

ServerPronto Cloud – User Guide

Virtual machines

Virtual machines are based on templates and are deployed on hypervisors. Hypervisors give them access to CPU, disk and network resources. The ServerPronto Cloud gives you high-end cloud management features including:

- Automatic VM deployment
- Allocate resources
- Setting firewall rules
- Customizable backups
- VM performance monitoring
- Auto-scaling
- Console access

The screenshot shows the ServerPronto Cloud dashboard interface. A navigation sidebar on the left includes: Dashboard, Virtual Machines, Hypervisors (HV1, HV2), Templates, Logs, Settings, Tools, and Usage Statistics. The main content area displays a welcome message for Steve Fenton, a 'Create a new Virtual Machine' button, and resource usage metrics for Disk Space (152 GB / 1.74 TB) and RAM free (2.37 GB / 28 GB). A circular navigation hub is visible, with callouts pointing to 'Cloud', 'Statistics', and 'Account' options. Below the metrics is a table of virtual machine actions.

Ref	Date	Action	Status	User	Target	Dependent
8900	01 Sep 14:15	DestroyVirtualMachine	Pending		VirtualMachine#656	
8899	01 Sep 14:15	DestroyVirtualMachine	Running		VirtualMachine#590	
8898	01 Sep 14:14	StartupVirtualMachine	Pending		VirtualMachine#659	8897

1. Manage VMs

Users on the ServerPronto Cloud have full control over the lifecycle of Virtual machines. Virtual Machines can be in the following states:

- o Created -A machine is created when you successfully Add New Virtual Machine from the Virtual Machines menu, having selected its template and set its properties, resources and network requirements.
- o Build - A Virtual Machine must be built after it is created. Building is the process of actually allocating the physical resources specified during its creation. This can be done manually, or automatically if you check the Build virtual machine automatically box during the creation process.
- o Powered on -A power on starts the virtual machine, its operating system and processes.
- o Powered off-If the operating system cannot be stopped, it will be forcefully terminated.
- o Shut down - A shut down will attempt to gracefully stop a virtual machine and its operating system, which typically involves terminating all running applications.
- o Rebooted - Rebooted means a virtual machine has been shut down, and then powered on again.
- o Deleted - When a virtual machine is deleted, its backups are still stored on the server and can be restored if required.
- o Re-built- To rebuild a virtual machine means to reinstall the template and reconfigure the resources and network. All data will be lost.
- o Failed - A failed virtual machine is one that is down, for example because of hardware or network problems. You will have to start the machine manually when those problems have been solved.²⁰

1.1 Create VMs:

Virtual machines are created from templates. To create a virtual machine:

1. On your Control Panel's dashboard, click the Create New Virtual Machine button (or go to the Virtual Machines menu, and click the Add New Virtual Machine button).
2. Fill in the form that appears:

Properties

- o Give your virtual machine a label and a hostname. The hostname should consist of letters [A-Za-z], digits [0-9] and dash [-]. For more info on hostname validation, refer to RFC standard documentation.

o Give your virtual machine a secure password. It can consist of 6-32 characters, letters [A-Za-z], digits [0-9], dash [-] and lower dash [_]. You can use both lower and uppercase letters.

Template

o Operating system - choose an OS from the drop-down box (Windows, Linux or FreeBSD)

Additional licensing fees apply for Windows and cPanel/WHM:

- cPanel: \$20/month (\$0.028/hour)
- Windows Web: \$18/month (\$0.025/hour)
- Windows Standard: \$26/month (\$0.036/hour)
- Windows Enterprise: \$36/month (\$0.049/hour)

o Distribution - choose a template Distribution

o Template - choose a specific template from the list.

Resources

o Set the resources needed for this VM: RAM, CPU cores, Disk space.

