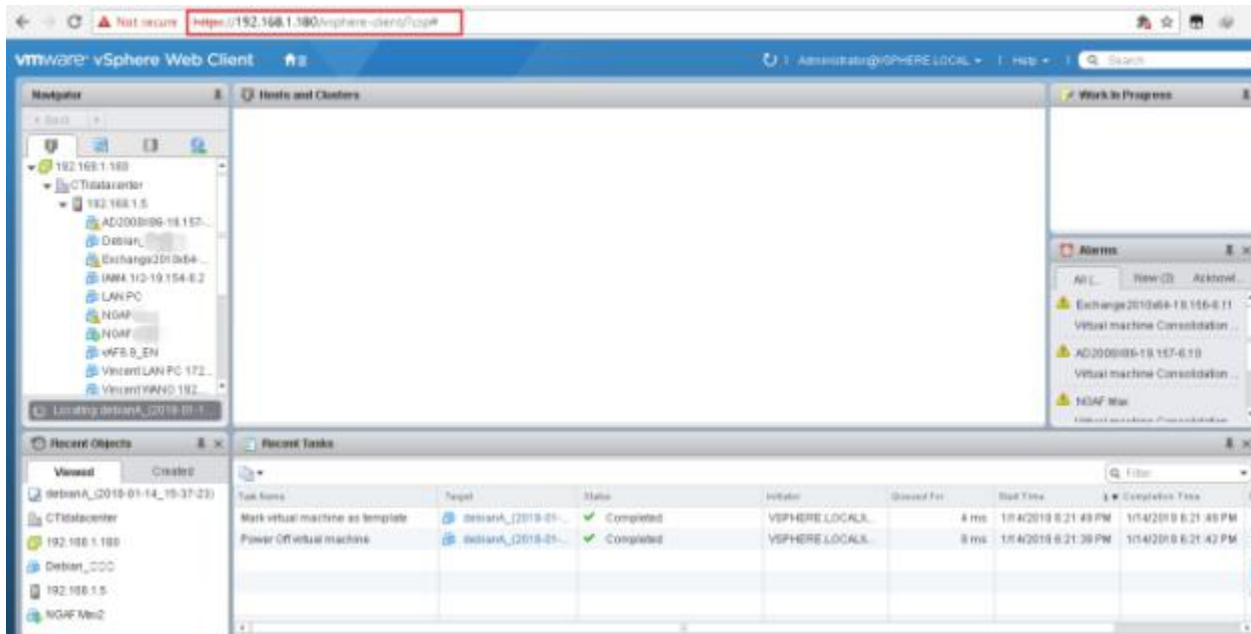
**Console:** Redirect to VCenter/Web based VSphere client.

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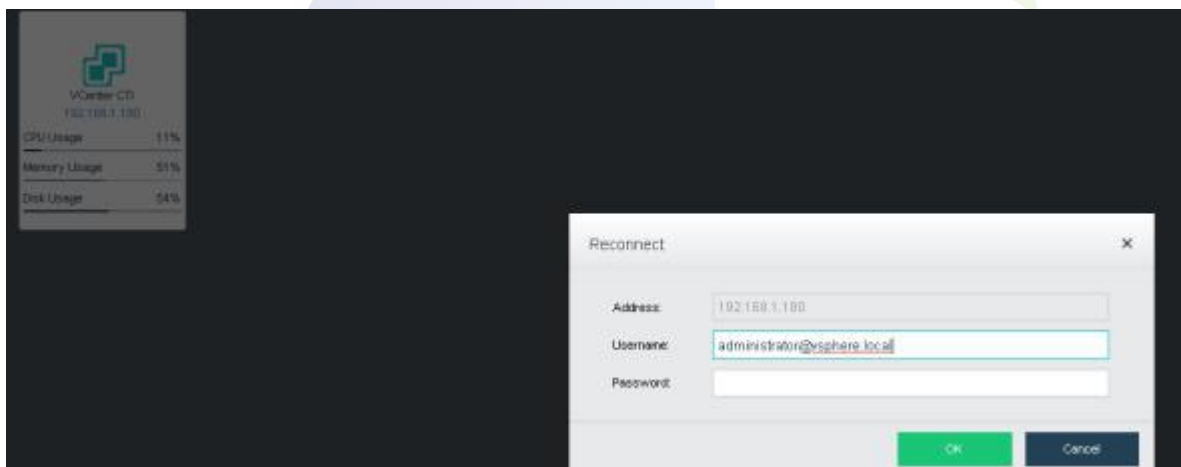
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**Reconnect:** Refresh the connection to VCenter.



