



RMS Admin Guide

Accops Reservation Management System

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Accops HyLabs (Previous name RMS - Reservation Management System)

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Introduction

Accops HyLabs (previously named as reservation management system or RMS) is schedule based dedicated virtual desktop delivery system for educational institutes, universities or corporates.

HyLabs enables

- Deployment and management of dedicated desktops delivery in completely automated manner using its feature sets, which will be covered in detail in later section of this document.
- Administrators to run a schedule based automatic dedicated desktop delivery to end-users; where administrators can simply schedule the delivery of the desktops to end-users and then the desktops will be readied and delivered to the users on scheduled time and at the end of schedule, the desktops will be powered-off or destroyed
- Pre-defined capacity planning helps in effective resource (RAM/CPU/Storage) utilization and thus empowering administrators for more and better VDI.

This document is intended for IT administrators, who will manage Accops HyLabs.

Every process is described in detail for administrators so that deployment and management of HyLabs system can be done without any additional support and details required.

Accops HyLabs Components

A typical HyLabs deployment involves multiple Accops modules deployed on different servers as virtual machines or on hardware.

- Accops HyWorks Controller
- Accops HyWorks Management Console
- Accops HyLabs (RMS) Portal
- Accops HyWorks DVM Tools
- Accops HyWorks Endpoints
- Accops HySecure Server

❖ Accops HyWorks Controller

HyWorks Controller is the core of the HyWorks offering centralized management of the virtual desktop infrastructure. Accops HyWorks Controller runs as a windows service and can be installed on Windows Servers 2008R2-SP1, Windows 2012R2 and Windows 2016.

The following components are installed with HyWorks Controller:

1. Accops HyWorks License Service
2. Accops HyWorks Upgrade Service
3. Accops HyWorks Monitoring Service

The web interface used for managing Accops HyWorks Controller Management Console.

Accops HyWorks License Service

Accops HyWorks License Server runs as a Windows service on supported Windows server platforms and is the primary controller layer for managing the licensing.

Accops HyWorks Upgrade Service

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Accops HyWorks Upgrade Server is required for upgrading the HyWorks Tools on configured Desktops and runs as a Windows service on supported Windows platforms.

Accops HyWorks Monitoring Service

Monitoring service collects system performance data from HyWorks Controller server and reports to HyWorks Controller service.

The monitoring service information is used for presenting HyWorks Controller status on dashboard.

Accops HyWorks Management Console

HyWorks Management Console is web application deployed using IIS (Internet Information Services) on supported Windows servers.

With RMS integration Accops HyWorks Management Console can be accessed in multiple modes by different types of users:

Accops HyWorks Management Console (Admin)

1. Web interface for configuration and management of application or desktop deliveries in enterprises
2. Default super-administrators (Configured during installation) will have access to HyWorks Controller Management Console
3. Super-administrator can later designate users as RMS Admins to manage RMS systems

HyWorks RMS Console or Accops HyLabs Portal

HyWorks Management Console being accessed by HyLabs users and interface is dynamically updated as per role and privileges of user e.g. reservation administrators, Incharges, Assistants and participants.

HyWorks User workspace portal

Web interface for non-RMS end-users for accessing assigned applications, dedicated or shared hosted desktops.

HyWorks RMS Client Console

Web access portal for participants (RMS End-users) – in HyWorks v3.2 RMS client console will be delivered with HyLite (Browser based client less access mechanism for desktops and applications).

Accops HyWorks DVM Tools

Accops HyWorks Tools is an integrated software package; which gets installed on target desktops (Desktop Virtual Machines: Hosted on Virtualization platforms like VMware ESXi, Microsoft Hyper-V servers and accessed by users from registered endpoints).

Accops HyWorks Tools is comprising of following components:

1. Accops HyWorks Desktop Agent
2. HyWorks USB Disconnection Utility
3. Built-In USB Redirection Driver Server-side Component
4. Accops Session Server Extensions

Accops HyWorks Desktop Agent

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Accops HyWorks Desktop Agent gets installed with HyWorks Tools and communicates with HyWorks Controller to achieve following purposes:

- Enabling Remote Desktop services for intended user
- Making the user member of local administrators' group
- Customizing Desktops being provisioned using HyWorks Controller

USB Disconnection Utility

The utility ensures that all redirected USB devices gets disconnected appropriately if user session is disconnected abruptly to avoid possible issues with USB redirection.

Built-in USB Redirection Server module

HyWorks Tools setup consists of server module of Built-in USB Redirection Driver (to be installed on Desktops) for enabling USB devices redirection plugged on HyWorks Devices. The client-side component is available with HyWorks Clients.

HyWorks also supports 'Enhanced' type of USB Redirection Driver also but the server-side component of Enhanced USB Redirection driver must be installed independently.

Important:

- Built-In USB redirection is free and best suited for dedicated Desktop environment.
- Enhanced USB redirection requires additional licensing cost and recommended for session hosted desktops (TSE or Microsoft RDS)

Accops HySecure Server

Accops HySecure is an application access gateway that enables enterprise mobility and secure access to corporate applications, desktops, and network services from any device working from any network.

HySecure enables users working from any network be it trusted LAN or untrusted WAN or internet or mobile network to securely access corporate resources.

Terminology and Concepts

- **HyLabs (Reservation Management System or RMS):** As name suggests, Accops Reservation Management System (To be referred as RMS) is reservation and schedule based dedicated virtual desktop delivery system.
- **Different Types of Role based RMS Users**
 - **Super Administrator:** System defined role having all the privileges on HyWorks Controller.
 - **Reservation Admin:** Predefined system role with full privileges to manage RMS, including course, self-study, reservation creations, modification and deletion.
 - HyWorks super administrator must add one user with permission of RMS Admin to allow RMS management and configuration.
 - **Incharge:** Incharge is faculty responsible for course and basically an AD user which can be added as an incharge while creating course.
 - Incharge has full control on reservation creations, modifications and deletions.
 - Incharge can perform all power operations on Gold Master VMs but cannot add/update settings/ delete Gold Master VM.
 - **Assistant:** An assistant is like faculty, an AD user with no permissions to create reservations, add/update or delete Gold Master VMs.

- **Participants:** Students as an end-user from active directory are referred to as participants, who are going to view and connect to their respective reserved VMs from courses or self-study. Participants will also be able to see announcements and their account settings.
- **Course:** Course is a lesson or subject, led by one or more instructors (Incharges), assistants and students (participants in RMS)
- **Classroom:** The course is usually run under a classroom.
- **Gold Master:** To be imported into RMS system from session provider (vCenter Server) and being used as source VM for creating clones for reservations.
- **Reservation:** Reservation in RMS refers to a pre-scheduled delivery of dedicated VDI desktops to end users. These schedules can be created from RMS portal or can be imported from CSV.
- **Schedule Pattern:** Defines recurring pattern of the reservation, can be of two types:
 - **One Time:** The reservation will be executed only once and then it gets expired, will not be executed again.
 - **Recurring:** The reservation will be scheduled to occur repeatedly over a period defined as Start Date and End Date in reservation. Recurring reservations can either be scheduled to occur
 - Daily: The reservation to occur on daily basis
 - Weekly: The reservation to occur on weekly basis
- **Dedicated Session Providers:** HyWorks terminologies for virtualization platforms can be used as source of desktops to be delivered. HyWorks supports Microsoft (Hyper-V and SCVMM servers) and VMware (ESXi or vCenter Servers) as dedicated session providers
 - RMS is currently supported with vCenter Server only
- **Self-study:** Participant created one-time reservations with specified Gold Masters for self-study
- **Course Self-study:** Reservations created by participants but using the same reservations for courses being studied by students.
- **DVM:** Desktop VM. HyWorks managed virtual machines on hypervisors
- **Reserved VMs:** VMs deployed as part of reservations delivery and managed by HyWorks/ HyLabs
- **Deployment:** Process of desktop creation on hypervisors in HyWorks
- **Desktop Pool:** Group of Desktop VMs in HyWorks for managing with same configurations and assigning them to clients
- **Connection Profile:** HyWorks' connection and timeout attributes collection which can be assigned at multiple levels to decide connection experience for end-users.

Important Port Configurations

Following ports are being frequently used by different HyWorks/HySecure components to deliver the RMS, Dedicated/Shared VDI or applications to end users and in any deployments with Windows or external firewalls must be configured to allow communications between these components.

From	To	Purpose	Port No.	Protocol	Customizable	Mandatory	If port not open
HyWorks Controller	HyWorks Session Host	Session Info	38871	HTTPS	No	Yes	application launch is slow

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HyWorks Controller	HyWorks Session Host	Load Info	38870	HTTPS	No	Yes	Resource based load balancing does not function
HyWorks Controller	AD / LDAP	User authentication	389	LDAP	No	Yes	user authentication fails
HyWorks Controller	AD / LDAP	Password Change	636	LDAP	No	No	password change not possible
HyWorks Controller	Hyper-V Connector	Hyper-V VM Management	38864	HTTPS	No	Yes	Cannot connect and manage Hyper-V VM
HyWorks Controller	VMWare vCenter/ESX	VMWare VM Management	443	HTTPS	On VMWare	Yes	Cannot connect and manage VMWare VMs
HyWorks Controller	RDS Server Host	RDP Service check	3389	TCP	No	No	RDS service status not checked
HyWorks Session Host	HyWorks Controller	Session Status	38866	HTTPS	No	Yes	application launch fails
HyWorks Controller	HyWorks DVM Agent	DVM Status, Sysprep	38863	HTTPS	No	Yes	Sysprep of clone VM fails, Workgroup login will not work
Admin Browser	HyWorks Management Console Server	Web Management	443	HTTPS	No	Yes	Admin cannot do management
HyWorks Client	HyWorks Controller	User login, Device management	38866	HTTPS	No	Yes	User login fails, device management fails
HyWorks Client	HyWorks Controller	Access over WAN/Internet via Accops Proxy	38861	RDP	Yes	No	User cannot launch desktop/Applications over Internet/WAN
HyWorks Client	RDS Server Host	Remote Session login	3389	RDP	No	Yes	User cannot launch desktop/Applications
User Browser	HyWorks Management Console Server	User Web Portal	443	HTTPS	No	No	User cannot use browser to login. Must use client
HySecure Gateway	HyWorks Controller	User login, app launch	38866	HTTPS	No	Yes	User app list fails, user app launch fails
HyWorks RMS	HyWorks Controller	RMS Data	38866	HTTPS	No	Yes	RMS Service will fetch to get RMS data
HySecure Gateway	AD / LDAP	User authentication	389	LDAP	No	Yes	user authentication fails

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HySecure Gateway	AD / LDAP	Password Change	636	LDAP	No	No	password change not possible
HySecure Client	HySecure Gateway	User login, app launch	443	HTTPS	Yes	Yes	User login fails
HyLite Portal	HySecure Gateway	User login, app launch	443	HTTPS	Yes	Yes	User login fails
RMS (Management Console Server) Both	HyWorks Controller Both	RMS Data	38866	HTTPS	Yes	Yes	Will not be able to get RMS details
HySecure Gateway	DVMs	RDP	3389	TCP	Yes	Yes	User won't be able to connect to reserved VMs
HyWorks Controllers	DVMS	Remote Connection Availability check	3389	TCP	Yes	Yes	Controller won't be able to check RDP readiness of VM
HySecure Gateway	HyWorks Web Server (RMS)	Connection to RMS	443	HTTPS	Yes	Yes	HyLite won't be able to get RMS Data
Primary HyWorks Controller	Secondary HyWorks Controller	SQL Connection	1433	TCP	Yes	Yes	Database synchronization, HA will not function correctly
Secondary HyWorks Controller	Primary HyWorks Controller	SQL Connection	1433	TCP	yes	Yes	Database synchronization, HA will not function correctly

HyLabs Installation and Configurations

HyWorks Installation for HyLabs (RMS)

With HyWorks v3.3, HyLabs deployment will require following components to be installed and configured correctly:

- HySecure Server
- HyWorks Controller and SQL Server
- HyWorks Controller Management Console
- HyWorks Reservation Management Service
- Accops DVM Push Service (Optional)

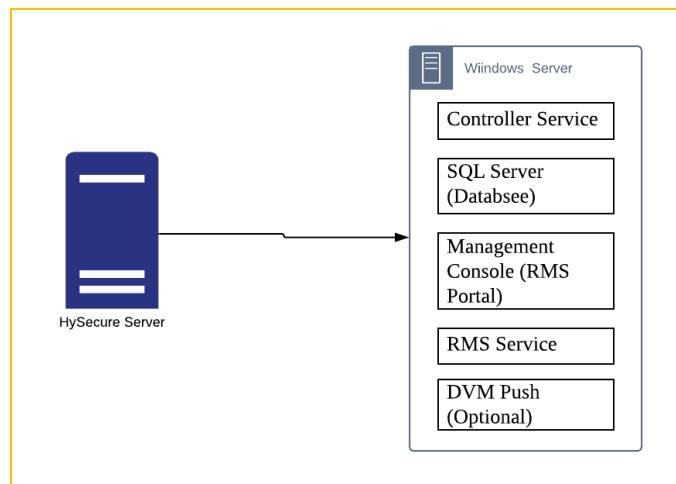
All HyWorks components can be installed on either of the following windows server operating systems with appropriate version of SQL Server (2008,2012,2014,2016,2017).

- Windows Server 2012R2
- Windows 2008R2-SP1
- Windows 2016

All HyWorks components can be installed on single Windows server but should be installed on separate servers as per requirements and load. Please note, for HyWorks HA number of servers will simply be doubled in below examples:

Single Windows Server Deployment

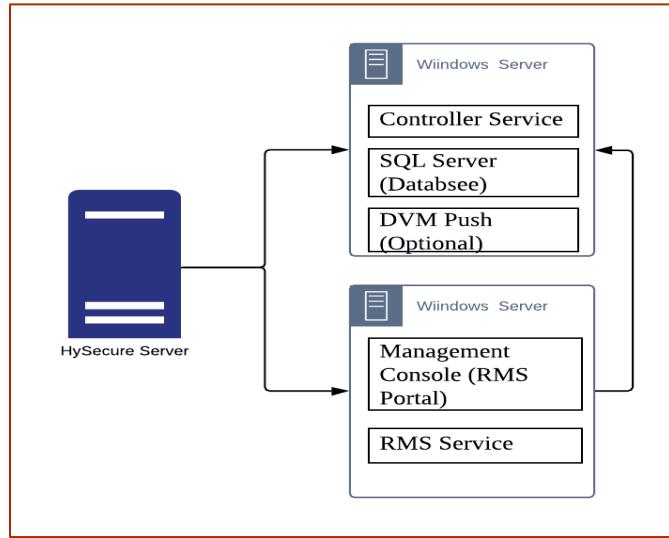
Where all HyWorks Components are installed on single windows server:



Deployment with two or multiple servers

HyWorks modules are distributed on two or more Windows servers and then configured to communicate with each other

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Once installed configurations can be done from HyWorks Controller Management Console. Please below sections for detailed descriptions of each operation.

Please refer **HyWorks Controller Installation Guide** for details on HyWorks Installation.

HyWorks Configurations for RMS

In the below sections of the document, the most important HyWorks configurations will be explained for enabling RMS functioning and deployment.

These configurations need to be done with HyWorks Super administrators

For detailed functioning of HyWorks Management, please refer **HyWorks Admin Guide**.

Authentication Server Configuration

Authentication tab in **Server** section can be used to manage the authentication servers. Configured authentication servers can be used as authentication or authorization server in authentication domain of an organization.

By default, every organization has one built-in authentication server which is also set as default authentication and authorization server in authentication domain of that organization.

Administrator can add several types of authentications servers into configurations. HyWorks deployment supports following types of authentication servers:

- Microsoft Active Directory
- Open LDAP/ Novell eDirectory
- Built-in

Configure Authentication Server

Built-In Authentication Server

Every organization in HyWorks and with fresh installation default organization has a default configured built-in authentication server.

Authentication Server					
Type	Address	Username	Type	In Use	Status
Built-In Directory	Built-In Directory	Not Available	Primary		

With fresh installation, there are no in-built users, but administrator can use User Management section to populate users and groups with appropriate details.

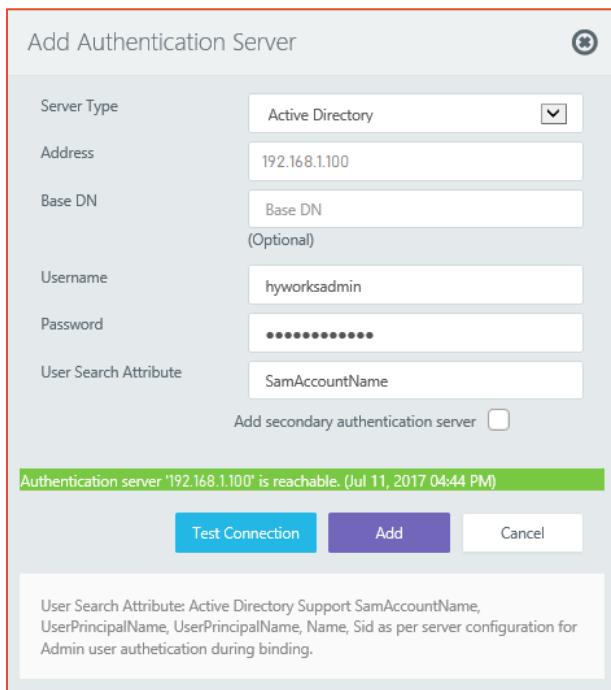
Built-in authentication server cannot be deleted from HyWorks and is default authentication/authorization server of an organization, can be changed as required.

Add New Authentication Server

To configure authentication server, follow the below steps:

1. Login into HyWorks Controller Management Console using appropriate admin credentials
2. Go to **Server** tab and expand the **Authentication** section
3. Click on **+ Add** button to open **Add Authentication Server** dialog
4. In **Add Authentication Server** dialog: Configure distinct types of authentication servers as per below steps:
 - a. **Microsoft Active Directory**
 - i. Select Appropriate **Server Type** as. Active Directory

- ii. Provide appropriate Server address e.g. 192.168.1.1 or accopsad.com in **Address** field (if providing domain name then it should be resolvable from HyWorks Controller server)
- iii. Provide Base DN information (**optional** for Microsoft Active Directory)
 - a) All users, groups and OUs will be fetched if Base DN information is not provided
 - b) On providing specific Base DN information users, groups or OUs will be fetched accordingly.
- iv. Provide administrator credentials (Domain username and password) with rights to read and write access to user account managements
- v. User Search Attribute: User search attribute



b. OpenLDAP/ Novell eDirectory

- i. Select Appropriate Server Type as Novell Directory/ OpenLDAP
- ii. Provide appropriate Server address e.g. 192.168.1.1 or accopsad.com
- iii. Provide Base DN information (***Mandatory** for Novell Directory/OpenLDAP e.g. o=qa)
- iv. Provide administrator credentials with rights to read and write access to user account managements

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Add Authentication Server

Server Type	Novell Directory/OpenLDAP	
Address	192.168.1.101	
Base DN	dc=accopsldap,dc=local	
Username	admin	
Password	
User Search Attribute	cn	
Disable password management	<input type="checkbox"/>	
Authentication server 192.168.1.101 is reachable. (Jul 11, 2017, 4:46 PM)		
Test Connection	Add	Cancel
User Search Attribute: Novell/OpenLDAP Support cn, displayName, Mail, uid, userPrincipalName, fullName, givenName, sn as per server configuration for Admin user authentication during binding.		

c. Workgroup

Note:

- In HyWorks v3.2, built-in directory support has been added, which is an improvisation over workgroup authentication server and should be preferred. Workgroup support will be stopped in future HyWorks releases.

