

yCenter

Quick Reference Guide

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Yottabyte Glossary of Terms

yCenter – Yottabyte system management Central administration and monitoring of a YB system is administered using this single application. Level of access (Infrastructure/domain/VE/VM) is determined via user login.

IMan – Infrastructure Manager. Only users with permissions to the overall system will see the link for IMan. This is where physical resources are arranged into resource pools, domains are created and resource pools are assigned to domains.

Domain – A system can contain one or more domains. Each domain maintains its own user security and can remain isolated from other domains.

Virtual Environment (VE) aka Virtual Data Center * The Virtual Environment (VE) is a subdivision of a domain. VEs are the containers that hold VMs and VM recipes. Separate VEs allow for organizing groups of VMs/VM recipes based on function, business group, project, etc. Domain security cascades down to the VE within the domain, with the option to define differing security at the VE level where desired.

vNet – Virtual networks allow portioning out a physical network into separate logical networks that are isolated by default via firewall and Natting/Patting. A vNet can be opened up as Communication can be opened as needed on a vNet with configurable firewall and NAT/PAT rules. Full management up through the network stack is available centrally via the yCenter application.

There are 3 types of vNets available:

- **Private** – Utilizes a YB system-created network bridge. In a private vNet, the gateway/router is managed within yCenter.
- **Direct Attached** – Utilizes an existing bridge device defined on the host(s). A direct attached vNet would be used to add VMs to an existing bridge or to utilize yCenter to firewall the existing bridge.
- **Public** – YB system-created network bridge. In a public vNet, an external (outside of yCenter) gateway/router is utilized.

vNets can also be defined as Layer2 or Layer3:

- Layer2 - IP management external to yCenter.
- Layer3 - IP management and awareness within in the YB system

vNets are created at the Iman level and ports can be assigned to domains and VEs. Typically, separate vNets are assigned to separate domains, allowing for network isolation or very controlled traffic via firewall and natting. Traffic can also be controlled or isolated between VEs by using separate vNets.

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VM Recipe – a customizable template for VM creation. A VM recipe includes hardware specifications (e.g. number cores, RAM, CPU type, drives, NICs, etc.) and resource pool specification (or can allow for remapping of compute and network resources). Additionally, custom fields can be added to the recipe to gather input at the time of recipe consumption. This data, input by the recipe consumer, can then be utilized to adjust elements within the new VM – typically, at first startup. For example, a VM recipe can prompt for a DB username and password, or for disk/ram size settings to input to a conf file inside the VM, etc. To create a VM Recipe, you must first create a “custom” VM. See *Creating a VM Recipe* [below](#)

VE Recipe – a customizable template for building of a group of VMs and the containing VE. To create a VE Recipe, you must first create a “custom” VE. See *Creating a VE Recipe* [below](#).

Recipe Creator – yCenter user who builds the original VM, setting configuration parameters and custom fields to gather information needed to customize the VM that will be created from the recipe.

Recipe Consumer – The yCenter user who creates a new VM or VE from a recipe, entering data as required by the recipe configuration.

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Instructions

Create a new domain

Creating a domain requires logging in with permissions at the IMan level.

From the [IMan Dashboard](#), select [Domains](#) → [New Domain](#)

Domain names:

- must be unique
- case-insensitive (saved in lowercase only)
- cannot contain the following characters: /,><?*`\$`&=\
- Keep in mind that users will be using the domain name to login to yCenter. (e.g. [username@domainname](#)). Therefore long and complicated domain names are not typically recommended. (A single default domain can be defined to allow its users login without domain suffix.)
- Domains cannot be deleted via the ycenter user interface. Deleting a domain involves a special process to be carried out by Yottabyte support personnel and requires a complete shutdown of the system.
- By default, the login “admin” created for each new domain. The 'admin' user in each domain has full access to the given domain, but does not have any access at the IMan level.
- After creating a new domain (and modifying the admin password, if necessary,) compute, storage and network resources must be provisioned to the domain:

Adding Compute Resources to a Domain

- From the [IMan Dashboard](#), select [Domains](#) and double-click the domain in the domains list.
- Click [Add Compute](#)
- Select a *Compute Pool*.