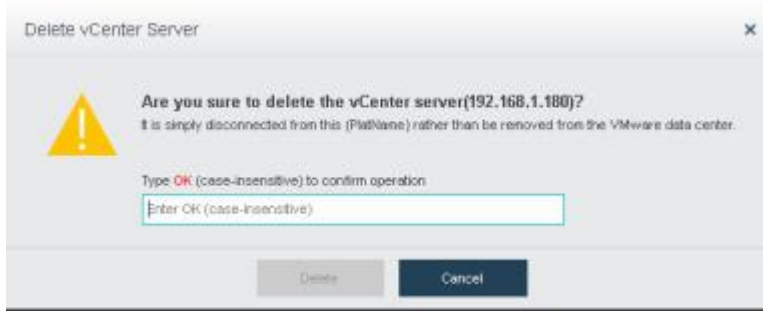
**Delete:** Delete current connected vCenter entry.

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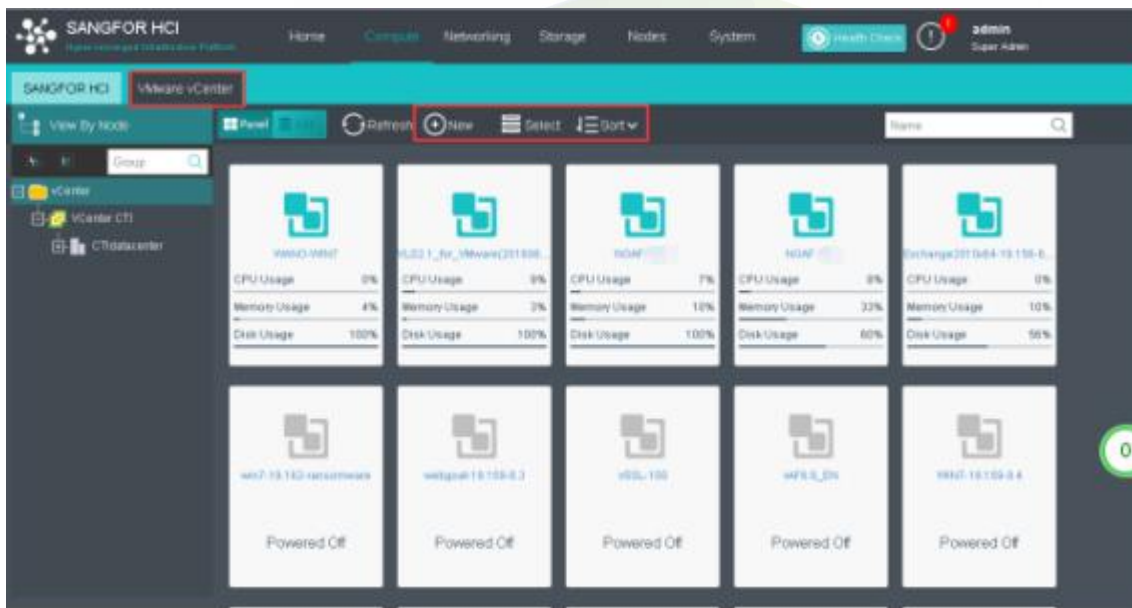
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## 6.3.2 Manage VMWare VM



Navigate to **Compute > VMware vCenter** Tab will shows current VMs that deploy in ESXi.