- i. In case of workgroup configuration, HyWorks Controller serves as a directory server and its local users are used to authenticate the user logon.
- ii. Select Appropriate Server Type as Workgroup
- iii. Provide appropriate Server address of HyWorks Controller itself e.g. 192.168.1.1 or hysrv.accops.com
- iv. Provide administrator credentials with rights to read and write access to user account managements
5. Click on **Test Connection** button to check server reachability
6. Once the successful connection message appears, click on **Add** button
7. Authentication Server is configured now and ready for use

Authentication Server							
Type	Address	Username	Type	In Use	Status	Defined In	
Novell Directory/OpenLDAP	192.168.1.101	admin	Primary	<input checked="" type="checkbox"/>	Reachable	This	
Built-In Directory	Built-In Directory	Not Available	Primary	<input checked="" type="checkbox"/>	Reachable	This	

System Changes for configuring Authentication server

Configuration of authentication server may fail if HyWorks Controller is not able to connect and resolve authentication server due to any of the following facts:

- HyWorks Controller machine is not in domain
- HyWorks Controller is in some other domain
- HyWorks Controller is not able to connect to domain

And thus, it is important to make sure HyWorks Controller can connect to authentication server and for achieving this, on system where HyWorks Controller is installed:

- Primary DNS should be configured as the authentication server being configured
- Appropriate **Hosts entries** should be created in **Hosts** file located at '**C:\Windows\System32\drivers\etc**

E.g. if the active directory propalmsnetwork.com (IP = 192.168.1.101) is being configured as authentication server then the primary DNS server on HyWorks Controller machine should be 192.168.1.101 and hosts file should have entries as '192.168.1.1 propalmsnetwork.com'

Authentication Servers Section on Dashboard for Status

If authentication server status becomes unreachable post configuration, the status of Authentication section in Dashboard will also start displaying status as Need Attention to attract administrator's attention on configuration issue.



Until now authentication server is configured in HyWorks and administrator must configure added authentication server into respective organization **Authentication Domain** configuration for using it. See the next section for detailed information on the same.

Authentication Domain Configuration in Organization

Organizations

HyWorks v3.2 supports multi-organization structure, which means administrators can have multiple sub-organizations to have logical separation of resources and assigned clients and deliver several types of desktop pools and applications to the users in distinct organizations.

See the section below to configure **Authentication Domain** Configuration for an organization using the **Edit Organization** wizard.

❖ Authentication Domain Configuration Steps

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An administrator with enough privileges, can modify the settings of the organization. For modifying settings of any organization, follow the below steps:

1. Go to Workspace -> Organizations section
2. Select the organization to modify and click on **Edit** button
3. **Edit Organization** will be displayed, and all configurations could be modified from here.

The screenshot shows a web-based application interface for managing organizations. At the top, there is a header with the title 'Organizations' and several buttons: '+ Add' (purple), 'Edit' (highlighted with a red box), 'Delete', and 'Expand'. Below the header is a search bar with a left arrow icon. The main area displays a table with four columns: 'Name', 'Sub Organization', 'Description', and 'Status'. A single row is visible for the organization 'Default', which is marked as the main organization ('1' under Sub Organization) and has a description 'This is the main organization'. The status is indicated by a green checkmark icon.

4. In **Edit Organization** wizard, go to **Authentication Domain** screen
 - a. Select **Authentication Server** as Auth server added in above section: Users will be authentication from this server
 - b. **Authorization server** as Auth server added in above section: Users will be added into HyWorks configurations from the authentication server configured as authorization server
 - c. Configure **Domain Name** as Authentication Server (will use Domain name configured with Authentication Server) or Authorization (Will use Domain name configured in Authorization server) or if needed it can also be specified as Custom

The screenshot shows the 'Edit Organization - Default' configuration page. The top navigation tabs include 'Organization Details', 'Authentication Domain' (which is active and highlighted in blue), 'UI Settings', 'Portal Settings', and 'Desktop Client Settings'. Under the 'Authentication Domain' tab, there are three dropdown menus:

- 'Authentication Server' dropdown containing '192.168.1.100'
- 'Authorization Server' dropdown containing '192.168.1.100'
- 'Domain Name' dropdown containing 'Authorization Server' (which is currently selected, indicated by a blue background)

Below these, there is a 'User Synchronization Type' section with a dropdown menu containing three options: 'Authorization Server' (selected), 'Authentication Server', and 'Custom'.

5. Navigate until the last tab i.e. **Desktop Client Settings** and finish the wizard.
6. Now all users will be authenticated against the configured authentication server.

Refer HyWorks Admin Guide for more details on Organization configurations.

Session Provider Configuration for RMS

RMS will use vCenter Server for delivering dedicated desktop VMs to the participants and thus it's one of the necessary configuration before configuring RMS for users.

Adding VMware/ vCenter Server as Dedicated Session Provider

VMware ESXi servers are independent hypervisors from VMware, which can be used to host desktop virtual machines, whereas vCenter Server is top layer management server which can be used to manage multiple ESXi servers.

Pre-requisites

1. VMware/ vCenter Server Supported Version:
 - a. Running appropriate supported ESXi or vCenter Server version
2. Appropriate administrator credentials of VMware servers are available with adequate rights.
 - a. If the admin user is not having enough privileges then it may fail the process of getting desktop details, performing power operations, provisioning etc.

Process to Add VMware/ vCenter Server as Dedicated Session Provider

1. Go to Server – Session Providers section
2. Click on **Add** button to invoke **Add Session Provider** wizard
3. Select **Category** as **Dedicated Session Provider**
4. Select **Type** as **VMware/ vCenter Server**
5. Provider a logical name in **Name** field
6. In **Host Address**, provide appropriate host address or IP (If providing host address then make sure it's being resolved correctly from Controller) of VMware ESXi or vCenter Server
 - a. Controller automatically detects, if it's an independent ESXi server or a vCenter server.
7. **RDP Port:** The field is **not available** in HyWorks Controller **v3.0**, but in later releases, **RDP Port** field will be used to provide RDP port on which dedicated desktops sessions will be served. Please note, with dedicated session providers configured port will be used to provide session of all dedicated desktops being served from this server. Default port is 3389.
8. Select **Active** checkbox to make session provider as active. Desktops from inactive session providers are not considered while providing the sessions to end users.

Add Session Provider	
Category	Dedicated Session Provider
Type	VMWare / vCenter Server
Name	vCenter
Host Address	192.168.1.11
RDP Port	3389
Username	administrator@qa.local
Password	*****
Active	<input checked="" type="checkbox"/>
Primary Session Provider is reachable Click add to continue configuring Session Provider.	
<input type="button" value="Test Connection"/> <input type="button" value="Add"/> <input type="button" value="Cancel"/>	

9. Click on **Test Connection** button to check the configurations.
10. Once connection is successful, success message will be displayed and clicking on **Add** button will add VMware ESXi or vCenter server as dedicated session provider
11. Administrator will be able to see configured other added session providers in Session Providers screen with appropriate status.
12. Session Provider will be added, and HyWorks Controller will start synchronizing the data from VMware/vCenter Server Dedicated Session Provider.
13. Once synchronization is completed, Session Provider status will change to Reachable.
 - a. The added Dedicated Session Provider row will now display the Desktop count as well.
14. Dedicated Session Provider of type VMware is ready for providing dedicated desktops sessions to end users using existing or provisioned desktops.

Enabling RMS Admin Portal for an Authenticated User

RMS Admin portal is not enabled for HyWorks super-administrator as well and thus it requires the configuration of one of the users from authorization server to be assigned with the role of **Reservation Admin**.

Reservation Admin

Reservation Admin is a system defined role for RMS administration. The role definition and available permissions can be viewed from Administration -> Roles page.

A user from configured authorization server can be assigned with Reservation Admin role and can enable him to start working on RMS system.

How to Configure Reservation Admin Role to User

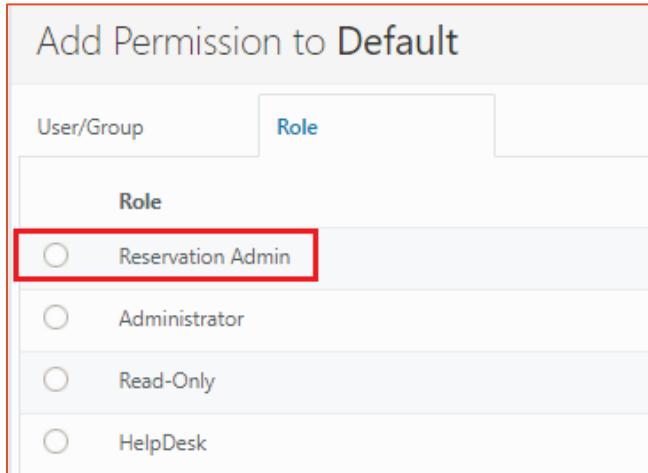
Considering that appropriate authentication and authorization servers are configured in **Authentication Domain** configuration in **Organization**.

Follow the below steps to enable user with Reservation Admin rights:

1. Login into Management Console as administrator with appropriate privileges on Permissions
2. Go to Administration – Permissions section
3. Click on button **Add Permission**
4. **Add Permissions** wizard will be invoked, displaying **User/Group** tab
5. In **User/Group** screen
 - a. Click on **Add Users/Groups** button to invoke **Available Clients** dialog
 - i. In **Available Client** dialog
 1. Set appropriate search options (**Client Type** as **User** or **Groups**, **Search By**, **Search Option**)
 2. Provide appropriate search text
 3. Select one or multiple users/ groups from search results and click on button **OK**
 4. Administrator will be navigated back to Users/Groups tab, displaying added users/groups

The screenshot shows the 'Add Permission to Default' dialog box. At the top, it says 'Add Permission to Default'. Below that, there are two tabs: 'User/Group' (which is selected) and 'Role'. Under the 'User/Group' tab, there is a search bar with a placeholder 'Search', a magnifying glass icon, a refresh icon, a plus sign icon labeled '+ Add Users/Groups', and a remove icon. Below the search bar is a table with columns: 'Client' (checkbox), 'Client Type' (dropdown), and 'Authentication Server'. One row is visible: 'qa1' under Client, 'User' under Client Type, and '172.17.0.207' under Authentication Server. At the bottom of the dialog, there is a checkbox labeled 'Propagate to child' (highlighted with a red box), a 'Next' button, and a 'Cancel' button.

6. At the bottom of **Add Permissions** wizard, checkbox **Propagate to Child** is shown.
 - a. HyWorks does not support RMS delivery at multiple organization levels and thus this configuration is not useful for HyLabs.
 - b. However, for HyWorks, selecting the checkbox will allow the same permission propagation to child organizations and this new administrator will be able to login and do administrative tasks at child organization as well.
 - i. The access of Propagated permissions can be later revoked using Restrict Access or overriding its role. (To be explained later in this section)
7. Click on **Next** button to proceed to **Role** screen
8. On **Role** screen, all built-in or custom defined roles (except super-administrator) will be listed
 - a. Select role **Reservation Admin**
 - b. Propagate to child checkbox will be available on this screen as well and can be used to propagate the permissions to the child level.



9. Click on **Save** button to save the settings
10. Permissions will be added and will be listed in **Permissions** section
11. The user added with Reservation role will be able to login and manage following configurations
 - a. HyWorks Controller Configurations with limited access
 - b. Reservation Management System (RMS) full access

Reservation Management System is now enabled and can be further configured by Reservation Admin user.

SMTP Configuration for E-mail Notifications

RMS supports e-mail-based notifications for all reservation events. To enable e-mail notification SMTP configuration must be set from HyWorks Management Console.

Following prerequisites must be fulfilled to send e-mails from HyWorks:

1. SMTP server is accessible from HyWorks Controller

❖ SMTP Configuration Process

1. In HyWorks Controller Management Console, Go to **System - SMTP Config**
2. Provide the following details
 - a. SMTP Server: Mandatory field requires hostname or IP of SMTP Server
 - b. SMTP Port: Mandatory field requires SMTP Port on which SMTP server can be connected
 - c. Enable SMTP Authentication: Select the checkbox if SMTP server requires authentication
 - i. SMTP Username: Mandatory field requires Username to authenticate with SMTP server in the format of username@domain.com.
 - ii. SMTP Password: Mandatory field requires Password of configured SMTP user
 - d. Confirm Password: Requires same password as SMTP Password
 - e. SMTP Email Sender: Mandatory, account of user which will appear as Email sender in the format of username@domain.com.

SMTP Configuration

SMTP Server*	smtp.accops.com
SMTP Port	987
Enable SMTP Authentication	<input checked="" type="checkbox"/>
SMTP Username*	admin.accops
SMTP Password*	*****
Confirm Password*	*****
SMTP email sender*	hyworks.bkp@accops.com
Test email address	admin.accops@accops.com

Send test email **Save** **Reset**

3. **Send Test Mail:** Once all SMTP configuration fields are filled with appropriate details, administrator can validate the configuration by sending a test mail to any email address. To send test email address:
 - a. Provider appropriate details in Test Email Address field in the format of username@domain.com
 - b. Click on button **Send Test Email**
 - c. Email will be sent to the provided email id and appropriate status prompt will be displayed on top of management console stating Test mail sent successfully

SUCCESS Test Email sent successfully. (Feb 18, 2016 01:14 PM)

4. Click on **Save** button to save the SMTP configuration.
5. SMTP Configuration will be saved, and appropriate status prompt will be displayed on top of management console stating SMTP Configuration saved successfully.

Allow RMS Access To All Authenticated Users

It will allow all users to login into RMS after successful authentication, though they do not have any association with existing course/ self-study.

To enable access for all users, following configurations must be done:

1. Access HyWorks Controller Management Console with Super admin credentials
2. Go to **System - Advanced Config** page
3. Search for option **RMS allow access to all authenticated users** - modify it to set as **True**
4. Click on **Update** button to save the configuration
5. To verify the changes, login into RMS with unauthorized user credentials (i.e. Not part of any course/self-study)
6. Login should be successful, and user should be able to view the RMS page.
7. By default, new users are given participant level access only, enabling them to do self-studies only.

If there are no self-study Gold Master added and user is not part of any course or self-study, then this user may not be able to work though allowed to login into RMS.

RMS Throttling Configurations from HyWorks Advanced Settings

Initiating too many parallel operations on session provider may hamper the performance of session provider very badly and even result in failures. To avoid failure situations, advanced configurations have been provided to specify the number of such operations to be performed on session provider. Following three types of actions are kept in this category:

- **Concurrent Full Clone:** Configuration will control the number of concurrent full clone operation on session provider initiated by HyWorks.
E.g. if the value is set as 3 and HyWorks has 10 reservations to create -> HyWorks will initiate **3** reservations simultaneously by starting the replica (full clone) of respective Gold Master. As soon as any of the full clone finishes, HyWorks will start full clone of another reservation. The process will continue until all the reservations are completed.
- **Concurrent Linked Clone:** Likewise, full clone, to limit the concurrent linked clone operation, configuration Concurrent Linked Clone can be used.
- **Concurrent Operation:** Concurrent operation configuration is for controlling the other operations, e.g.
 - Deleting the VMs on reservation expiry, cancellation or deletion.
 - Powering on VMs for reservations
 - Powering off VMs on completion of occurrence

Name	Value	Description	Default Value	Tags
Desktop Management				
Concurrent Full Clone	3	Number of concurrent full/replica cloning operation per provider.	3	-
Concurrent Linked Clone	5	Number of concurrent linked cloning operation per provider.	5	-
Concurrent Operation	10	Number of concurrent desktop power and delete operation per provider.	10	-

RMS Throttling Configurations are important aspects to determine the parallel operations to be performed on session provider for making a stable and efficient RMS environment.

Login as Reservation Admin

Once a user is designated as reservation admin role, it can now be enabled for all reservation management operations.

HyWorks super administrators do not have RMS console access and thus all the management must be done by reservation admin user only.

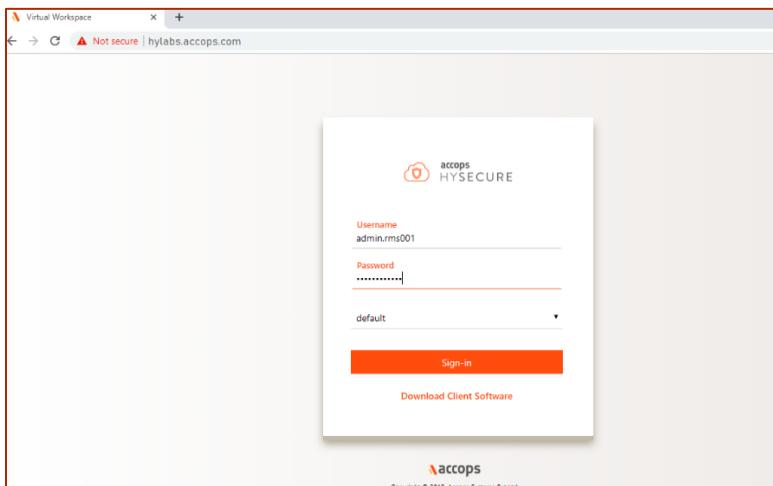
RMS in HyWorks v3.2 is being delivered through HyLite only and thus

- A newer RMS compatible HySecure server must be installed and configured to deliver RMS.
- Please refer HySecure Configuration Guide to deliver RMS for detailed instructions.

