HyperCloud Requirements Specification

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Functional Requirements

FR 1: (Compute Service) Provisioning VMs Using a UI-based Workflow

This section covers creation and provisioning of VMs through HyperCloud's UI-based workflow.

FR 1.1

The system must allow users to visit virtual machine provision page from the HyperCloud sidebar.

Description: The user clicks on "Virtual Machines" tab on left-hand HyperCloud bar.

FR 1.2

The system must bring users to the VM provision page.

Description: Upon clicking on "Virtual Machines" tab on left-hand HyperCloud bar, the user is brought to the primary hub of VM creation and provisioning.

FR 1.3

The system must allow users to create a new virtual machine from the VM provision page.

Description: The user clicks on blue "New" drop-down menu in the top-right of VM provision page.

FR 1.4

The system must allow users to select compute service providers when creating a VM.

Description: The user selects "HyperCloud" beneath "Enterprise Clouds" section in the VM creation drop-down menu.

FR 1.5

The system must bring users to the VM provisioning form.

Description: Upon designating a compute service provider when creating a VM, the user is brought to a VM provisioning form for additional configuration.

FR 1.6

The system must allow users to select the compute service provider that is registered to them on the VM provision form.

Description: The user selects the compute service provider that is registered to them from the drop-down menu next to “Selected Provider” header in VM provision form (see FR 1.5).

FR 1.7

The system must allow users to select an appropriate disk size on the VM provision form.

Description: The user selects an appropriate disk size next to “Selected Size” header in VM provision form (see FR 1.5).

FR 1.8

The system must allow users to select an appropriate VM image file on the VM provision form.

Description: The user selects an appropriate VM image file next to “Select an Image” header in VM provision form (see FR 1.5).

FR 1.9

The system must allow users to select an appropriate VLAN network on the VM provision form.

Description: The user selects an appropriate VLAN network next to “Select a Network” header in VM provision form (see FR 1.5).

FR 1.10

The system must allow users to designate how many VMs he/she wishes to run on the VM provision form.

Description: The user designates how many VMs he/she wishes to run beneath “Finalize and Create” header in VM provision form (see FR 1.5).

FR 1.11

The system must allow users to create a fully provisioned VM.

Description: The user clicks “Create” upon appropriately provisioning their VM in VM provision form (see FR 1.5).

FR 1.12

The system should allow users to configure advanced VM provisioning options.

Description: The user toggles the hidden “Advanced (optional)” header above “Finalize and Create” header in VM provision form (see FR 1.5).

FR 1.13

The system should reveal an advanced options form upon toggling an advanced options header.

Description: The user is shown a drop-down advanced options form upon clicking on hidden “Advanced (optional)” header in VM provision form (see FR 1.5).

FR 1.14

The system should allow users to enable the ability to easily migrate to a different VM host in a fallover cluster.

Description: The user clicks empty “Highly Available” checkbox in advanced provision options (see FR 1.12 & 1.13).

FR 1.15

The system should allow users to designate an install agent for VM monitoring and provisioning if one is not already installed.

Description: The user clicks empty “Install Agent” checkbox in advanced provision options (see FR 1.12 & 1.13).

FR 1.16

The system should allow users to change VM naming prefix.

Description: The user enters a desired VM prefix name in text entry bar beneath “Name prefix” header in advanced provision options (see FR 1.12 & 1.13).

FR 1.17

The system should allow users to override default VM node.

Description: The user selects desired override node from “Select a Node…” drop-down menu beneath “Node” header in advanced provision options (see FR 1.12 & 1.13).

FR 1.18

The system should allow users to override default VM cluster.

Description: The user selects desired override cluster from “Select a cluster…” drop-down menu beneath “Cluster” header in advanced provision options (see FR 1.12 & 1.13).

FR 1.19

The system must allow users to see individual VM overview, timeline, monitoring, system info, compose, and plugin pages.

Description: The user clicks on a created VM in “Virtual Machines” provision page (see FR 1.2).

FR 1.20

The system should allow users to view provisioned VM execution logs.

Description: The user clicks on “TIMELINE” tab on VM overview page (see FR 1.19) and clicks “View execution logs” at the end of VM creation timeline. The user is subsequently shown an execution log pop-up in a closeable window.