HCI manage VM interface provides grouping features such as multiple select and sorting tool. (CPU, Memory, Name or Disk usage.)

Mouse over VMware VM, basic feature such as **poweroff, shutdown, console** or **more** can be found.

## 6.3.3 Create new VM to VMware vCenter

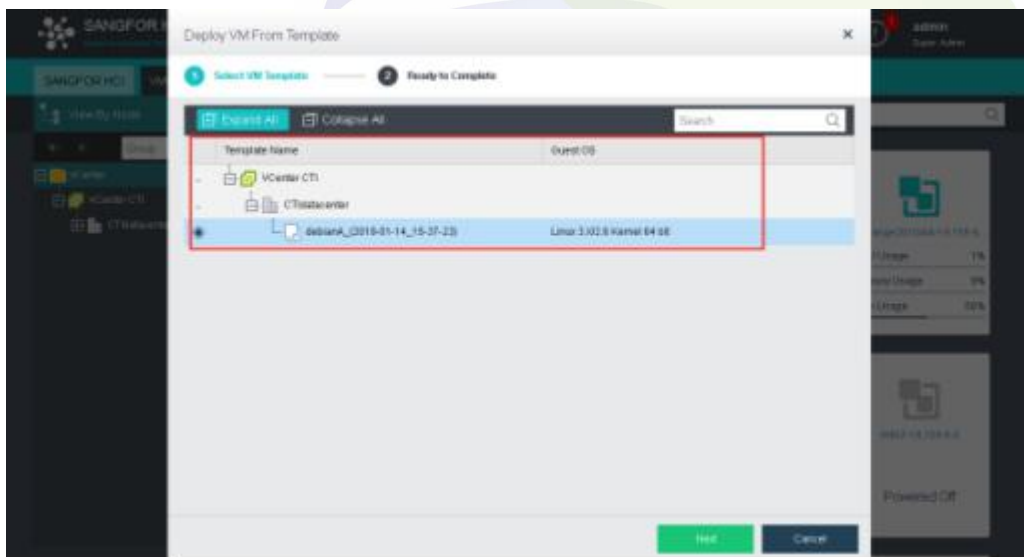
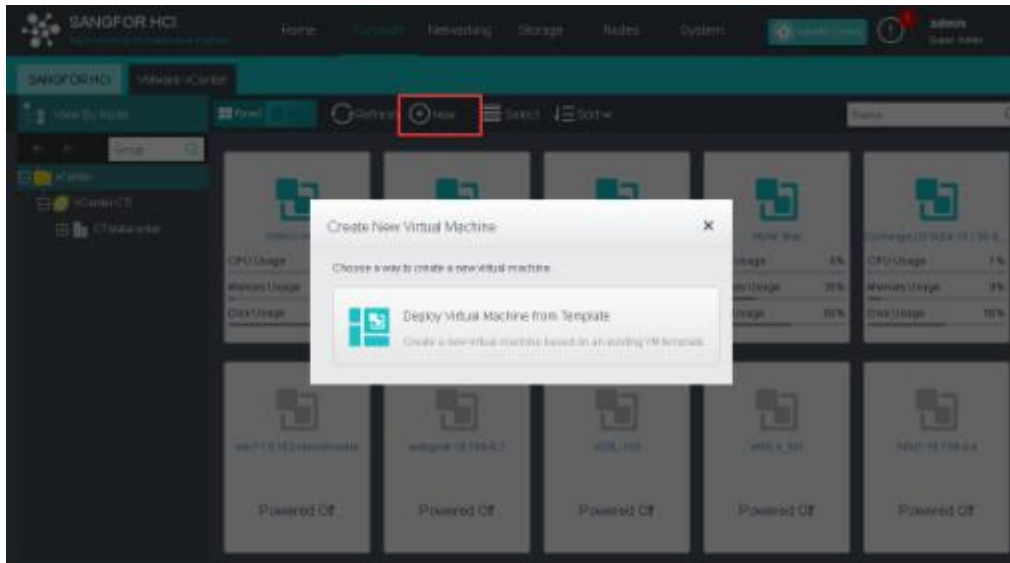
Users able to directly create new VM from HCI that reflect in VMware vCenter. However, It only constraint to deploy VMs from VMware template.