Considering that HyWorks is correctly configured in HySecure Server. Follow the below sections to configure RMS. Follow the below steps to login as **Reservation Admin** into HyWorks Controller Management Console -> RMS Console:

Login from HySecure Portal

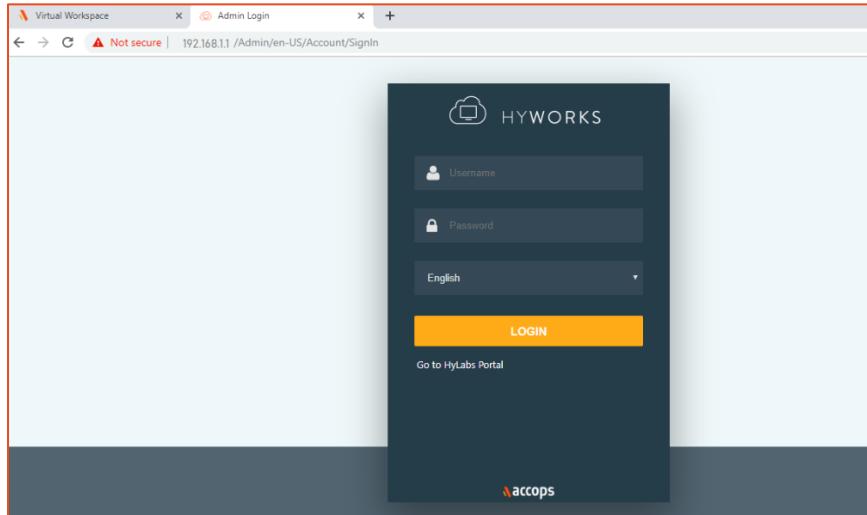
1. Type HySecure URL to access the HyLite login page (* HySecure is installed and configured to deliver RMS)
2. User will be prompted for credentials as shown in image below
3. On successful login into HySecure, credentials will be forwarded to HyWorks which will verify the user authorization and on identifying its role as reservation admin, RMS interface (Reservation Admin) will be presented.



Login from HyWorks Controller Management Console

1. Type the address as https://Controller-IP or Hostname:<port Number> e.g. https://192.168.1.2/ and press **Enter** -> Administrator will be navigated to RMS Console first
 - a. If any other page is displayed, then user must click on link **Go to HyLabs Portal** to navigate to RMS Console

Accops HyLabs (Previous name RMS - Reservation Management System)



2. On RMS Console, following options can be presented to the user:
 - a. Username: Provide appropriate username
 - b. Password: Provide appropriate password
 - c. Language: Choose as English or Japanese
 - d. Organization: Select organization (if HyWorks deployment is having multiple organization configured, if not user will be shown this option)
2. Provide all the necessary details and click on **Login** button
 - a. If the user is not having **Reservation Admin** rights, then appropriate authorization error will be displayed.
3. On successful login, reservation admin user will be navigated to Reservation Management System.

After successful login, Reservation Admin can start using different screens of RMS to create and update RMS objects. In this section of document, the details of each page and associated administrative operations will be described.

RMS Dashboard

RMS dashboard is available to all types of RMS users i.e. Reservation Admins, Incharges, Assistants and to the participants; but the content will be dynamically showed as per the logged-in user's role.

The screenshot shows the RMS Dashboard interface. At the top, there are five summary boxes: GOLD MASTER (4), GOLD MASTER FOR COURSE (2), GOLD MASTER FOR SELF-STUDY (1), GOLD MASTER FOR INCHARGE (1), and TOTAL VMs (10). Below these are three reservation-related boxes: COURSE RESERVATION (4), COURSE SELF-STUDY RESERVATION (2), and SELF-STUDY RESERVATION (1). A 'CSV import Info' section displays a table with one row for 'RES', showing Last Processed Date (10/18/2019 2:33:29 PM), Next Due Date (10/18/2019 3:33:29 PM), Total Records (0), Success Records (0), Fail Records (0), and Status (Processed). An 'Announcement Information' section shows a single announcement titled 'Holiday on 21-October-2019' with the content: 'Due to election being held in Pune on 21-October-2019, holiday has been declared by Accops. So that everyone can practice their right to...'. There is also a search bar with placeholder text 'Enter text to search...' and a 'Go!' button.

Dashboard Contents for Reservation Admin

RMS dashboard provides summarized information of the RMS system. Following contents are displayed on RMS dashboard:

- System Summary:** Following details are displayed in RMS dashboard, giving summarized information of the system.
 - Count of **Gold Master**: Number of Gold Master VMs imported into HyWorks RMS for desktops' deployment
 - Count of **Gold Master for Course**: Specifying number of Gold Master VMs assigned to courses.
 - Count of **Gold Master for Self-study**: Specifying number of Gold Master VMs assigned for self-study.
 - Count of **Gold Master for Incharges**: Specifying number of Gold Master VMs assigned for incharges.
 - Total VMs**: Total number of VMs deployed using RMS.
 - Number of **Course Reservations**
 - Number of **Self-study Reservations**
 - Number of **Course Self-study Reservations**
- CSV Import Information:** HyWorks v3.2 will be having feature to execute whole RMS system using CSV import feature. CSV import feature ensures that all relevant data from CSV is imported automatically or manually from a predefined location.

The section of dashboard displays the CSV Import status and last updated time of it.
- Announcement Information:** Announcement information section lists announcements created by administrators in RMS or HyWorks.

Objects – Gold Master and Courses

Following two types of objects can be defined by RMS administrators:

- Gold Master
- Courses

Sections below will give detailed information for these object configurations.

Gold Master

The template VM from dedicated session provider, which will be used in RMS as source for cloning into multiple reserved VMs for classes, is referred as Gold Master. A Gold Master VM will have all the configurations and applications installed required by participants.

Following management options are possible on Gold Master page:

- View list of added Gold Master VMs
- Add new Gold Master VM
- Edit existing Gold Master VM
- Delete existing Gold Master VM
- Power Operations on existing Gold Master VM
- Manage Snapshots
- Connect to existing Gold Master VM
- Refresh Gold Master
- Upgrade DVM Tools on Gold Master

View Gold Master VMs and UI Operations

On navigating to Gold Master page, reservation admin user can view the list of already added Gold Master VMs.

Following details are available:

Column Name	Description	Sortable	Searchable
Gold Master Name	Name of Gold Master VM as fetched from dedicated session provider	Yes	Yes
OS	Operating System of Gold Master VM as fetched from dedicated session provider	Yes	Yes
HDD (GB)	Hard disk size in GB	Yes	No
CPU	Number of vCPUs allocated to Gold Master VM	No	No
Memory	Memory in MB allocated to Gold Master VM	No	No
Active/ Maximum Total VMs	Currently running or Active VMs from Gold Master Vs Maximum number of VMs to be created from this Gold Master VM	No	No
Active/ Concurrent Connection Limit	Total active connections to VMs from Gold Master vs Concurrent Connection Limit for Gold Master	No	No
Deployed VMs	Total number of VMs deployed using this gold master	No	No
Power State	Power state of Gold Master VM	No	Yes
Assigned	RMS object to which Gold Master VM is assigned (Possible value: Course, Course Default, Incharge, Self-study)	Yes	No
In Use	If Gold Master is having any active reservation	No	Yes

Lock Status	Gold Master is locked during replica creation, Lock status will be shown as Locked Icon if replica cloning is in progress, it will be shown as Unlocked Icon if Gold Master is currently being cloned and in use.	No	No
Agent status	Agent version and agent status is shown. Possible statuses are Responding, Not Available, Not responding	No	No

Gold Master Name	OS	HDD (GB)	CPU	Memory (MB)	Active/Maximum Total VMs	Active/Concurrent Connection Limit	Deployed VMs	Power State	Assigned	In Use	Lock Status	Agent Status
AutomationNOOS-1	Microsoft Windows 10 (32-bit)	0	1	4	-	-	0	🔴	👤 Incharge	No	🔒	Not Available
PS-NoOSY	Other:x86	0	1	8	7	-	6	🔴	👤 Course Default	Yes	🔓	Not Available
PS-W7x66	Microsoft Windows 7 (32-bit)	30	2	2048	-	-	4	🔴	👤 Course Default	Yes	🔒	Not Available
PS-W7x86-GM2-0001	Microsoft Windows 7 (32-bit)	30	2	2048	1	-	0	🟢	💻 Self-study	No	🔒	Responding v3.3.1.17

UI Operations on Gold Master VM: Administrator can perform following UI operations on Gold Master VMs list:

- List of Gold Master VMs can be sorted if specific column supported sorting.
- If needed, any specific Gold Master VM can be searched using specific search text.
- List can be refreshed to get a fresh list of Gold Master VMs from HyWorks

Add New Gold Master VM

A new Gold Master can be imported (added) into RMS to be connected by authorized users and managed for reservations. A Gold Master can be assigned to following objects:

1. **Assign to a course:** While creating course reservations assigned Gold Master will be used for cloning. Gold Master assigned to course can be accessed by reservation admins, incharges and assistants of courses.
2. **Assign to Self-study:** For self-study reservation, assigned Gold Master will be used for cloning for Self-study reservations. Only reservation admins will have access to self-study Gold Master.
3. **Assign to Incharge:** Incharge will be able to connect, manage (Power operations) and configure the assigned Gold Master and create course reservations using assigned Gold Master. Gold Master assigned to Incharge will be accessible to reservation admins and assigned incharge.
4. **Course Default Gold Master:** A course default gold master can be used for any course reservation. The type of gold master is useful, where all courses can use the same gold master for reservations. By default, course default Gold Master is accessible to incharges, assistants and reservation admins, but it can be configured to be restricted to admin only.

While adding Gold Master, administrator can also choose **Snapshot** to be used for creating reservations. Following types of snapshot configurations can be made:

- **Current state:** selecting this option will always create reservation from current state of Gold Master.
- **Specific Snapshot:** Selecting snapshot will make reservations from snapshot of Gold Master.

RMS is also having Snapshot Management capabilities available for administrators.

Important Prerequisites for Gold Master VM

Before importing a Gold Master VM into RMS; for effective and error free usage of Gold Master in RMS, following prerequisites must be fulfilled:

1. Gold Master VM must not be a pre-cloned VM and must be a fresh installed OS
2. Latest version of VMware Tools must be installed on Gold Image
3. Gold Master image must not have static IP configured
4. Latest HyWorks DVM Tools must be installed on Gold Master
5. Windows Firewall is disabled and NLA (Network level authentication) is turned off
6. Sleep/Display Off settings should be disabled
 - a. Control Panel -> Power Options
 - i. Turn Off the display -> Never
 - ii. Put the computer to sleep -> Never
 - iii. Advanced Settings -> Turn off hard disk after – 0 (Never)
7. Audio and Video Redirection is enabled from group policies
 - a. Group Policy Location: Computer Configuration\Policies\Administrative Templates\Windows Components\Remote Desktop Services\Remote Desktop Session Host\Device and Resource Redirection
 - b. Group Policies to be enabled:
 - i. Allow audio and video playback redirection -> Enabled
 - ii. Allow audio recording redirection -> Enabled
 - iii. Limit audio playback quality -> Enabled - Dynamic

8. Windows 10 Specific Configurations:

- a. No additionally installed/removed Microsoft Store Apps
 - i. Sysprep fails after you remove or update Microsoft Store apps that include built-in Windows images (please refer KB article from Microsoft on the same:
<https://support.microsoft.com/en-us/help/2769827/sysprep-fails-after-you-remove-or-update-windows-store-apps-that-inclu>)
- b. Following group policy configurations should be enabled and configured to set to **Negotiate**
Computer Configuration\Policies\Administrative Templates\Windows Components\Remote Desktop Services\Remote Desktop Session Host\Security -> Require Use of Specific Security Layer for Remote (RDP) Connections
- c. HyWorks v3.3 DVM Tools has integrated HyPrep module which can be used for faster customization of Windows Desktops and all Sysprep related failures can be avoided. Please check section **Enabled HyPrep on Gold Master** for detailed instructions.

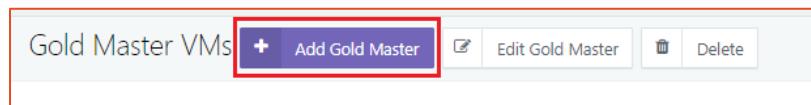
9. Ubuntu16 Specific Configurations

- a. As per VMware recommendations, latest Open VM tools should be installed
- b. All Gold Master Ubuntu VMs should be configured with different hostnames correctly – sometimes having the same hostnames create issues with console or remote access
- c. Domain joining on Gold Master must be done manually (Please refer Linux VDI Configuration document for detailed information)
 - i. DHCP configuration must support appropriate IP distribution to Linux VMs (In some cases it has been observed that newly cloned machines are unable to get IPs from DHCP server or taking time.)

Step by Step Process to Add a new Gold Master

Considering that all prerequisites are configured on target Gold Master, then following steps can be used to import the Gold Master into RMS:

1. Login into RMS Console in **RMS Admin** mode with appropriate user credentials having reservation admin rights
2. Go to **Objects - Gold Master** page
3. Click on button **Add Gold Master – Add Gold Master** wizard will be invoked



4. The first tab in **Add Gold Master** wizard is **Usage** – which defines the purpose of adding Gold Master into RMS

A screenshot of the 'Add Gold Master' wizard. The title bar says 'Add Gold Master'. Below it is a tab navigation bar with 'Usages' (which is selected and highlighted in blue), 'Session Provider', 'Select Course', 'Snapshot', and 'Access Policy'. The main form area has several input fields:

- 'Assign To*' dropdown: The option 'Course' is selected and highlighted in blue. A dropdown menu shows 'Course', 'Self-study', 'Incharge', and 'Course Default'.
- 'Description' input field: An empty text box.
- 'Maximum Total VMs*' input field: A text box containing '0'.
- 'Maximum Active VMs*' input field: A text box containing '0'.
- 'Concurrent Connection Limit*' input field: A text box containing '0'.

A red box highlights the 'Assign To' dropdown and its dropdown menu.

5. Respective entitlement tab will be enabled dynamically based on selection of option **Assign To** in **Usage** tab.
 - a. Set **Assign To** – Course will enable **Select Course** tab
 - b. Set **Assign To** – Incharge will enable **Select Incharge** tab
 - c. Set **Assign To** – Self-study or Course default will not enable any new tab

Add Gold Master for Course

This section will give details about adding a Gold master for courses:

Prerequisite:

Course is already created with appropriate participants, assistants and incharges.

Process:

1. Invoke **Add Gold Master** wizard
2. In **Usage** tab, fill the following details:
 - a. Select option **Course** in **Assign To** dropdown list
 - b. Provide **Description** for Gold Master
 - c. Provide appropriate number for Gold Master limits:
 - i. **Maximum Total VMs:** Total number of VMs to be deployed from gold master (0 means unlimited)

- ii. **Maximum Active VMs:** Total number of VMs which can run in parallel in one or multiple reservations (0 means unlimited)
- iii. **Concurrent Connection Limit:** Total number of allowed connections to reserved VMs deployed from gold master. The feature implementation requires controller polling mode as hybrid which means DVM Push services must be active.

The screenshot shows a configuration interface for adding a Gold Master. The top navigation bar has tabs: Usages (selected), Session Provider, Select Course, Snapshot, and Access Policy. The main area contains the following fields:

- Assign To*: Course (dropdown menu)
- Description: Gold Master for Java on Ubuntu
- Maximum Total VMs*: 70
- Maximum Active VMs*: 50
- Concurrent Connection Limit*: 20

3. Click on **Next** button to navigate to **Session Provider** tab
4. Selecting Gold Master VM from Session Provider tab
 - a. In **Session Provider** tab,
 - i. Select the session provider from the dropdown list – It will show complete vCenter hierarchy
 - ii. Select the **Provisioning Profile** to associate with Gold Master (Provisioning profile is mandatory for any gold master and defines the whole deployment of reservations to be created using this master.)
 - iii. Added session provider's datacenter will displayed in tree view
 1. Click on "+" icon to expand the tree
 2. Click on the resource pool or object under which the intended Gold Master is residing
 3. All VMs in the selected resource pool or VMware object will be listed on the right side, administrator can
 - a. Provide appropriate search string (Gold Master Name or Operating System) to find the required Gold Master
 - b. Once desired VM is listed, it can be selected

Accops HyLabs (Previous name RMS - Reservation Management System)

Add Gold Master

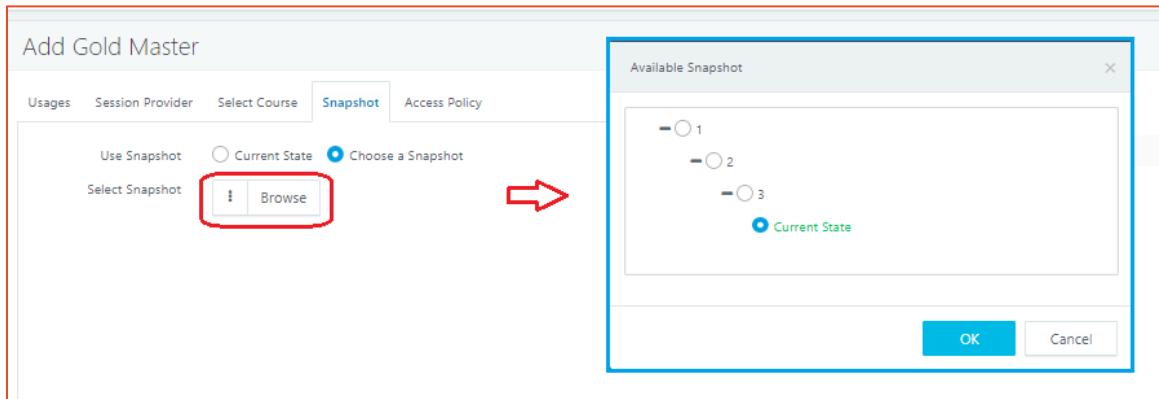
Usages	Session Provider	Select Course	Snapshot	Access Policy	
	Session Provider*	VCA	(1) Select session provider		
	Provisioning Profile*	Windows7-PS	(2) Select provisioning profile		
	Available Gold Master*				
<ul style="list-style-type: none"> - QA-Datacenter - QA-CLUSTER - Resources <ul style="list-style-type: none"> QA-ONKAR QA-Shruti QA-Dm QA-Bharti Automation QA-Simran + QA-Puneet Sheela 10.0.0.14 10.0.0.15 10.0.0.12 		Search By: Gold Master Name <input type="text" value="2k12"/> (4) Search for Gold Master			
		<input checked="" type="radio"/> 2k12r2ProSHD <input type="radio"/> 2k12R2-SHD-Om <input type="radio"/> Replica-2k12r2ProSHD-d3ca5085-8cb7-4405-b232-e24418e2fb78 <input type="radio"/> SSP-2k12	OS	Power State	
Select Gold Master and go to next page					

5. Click on **Next** button to navigate to **Select Course** tab. In Select **Course** tab,
 - a. Click on **Add Course** button
 - b. Search with appropriate search text to list down the available courses
 - c. Select and add intended course(s) (one or multiple)