Define desired compute maximums for this domain:

- ◆ **Max running cores** and **max running ram** are required and define restrictions for usage limits across the domain.
- ◆ **Max cores per VM** is optional, defines the greatest number of cores that can be assigned to a single VM within the domain.
- ◆ **Max ram per VM** is required, defines the largest amount of memory allowed per a single VM; 512MB is the minimum that can be defined here.

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Adding Storage Resources to a Domain

- From the **IMan Dashboard**, select **Domains** → double-click the domain in the domains list.
- Click **Add Storage**
- Select a **Storage Pool**. Tier2 is comprised of solid state drives and is optimized for read/write performance. Tier4 is comprised of spinning disk and is optimized for capacity.

Define desired storage maximums for this domain:

- ◆ **Max diskspace** will limit the amount of space allowed to this domain. Note: Overprovisioning is accommodated until actual space used +new allocated exceeds this limit.
- ◆ **Max iops** can be left blank to disable any iop throttling at the domain level. *Note: Max iops is not enforced per domain at this time.*

It will be necessary to add network resources to the domain as well. Vnets need to be created at the IMan level and then ports from those vNets can be assigned to the domain.

Creating a vNet

Creation of vNets can only be done at the IMan level.

- From the IMan Dashboard, select **Network** from the left menu.
- Select **New vNet**.
- Define a **Friendly Name** (optional) – a descriptive display name for the network
- Enter a **Description** (optional) - allows an area to enter more text information.
- Select a **Type** – Public/Private/Direct Attached. (See descriptions of vNet types in glossary section.)
- Select a **Device** – network device on the host to attach this network. (for type=Direct Attached, only bridge devices can be selected; for type=Public or Private, a bridge is automatically created by the yCenter software.)
- Select **Encapsulation Type** – vLAN/vxLAN – vxLAN typically recommended.
- Note: A **vNet ID** can be manually assigned. However, if not defined here it is auto assigned by the system. It is recommended to let the system auto assign all vNet IDs to avoid potential ID conflicts.
- Select level of **Network Management**:
 - **Layer2** – IP addressing is handled externally to yCenter. The yottabyte system has no visibility to IP addressing.
 - **Layer3** – IP addressing options, e.g. DNS/DHCP, routing, firewalling, NATTING/PATting available within yCenter.

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IP aliases

IP alias entries have been created for the available public IP addresses within the ARC-TS/YB POC environment. This pre-issuing makes the addresses available for Natting. This will prevent the need for a router restart each time an alias is added. Note: descriptions for these alias entries can be added without needing to restart a router. If further IP alias entries are needed in the future, contact Yottabyte support for assistance.

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Create a VE

A Virtual Environment(VE) is the equivalent of a Virtual Data Center(vDC). The current production version of yCenter uses the term VE. Future versions use the term 'Virtual Data Center (vDC)'. Labeling within the application will be changed prior to GA release.

Domain Administrator permission level is required to create a VE. At least one VE is required before a VM can be created in the domain.

- From the yCenter dashboard (logged into the desired domain), select **VEs** → **New Custom VE**. (After custom VEs are created, VE recipes can be created. See following section for instructions on creating a VE Recipe.)
- Enter **Description** (optional).
- Enter a **VE Name** - Unlike a domain, a VE name may contain both capital and lowercase letters. Use a clear and descriptive name for the VE.
- **Default Compute Pool, Default Storage Pool, Default vLAN** can be used to define the default-selected pool for new VMs within this VE.
- * **Max running ram, *Max running cores, *Max ram per VM and *Max cores per VM** can be left as-is to simply cascade down from the settings defined at the domain level, or can be modified for this VE.
** These values are checked when VMs are started. The system will allow creating VEs and VMs with values that exceed those set at the domain. However, when VMs are started, domain limits are enforced; therefore, max values for the VE should not be defined higher than those set at the domain level.*
- Set **Max Space** - This defines a disk space threshold for the VE. Note: Overprovisioning is accommodated until actual space used +new allocated exceeds this limit.
- **Max iops** can be left blank to disable any iop throttling at the VE level. *Note: Max iops is not enforced per VE at this time.*
- A list of all **vNets** assigned to the domain are displayed. A vNet is selected by entering a **Max Ports*** setting. Enter a value for each vNet that should be assigned to this VE.
** Max port setting is not actually enforced at this time. However, the VE will only be able to utilize vNets where a max ports setting is set to something higher than 0.*