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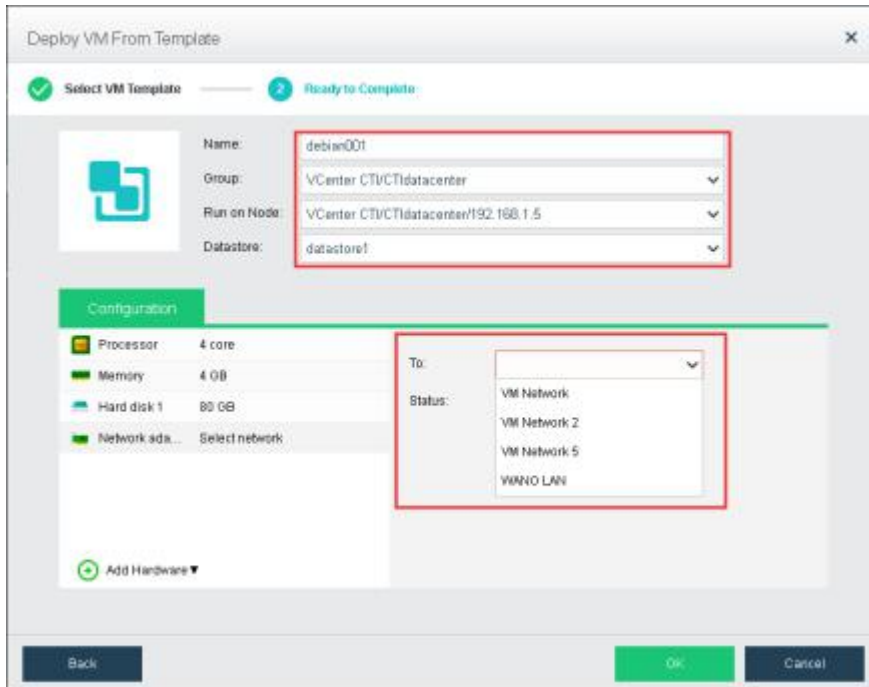
Following diagram shows template that exist in VMware, users only allowed to create template VMs through HCI.

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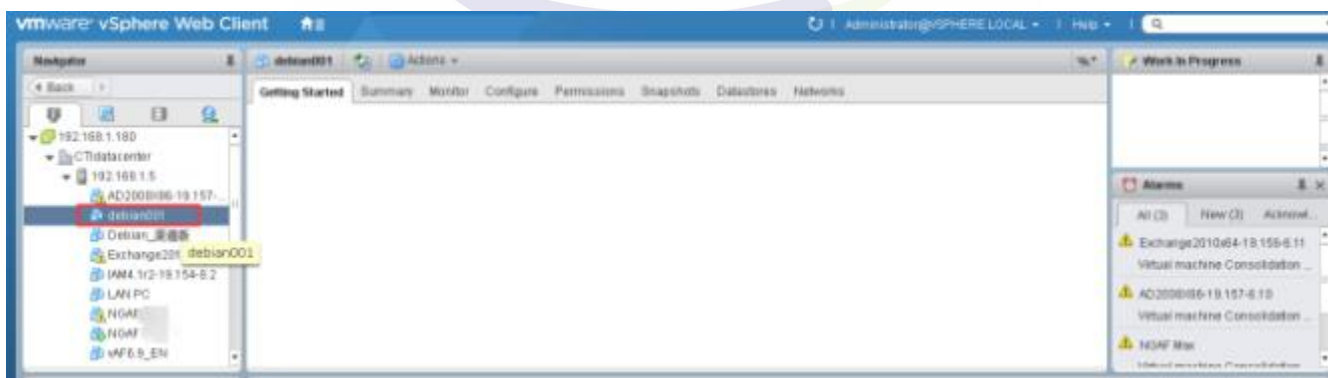
**Name:** Naming of new VM