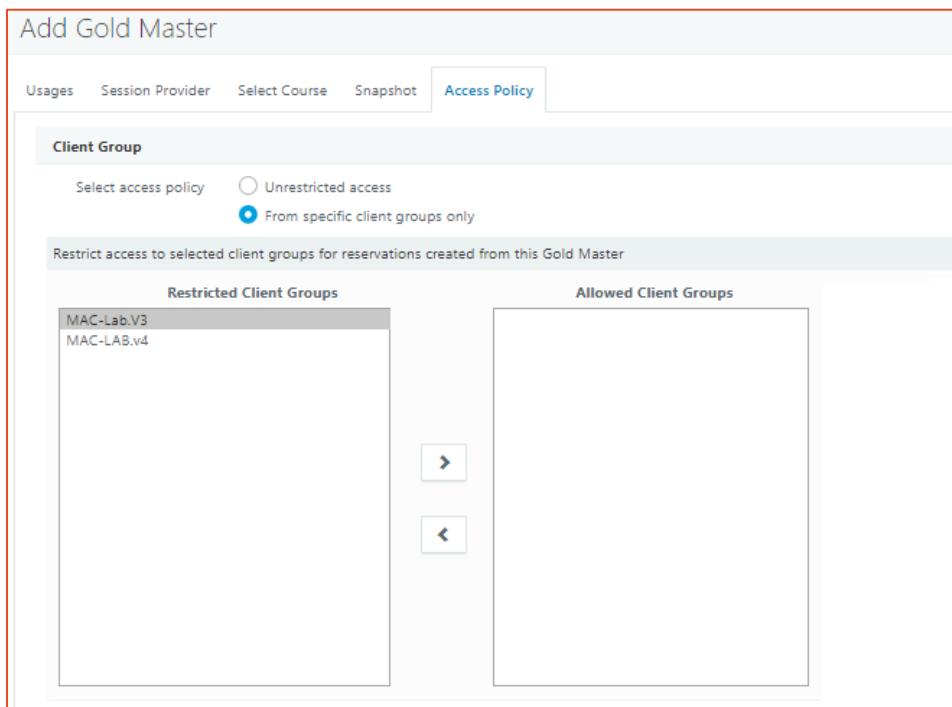
Add Gold Master

Usages	Session Provider	Select Course	Snapshot	Access Policy										
		Search <input type="text" value="PS-HWS1"/> Add Course												
		<table border="1"> <thead> <tr> <th><input type="checkbox"/></th> <th>Code</th> <th>Name</th> <th>Description</th> <th>Course Location</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>PS-HWS1</td> <td>PS-HWS1</td> <td>Test course</td> <td>Class1</td> </tr> </tbody> </table>	<input type="checkbox"/>	Code	Name	Description	Course Location	<input type="checkbox"/>	PS-HWS1	PS-HWS1	Test course	Class1		
<input type="checkbox"/>	Code	Name	Description	Course Location										
<input type="checkbox"/>	PS-HWS1	PS-HWS1	Test course	Class1										

6. Click on **Next Button** to move to **Snapshot** tab and set appropriate Snapshot configurations for Gold Master. In **Snapshots** tab, following settings can be done:
 - a. Set snapshot configurations as **Current State** or **Choose a Snapshot**
 - b. Selecting option **Choose a snapshot** enables option to browse snapshot, which will list down all available snapshots of Gold Master. HyLabs supports creation and management of Gold Master snapshots. Refer section **Snapshot management** for more details.



7. Click on **Next** button to move to **Access Policy** tab, which can be used to restrict reservation connections from specific endpoints (called as Client Groups) only. Selected client groups at Gold Master level can be removed at reservation level to restrict its usage further, but new client groups can not be added to allow usage from client groups other than Gold Master defined.
8. In **Access Policy** tab,
 - a. Select option **Unrestricted access** if all reservations from this Gold master should allow access from anywhere
 - b. Select option **From Specific Client Groups only** to select Client Groups from which reservations will be accessible



9. Click on **Save** button to finish the wizard
10. Gold Master will be added to RMS and will be synced for its status and associated data.
11. Reservation Admin or incharges of selected courses can now use this Gold Master for scheduling the reservation.

Add Gold Master for Self-study

A Gold Master can also be imported for self-study of the participants. Once imported into RMS, participants will be able to request for self-study reservation of this Gold Master.

Prerequisites:

1. None

Process:

1. Invoke **Add Gold Master** wizard
2. In **Usage** tab, fill the following details:
 - a. Select option **Self-study** in **Assign To** dropdown list
 - b. Provide **Description** for Gold Master
 - c. Provide the number of **Maximum Active VMs** to be created. At a given point of time, RMS will allow maximum self-study reservations up to **Maximum Active VMs** count.

The screenshot shows the 'Add Gold Master' interface with a red box highlighting the 'Usages' tab. Under 'Assign To', 'Self-study' is selected. The 'Description' field contains 'Description of Self-study'. The 'Maximum Active VMs' field is set to '10'. Other tabs like 'Session Provider', 'Snapshot', and 'Access Policy' are visible but not selected.

3. Click on **Next** button to navigate to the Session provider tab. In **Session Provider** tab,
 - a. Select the session provider from the dropdown list
 - b. Select the **Provisioning Profile** to associate with Gold Master
 - c. Select the VM from the list to be imported as Gold Master into RMS

Detailed process for selecting Gold Master is already provided in section [**Add Gold Master for Course**](#)

4. Click on **Next Button** to move to **Snapshot** tab and set appropriate Snapshot configurations for Gold Master
5. Click on **Next** button to move to **Access Policy** tab, which can be used to restrict reservation connections from specific endpoints only. Set appropriate access policies as per requirements. Refer section **Restrict Reservation Usage using Client Groups** for more details.
6. Click on **Save** button to finish the wizard
7. Gold Master will be added to RMS and will be synced for its status and associated data.
8. Participants will now be able to schedule self-study reservations using this Gold Master VM.

Add Gold Master for Incharge

A Gold Master can also be assigned to an incharge, so that incharge can make appropriate changes on the Gold VM and then later user Gold Master VM to create reservations of its courses.

RMS Prerequisites:

- Authentication domain is configured with appropriate authentication and authorization server

Process:

1. Invoke **Add Gold Master** wizard
2. In **Usage** tab, fill the following details:
 - a. Select option **Incharge** in **Assign To** dropdown list
 - b. Provide **Description** for Gold Master
 - c. Provide appropriate number for Gold Master limits:
 - i. **Maximum Total VMs:** Total number of VMs to be deployed from gold master (0 means unlimited)
 - ii. **Maximum Active VMs:** Total number of VMs which can run in parallel in one or multiple reservations (0 means unlimited)
 - iii. **Concurrent Connection Limit:** Total number of allowed connections to reserved VMs deployed from gold master. The feature implementation requires controller polling mode as hybrid which means DVM Push services must be active.

The screenshot shows the 'Add Gold Master' wizard interface. The 'Usages' tab is selected. The 'Assign To' dropdown is set to 'Incharge'. The 'Description' field contains 'Description of Self-study'. The 'Maximum Total VMs' field is set to 0. The 'Maximum Active VMs' field is set to 0. The 'Concurrent Connection Limit' field is set to 0.

3. Click on **Next** button to navigate to **Session Provider** tab. In **Session Provider** tab,
 - a. Select the session provider from the dropdown list
 - b. Select the **Provisioning Profile** to associate with Gold Master
 - c. Select the VM from the list to be imported as Gold Master into RMS

Detailed process for selecting Gold Master is already provided in section [**Add Gold Master for Course**](#)

4. Click on **Next** button to navigate to **Select Incharge** tab. In **Select Incharge** tab,
 - a. Click on **Add Incharge** button to invoke **Incharge** dialog, which can be used to search with appropriate search string to list users from authorization server already added as incharge in RMS
 - b. Select one or multiple incharges for the selected Gold Master

Incharge(s)	Display Name	Distinguished Name
<input type="checkbox"/> in.rms109	in.rms109	CN=in.rms109,OU=PSOU,DC...
<input type="checkbox"/> in.rms438	in.rms438	CN=in.rms438,OU=PSOU,DC...

5. Click on **Next Button** to move to **Snapshot** tab and set appropriate Snapshot configurations for Gold Master. In **Snapshots** tab, following settings can be done:
 - a. Set snapshot configurations as **Current State** or **Choose a Snapshot**
 - b. Selecting option **Choose a snapshot** enables option to browse snapshot, which will list down all available snapshots of Gold Master. HyLabs supports creation and management of Gold Master snapshots. Refer section **Snapshot management** for more details.
6. Click on **Next** button to move to **Access Policy** tab, which can be used to restrict reservation connections from specific endpoints only. Refer section **Restrict Reservation Usage using Client Groups** for more details. In **Access Policy** tab,
 - c. Select option **Unrestricted access** if all reservations from this Gold master should allow access from anywhere
 - d. Select option **From Specific Client Groups only** to select Client Groups from which reservations will be accessible
7. Click on **Save** button to finish the wizard
8. Gold Master will be added to RMS and selected incharge user on logon to RMS portal will be able to see the assigned Gold Master.

Add Course Default Gold Master

To add course default gold master, follow the below steps:

1. Invoke **Add Gold Master** wizard
2. In **Usage** tab, fill the following details:
 - a. Select option **Course Default** in **Assign To** dropdown list
 - b. Provide **Description** for Gold Master
 - c. Provide appropriate number for Gold Master limits:
 - i. **Maximum Total VMs:** Total number of VMs to be deployed from gold master (0 means unlimited)
 - ii. **Maximum Active VMs:** Total number of VMs which can run in parallel in one or multiple reservations (0 means unlimited)
 - iii. **Concurrent Connection Limit:** Total number of allowed connections to reserved VMs deployed from gold master. The feature implementation requires controller polling mode as hybrid which means DVM Push services must be active.
 - d. Enable option **Only Admin Access**, if the gold master should be managed by reservation admin only. (Unchecking the option will make it accessible to incharge and assistants also)

Usages		Session Provider	Snapshot	Access Policy
Assign To*	Course Default			
Description	Description			
Maximum Total VMs*	0			
Maximum Active VMs*	0			
Concurrent Connection Limit*	0			
Only Admin Access	<input checked="" type="checkbox"/>			

3. Click on **Next** button to navigate to **Session Provider** tab. In **Session Provider** tab,
 - a. Select the session provider from the dropdown list
 - b. Select the **Provisioning Profile** to associate with Gold Master
 - c. Select the VM from the list to be imported as Gold Master into RMS

Detailed process for selecting Gold Master is already provided in section [**Add Gold Master for Course**](#)

4. Click on **Next Button** to move to **Snapshot** tab and set appropriate Snapshot configurations for Gold Master. In **Snapshots** tab, following settings can be done:
 - a. Set snapshot configurations as **Current State** or **Choose a Snapshot**
 - b. Selecting option **Choose a snapshot** enables option to browse snapshot, which will list down all available snapshots of Gold Master. HyLabs supports creation and management of Gold Master snapshots. Refer section **Snapshot management** for more details.
5. Click on **Next** button to move to **Access Policy** tab, which can be used to restrict reservation connections from specific endpoints only. Set appropriate access policies as per requirements. Refer section **Restrict Reservation Usage using Client Groups** for more details.
6. Click on **Save** button. Course default type gold master will be added into RMS and now while creating reservation the Gold Master will be available for reservation.

Power Operations on Gold Master

Power operations on gold master will be available to following users:

1. Reservation Admin (All types of gold masters)
2. Incharge (Gold Master assigned to course, gold master assigned to incharge, course default gold masters (if not restricted to admin only))
3. Any custom role with defined access to Gold Masters

Users with appropriate privileges will be able to perform power operations on gold masters as described below:

Gold Master VMs		+ Add Gold Master	Edit Gold Master	Delete	Connect	Power Off	Shut down	Suspend	Restart
Enter text to search... <input type="text"/> Go!									
Gold Master Name	OS	HDD (GB)	CPU	Memory (MB)	Maximum VMs	Units Used	Power State	Assigned	In Use
<input type="radio"/> En-KYOTO-Windows 10	Microsoft Windows 10 (64-bit)	32	1	1024	12	0			No
<input type="radio"/> NoOSRMSEng	Other-x64	1	1	16	1	0			No
<input checked="" type="radio"/> NoOSRMSFr1	Other-x64	1	2	32	1	0			No

- **Power On:** The option will be available on Gold Master VMs in **Powered Off** state.
- **Power Off:** The option will be available on Gold Master VMs in **Powered on** State. On performing Power off/ Suspend/ Restart operation, user will be shown a confirmation dialog.
- **Suspend:** The option will be available on Gold Master VMs in **Powered on** State. On performing Power off/ Suspend/ Restart operation, user will be shown a confirmation dialog.
- **Restart:** The option will be available on Gold Master VMs in **Powered on** State. On performing Power off/ Suspend/ Restart operation, user will be shown a confirmation dialog.
- **Resume:** The option will be available on Gold Master VMs in **Suspended** State.

Connect to Gold Master

Reservation Admin/Incharge users will be able to connect to assigned Gold Master VM. The option will be enabled when Gold Master VM is in powered on state and DVM agent status is responding.

For ready to connect Gold Master VMs,

1. Select the Gold Master VM
2. Click on **Connect** button, Gold VM will be connected using logged-in user credentials (Reservation Admin or Incharge)

Gold Master VMs		+ Add Gold Master	Connect	Power Off	Shut down	Suspend	Restart	
Enter text to search... <input type="text"/>								
Gold Master Name	OS	HDD (GB)	CPU	Memory (MB)	Maximum VMs	Units Used	Power State	Assigned
<input type="radio"/> En-KYOTO-Win...	Microsoft Windows 7 (...)	32	1	1048	5	0		
<input checked="" type="radio"/> En-KYOTO-Win...	Microsoft Windows 8 (...)	32	1	2048	4	0		

Connect Gold Master Flow:

1. On connect call to gold master by reservation admin or incharge, the controller will request HyWorks DVM agent to configure following settings:
 - a. Add the user to Remote Desktop Users group
 - b. Add the user to Administrators group
2. Now the admin/incharge on-access will get the access to Gold Master with local administrator rights
3. User can make necessary changes and then will logout
4. On next DVM Agent service restart (eventually with gold master restart or shutdown-start), all the rights of existing users will be revoked.

Refresh DVM Agent Status of Gold Master

As explained in above section, HyWorks DVM Agent is having very important role in facilitating remote access to users and unavailability of DVM agent may affect functioning of gold master.

In cases where users are facing connection or permission issues on Gold Master, they may verify agent status on Gold Master page and refresh it to get latest status of DVM agent.

To perform refresh action on Gold Master:

1. Select Gold Master from list
2. Click on button **Refresh** in action bar
3. HyWorks in backend will communicate with respective session provider to fetch
 - a. Power status of Gold Master
 - b. Latest IP address of Gold Master
 - c. Agent status on Gold Master
4. As per above updates, Gold Master status will be updated and will be shown to user.

Edit Gold Master

Once imported and assigned to specific RMS object (Course/Self-study/Incharge), following types of Gold Master VMs can be modified:

1. Gold Master assigned to course with no reservation(s)
2. Gold Master assigned to course with expired reservation(s)
3. Gold Master assigned to incharge
4. Gold Master assigned to Self-study

Following attributes of modifiable Gold Master VM can be changed:

1. Usage Information:
 - a. Assign To
 - b. Maximum VMs
 - c. Description
2. Assigned Objects (Courses, Incharges)
3. Modify Gold Master Limits
 - a. Course Gold Masters: Maximum Total VMs, Maximum Active VMs
 - b. Self-study Gold Master: Maximum Active VMs
4. Modify Snapshot Settings
5. Modify Access Policies

Edit Gold Master Assignment

As already specified in above section that only those Gold Master VMs configurations can be modified, which do not have any reservations associated with it. This section will describe process to edit Gold Master Assignment:

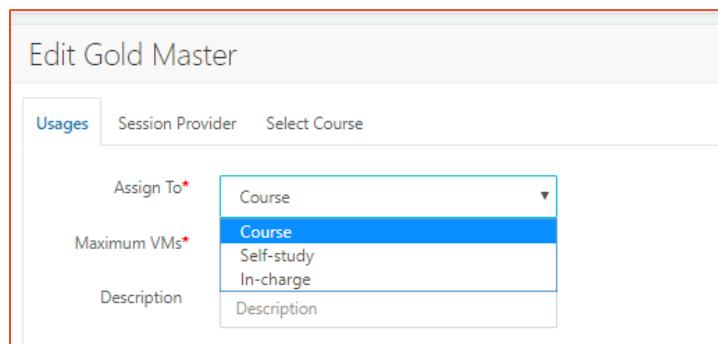
Change Gold Master Assign To

It is not only possible to change the assigned object to a Gold Master, but it's also possible to change the assigned object itself. Let us try to understand it:

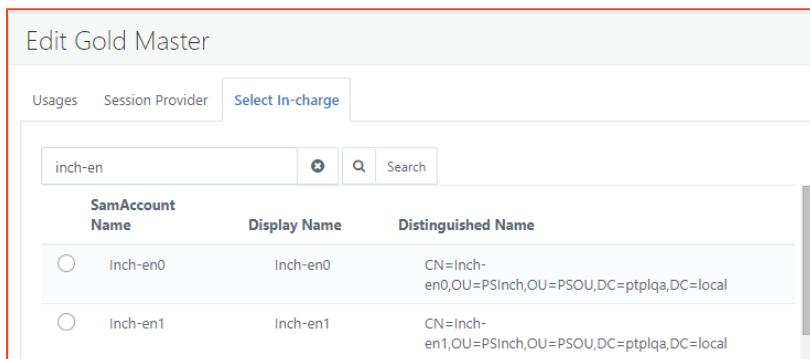
An administrator initially assigned a Gold Master to a course but later needed it to be modified by Incharge first. To achieve this, administrator will be willing to change the **Assign To** of Gold Master to incharge from Course. Below is the step by step process to achieve this:

- **Assign Gold Master to Incharge from Course**

1. Go to **Gold Master** page -> Select the Gold Master to be modified (Assigned to course but not having an upcoming or a running reservation)
2. Click on **Edit Gold Master** button
3. In **Edit Gold Master** wizard
 - a. Change **Assign To** field from existing RMS object to new RMS Object (e.g. Course to Incharge)



4. Click on **Next** button to navigate to **Session Provider** tab
5. In **Session Provider** tab, it should not allow the user to modify Session Provider or selected Gold Master configuration
6. Click on **Next** button to go to **Select Incharge** tab (When reservation admin changes Assign To from Course to Incharge, the third tab also gets changed to Incharge)
7. In **Select Incharge** tab,
 - a. Search with appropriate search string to list the users from authorization server
 - b. Select a user to be designated as incharge of the select Gold Master



8. Click on **Save** button to finish the wizard
9. Gold Master will be saved in RMS and selected incharge user on logon to RMS portal will be able to see the assigned Gold Master.

- a. While creating reservation for course which has been unassigned won't be able to see this Gold Master.