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Creating a VE Recipe

Creating a VE Recipe requires first creating a base VE. The VE must be created using the **New Custom VE** option. After the VE is created it can be “turned into” a VE recipe:

- Create a VE. (Select **New Custom VE**), or go to the dashboard of an existing VE.
- After configuring the VE as desired, Select **Make Recipe** from the left menu.
- Select **Edit Recipe** .

General Recipe Settings

- **Clone permissions** – If this option is selected, permissions of the recipe VE are copied to new VEs created with this recipe.

Custom Fields

Custom fields allow presenting the recipe consumer with input fields in order to collect data for customizing the VM created from the recipe. The following types are available: Text, Number, Dropdown, Checkbox, Password, Hidden*, Disk/RAM size, Email. For each custom field created, the recipe creator defines the following:

- **Unique key name** – name of key to be used in custom scripting
- **Label , Mouse over Text and Placeholder text** are presented to recipe consumer to describe what the input should be.
- Depending upon the field type other options are available, including **Default Value, Required, Min/Max values.**
- **Field Types: Password and Hidden** allow the option to **Destroy after First Use.** When this option is selected, the field data can only be acquired one time; it is deleted immediately after first access.

A recipe can contain any number of custom fields. When done configuring the VE/Recipe as desired, select **Publish Recipe** from the menu. A recipe must be published before it can be used by a recipe consumer.

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Disk Image Upload

ISOs and other disk images (e.g. *.vmdk, *.qcow, etc.) can be uploaded into the system for VM installation/disk import.

Contact Yottabyte support for assistance in obtaining installation images containing virtio drivers and other optimizations.

From the [Domain Dashboard](#), Select [Disk Images](#) → [Upload](#).

Additional disk image uploads can be queued while the file is uploading.

Once fully uploaded, the disk image file is available and ready for use within the domain.

Currently, disk images need to be replicated between domains. However, de-duplication is in place so multiple copies do not actually consume the extra disk space. Future versions will organize ISOs in a global catalog structure – allowing publishing at various levels and presenting a list of available disk images to user based on the user's permissions.

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Creating a new VM

Once the VE is created, VMs can be created within the VE.

- From the **Domain Dashboard** select **VEs** → double-click the desired VE from the list.
- Select **New Custom VM** from the menu.
- **Virtual Environment** – this dropdown will contain a list of all VEs to which the user has write access. If VM creation was initiated from a VE dashboard, that VE will be selected by default.
- **VM Name** - required. Once a VM is saved, the name cannot be modified via current version of the UI. Name must be unique within the VE.
- **Operating System** – free form text field. If the text contains “win” (case-insensitive), special flags for Windows optimization will be used when starting the VM.
- **Primary Pool** – Primary server pool to be used for compute resources.
- **Failover Pool** used when primary server pool not available.
- **HA Timeout** – Used to determine the amount of time a host server would need to be unresponsive before the VM will be started on a different host server.
- **Ram** – assigns the amount of RAM to the individual VM. Although the UI will allow assigning a VM a higher amount of memory than that defined as a max at the VE level, the VE max limit will be applied when the VM is started; if the VM has been defined with memory of that exceeding the max restriction set at the VE or at the Domain level, the VM cannot be started and an error will be thrown. The Max RAM amount defined per domain and VE is displayed in the field label.
- **CPU Count** – Although the UI will allow selecting up to 12 cores when creating the VM, the limits set at the VE/Domain level will apply when the VM is started; if this setting exceeds the restriction set at the VE or at the Domain level, the VM cannot be started and an error will be thrown when a start is attempted.
- **CPU Type** – Typically, the Recommended type should be selected (Recommended type will be selected by default.) Selecting the recommended option will be optimum for moving the VM to other hosts in the YB cluster.
- **Machine Type** – at this time, PC is the only recommended machine type because of potential issues with Q35 VM migration.