Fees apply for allocating more resources than ordered at sign-up:

- 1 Core: \$17.95/month (ON: \$0.02490/hour | OFF: \$0.00)
- 1GB RAM: \$10/month (ON: \$0.014/hour | OFF: \$0.00)
- 1GB HDD: \$0.10/month (ON: \$0.00014/hour | OFF: \$0.00014/hour)

Primary disk

o Choose a data store zone for this VM's primary disk.

o Set the primary disk size.

Swap disk

o Choose a data store zone for this VM's swap disk.

o Set the swap disk size.

There is no swap disk for Windows-based VMs. In all other cases, swap disk size must be greater than zero.

Network configuration

o Choose Network Zone as the network zone and set the port speed for this VM.

o Choose the port speed

Automation settings

- o Tick the Build Virtual Machine Automatically box if you want the system to automatically build the VM.
→ This is recommended. If you leave this box blank, you will have to build your machine manually after it is created.
 - o Tick the Automatic backup box if you want this VM to be backed up automatically (according to the backup settings configured in the Settings/Autobackup Presets menu)
 - o Tick the Enable autoscale box if you wish to set autoscaling rules for this VM.
3. Click the Create Virtual Machine button to start the creation process. You will be taken to the virtual machine details screen.

1.2 View VMs:

To view all virtual machines deployed in the cloud:

1. Go to your Control Panel's Virtual Machines menu to see an overview of all virtual machines in the cloud: their name, IP addresses, power status (with on/off buttons), and allocated disk size and RAM.
2. From here you also have quick access to the Statistics screen for each virtual machine, where you can see its CPU usage, and the Backups screen for each machine. Click the relevant icon in each case.

To see detailed information about a specific virtual machine:

1. Go to your Control Panel's Virtual Machines menu.
2. On the screen that appears, use the top menu to manage your virtual machines. The schematic menu navigation with the references to appropriate sections is represented below.

Overview

Properties, show VM information and gives access to most of the

CPU Usage VM actions

Billing Statistics

Autoscaling

Console

Networking, manage VM network

Network Interfaces

Firewall

IP Addresses

Storage, access to VM disks and backups

Disks give

Backups

1.3 VM properties:

To access main actions and information on VMs, go to Overview -> Properties tab.

VM information gives general overview of the VM details:

- o Hostname and login
- o Power status & On/Off buttons
- o Template this VM is built on
- o Resources for this VM
- o Hypervisor, network and IP
- o Owner
- o Prices per hour
- o Activity log

Actions menu enables you to perform main action on VMs (the exact list shown depends on the VM status):

- o Startup Virtual Machine -Queues a start-up action for a VM that's currently powered off.
- o Startup on Recovery - Starts the VM in Recovery mode with a temporary login ("root") and password ("recovery").
- o Reboot Virtual Machine - Powers off and then restarts the VM.
- o Reboot in Recovery - Powers off and then restarts the VM Recovery mode with a temporary login ("root") and password ("recovery").

- o Edit Firewall Rules – Redirects you to Networking -> Firewall menu, where you can set firewall rules.
- o Rebuild Network - Rebuilds network join, added to this VM (required after allocating new IP addresses).
- o Reset Root Password - Resets the root password for this VM (the password is displayed in VM Information).
- o Rebuild Virtual Machine - Pops up the VM rebuild dialogue, where you can rebuild the VM on the same (or another) template. All data will be lost!
- o Adjust Resource Allocation -Opens the Adjust Resource Allocations screen for resizing this VM, where you can change number of CPUs, size of RAM, CPU priority and change VM label. Note, that resizing the VM may lead to reboot (depends on the template)!
- o Segregate Virtual Machine – Pops up a drop-down menu where you may choose a VM to keep away from (your VM will never be booted on the same hypervisor as specified VM).
- o Shut Down Virtual Machine – Pops up a dialog box, where you can either Shut Down VM (terminates the VM gracefully), or Power Off VM (terminates the VM forcefully).
- o Delete Virtual Machine - Removes the VM from the system.