Assign Gold Master to Course from Incharge

1. Go to **Gold Master** page -> Select the Gold Master to be modified (Assigned to course but not having an upcoming or a running reservation)
2. Click on **Edit Gold Master** button
3. In **Edit Gold Master** wizard
 - a. Change **Assign To** field from existing RMS object to new RMS Object (e.g. Incharge to Course)

The screenshot shows the 'Edit Gold Master' interface. At the top, there are three tabs: 'Usages' (which is active and highlighted in blue), 'Session Provider', and 'Select Course'. Below these tabs, there are three input fields: 'Assign To*' (with a red asterisk indicating it's required), 'Maximum VMs*', and 'Description'. A dropdown menu labeled 'Course' is open, showing three options: 'Course' (selected and highlighted in blue), 'Self-study', and 'In-charge'. The 'Course' option is currently selected.

4. Click on **Next** button to navigate to **Session Provider** tab
5. In **Session Provider** tab, it should not allow the user to modify Session Provider or selected Gold Master configuration
6. Click on **Next** button to go to **Select Course** tab (When reservation admin changes Assign To from Incharge to Course, the third tab also gets changed to **Select Course**)
7. In **Select Course** tab,
 - a. Search with appropriate search text to list down the available courses
 - b. Select the intended course

The screenshot shows the 'Edit Gold Master' interface with the 'Select Course' tab active. At the top, there are three tabs: 'Usages', 'Session Provider', and 'Select Course' (which is highlighted in blue). Below the tabs is a search bar with the text 'Hin' and a 'Search' button. Underneath the search bar is a table with two columns: 'Course Name' and 'Course Description'. There is one row in the table, showing 'Hindi' in both columns. A small blue circular icon is positioned next to the 'Hindi' entry in the 'Course Name' column.

8. Click on **Save** button to finish the wizard
9. Gold Master will be saved in RMS and Gold Master will get assigned to selected course. While creating reservations for the course, selected course master will be displayed.

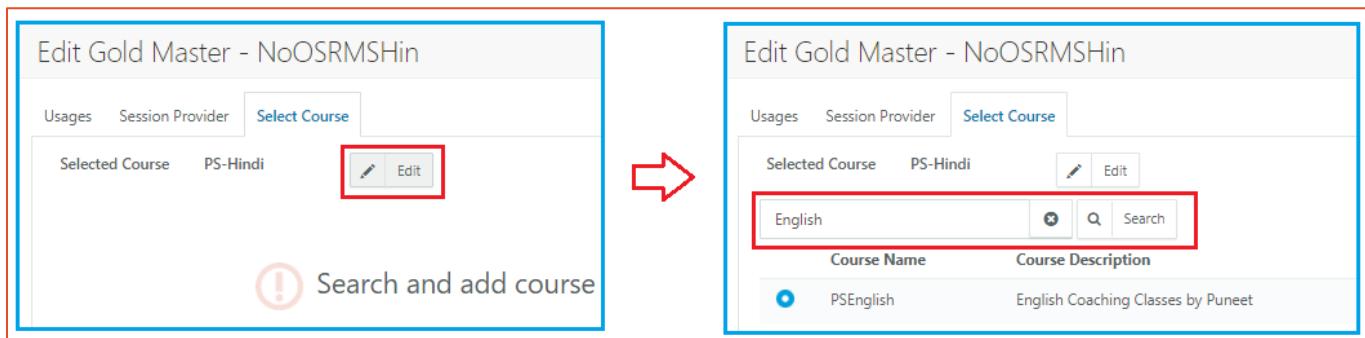
- a. On next logon, incharge (previously assigned with Gold Master) will not be able to view the Gold Master (if the same incharge user is not included in newly assigned course).

Change Gold Master Assigned Objects

Edit Gold Master wizard also provides options to change the assigned objects while keeping the **Assign To** same as before, e.g. changing the course of a Gold Master or changing incharge of a Gold Master. To achieve this, follow the below steps:

- **Change Course of a Gold Master Assigned to a Course**

1. Go to **Gold Master** page -> Select the Gold Master to be modified (Assigned to course but not having an upcoming or a running reservation)
2. Click on **Edit Gold Master** button
3. In **Edit Gold Master** wizard,
 - a. Do not make any changes in **Usage** tab and click on **Next** button
 - b. Click on **Next** button to navigate to **Session Provider** tab
 - i. In **Session Provider** tab, it should not allow the user to modify Session Provider or selected Gold Master configuration
4. Click on **Next** button to go to **Select Course** tab
5. In **Select Course** tab,
 - a. Click on **Edit** button to edit existing assignments
 - b. Search with appropriate search text to list down the available courses
 - c. Select the intended course



6. Click on Save button
7. Gold Master will be assigned to new course
 - a. While creating reservation for previous course, the Gold Master will no longer be available
 - b. Gold Master can now be used while creating reservation for new course

- **Change Incharge of a Gold Master Assigned to an Incharge:**

The process to change incharge is like the process to modify course. Follow the exact same steps as above and on **Select Incharge** tab,

1. Search and select a new incharge for Gold Master
2. Save the settings
3. Gold Master will be assigned to new incharge

- a. Previous incharge on next login will not be able to view or control the Gold Master
- b. New incharge on next logon will be able to view and control the Gold Master

Modify Other Configurations of Gold Master

Following other configurations can also be modified in **Edit Gold Master** wizard:

- 1. Description:** Modification of description does not have any impact on any of associated objects.
- 2. Maximum VMs:**
 - a. This could affect the over-all reservation creation process, as changing the number may affect the reservation capacities.
 - b. [RC3 Known Issue] The configuration is currently not in use and thus modifications will not have any impact.
- 3. Active VMs:**
 - a. This could affect the over-all reservation creation process, as changing the number may affect the reservation capacities
 - b. [RC3 Known Issue] The configuration is currently not in use and thus modifications will not have any impact.

Edit Gold Master Snapshot Settings to Redeploy Reservations

Administrator can modify the Gold Master VM's snapshot configurations, while modifying Gold Master. The changes can be used for the following two purposes:

1. Future reservations from this Gold Master will use new settings
2. Redeployment of existing reservations with new snapshot settings of Gold Master

To redeploy existing reservation following steps should be followed:

1. Go to **Gold Master** page -> Select the Gold Master to be modified (Assigned to course but not having an upcoming or a running reservation)
2. Click on **Edit Gold Master** button
3. In **Edit Gold Master** wizard, go to **Snapshots** tab
 - a. Update Snapshot settings as per requirements
 - b. Below to Snapshot settings, it will display **Reservation List**
 - i. Displaying all reservations from this Gold Master, their current snapshot configuration as well e.g. if reservation is deployed using Current State of Gold Master it will be shown with **Snapshot Name** as blank, **Snapshot Source** as Current State and **Redeployment State**.
 - ii. Select reservations which requires redeployment as per current snapshot configuration change

The screenshot shows the 'Edit Gold Master - PS-NoOSY' interface. At the top, there are tabs for 'Usages', 'Session Provider', 'Snapshot' (which is selected), and 'Access Policy'. In the 'Snapshot' tab, there's a section for 'Use Snapshot' with two radio buttons: 'Current State' (unchecked) and 'Choose a Snapshot' (checked). Below this is a 'Select Snapshot' dropdown with options 'Browse' and 'XSNAP'. A red box surrounds this section. To the right, a red circle labeled '1' points to the 'Choose a Snapshot' button. Below this is a table titled 'Reservation List' with columns 'Name', 'Reservation For', 'Course Code', and 'Snapshot Name'. Two rows are listed: 'Res-ARI3C3' (Reservation For: PS-NoOS, Course Code: PS-NoOS, Snapshot Name: -) and 'Res-O79GW2' (Reservation For: PS-NoOS-Bulk, Course Code: PS-NoOS-Bulk, Snapshot Name: Test-2). Both rows have checkboxes in the first column. A red circle labeled '2' points to the checkboxes for 'Res-ARI3C3' and 'Res-O79GW2'.

4. Proceed to save settings and finish **Edit Gold Master** wizard
5. HyLabs will mark all selected reservations for redeployment, which can be seen in Reservations screen
6. As per next deployment window, all redeployments will be done
7. If administrators are willing to redeploy reservations immediately, they can do it from Deployment options in Reservations screen

Important Notes for Redeployments

Administrator will be able to select one or multiple reservations to be redeployed using following rules:

- Only those selected reservations will be redeployed, which are using different than the currently selected snapshots, e.g. a Gold Master is having 3 reservation deployed with Snapshot1 and 1 reservation with Snapshot2. Now administrator changes Snapshot settings to move to Snapshot2 and select all 4 reservations; then 4th reservation which is already using Snapshot4 will not require redeployment and will not redeploy.
- All redeployments will be done as per the deployment settings
- Running reservations will not be redeployed immediately but if they have multiple schedules or recurring, then in next deployment window, redeployment will be done
- Expired, cancelled reservations will not be listed for redeployment.

Edit Gold Master Access Policies

Administrator can modify access policies using **Edit Gold Master** wizard. Administrators can opt to remove or add client groups to the Gold Masters. Please follow below steps to update access policies of existing Gold Master:

1. Go to **Gold Master** page -> Select the Gold Master to be modified (Assigned to course but not having an upcoming or a running reservation)
2. Click on **Edit Gold Master** button
3. In **Edit Gold Master** wizard, go to **Access Policy** tab
 - a. Add/ Remove Client groups as per requirements
 - b. It will display a warning message with the list of affected reservations

4. Click on **Save** button to save settings. Now Gold Master access policies have been modified and following behaviour is expected:
 - a. Existing reservation access will be affected
 - b. New reservations will be created as per new access policies

Delete Gold Master

An existing Gold Master can be deleted from RMS. The delete operation only removes Gold Master from HyWorks (RMS) database and does not delete Gold Master from dedicated session provider.

Follow the below steps to delete Gold Master from RMS:

1. Go to **Gold Master** page -> Select the Gold Master to be deleted
2. Click on **Delete Gold Master** button

Gold Master Name	OS	HDD (GB)	CPU	Memory (MB)	Maximum VMs	Units Used
GOLD-WIN-EN...	Microsoft Windows 8 (...)	60	4	3072	5	0

3. **Confirm Action** dialog will be displayed -> Click on **Delete** button to continue deleting the Gold Master

4. Gold Master will be deleted from RMS and associated RMS object (Course, Incharge) will no longer be able to make use of the deleted Gold Master VM.

Gold Master VMs Deletion Dependencies

HyLabs or RMS will not allow deletion of Gold Master VMs, having some association with existing objects such as assigned to courses or having running reservations and thus following types of Gold Master VMs can be removed from RMS:

1. Gold Master which does not have any associated reservations with it (Attempt to delete Gold Master assigned to course with scheduled or running reservation, will result in failure)
2. Gold Master assigned to incharge

Gold Master DVM Tools Upgrade

Gold Master DVM Tools upgrade can be done using following two mechanisms:

❖ **Direct and Automatic Upgrade from RMS Portal:** The function is enabled in HyWorks v3.3, where administrators will be able to upgrade HyWorks DVM Tools from RMS portal itself. To upgrade DVM Tools on Gold Master, follow below steps:

1. Place latest available **HyWorks DVM Tools** installer/update file on HyWorks Controller at appropriate location. Default location for update files are provided below:
 - i. Windows: C:\Program Files (x86)\Accops\HyWorks\HyWorksUpgradeService\Updates\Windows
 - ii. Linux: C:\Program Files (x86)\Accops\HyWorks\HyWorksUpgradeService\Updates\Linux
2. Login as reservation admin
3. Select Gold Master VM, check currently running version of DVM Tools
4. Click on button **Upgrade Agent** to initiate DVM Tools upgrade on Gold Master
5. New DVM Tools will be downloaded in Gold Master and Gold Master will get upgraded with latest DVM Tools.

❖ **Manual Installation of DVM Tools:** In previous versions of HyWorks, no direct upgrade mechanism was available, and thus administrator or incharge must download the HyWorks DVM Tools from HyWorks Management Console and copy to the Gold Master. Following steps can be followed to upgrade DVM tools on Gold Master:

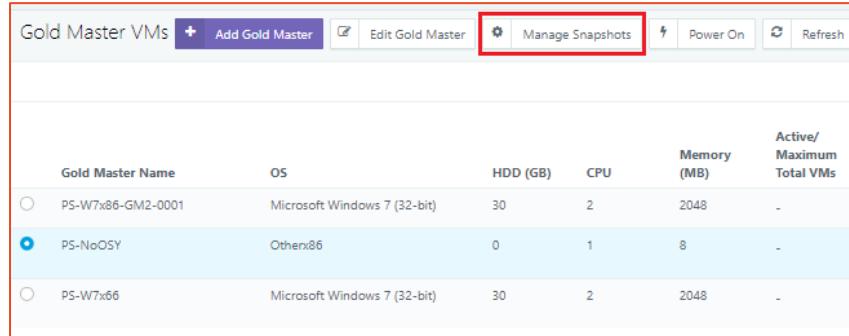
1. Connect to Gold Master with local admin privileges (Login as Incharge/RMS Admin)
2. Download and copy HyWorks DVM Tools setup locally on gold master
3. Double click on setup to invoke the installer
4. If any warning is displayed for User Account Control, then click on **Yes** button to affirm the action
5. Proceed with installation and when components are shown, select all components and click on **Next** button to proceed
6. Let the installation be completed
 - a. In between, it may display the confirmation prompt for HyPrint module installation
7. Once completed, click on **Finish** button to dismiss the wizard.

Gold Master Snapshot Management

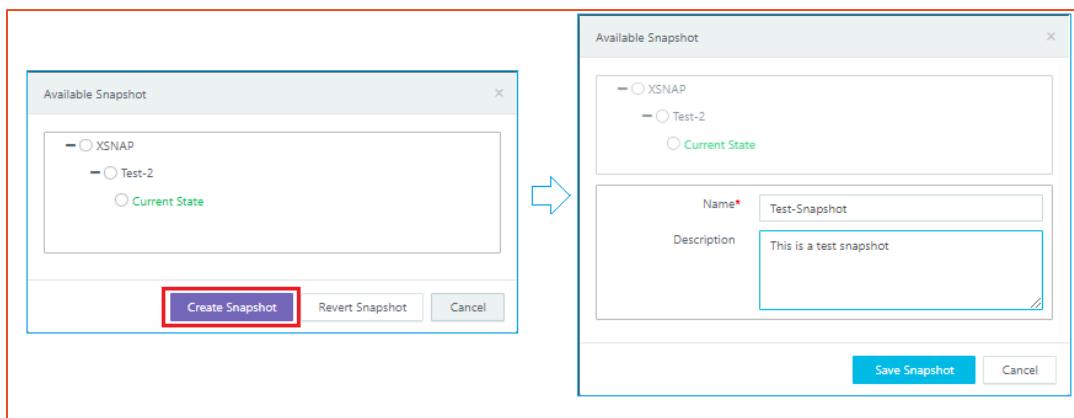
HyWorks v3.3 or later supports effective mechanisms to manage snapshots of added Gold Master VMs. Administrators will be able to perform following operations:

❖ **Create New Snapshot:** To create a new snapshot of Gold Master, follow below steps:

1. Login as reservation admin
2. Select Gold Master VM and launch **Available Snapshots** dialog by clicking on button **Manage Snapshots**



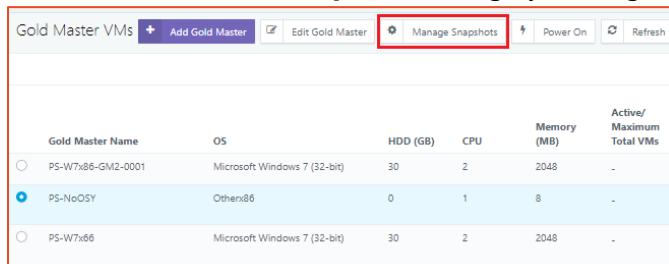
3. In **Available Snapshots** dialog,
 - a. Click on button **Create Snapshot**
 - b. Provide appropriate **Name** and **Description** for new snapshot
 - c. Click on button **Save Snapshot**



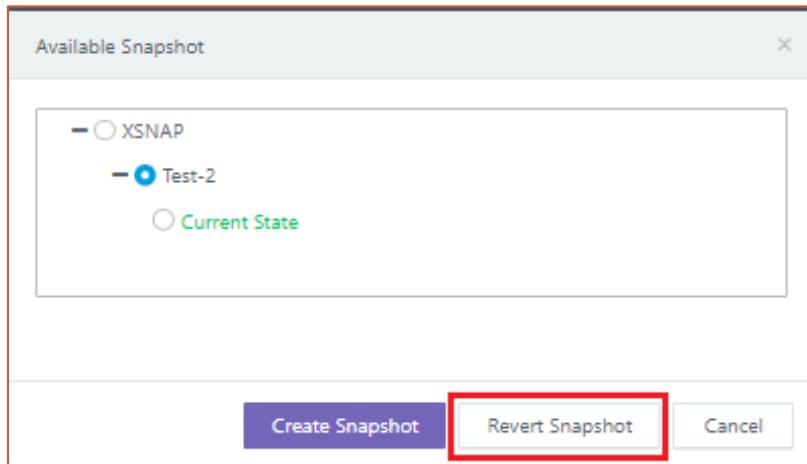
4. **Available Snapshot** dialog will be dismissed, and new snapshot will be taken.

❖ **Revert to Snapshot:** To revert to existing snapshot follow the below steps:

1. Login as reservation admin
2. Select Gold Master VM and launch **Available Snapshots** dialog by clicking on button **Manage Snapshots**



3. In **Available Snapshots** dialog,
 - a. Select snapshot from tree view to which Gold Master should be reverted
 - b. Click on button **Revert Snapshot**



- c. Confirm action text will be shown, click on **Revert Now** button to continue reverting to snapshot
- d. **Available Snapshot** dialog will be dismissed, and Gold Master will be reverted to selected snapshot.

Enable HyPrep on Gold Master

To enable HyPrep on gold images (source VMs), follow the below steps:

1. Download and install latest HyWorks DVM Tools supports HyPrep
2. Login user having admin privileges on gold image (source VM), copy HyWorks DVM Tools setup file
3. Open registry editor (Open **Run** prompt -> Type **regedit** -> Press **Enter** key)
4. Go to following location:
 - a. **HKEY_LOCAL_MACHINE\SOFTWARE\Accops\DVMAgent**
 - b. Locate the Registry Entry **USEHYPREPTOOL** (Default value **False**)
 - i. Modify value to **True**
5. Exit the registry editor
6. Gold Master or source image is ready for using HyPrep.

Limiting Over Usage of Gold Master using Gold Master Limits

HyWorks v3.3 or later supports Gold Master usage restrictions using Gold Master Limits. Currently following types of limits are implemented:

- ❖ **Course Gold Master:** Following types of limits can be applied on Gold Master being used for Course reservations:
 - **Maximum Total VMs:** Total number of VMs to be deployed from gold master (0 means unlimited)
 - **Maximum Active VMs:** Total number of VMs which can run in parallel in one or multiple reservations (0 means unlimited)
 - **Concurrent Connection Limit:** Total number of allowed connections to reserved VMs deployed from gold master. The feature implementation requires controller polling mode as hybrid which means DVM Push services must be active.