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- **Remote Console**
 - *VNC* – no audio or virtual usb support
 - *Spice* – audio pass through support; usb pass through support. Audio and usb pass through support require Spice client software.
- **Remote Console Password** - not required. Login screen will be presented, and correct login required before the console is accessed. By default, all console traffic within yCenter is on an isolated virtual network with no direct link into that listening port. Vnet/Firewall settings can be modified to allow connections externally. Console passwords can help control first level of console access to VMs. However, it is important to remember that console access presents the last state of the VM. For example: if root user of the OS is logged in and unlocked, this would allow any user gaining console access, root access via that root login.
- **USB Tablet Mode** – emulates tablet pointer rather than mouse and therefore provides for less overhead and net traffic. For a command-line only VM, with no mouse, this mode can be turned off. For Spice VMs that will use agent, this option is unnecessary.
- **Video Hardware** – QXL video driver required when using Spice remote console protocol. Otherwise, the The Standard VGA card with VESA 2.0 VBE Extensions is the recommended for most modern OS installations. Cirrus Logic is very compatible especially with older OS versions.
- **Audio Hardware** (only applies when Spice selected for Remote Console) – Defaults to 'none (recommended for servers)'. An audio device must be selected in order to use audio pass-through.

Drives

- **Media Type**
 - *CD-Rom device* – Select a disk image. Browse start point is at the VE level. Navigate up to select images at the domain level. *The CD-ROM device can be instrumental in installing OS on a new VM image. To remove this install media after install: CD-ROM device can be deleted; the media (file) can be changed or the CD can be ejected.*
 - *Standard Drive* – persistent, IDE/virtio/USB/SCSI etc. Max size will be restricted per domain and VE settings.
 - *Non-persistent Drive* – This allows for a drive that does not maintain changes between boots; each time the VM is started, the non-persistent drive uses a fresh, generic drive image. A non-persistent drive is pointed to the *.raw file image, allowing for maintaining a

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“golden-image” OS install where all updates and modifications can be made centrally. This is particularly useful for solutions, such as vDI, where a consistent installation needs to be maintained for many machines. The *.raw file selected should point to a persistent drive of a VM that will serve as the base image.

- *Clone Drive* – for cloning of an existing drive within Ycenter system. Note: currently only available within the same storage tier.
- *Import Drive* – import from standard formats, such as *.vmdk, *.qcow, *.qcow2 Note: current version supports import only from within the same tier of storage. (To place files for importing drives, see **Disk Image Upload** section.)

NICs

- **Model** –
 - Virtio - recommended, when possible; simulates 10GB Nic; For assistance in obtaining/creating disk images with proper virtio drivers, contact Yottabyte Support.
 - E1000 - most compatible natively for most modern operating systems; simulates 1Gb Nic.
 - Realtek 8139 provides widest support for legacy systems; simulates 100Mb nic
- **Virtual Network** – select an existing vNet. Note: only vNets that have been assigned a max ports setting within the VE will appear in the list for selection.
- **MAC Address** – auto is typically recommended to avoid duplicate MAC address situations. A specific MAC can be entered.
- **Description** – optional, but recommended if more than one NIC will be added to the VM

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Creating a VM Recipe

Creating a VM Recipe requires first creating a base VM. The VM must be created using the **New Custom VM** option. After the VM is created it can be “turned into” a VM recipe:

- Create a VM. (Select **New Custom VM**)
- Go to the VM's dashboard → Single click the VM → select **View VM** -or double click the VM
- After configuring the VM as desired, Select **Make Recipe** from the menu. (Note: You cannot create a recipe from a VM while it is running)
- Select **Edit Recipe** .

General Recipe Settings

- **Clone permissions** – If this option is selected, exact permissions of the recipe VM are copied to new VMs created with this recipe.
- **vNet – Allow Remapping** – allows the recipe consumer to select a different vNet for the new VM. If not selected, vNet settings are copied from recipe to new VM.
- **vNet Display Name** – overrides the friendly name for vNet for display on the new VM's dashboard
- **Drivex - Non-persistent** - A checkbox will display for each drive in the recipe. Any/all drives can be set to non-persistent to affect the resulting drives when a VM is created using the recipe. A non-persistent drive is cloned from its base drive each time it is started.