FR 1.21

The system must allow users to generate YAML blueprints of VMs.

Description: The user clicks “Generate Blueprint” next to “Create” at the bottom of the VM provision form (see FR 1.5).

FR 1.22

The system must present users with an “Equivalent Machine Compose” YAML code block.

Description: Upon clicking on “Generate Blueprint” (see FR 1.21), a YAML code block is presented in a pop-up window.

FR 2: (Compute Service) Creating Machine Blueprints

This section covers utilization of HyperCloud’s self-service library to create VM blueprints. These blueprints are published by IT and function to their expected IT-defined entitlements. To utilize machine blueprints, a VM must have already been created (see FR section 1).

FR 2.1

The system must allow users to visit VM library page from the HyperCloud sidebar.

Description: The user clicks on “Library” tab on left-hand HyperCloud bar.

FR 2.2

The system must bring users to the VM library page.

Description: Upon clicking on “Library” tab on left-hand HyperCloud bar, the user is brought to the primary VM blueprint library.

FR 2.3

The system must bring users to individual VM blueprint configuration page.

Description: Upon clicking on an appropriate VM in the blueprint library, users are brought its blueprint configuration page.

FR 2.4

The system must allow users to create new blueprints with YAML code.

Description: The user clicks on blue “New” drop-down menu in the top-right of VM blueprint library.

FR 2.5

The system must allow users to generate a blueprint using machine compose.

Description: Upon clicking “New” drop-down menu in VM blueprint library, user selects “Machine Compose” option beneath “Infrastructure” tab.

FR 2.6

The system must allow users to edit VM blueprints.

Description: The user clicks on “Edit” in top-right of VM blueprint configuration page.

FR 2.7

The system must present users with VM blueprint editor page.

Description: Upon clicking “Edit” on VM blueprint configuration page, the user is presented with a VM blueprint editing form containing the mandatory parameters of “Name”, “Description”, “Blueprint Type”, “YAML”, and “Cloud Provider”.

FR 2.8

The system must allow users to fill-in required VM blueprint attributes.

Description: “Name” and “Description” are text bar fill-ins, “Blueprint Type” is a drop-down menu, “YAML” is an empty code block, and “Cloud Provider” is a drop-down menu (provided a previous cloud provider has already been registered). All are required attributes in VM blueprint editor form (see FR 2.7).

FR 2.9

The system must allow users to finalize and create a VM blueprint.

Description: The user clicks “Save Changes” upon appropriately provisioning their VM blueprint in VM blueprint editor form (see FR 2.7).

FR 2.10

The system must confirm changes were saved successfully.

Description: The user is taken back to VM blueprint library (see FR 2.2) with a fading green “Changes saved successfully!” notification pop-up in top-right of page.

FR 2.11

The system should allow users to configure advanced VM blueprint editor options.

Description: The user toggles the hidden “Advanced configuration” tab above “Save Changes” button in VM blueprint editor form (see FR 2.7).

FR 2.12

The system should reveal an advanced options form upon toggling an advanced configuration header.

Description: The user is shown a drop-down advanced configuration form upon clicking on “Advanced configuration” tab in VM blueprint editor form (see FR 2.7).

FR 2.13

The system should allow users to change VM blueprint versions.

Description: The user fills in desired version number in “Version” text box in advanced configuration options (see FR 2.11 & 2.12).

FR 2.14

The system should allow users to change VM blueprint profile image.

Description: The user clicks “Image” attribute in advanced configuration options (see FR 2.11 & 2.12) and chooses a desired image from a drop-down menu.

FR 2.15

The system should allow users to pick desired VM blueprint cloud provider association.

Description: The user clicks “Cloud Provider” drop-down menu in advanced configuration options (see FR 2.11 & 2.12) and selects a desired cloud provider (provided a previous cloud provider has already been registered).

FR 2.16

The system should allow users to add customizable VM blueprint parameters.

Description: The user clicks “+” icon next to “Customizable Params” header in advanced configuration options (see FR 2.11 & 2.12). Upon creating the custom parameter, the user can edit its name, label, and suggestion in provided text boxes.

FR 2.17

The system should allow users to change VM blueprint security entitlements.