Add Gold Master

- [Usages](#)
- [Session Provider](#)
- [Select Course](#)
- [Snapshot](#)
- [Access Policy](#)

Assign To* Course
Description Gold Master for Java on Ubuntu
Maximum Total VMs* 70
Maximum Active VMs* 50
Concurrent Connection Limit* 20

❖ **Self-study Gold Master:** Self-study Gold Master can use following limit:

- **Maximum Active VMs:** Maximum Active VM limit will allow creation of self-studies up to Maximum Active VMs count at a given point of time.

Add Gold Master

- [Usages](#)
- [Session Provider](#)
- [Snapshot](#)
- [Access Policy](#)

Assign To* Self-study
Description Description of Self-study
Maximum Active VMs* 10

❖ **Course Self-study Limits:** Limit applied at reservation level, where course users will not be allowed to created course self-study reservation beyond provided limit at a given point of time.

- **Maximum Units to be Used:** Total number of course self-study reservations to be created at a time

Edit Reservation - Res-ARI3C3

- [Option](#)
- [Course Reservation](#)
- [Schedules](#)
- [Course Self-study](#)
- [Incharges](#)
- [Assistants](#)
- [Participants](#)

Enable Course Self-study
Maximum Units to be Used 0
Max Duration 3:00
Allow Extension
Reservation Window

Gold Master Limit Enforcement

Gold Master limits will be checked on following actions or operations:

1. CSV Import: On reservation CSV import, limits will be checked and if any issues are there it will fail reservation import.
2. Manually Creating Reservations: Gold master limits will be validated, when reservations are being created by
 - a. Reservation Admin
 - b. Incharges/ Assistants
 - c. Participants

Some basic Gold Master Limit Rules

1. **Maximum Total VMs >= Maximum Active VMs >= Concurrent Connections**
2. Modifying limits of Gold Master after reservations have deployed, will not affect existing reservations.

Examples of Gold Master Limits

- ❖ **No Limits:** A course default Gold Master has been created with unlimited (zero in Gold Master wizard) **Maximum Total VM, Maximum Active VM** and **Concurrent Connection Limit**, now while creating reservations, following behaviour is expected:
 - Any number of reservations with any number of reserved VM counts can be created
 - While logging in, any number of users can connect to reserved VMs
- ❖ **Course Limits Applied:** A course default Gold Master has been created with limits as **Maximum Total VM = 70, Maximum Active VM = 50 and Concurrent Connection Limit** as 20. Now while creating reservations, following behaviour is expected:
 - X number of reservations can be created, where sum of total VMs cannot be greater than 70 (i.e. **Maximum Total VM** count). E.g.
 - 2 reservation on different time cannot be created having VM count as 50 and 30. Error will be shown while creating the 2nd reservation, for first reservation, it should allow creation.
 - 5 reservations with 14 VMs each can be created. Whereas if 4 reservations are created with total 60 VMs, then 5th reservation will not be allowed to have more than 10 VMs.
 - Y number of reservations can run in parallel, where sum of VMs in Y reservations cannot be greater than 50 (i.e. **Maximum Active VM** count). E.g.
 - 1 reservation with 50 VMs, 2 reservations with 30 and 20 VMs or 3 reservations with 10, 15 and 25 VMs can be created to run at the same time. But 1 reservation with 55 VMs or 2 reservation with 25 and 30 VMs cannot be created at the same time. Please understand that 2 reservations with 25 and 30 VMs can be created and run at different timings but not at the same time due to **Active VM** limit.
 - Z number of reserved VMs can be connected from one or multiple reservations, where Z <= 20. E.g. if one reservation is created with VM count as 40, then first 20 users will be allowed to connect whereas next 20 users will be declined the connections. If two reservations are created to run in parallel with 20 and 30 VMs, then first 20 users from both reservations will be allowed and all other connections will be refused due to **Concurrent Connection** limit.

Accops HyLabs (Previous name RMS - Reservation Management System)

Courses

Course in RMS is a lesson or subject having RMS Users associations so that when any reservations must be created, it can be used as reference.

Courses tab can be used to manage the courses. Only reservation admin will be able to manage courses. When reservation admin users navigate to Objects – Courses screen, following information is available in list view for already added courses:

Code*	Unique code for a course. The field allows alpha-numeric characters and following special characters: - (Hyphen), _ (Underscore)
Name*	Name of course e.g. Java on Ubuntu
Description	Description of course e.g. Java on Ubuntu
Classroom	Classroom for a course
Department	Department for which course is being designed
Group	Group to which course can be member of
Incharge Count	Number of incharges in course
Assistants Count	Number of assistants in course
Participant Count	Number of participants in course

<input type="checkbox"/>	Code	Name	Description	Classroom	Department	Group	Incharge Count	Assistants Count	Participant Count
<input type="checkbox"/>	PS-HWS1	PS-HWS1	Test course	Class1	Dep1	Group1	1	1	1
<input type="checkbox"/>	PS-NoOS	PS-NoOS	-	-	-	-	2	1	2

Course Creation

Course creation, modification or deletion privileges are by default available to reservation admin only. For creating a course reservation admin can use the following steps:

1. Login into RMS Admin console using appropriate credentials designated as reservation admin (Refer section [Login as Reservation Admin](#) for detailed information).
2. In RMS Admin console, go to Configuration -> Course
3. Click on **Add Course** button

Courses		+ Add Course		Edit Course		Delete Course
<input type="checkbox"/>	Code	Name	Description	Classroom		
<input type="checkbox"/>	PS-HWS1	PS-HWS1	Test course	Class1		
<input type="checkbox"/>	PS-NoOS	PS-NoOS	-	-		

4. In **Add Course** wizard, provide the following details:

- a. **Course Details** Screen: Provide appropriate details in **Code, Name, Description, Department, Group, Classroom** fields.

Add Course

Course Details	Incharges	Assistants	Participants
Code*	M3		
Name*	Mathematics-3		
Description	Mathematics for semester-3		
Department	Common		
Group	Maths		
Classroom	Classroom		

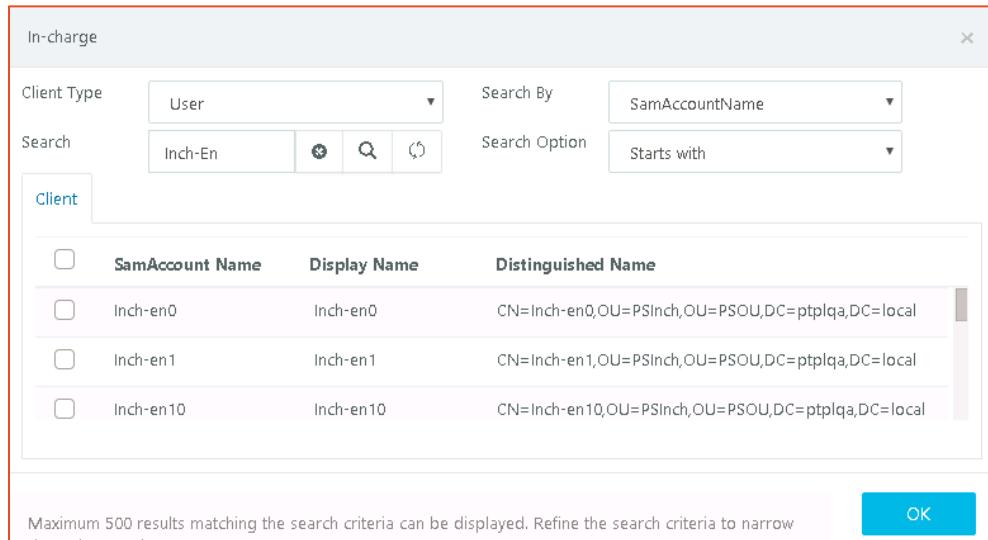
b. **Incharge** screen:

- i. Click on **Add Incharge** button -> **Incharges** dialog will be invoked

Add Course

Course Details	Incharges	Assistants	Participants
<input type="text"/> Search			+ Add Incharge
There are no Incharge(s)			

- ii. Search and add users from authorization server as incharge for this course.



c. **Assistants** screen:

- i. Click on **Add Assistants** button -> **Assistants** dialog will be invoked
- ii. Search and add users from authorization server as assistant for this course.

d. **Participants** screen:

- i. Click on **Add Participants** button -> **Participants** dialog will be invoked
- ii. Search and add users from authorization server as participant for this course.

5. Once all the details are provided, click on **Finish** button on **Participants** screen to save the course details.
6. Course will be saved, and reservation admin user will be able to view and manage course from **Courses** screen.

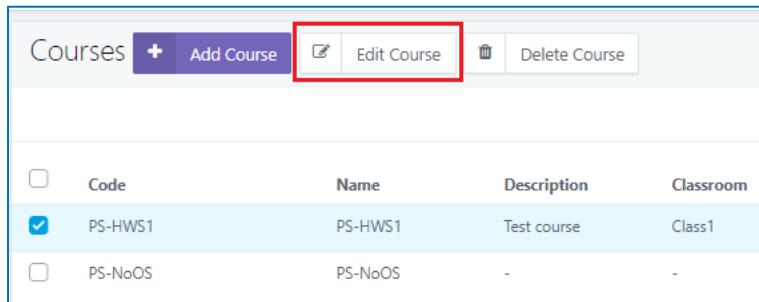
Once added into RMS, courses can be further managed by reservation administrators.

Modifying Course

Reservation admin can modify a course to change its details, add new incharges, assistants or participants or remove existing incharges, assistants or participants.

To modify an existing course, follow the below steps:

1. Go to **Courses** screen, select the course to be modified
2. Click on button **Edit Course**



3. **Edit Course** wizard will be displayed, modify configurations as needed:

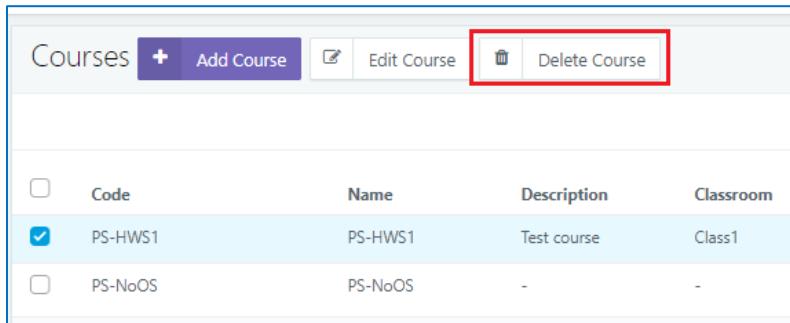
- a. Edit details of course
- b. Add/Remove incharges

- c. Add/Remove assistants
- d. Add/Remove participants
4. Click on **Finish** button to save the changes.
5. All RMS users associated with the course will be able to see the changes on next logon.

Delete Course

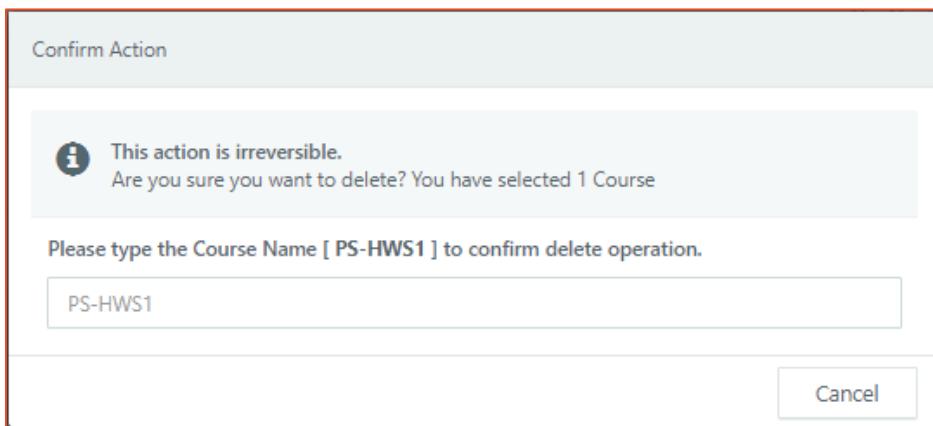
Reservation administrator can delete an existing course by following the below steps:

1. Select one or more courses from **Courses** screen
2. Click on **Delete Course** button



Courses				
	<input type="button" value="Add Course"/>	<input type="button" value="Edit Course"/>	<input type="button" value="Delete Course"/>	
	Code	Name	Description	Classroom
<input type="checkbox"/>	PS-HWS1	PS-HWS1	Test course	Class1
<input type="checkbox"/>	PS-NoOS	PS-NoOS	-	-

3. **Confirm Action** dialog will be displayed
 - a. Type **Course Name** and click on **Delete** button to continue deleting the selected course.



4. Deleted course(s) will no longer be visible in **Courses** screen.

Note:

- Course deletion will fail if it has any Gold Master associated. To delete a course, first associated Gold Master should be removed.

User Management – Incharges, Assistants, Participants

All users added into RMS during course creation or modification can be managed from User Management section in RMS.

User Management section is accessible to reservation admin role only and enables management of **Participants**, **Assistants** and **Incharges** management.

Following types of actions are available:

- View list of Users
- Add User (Incharge/Assistant/Participant)
- Modify User (Incharge/Assistant/Participant)
- Delete User (Incharge/Assistant/Participant)

View List of Users

Incharges page will list all the incharges in RMS and similarly assistants and participants pages will be showing list of assistants and participants respectively. While navigating to specific page, administrator can see following information:

- **Incharges** Page: Incharge Name, Incharge Distinguish Name (DN), Incharge SAMAccountName, Number of Courses
- **Assistants** Page: Assistant Name, Assistant Distinguish Name (DN), Assistant SAMAccountName, Number of Courses
- **Participants** Page: Participant Name, Participant Distinguish Name (DN), Participant SAMAccountName, Number of Courses

Administrator can search for specific user by providing appropriate search string in search box provided.

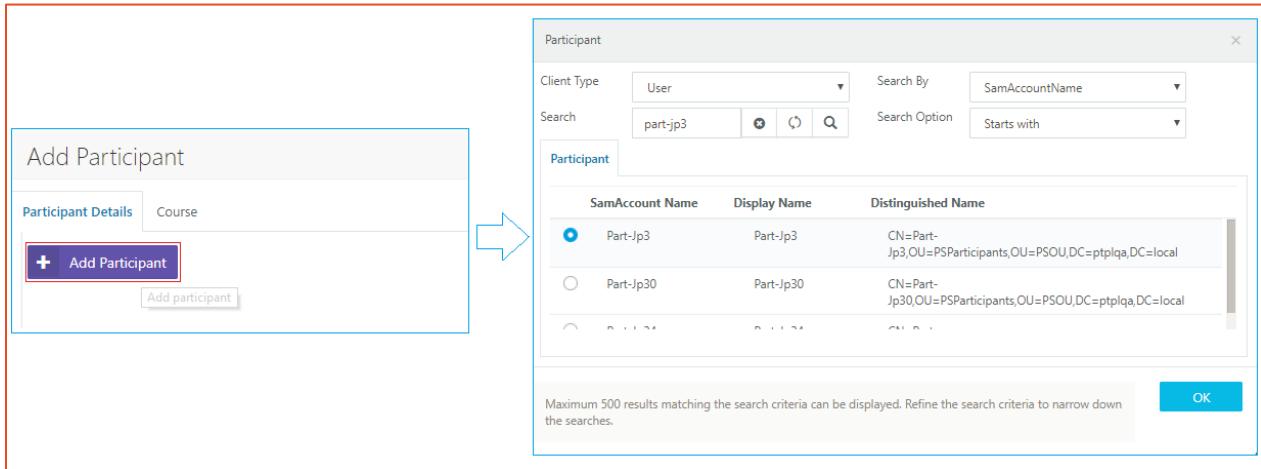
Add Incharge/Assistant/Participant

To add a user (Incharge/Assistant/Participant), below steps can be provided:

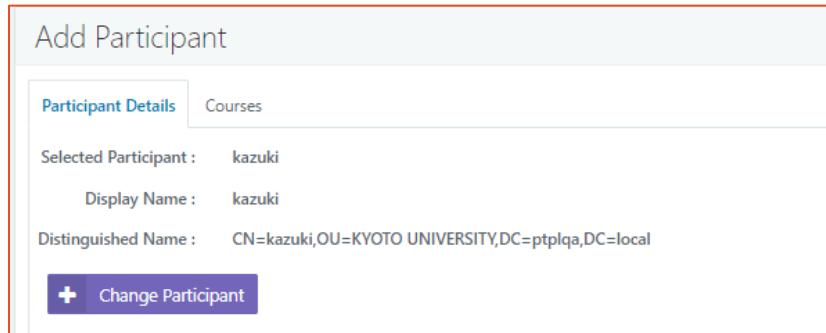
1. Go to **User Management – Participants** screen (For Incharges go to Incharges page and for assistants use Assistants page)
2. Click on **Add Participant** button

Participants		+	Add Participant	Edit Participant	Delete Participant
<input type="checkbox"/>	Participant	Distinguished Name			
<input type="checkbox"/>	Part-Jp0	CN=Part-Jp0,OU=PSPParticipants,OU=PSOU,DC=ptplqa,DC=local			
<input type="checkbox"/>	Part-Jp1	CN=Part-Jp1,OU=PSPParticipants,OU=PSOU,DC=ptplqa,DC=local			

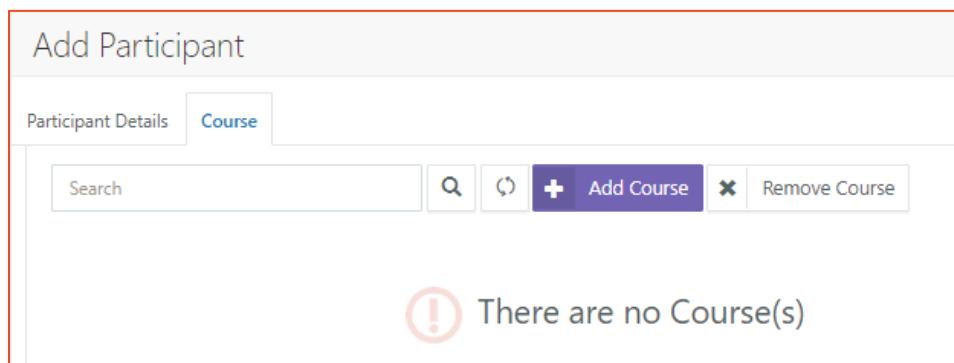
3. In **Add Participant** wizard, click on **Add Participant** button
 - a. In **Participant** screen, search and select a participant and click on **OK** button



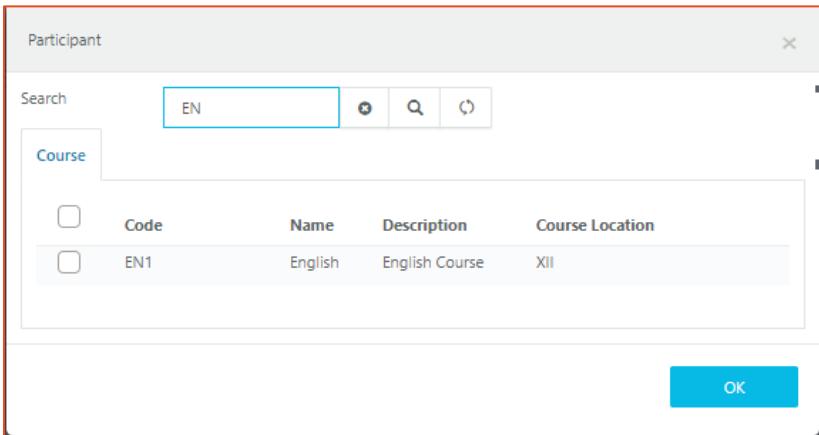
- b. Selected participant will be shown as added



- c. Add participant can also be changed from same screen by clicking on **Change** button, which displays the **Participant** screen to select a different user
4. Click on **Next** button
5. In **Course** tab, click on **Add Course** button to invoke **Course** dialog



6. In **Course** dialog, search and select a course and click on **OK** button – course will be added

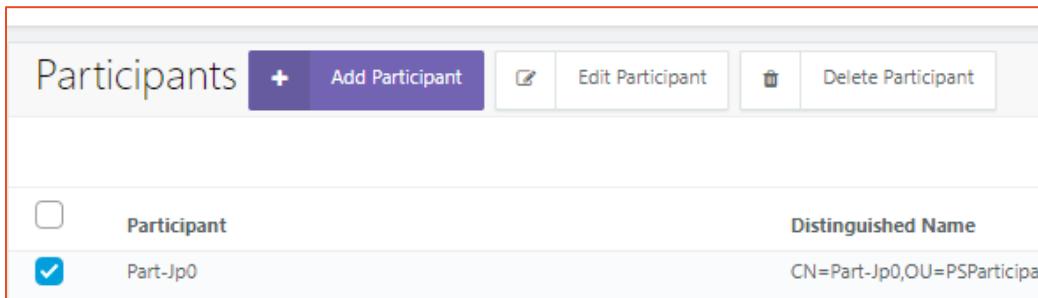


7. Click on **Save** button to save the participant.
8. Participant now will become the part of the course and whenever reservations are created for the selected course, participant will be considered.
9. Similarly, incharges/assistants can be added to existing courses from their respective screens.