1.3.1 Adjust Resource Allocation

You can adjust CPU and RAM resources for all VMs. Depending on the OS it is built on, some VMs can have their CPU and RAM resized without needing to be powered off (“resize without reboot”).

Windows 2008 and Windows 7 VMs can be resized without rebooting: Windows 2003 requires a reboot. With Linux it depends on kernel. E.g. CentOS with kernel 2.6.18 can be resized; Ubuntu cannot.

To adjust VM CPU & RAM resources:

1. Go to your Control Panel’s Virtual Machines menu.
2. Click the label of the machine you want to resize, to show its details screen.
3. Click the Adjust Resource Allocation link in the Actions section of the details screen.
4. Change CPU core/priority and RAM values , and click the Save Virtual Machine button:
 - o If the VM template allows resize without reboot, the resize should be completed automatically: you will be returned to the VM details screen and see a message indicating the resize was successful.
 - o If the template does not allow this, you will be asked to confirm that the VM will need rebooting so that the resize can take place.

1.3.2 Autoscale VMs

VM autoscaling allows you to automatically increase the RAM, CPU and disk size of a virtual machine. VM resources are scaled based on rules you specify. For example, you can set up a rule that will add 1000MB of memory to a VM if RAM usage has been above 90% for the last 10 minutes - but add no more than 5000MB in total in 24 hours. Once the RAM, CPU and disk size are increased, the values are not scaled down.

To configure autoscaling:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the appropriate VM.
3. On the page that follows, click the Autoscaling tab.
4. Add autoscaling rules, explained below:
 - If RAM usage exceeds X% for a specific time period, add Y MB – but no more than Z MB in a 24 hour period.
 - If CPU usage exceeds X % for a specific time period, add Y% - but no more than Z% in a 24 hour period.
 - If disk usage exceeds X % for a specific time period, add Y GB - but no more than ZGB in a 24 hour period.
5. Click Apply.

To delete an autoscaling rule:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the appropriate VM.
3. On the page that follows, click the Autoscaling tab.
4. Click Delete. This will delete all autoscaling rules.

1.3.3 VM integrated console

ServerPronto's Cloud includes an integrated VNC console that gives users direct access to their virtual machines through the Cloud Control Panel, if their user role permits. Administrators can access all virtual machine consoles for support and troubleshooting purposes.

The console connects the user's browser to the VNC port made available via the hypervisor for the guest console. Both the administrator and the end user web UIs offer a console connection, regardless of the OS.

1.3.4 Set firewall rules

With the ServerPronto Cloud you can set firewall rules for the network interfaces of virtual machines. There are two types of firewall rule:

- ACCEPT – defines the packets that will be accepted by the firewall
- DROP – define the packets that will be rejected by the firewall

To configure a rule:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the VM for which you want to configure a firewall rule.
3. Click the Networking -> Firewall tab.
4. On the page that appears set the following:
 - a. Choose the network interface.
 - b. Specify if the rule defines requests that should be accepted or dropped.
 - c. Set the IP address for which this rule is active.
 - Leave the empty field to apply this rule to all IPs
 - Enter hyphen-separated IPs to apply the rule to an IP range
(e.g. 192.168.1.1-192.168.1.10)
 - Enter the IPs with slash to apply the rule to CIDR (e.g. 192.168.1.1/24)
 - d. Set the port for which this rule will be effective.
 - Leave the empty field to apply the rule to all ports
 - Enter colon-separated ports to apply the rule to a port range (e.g. 1024:1028)
 - Enter comma-separated ports to apply the rule to the list of ports
(e.g. 80,443,21)
 - e. Choose the protocol (TCP or UDP).

5. Save the rule. The rule will be saved in the UI, but the transaction won't be started until you click the Apply Firewall Rules button.