Description: The user selects “Only me”, “Everyone”, or “Groups & Users” next to “Entitled Users” header in advanced configuration options (see FR 2.11 & 2.12). Upon clicking “Groups & Users”, the user must be able to designate which specific groups or users have security entitlements via a drop-down menu.

FR 3: (Compute Service) Provisioning VMs from the Self-Service Library

This section covers changing of VM licenses to allow for provisioning directly from HyperCloud’s VM blueprint self-service library. To utilize license changing, a VM blueprint must have already been created (see FR section 2).

FR 3.1

The system must allow users to edit advanced configurations in VM blueprint configuration page.

Description: The user clicks on previously created VM blueprint from VM blueprint library page (see FR 2.2 & 2.3). The user clicks blue “Show” button next to “Advanced Configurations” header.

FR 3.2

The system must reveal an advanced configuration form upon toggling an advanced configurations header.

Description: The user is shown a drop-down advanced configurations form upon clicking on blue “Show” button next to “Advanced Configurations” header in VM blueprint configuration page (see FR 2.3).

FR 3.3

The system must allow users to change VM license to auto-include or an already specified lease.

Description: The user clicks drop-down menu next to “License Model” header in advanced configurations form (see FR 3.1 & 3.2) and chooses from default “License Included” or manual “Bring Your Own License”.

FR 3.4

The system must allow users to specify a VM blueprint lease.

Description: The user chooses “Bring You Own License” in drop-down menu next to “License Model” in advanced configurations form (see FR 3.1 & 3.2). The user then specifies a lease via a text box next to “Lease” header in advanced configurations form (see FR 3.1 & 3.2).

FR 3.5

The system must allow users to finalize and create a VM from a VM blueprint.

Description: The user clicks blue “Create Machines” button at the bottom of VM blueprint configuration page (see FR 2.3) upon appropriately configuring their VM blueprint.

FR 3.6

The system must take users to virtual machine provision page upon creating a VM from a VM blueprint.

Description: Upon finalizing and creating a VM from a VM blueprint (see FR 3.5), the user is taken to virtual machine provision page (see FR 1.1 & 1.2) where the newly created VM will be operational.

FR 4: (Compute Service) Monitoring & Troubleshooting Performance Issues in VMs

This section covers monitoring of VM performance directly from HyperCloud's individual VM provision pages. To utilize license changing, a VM must have already been created (see FR section 1 & 3).

FR 4.1

The system must allow users to view VM monitoring information.

Description: The user clicks on previously created VM (see section 1 & 3) to visit that VM's individual provision page (see FR 1.19). Upon visiting the VM's provision page, the user click on "MONITORING" tab.

FR 4.2

The system must present users with VM monitoring information.

Description: Upon visiting individual VM monitoring page (see FR 3.1), the user is presented with CPU, memory, and disk usage graphs.

FR 4.3

The system should allow users to view different VM performance time intervals.

Description: Upon visiting individual VM monitoring page (see FR 3.1), the user selects "HOURLY", "DAILY", or "CUSTOM" options in top-right of monitoring page.

FR 5: (Compute Service) Accessing the In-Browser Terminal to Track Configuration Drift

This section covers user access to an in-browser input / output terminal to track individual VM configuration drifts. To utilize this feature, a VM must have already been created (see FR section 1 & 3).

FR 5.1

The system must allow users to access configuration drift input / output terminal per each VM.

Description: The user clicks blue "Action" drop-down menu in top-right of an individual VM's provision page (see FR 1.19) and clicks "Terminal" option.

FR 5.2

The system must present users with an input / output terminal in a new window.

Description: Upon clicking "Terminal" action (see FR 4.1), the user is presented with a borderless input / output terminal directly connected to its respective VM. Clicking anywhere beyond the terminal's border must close it.

Non-Functional Requirements

NFR 1.1

VMs should provision in a reasonable amount of time.

Description: Upon creating a VM, the provision step should not take longer than 60 seconds.

NFR 1.2

Advanced options and configurations should be toggled (see FR 3.2, 2.12, & 1.13)

Description: In an appropriate provision form, users click on a drop-down menu to reveal advanced options and/or configurations.