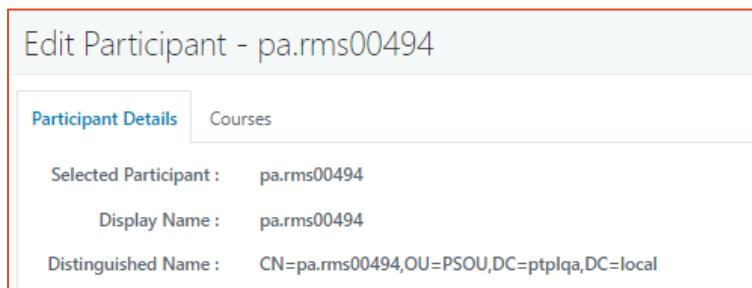
Edit Incharge/Assistant/Participant

To modify course assignments of a user (Incharge, Assistant, Participant), **Edit** wizard can be used. To modify any user, below steps can be used:

1. Go to **User Management – Participants** screen (For Incharges go to Incharges page and for assistants use Assistants page)
2. Select the participant from the displayed list
3. Click on **Edit Participant** button (Only one participant can be modified at a time)



4. On Participant screen only, participant information will be displayed.



5. Click on **Next** button to navigate to **Course** tab
6. To remove from a course, select the already add course and click on **Remove Course** button

Code	Name	Description	Course Location
JPx	Japanese	Japan	XII

7. To assign to a new course, click on **Add Course** button -> In **Course** dialog, search and select a new course and click on **OK** button
8. Click on **Save** button to save the assignments (At-least one course must be selected for saving the assignments)
9. Please note, any changes done for course assignments will not affect already logged-in users and they still can use resources assigned to them. But on next logon all new assignments should work effectively.

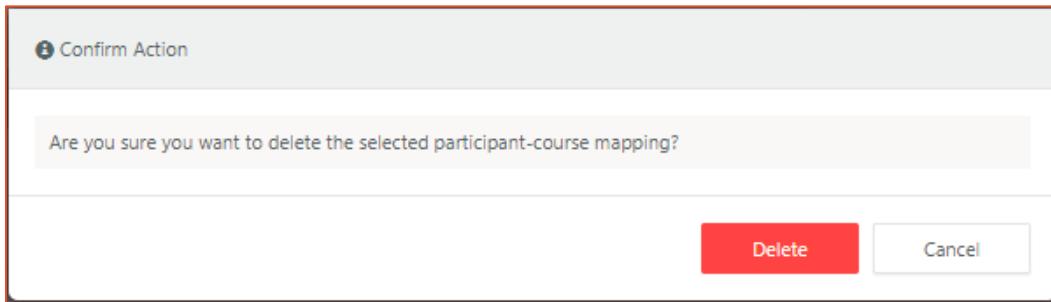
Remove Incharges/ Assistants/ Participants

To remove a user (Incharge, Assistant, Participant) from RMS, following steps can be used:

1. Go to **User Management – Participants** screen (For Incharges go to Incharges page and for assistants use Assistants page)
2. Select the participants from list

Participant	Distinguished Name
<input type="checkbox"/> Part-Jp0	CN=Part-Jp0,OU=PSParticipants,OU=PSOU,
<input checked="" type="checkbox"/> Part-Jp1	CN=Part-Jp1,OU=PSParticipants,OU=PSOU,

3. Click on **Delete Participant** button - **Confirm Action** dialog will be displayed



4. Click on **Delete** button to continue deleting the participants.
5. Participants will be removed from RMS, association with any existing courses will also get removed.

Reservation Management (Reservations and Reserved VMs)

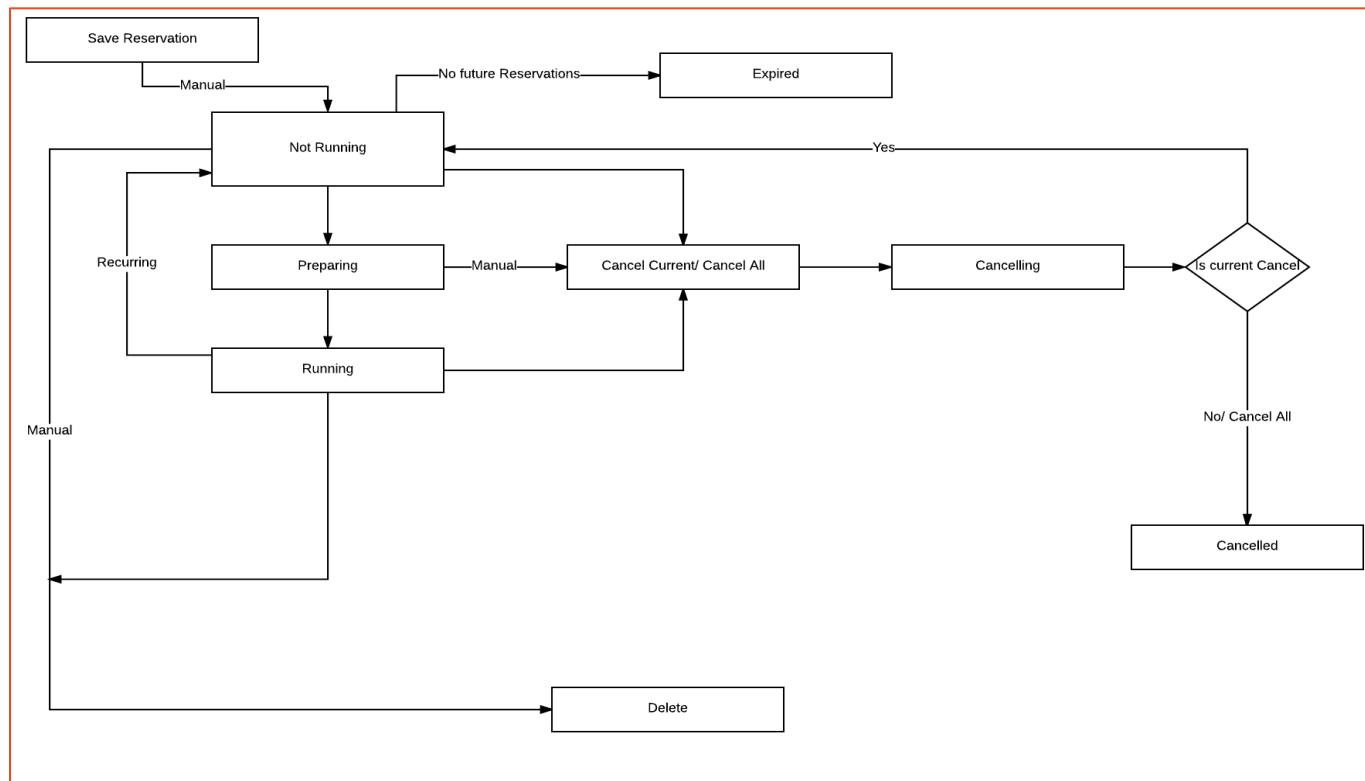
Reservations

Reservations in RMS refers to a schedule on which cloned VMs of Gold Master VM will be delivered to end-users.

Reservations page in RMS provides the interface to reservation admin and incharge users to create reservations for participants.

This section will provide detailed information on managing reservations for RMS users.

Reservation Life Cycle



❖ An Example of One-time Course Reservation:

1. Once a reservation is saved, it's in **Not Running** state
 - a. None of the associated RMS users will be able to access the reserved VMs in **Not Running** state
2. Just before an hour ago, reservation preparation gets started and it moves to **Preparing** state
 - a. An On-Demand, Temporary type of desktop pool will be created with all RMS users as client.
 - b. Reserved VMs will not be accessible during **Preparing** state
3. Once the VMs are prepared, then the machines go into **Ready** state
 - a. RMS users will not be able to access the reserved VMs unless the reservation starts
4. Once the reservation time starts, reservation goes into **Running** state
 - a. RMS users can now login and on connecting will get assigned with one of the reserved VMs.
 - b. The reserved VMs are given first come first serve basis - if there are less VMs than the number of participants, then users connecting first will get assigned with the VMs until all VMs are consumed and users logging-in after that will not get any VMs.

5. Once reservation time finishes, reservation gets expired -> VMs will be powered off and deleted as per the configuration.

Types of Reservations

With RMS following types of reservations can be configured:

1. **Course based reservations:** These types of reservations can be created by:
 - a. Reservation admin
 - b. Incharge of course
 - c. System (CSV Import)
2. **Course self-study reservations**
 - a. Participants (Member of any specific course)
3. **Self-study reservations**
 - a. Reservation admin
 - b. Participants

Listing and Viewing Reservations

Once reservations are created, they will be listed in **Reservations** page. Following details are displayed:

Column Name	Description	Sortable	Searchable
Name/ Display Name of Reservation	System generated unique name of the reservation/ Administrator provided user-friendly name of reservation	Yes	Yes
Course Name/ Course Code	Displaying name of the course and its code for which reservation is created. For self-study reservation, it will be displayed as Self-study	Yes	Yes
Classroom	Name of the class to for which this reservation is created	Yes	Yes
Gold Master	Name of Gold Master which will be used for this reservation	Yes	Yes
Reservation Creator	RMS Username who has created this reservation	Yes	Yes
Ready VMs/ Total VMs	Actual number of reserved VMs which are in ready state for end-user connections vs total number of deployed VMs in the reservations	No	No
Start Date and Time/ End Date and Time	Date and time of reservation start Date and time of reservation completion	Yes	No
Action	Possible action on reservations e.g. connect. Connect option will only be available to RMS Users (Incharges, assistants, participants)	No	No
Current Status	Current status of the reservation (possible values: Not Running, Running, Finished, Expired etc.)	Yes	Yes
Deployment Status	Reservation deployment status. Possible statuses could be Deployment pending, Redeployment Pending, Deployed	No	No

For ease of management, following UI controls have been provided:

- **Filter based on reservation time:** Administrator can choose to display reservation for today or all
- **Sorting Reservations:** List of reservations can be sorted if specific column supported sorting. Please see above for columns which have support for sorting
- **Searching any specific reservation/ reservations:** If needed, any specific reservation(s) can be searched using specific search text. E.g. listing all reservations from specific Gold Master
- **Refreshing List of Reservations:** List can be refreshed to get a fresh list of reservations from HyWorks

Create New Reservations

In this section of document, details of reservations which can be created by administrator users will be shared.

Course Reservation Creation

Reservation admin or an incharge part of any course will be able to create reservation for the course. And while creating reservations, course defines the RMS users who are going to be part of this reservation.

❖ Prerequisites for Creation of Reservation

- A course is already defined with incharge, assistants and participants (Refer section Courses for detailed information on course creation and associated information)
- Gold Master is imported into RMS and assigned to course (Refer section [Gold Master](#) for more information) or Course default gold master is available

❖ Reservation Creation Process

Once the prerequisites are in place, a reservation can be scheduled using following steps:

1. Login as reservation admin and go to **Reservations** page
2. Click on button **Add New Reservation -> Add Reservation** wizard will be invoked
3. In **Add Reservation** wizard, first screen is **Option** tab.
4. In **Option** tab, select **Reservation For** as **Course Reservation**
5. Click on **Next** button to navigate to **Course Reservation** tab
6. In **Course Reservation** screen,

The screenshot shows the 'Add Reservation' interface. At the top, there's a navigation bar with tabs: 'Option' (which is active and highlighted in blue), 'Course Reservation' (also highlighted in blue), 'Schedule', 'In-charge', 'Assistants', and 'Participant'. Below the tabs, there are three sections: 'Course', 'Classroom', and 'Gold Master'. The 'Course' section has a dropdown menu labeled 'Select Course' with 'Test-SS' listed below it. The 'Classroom' and 'Gold Master' sections currently have empty dropdown menus.

- a. Select the **course** for which reservation needs to be created. Selecting a course auto-fills the **Classroom** details and fetches **Gold Masters** (Available for selected course: 1. Gold Master VMs directly assigned to this course 2. Course default Gold Master VMs)
- b. Select Gold Master to be used for this course reservation

- c. Provide appropriate **Display Name** for reservation (Whether to show system generated reservation name, admin provided display name, classroom name is set in **Default Reservation Settings**)

The screenshot shows the 'Add Reservation' form with the 'Course Reservation' tab active. The 'Course' field is set to 'PS-NoOS - [PS-NoOS]'. The 'Classroom' field is empty. The 'Gold Master' field is set to 'PS-NoOSY'. The 'Display Name' field has the placeholder 'Enter display name'.

- d. Select appropriate **Snapshot** settings for this reservation: Defining if reservations should use any specific snapshot settings, following options are available
 - i. **Current State:** Reserved VMs will be created from current state of Gold Master
 - ii. **Use Gold Master Settings:** Reserved VMs will be created as per Gold Master Snapshot configurations
 - iii. **Choose a Snapshot:** Reserved VMs will be cloned from specified snapshot only
- e. Selection of course also auto-fills the field **Total VMs** count but can be changed as per requirement. which defines total number of VMs to be cloned from Gold Master for this reservation
 - i. **Total VMs**
 1. By default, it will be populated with the total number of RMS users added to the course i.e. Incharges, Assistants and Participants, but admin can choose to change the count as well.
 2. The reservation will deploy linked clones as per the given number only.

The screenshot shows the 'Clone From Snapshot' configuration panel. It includes radio buttons for 'Current State' (selected), 'Use Gold Master Setting', and 'Choose a Snapshot'. There are 'Select Snapshot' buttons for 'Browse' and 'Current State'. Below these is a 'Total VMs' input field containing the value '6'.

- f. **Allow Extensions:** On enabling option **Allow Extensions**, incharge during course reservation will be able to extend the reservation by certain time as specified in the configuration. The extensions will be limited to number specified in the course configurations. Following configurations are available for extensions:
 - i. **Extension Duration:** Duration of extension
 - ii. **No. of Times:** Allowed number of extensions after the course reservation e.g. 2, then it will allow the reservation to be extended twice with duration as extension duration.

- g. **Reuse VMs for each run of reservation:** Checkbox enables the reuse of provisioned VMs in every cycle of reservation, which means the provisioned VMs won't get deleted after the first cycle is completed. Unchecking this option will provision new VMs before every occurrence of this reservation

Allow Extensions

Extension Duration

No. of Times

Reuse VMs for each run of reservation

- h. **Assignment Life Span:** Defines the assignment life span for reservation. Available options are:
- Permanent:** User will be given the same desktop for all the schedules and all the occurrences of the reservation
 - Single Schedule:** User assignment will be limited to single occurrence and on completion of the schedule the assignment will be reset.

Assignment Life Span

Allow Connect

- Allow Connect Before Reservation Start:** The configuration allows the users to connect the reservation before the actual start time. By default, the setting is configured as zero which means the users will only be able to connect to VMs when reservation is running.
- Click on **Next** button to navigate to **Schedule** tab
 - Schedule** tab defines the date, time and pattern, when the VMs will be delivered to end users. In **Schedule** tab,
 - Define if reservation should be scheduled **One Time** or **Recurring**
 - For **One Time** schedule,
 - Schedule Code:** Provide a unique code for reservation. 3 character long supporting only alphanumeric characters e.g. a01.
 - Provide appropriate **Start Time/End Time**
 - Provide appropriate **Start Date/ End Date**

The screenshot shows two side-by-side reservation configuration forms. On the left, under 'One Time' mode, fields include 'Code' (OT1), 'Start Time' (19:55), 'End Time' (20:55), 'Start Date' (2018/02/19), and 'End Date' (2018/02/19). A red box highlights the '+ Add' button. An arrow points to the right, where the same fields are shown under 'Recurrence' mode. The 'Recurrence' section includes a 'Schedule List' pane containing a single entry: 'OT1' with start time '2018/02/19 20:00' and end time '20:55'. This entry is also highlighted with a red box.

ii. For **Recurring** schedule -> Define recurring pattern as daily or weekly

1. Daily Recurring Reservation

- Provide Course **Start Time** and **End Time**: On which reservation will run
- Select **Recurrence Pattern** as **Daily** and provide numeric value from 1-7 for field **Recur Every** (Recur every field will define the recurring schedule, e.g.
 - Recur every = 1, means the schedule will occur on daily basis
 - Recur every = 2, means the schedule will occur on alternate day
 - Recur every = 3, means the schedule will occur on every two days and so on

The screenshot shows the 'Recurrence' configuration for a reservation. It includes fields for 'Code' (R01), 'Start Time' (19:55), 'End Time' (20:55), and a 'Recurrence Pattern' section. In this section, the 'Daily' radio button is selected, and the 'Recur every' dropdown is set to '1 days'. A red box highlights the 'Daily' radio button and the 'Recur every' field.