**Group:** Group in VMware VCenter

**Run on Node:** ESXi nodes that added to VCenter

**Datastore:** ESXi datastore

**Network:** Network adapter of ESXi



After the deployment is done, it will show new created VMs in VCenter.

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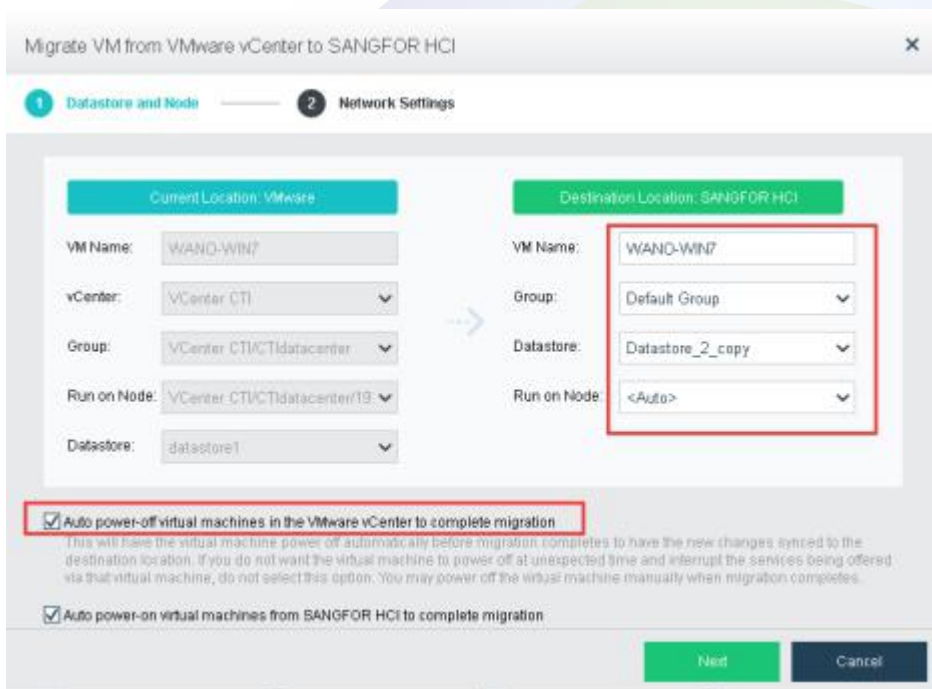
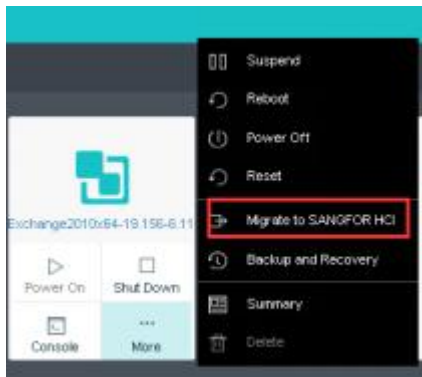
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### 6.3.4 Migration of VMware VMs to Sangfor HCI

Mouse over to VM that need to migrate and click on **More > Migrate to SANGFOR HCI**