6. To start the transaction which runs firewall rules for a VM, click Apply firewall rules button.

Example: the Int1ACCEPT 122.158.111.21 22 TCP firewall rule means that the Int1 network interface will accept all requests and packets addressed from 122.158.111.21 using the TCP protocol on port 22. The Int2 DROP 122.158.111.21 22 UDP firewall rule means that the Int2 network interface will reject all requests and packets from 122.158.111.21 using the UDP protocol on port 22.

1.3.5 Manage VM disk space

Virtual machine storage is provided by disks. A disk is a partition of a data store that is allocated to a specific virtual machine. Disks can be assigned as standard or swap disks (there are no swap disks for Windows based templates). They can also be set as primary (that is, the disk from which an OS will boot).

Managing disks for the entire cloud is handled through the Control Panel's Settings menu. Disks for individual virtual machines are managed through the Control Panel's Virtual Machines menu, where you can:

- see the list of disks allocated to this VM
- add new disks
- resize a disk
- migrate a disk
- back up a disk or see already made backups for the disk
- set backup schedules
- check disk usage statistics (IOPS)
- delete a disk

1.3.6 Add disks to a VM

1. Go to your Control Panel's Virtual Machines menu.
2. Click a VM's label to open its details screen.
3. Click the Storage -> Disks tab.

4. Click the Add New Disk button.

5. Fill in the details:

- o Choose the Data Store to create a disk on from the drop-down menu.
- o Set the desired disk size.
- o Specify if this disk is swap space, and requires formatting. Specify whether the disk should be added to Linux FSTAB, and its mount point.

6. Click the Add Disk button to finish.

1.3.7 Resize VM disks

You can easily resize disks when needed. The resize will fail if your current usage is greater than the new size you request. Note, that any changes on disk size will lead to reboot of your VM.

To change disk size:

1. Go to your Control Panel's Virtual Machines menu.
2. Make sure your virtual machine is powered off, then click its label to open its details screen.
3. Click the Storage -> Disks tab.
4. Click the Edit icon next to the disk you want to change.
5. Enter a new disk size in GB in the field provided.
6. Click the Save Disk button.

1.3.8 Back up VM disks

To back up a virtual machine:

1. Go to your Control Panel's Virtual Machines menu.
 2. Click the label of the machine you want to back up.
 3. Click the Storage -> Disks tab. You'll see a list of the disks allocated to that virtual machine.
 4. Click the Backups icon next to a disk. You'll see a list of all the backups taken and pending for that disk, along with the tools to restore backups, delete them, and convert them to templates.
- o To make a backup, click the Take Backup button at the end of the list.
 - o To restore a backup, click the Restore link next to the backup you want to revert to.

o To convert a backup into the custom template, click Convert to template link next to the backup (see Create custom templates).

1.3.9 Schedule VM backups

In addition to the system autobackup presets, you can schedule backups of VMs (VM disks) as required.

For example, you can set up a schedule to back up your disks once a week.

To add a backup schedule:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the virtual machine you want to schedule a backup for.
3. Click the Disks tab.
4. On the screen that appears, click the Schedules icon next to the disk you want to back up.
5. On the screen that follows, click the Add New Schedule button.
6. Next, enter duration and choose a period from the drop-down menu: daily, weekly, monthly or yearly. The duration determines how frequently the backup will take place according to the period set. For example, duration of 2 and a period of days will take a backup every 2 days.
7. Click the Save button to finish.

Editing and deleting backup schedules is handled through the Control Panel's Settings menu, in the Schedules section.

1.3.10 Delete VM disks

To delete a disk:

1. Go to your Control Panel's Virtual Machines menu.
2. Make sure your virtual machine is powered off, then click its label to open its details screen.
3. Click the Storage -> Disks tab.
4. Click Delete icon next to the disk you want to delete.

1.4 Manage backups

Backups tab lists all backups performed for the VM (off all disks) and enables you to restore or convert them into custom templates.