Custom Fields

Custom fields allow presenting the recipe consumer with input fields in order to collect data for customizing the VM created from the recipe. The following types are available: Text, Number, Dropdown, Checkbox, Password, Hidden*, Disk/RAM size, Email. For each custom field created, the recipe creator defines the following:

- **Unique key name** – name of key to be used in custom scripting
- **Label , Mouse over Text and Placeholder text** are presented to recipe consumer to describe what the input should be.
- Depending upon the field type other options are available, including **Default Value, Required, Min/Max values.**

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- **Field Types: Password and Hidden** allow the option to **Destroy after First Use**. When this option is selected, the field data can only be acquired one time; it is deleted immediately after first access.

A recipe can contain any number of custom fields. When done configuring the VM/Recipe as desired, select **Publish Recipe** from the menu. A recipe must be published before it can be used by a recipe consumer.

Example – Recipe Custom fields:

Domain: domainwithusers > Virtual Machines > Virtual Machine: 2-debianlive > Modify Recipe: 2-debianlive

General

Clone Permissions

vNet beths-new-xxian - Allow Remapping

vNet beths-new-xxian - Display Name

beths-new-xxian

Custom Fields

Unique Key Name *

Login

Label *

App Administrator usernam

Mouse Over Text

Must use standard naming

Placeholder Text

THIS IS PLACEHOLDER TEX

Type

Text

Required

Default Value

Admin

Delete this field

Unique Key Name *

Password

Label *

App Administrator login

Mouse Over Text

Password should meet mini

Type

Password

Required

Default Value

Destroy After First Use

Delete this field

Unique Key Name *

Server_role

Label *

App Server Role

Mouse Over Text

Select appropriate Role

Type

Dropdown

Default Value

optmaster

Dropdown Options (JSON keyvalue object)

```
{
  "optmaster":
  {
    "Master": "optdata";
    "DataStore": "optxfer";
    "Transfer Only":
  }
}
```

Delete this field

Unique Key Name *

HiddenField

Type

Hidden

Default Value

helloimahiddenfield

Destroy After First Use

Delete this field

Unique Key Name *

Email

Label *

Reporting Email

Mouse Over Text

Enter a valid email address

Placeholder Text

Enter valid email address fc

Type

Email

Required

Default Value

Delete this field

Add Custom Field

+

Cancel Submit

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Modifying a VM Recipe

- A recipe VM can be started/modified when maintenance has been enabled.
 - When a recipe is published and maintenance is enabled, it is visible but not selectable to recipe consumers.
- A recipe VM can also be started/modified when it is Unpublished.
 - When a recipe is unpublished, it does not even appear to recipe consumers.

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Creating a VM from a Recipe

- From the Domain or VE dashboard, select **New VM**.
- Select a **Recipe Group**. (Only groups with published recipes will appear.)
 - Published recipes within the selected group appear in the Recipe list to the right.
 - Published recipes that are currently in Maintenance will appear in the list but will be greyed out and unavailable for selection.
- Select the desired recipe.
- Click **Next**.
- Select a **Virtual Environment Destination** (VE) for the new VM.
- Enter a **VM Name** for the new VM. Name will default to the same name as the recipe VM. If creating the new VM within the same VE where the recipe exists the name will need to be changed as VM names must be unique within a VE.
- Enter values for **Custom settings**, as necessary. The custom fields displayed and required will depend on how custom fields defined in the recipe.

Example – New VM from Recipe:

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Creating Static IP Leases

Static IP Leases can be created from the vNet dashboard.

A static IP lease can be created new or by modifying an existing dynamic lease.

To create new:

- From the vNet dashboard, select **IP Addresses** from the left menu.
- Select the **New DHCP Client** option.
- The **Type** will default to static.
- Enter the correct **MAC address**. (MAC address can be viewed from the VM dashboard or from the VM list.)
- Assign an **IP address**. (*Must be a valid address for the selected vNet. A hint for address range is displayed under the IP Address field.*)
- Enter **Host Name** and **Description** (optional fields), as desired.

To create from an existing dynamic lease:

From the vNet dashboard, select **IP Addresses** from the left menu.