**VM Name:** New VM name that used in HCI after migration

**Group:** HCI groups

**Datastore:** HCI virtual storage

**Run on Node:** Run on which node after finish migration (Default: Auto)

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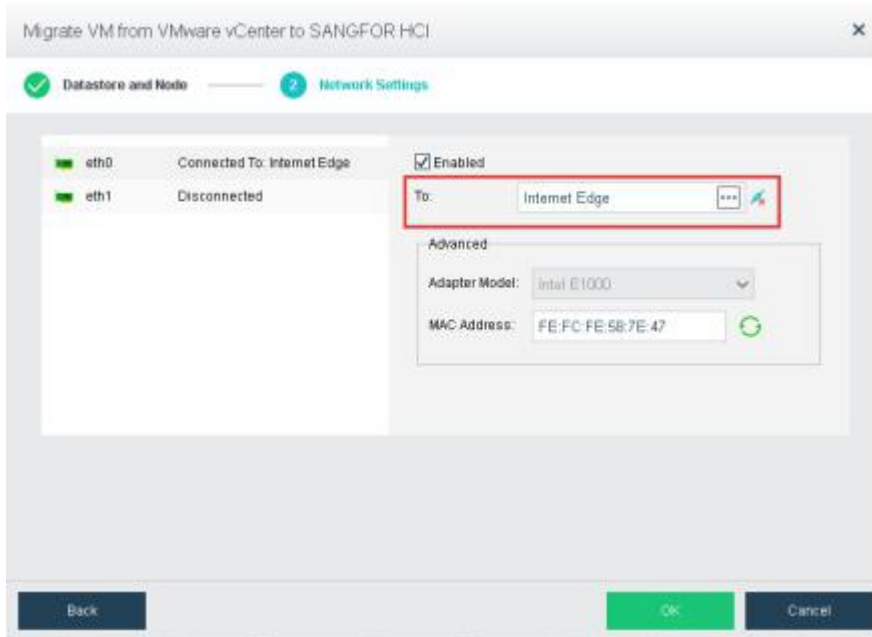
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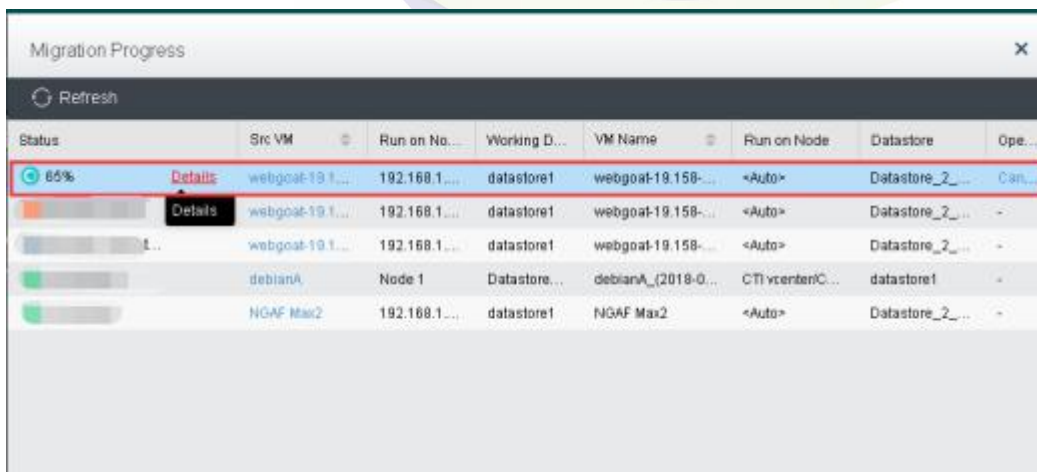
**Note:** Migration of VM from HCI to VMware need to be powered off.

**Attention:** Tick the following option will auto power off the VM to complete the migration.

If following option does not selected, VMware to HCI migration will stop at 95%. It require users to manually power off the VM to complete migration process.



Recommended to select the right/available Edge interface to reduce network down time of VMware VM after migration.



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Click on **Details** button to check migration information such as transfer speed and completed percentage.