To restore backups or convert them to custom templates:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the machine you require.
3. Click the Storage -> Backups tab.
4. You'll see a list of all the backups taken and pending for that virtual machine, along with the tools to restore backups, delete them, and convert them to templates.
 - o To restore a backup, click the Restore link next to the backup you want to revert to.
 - o To convert a backup into the custom template, click Convert to template link next to the backup (see Create custom templates).

2 VM statistics

For your convenience, the system tracks VM performance and generates statistics on:

- VM CPU utilization
- VM Billing statistics
- Interface Usage
- Disk IOPS

2.1 VM CPU utilization

ServerPronto's Cloud tracks CPU usage for virtual machines and generates charts that help analyze VM performance. The charts show the total CPU usage for all the cores of this particular VM for a specified time period. The vertical axis has a scale of 0.0-X.0, where 0.0 is 0% and X.0% is 100% of CPU utilization - X depends on the total number of cores used by the VM. The horizontal axis defines a time period.

To see CPU usage statistics:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the virtual machine you're interested in.

3. Click the Overview -> CPU Usage tab.
4. On the screen that appears, the top chart shows CPU usage for the last 24 hours. The bottom chart shows usage for the last three months (if there is enough data). If there less data available, the chart will show utilization for the time available.
5. Tick the Show in my Timezone box to show bandwidth statistics according to your profile's timezone settings.
6. To zoom into a time period, click and drag in a chart. Click the Show all button to zoom out again.

2.2 VM Billing statistics

ServerPronto has a record of all the charges applied to your VMs for the last three month period. If a virtual machine was created less than three months ago, statistics are recorded for the VM's existence to date. You can view all statistics available, or those for a shorter period by setting a Start and End time.

To view billing statistics for a virtual machine:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the virtual machine you're interested in.
3. Click the Overview -> Billing Statistics tab.
4. Set Start and End time. By default the statistics are generated for the last three months or the actual VM existence period.
5. Tick the Show in my Timezone box to show bandwidth statistics according to your profile's timezone settings.
6. On the page that appears:
 - o Date – particular date and time for the generated statistics
 - o Users – the virtual machine owner. Click the owner name to see the User Profile (user details)
 - o Virtual Machines – the virtual machine name with the total due for VM resources (CPU priority, CPUs, memory and template resources) for the point of time specified in the Date column.
 - o Network Interfaces – the total due for the network interfaces used by this VM for the point of time specified in the Date column. Click the network interface name to see its details.

- o Disks – the list of disks assigned to this VM with the total due for the disk space resources (disk size, data read/written, reads/writes completed) for the point of time specified in the Date column. Click the disk name to see its details.

- o Costs – the total due for the Virtual Machines, Network Interfaces and Disks resources for the point of time specified in the Date column.

2.3 Network Interface usage

ServerPronto tracks network usage for virtual machines and generates charts that help analyze network performance. To see network utilization statistics for a virtual machine:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the virtual machine you're interested in.
3. Click the Networking -> Network Interfaces tab.
4. Click the Statistics (chart) icon next to the network you're interested in.
5. On the screen that appears, the top chart shows bandwidth usage for the last 24 hours. The bottom chart shows usage for the last three months.
6. To zoom into a time period, click and drag in a chart. Click the Show all button to zoom out again.

2.4 Disk IOPS

The system tracks IOPS (Input/Output Operations per Second) for virtual machines and generates charts that help analyze VM disk performance. To see IOPS for a virtual machine:

1. Go to your Control Panel's Virtual Machines menu.
2. Click the label of the virtual machine you're interested in.
3. Click the Storage -> Disks tab.
4. Click the Statistics (chart) icon next to the disk you're interested in. There are four charts on the screen that appears:
 - o IOPS for the last hour
 - o IOPS for the last 24 hours
 - o Data written/read for the last 24 hours
 - o Data written/read for the last hour
5. To zoom into a time period, click and drag in a chart. Click the Show all button to zoom out again.