Select the desired static lease from the list with a double-click.

Change the **Type** field to Static.

Change **IP address**, if desired. (*Must be a valid address for the selected vNet. A hint for address range is displayed under the IP Address field.*)

Host Name and **Description** as desired.

Note: When the IP address is changed, the address change will not take effect on the VM until:

- the lease period expires,
- the VM is restarted/networking service restarted or
- a lease release/renew is performed.

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Configuring User Security

Security can be set at a granular level – per individual object. User security applies to:

- IMan (Infrastructure)
- Domain
- VE (VE)
- VM
- user

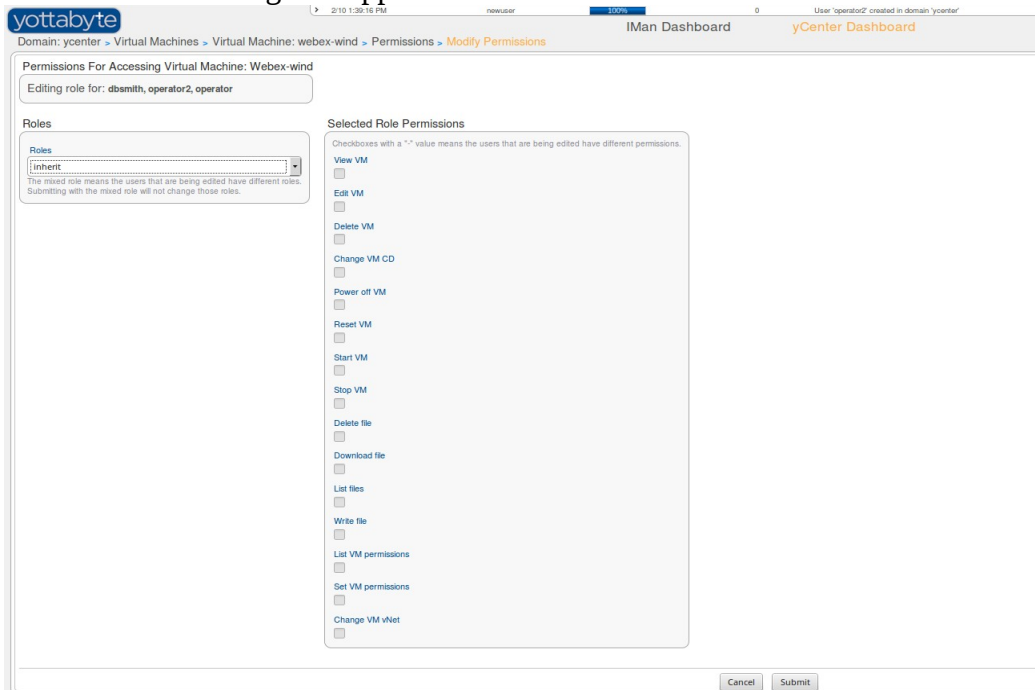
Security settings cascade from container object, however, it can be modified for specific objects. For example, a VM would draw its security settings from its container VE, but any individual VMs could be assigned separate security settings, if desired.

To modify specific security to an individual object, navigate to the object within the UI and select **Permissions** from the left menu.

For example, to set permissions on a particular VM:

- Navigate to the dashboard of the VM
- Select **Permissions** from the left menu.
- Select the user(s) for which specific permissions are desired.
- Click **Edit Users** from the left menu.

A screen similar to the following will appear:



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- The top label on the screen reflects the object to which security is being applied.
- Displayed directly beneath that a list of users with security being modified (for the given object.)
- Typically, the selected user(s) will have the “inherit” role.
- If the selected users do not all currently have the same role, the value will display “--mixed--”.
- To the right, the selected displays the individual permissions held currently by the selected user(s).
- The Roles drop-down will display the role of the selected user(s).
 - Roles are sets of permissions.
 - Default defined roles:
 - inherit (permissions are carried down from the container object)
 - admin
 - operator
 - read only
 - none
 - the permissions of the selected role (as applied to this object type) are shown checked in the permissions list on the right.

User groups is a feature scheduled for availability in the yCenter GA release.

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