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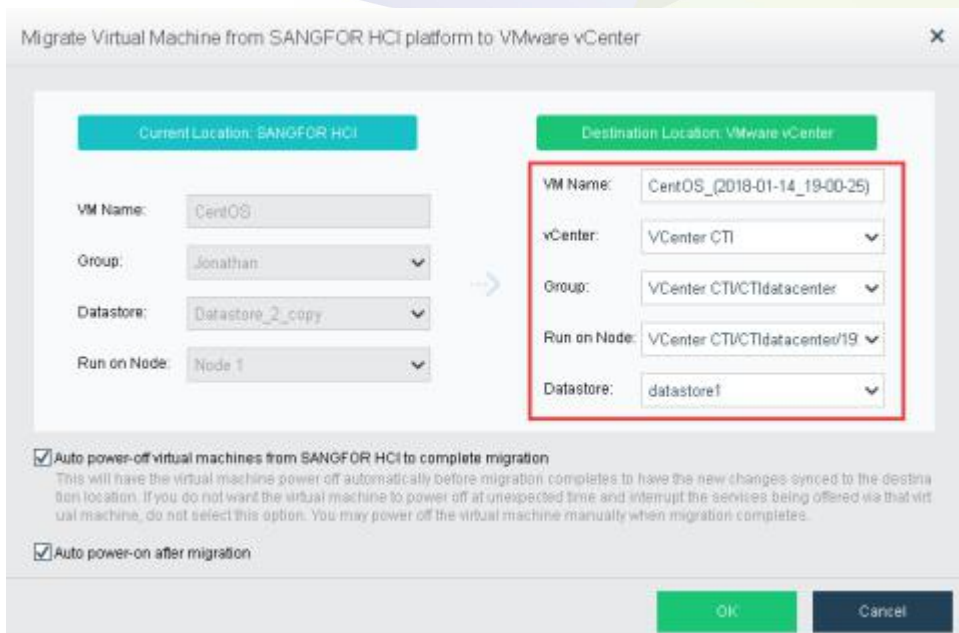
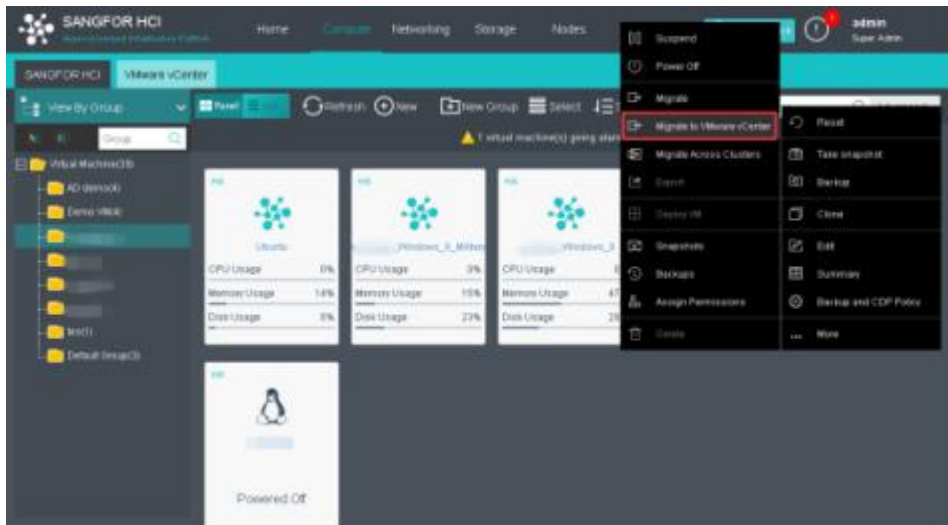
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## 6.3.5 Migration of HCI to VMware VCenter

Navigate to VM > More > Migrate to VMware VCenter



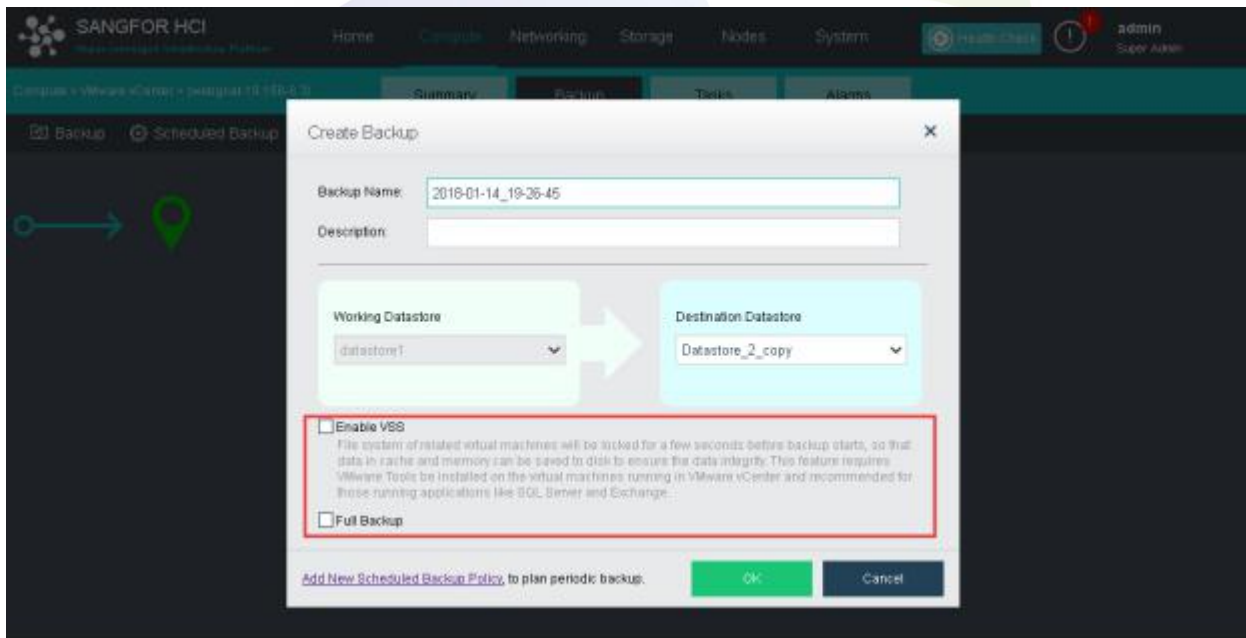
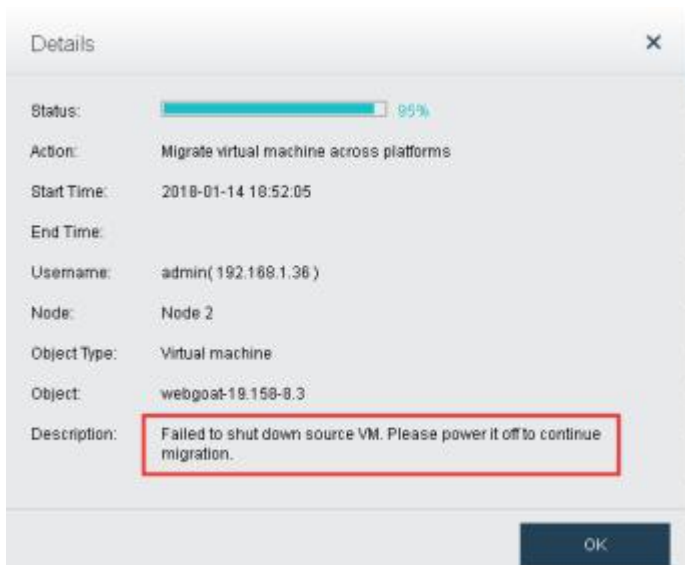
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For VM that does not tick/select auto power-off virtual machines, the migration will stop at 95% with description manually shutdown the source VM.



**Enable VSS option** if VMs is running high IO usage server such as SQL server. It will increase the data integrity by lock down the file system before backup.

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