- Select **Recurrence Range** (Start Date and End Date: schedule can also be defined to run infinitely with no End Date)

The screenshot shows the 'Range of Recurrence' configuration. It includes 'Start Date' (2018/02/19) and 'End Date' (2018/02/19) fields. The 'No end date' radio button is selected. A red box highlights the 'No end date' radio button and the 'End Date' field. Below these fields is a '+ Add' button.

2. **Weekly Recurring Schedule**

- Provide **Course Start Time** and **End Time**: On which reservation will run (**Duration** filed will be auto-calculated as per provided time range)
- Select **Recurrence Pattern** as **Weekly** and provide numeric value from 1-52 for field **Recur Every Week(s) (Recur every** field along with selected **Day** will define the recurring schedule, e.g.
 - For a weekly Monday reservation: Recur every = 1 and selected day will be Monday
 - For a bi-weekly Tuesday, Wednesday reservation: Recur every = 2 and selected day will be Tuesday and Wednesday

The screenshot shows a configuration interface for a recurring event. At the top, there are two radio buttons: 'One Time' (unchecked) and 'Recurrence' (checked). Below this are 'Start Time' and 'End Time' fields set to 19:55 and 20:55 respectively. Under 'Recurrence Pattern', the 'Weekly' option is selected. In the 'Recur every' section, the value '1' is entered, followed by 'week(s) on :'. A dropdown menu is open, listing the days of the week: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday. The 'Select' option at the top of the list is highlighted in blue.

- Select **Recurrence Range** (Start Date and End Date: schedule can also be defined to run infinitely with no End Date)

The screenshot shows a configuration interface for defining a recurrence range. It features a 'Range of Recurrence' header. Under 'Start Date', the value '2018/02/19' is shown with a calendar icon. Below it is a radio button for 'No end date' (unchecked). Under 'End Date', the value '2018/02/19' is shown with a calendar icon, and a radio button for 'End Date' (checked). At the bottom are two buttons: a blue '+' button and a purple 'Add' button.

- Once schedule is confirmed, click on **Add** button
- Add more schedules as per requirement e.g. if a reservation must run every week on Monday and Wednesday, then two weekly schedules should be added one for Monday and another one for Wednesday
- Proceed to next screen **Course Self-study Screen** using **Next** button. **Course Self-study** settings allows admin to enable/disable the course self-study for participants. If allowed, participants will be able to create self-study reservation after the course reservation. Following configurations are available:

- a. **Enable Course Self-study:** To allow course self-study for the course reservation
- b. **Maximum Units to be used:** The number of units to be allowed for self-study. (This can not be greater than **Total VMs** count in **Course Reservation** screen)
- c. **Max Duration:** Maximum allowed duration for which a participant can request for self-study.
- d. **Allow Extension:** Will be enabled only if extension is allowed for course. If checked, extensions will be allowed as per configurations of course. If unchecked, the extensions in course self-study won't be allowed irrespective of configuration in course.
- e. **Reservation Window:** If enabled, course self-study reservation will be allowed only in the defined timeslot and this should not be conflicting with the course reservation timing. If enabled, the start time and end time must be defined.

Access Policy	
Enable Course Self-study	<input checked="" type="checkbox"/>
Maximum Units to be Used	1
Max Duration	3:00
Allow Extension	<input type="checkbox"/>
Reservation Window	<input checked="" type="checkbox"/>
Start Time	9:40
End Time	12:39

12. Next three tabs are for viewing and editing RMS Users i.e. **Incharges**, **Assistants** and **Participants** respectively.
 - a. It displays the list of all RMS users
 - b. Incharges, assistants or participants cannot be removed from course in **Reservation** wizards, but they can be excluded by unchecking the undesired RMS user in respective tab
 - i. VMs are not created for excluded users and they won't be able to access any reserved VMs from the respective reservations.
13. Click on **Next** button on **Participants** tab to go to **Access Policy** tab
14. In **Access Policy** screen, following configurations can be done, select appropriate options
 - a. **Inherit Access Policy from Gold Master:** Use same access policies as Gold Master
 - b. **Choose Access Policy:** Selecting this option, enables administrators to remove Client Groups which are already added at Gold Master level. Which means reservations can not reduce the security level by adding new client groups and they can only further restrict the access by removing client groups from Gold Master.
15. Click on **Save** button to save configured reservation. All configurations are completed and now HyLabs will deploy and deliver reservation as per schedules.

Self-study Reservation by Reservation Admin

Self-study reservations can be created on-demand by reservation admin for specific participants using specific self-study gold master.

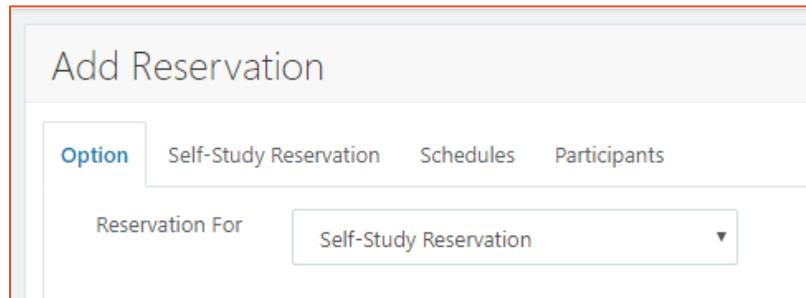
❖ Prerequisites for Creation of Reservation

- Self-study Gold Master is imported into RMS

❖ Reservation Creation Process

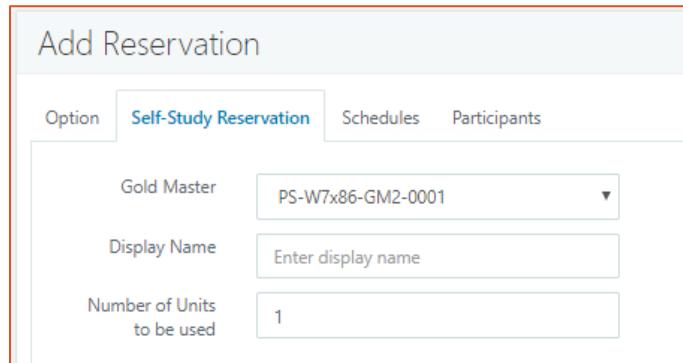
Follow the below steps to create self-study reservation:

1. Login as reservation admin and go to **Reservations** page
2. Click on button **Add New Reservation** -> **Add Reservation** wizard will be invoked
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Self-study Reservation**



The screenshot shows the 'Add Reservation' interface. At the top, there's a title 'Add Reservation'. Below it is a tab navigation bar with four tabs: 'Option' (which is highlighted in blue), 'Self-Study Reservation', 'Schedules', and 'Participants'. Under the 'Option' tab, there's a section labeled 'Reservation For' with a dropdown menu. The dropdown menu is open, and the option 'Self-Study Reservation' is selected. A small downward arrow icon is at the end of the dropdown menu.

- b. Click on **Next** button to navigate to **Self-study Reservation** tab
- c. In **Self-study Reservation** tab
 - i. Select the gold master to be used for this self-study reservation
 - ii. Provide appropriate **Display Name** for reservation (Whether to show system generated reservation name, admin provided display name, classroom name is set in **Default Reservation Settings**)
 - iii. Provide the count of reserved VMs to be created for this self-study reservation in field **Number of Units to be used**



The screenshot shows the 'Add Reservation' interface with the 'Self-Study Reservation' tab selected. The tab navigation bar at the top is now showing 'Self-Study Reservation' in blue. Below the tabs, there are three main input fields. The first field is 'Gold Master' with a dropdown menu showing 'PS-W7x86-GM2-0001'. The second field is 'Display Name' with a text input box containing the placeholder 'Enter display name'. The third field is 'Number of Units to be used' with a text input box containing the number '1'.

- d. Click on **Next** button to navigate to **Schedule** tab
- e. In **Schedule** tab,

- i. Appropriate **Date** for the reservation
- ii. Appropriate **Start** and **End time**
- iii. **Allow Extensions:** On enabling option **Allow Extensions**, incharge during course reservation will be able to extend the reservation by certain time as specified in the configuration. The extensions will be limited to number specified in the course configurations. Following configurations are available for extensions:
 - iv. **Extension Duration:** Duration of extension
 - v. **No. of Times:** Allowed number of extensions after the course reservation e.g. 2, then it will allow the reservation to be extended twice with duration as extension duration.

The screenshot shows the 'Add Reservation' screen with a red border around the 'Schedules' tab. The 'Schedules' tab is active, indicated by a blue background and white text. Below the tabs, there are several input fields: 'Start Time' set to 19:40 with a clock icon; 'End Time' set to 20:39 with a clock icon; 'Date' set to 2018/02/22 with a calendar icon; 'Allow Extensions' checked with a blue checkmark; 'Extension Duration' set to '15 Minutes' with a dropdown arrow; and 'No. of Times' set to '1' with a dropdown arrow. The entire form is contained within a light gray box.

- f. Click on **Next** button to navigate to the **Participants** screen
- g. On **Participants** screen,
 - i. Click on **Add Participants** button -> **Participants** dialog will be invoked
 - ii. Search and add users from authorization server as participant for this course.
- h. Click on **Save** button on **Participants** tab to schedule the reservation.
- i. Reservation will be scheduled, and participants will be able to access the reservation on scheduled time.

Modifying Existing Reservation

Administrators can also edit any existing reservations depending on the status of the reservation. This section will have details for editing existing reservations:

Modify an Expired Reservation

Expired reservations can only be deleted from RMS and modification is not possible for expired reservation.

Modify a Preparing Reservation

Modification is not possible for reservation under preparation and preparing reservations can only be deleted from RMS.

Modify a Running Reservation

It is possible to modify a running reservation, but only certain attributes will be modifiable and only few of them will take effect in reservation duration, to modify a running reservation follow the below steps:

1. Select the reservation with **Current Status** as **Running**
2. Click on **Edit Reservation** button
3. **Edit Reservation** wizard will get opened:
 - a. **Option** tab – **Reservation For** field is not editable
 - b. **Course Reservation** tab
 - i. **Course, Classroom and Gold Master** fields are not editable
 - ii. **Display Name** can be modified and will require users to re-login for new settings to take effect
 - iii. **Reuse VMs for each run of reservation** editable, select or unselect to modify. As per changes, reserved VMs can be made volatile or non-volatile. See details in later section of this document.
 - iv. **Snapshot Settings:** Changing snapshot settings from its old configuration can populate following options:
 1. **Redeploy Now** or **Redeploy on next Schedule**.
 - c. Use any of these options, redeployment will happen as per deployment settings.
 - d. **Schedule** tab
 - i. Schedule is not modifiable as reservation is running
 - ii. Extension can be modified to allow extensions during the reservation itself; but the changes will come into effect in the next schedule
 - e. Next three tabs can be used to modify the associated RMS users and like reservation creation process,
 - i. Already added incharges, participants, assistants cannot be removed but can be excluded/included
 - ii. Though exclusion should not affect VM creation or deletion.

Modify a Scheduled (Not Running) Reservation

Not running reservations modifications enables modifications of multiple fields. Follow the below steps to modify the not running reservations:

1. Select the reservation with **Current Status** as **Not Running**
2. Click on **Edit Reservation** button
3. **Edit Reservation** wizard will get opened:
 - a. **Option** tab – **Reservation For** field is not editable
 - b. **Course Reservation** tab
 - i. **Course, Classroom and Gold Master** fields are not editable
 - ii. **Reuse VMs for each run of reservation** editable, select or unselect to modify
 - iii. **Automatically delete VMs after reservation as expired:** To be removed as per new wizard
 - c. **Schedule** tab
 - i. Reservation admin can simply change the schedule of the reservation and reservation will get started as per the new schedule

- ii. Extension can be modified to allow extensions during the reservation itself
- d. Next three tabs can be used to modify the associated RMS users and like reservation creation process,
 - i. Already added incharges, participants, assistants cannot be removed but can be excluded/included
 - ii. Exclusion should not affect VM creation or deletion.

Cancelling Reservations

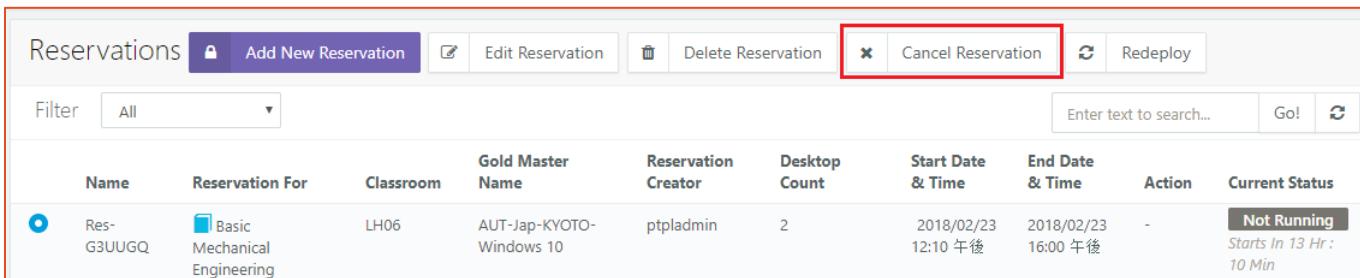
Reservation admin or incharge users will be able to cancel a reservation. Following two types of cancellation flows can be used:

1. Cancelling Whole Series
2. Cancelling current occurrence

Cancelling Whole Series

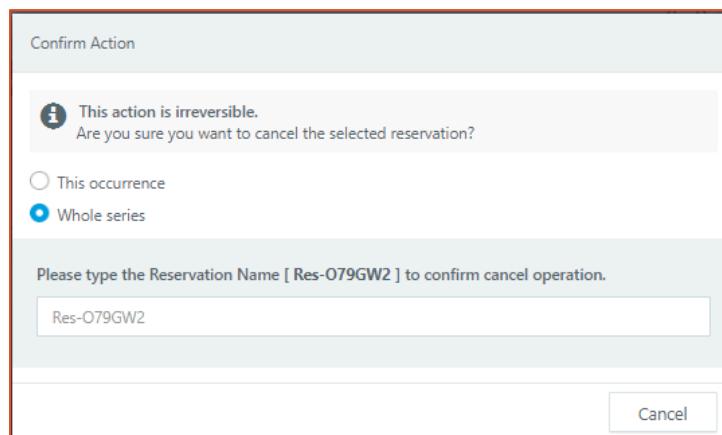
To cancel the whole series of reservation, follow the below steps:

1. Select the reservation to be cancelled
2. Click on **Cancel** button

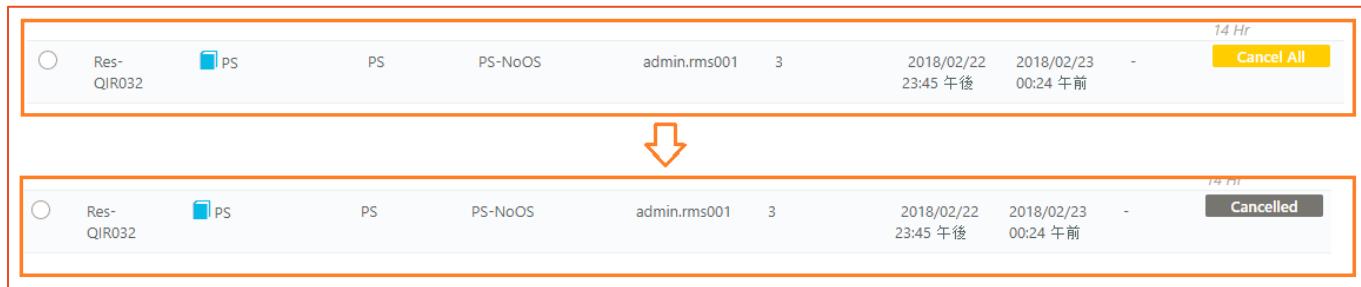


Reservations									
		Add New Reservation		Edit Reservation	Delete Reservation	x	Cancel Reservation	Redeploy	
Filter		All	Enter text to search... Go!						
Name	Reservation For	Classroom	Gold Master Name	Reservation Creator	Desktop Count	Start Date & Time	End Date & Time	Action	Current Status
Res-G3UUGQ	Basic Mechanical Engineering	LH06	AUT-Jap-KYOTO-Windows 10	ptpladmin	2	2018/02/23 12:10 午後	2018/02/23 16:00 午後	-	Not Running Starts In 13 Hr : 10 Min

3. Dialog will be presented to cancel the whole series or this occurrence
 - a. Select option **Whole Series**



4. Click on **OK** button
5. Reservation will first go into **Cancelling** state and then will be shown **Cancelled**. The flow will be explained in the next section of the document.



Whole Series Cancellation Flow

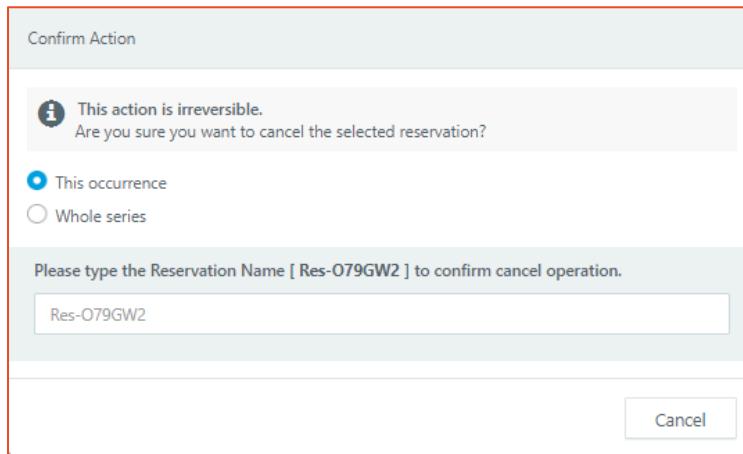
1. Not Running (Scheduled Reservations):
 - a. Reservation will go into cancelled state and will never be deployed.
2. Running Reservations:
 - a. Reservation will go into cancelling state
 - b. All deployed VMs and replica will be deleted
 - c. Reservation will go into cancelled state
 - d. None of the participants will be able to use the reservation.
 - e. Future occurrences will not run.
3. Reservations with completed occurrences (Deployed but not running)
 - a. Reservation will go into cancelling state
 - b. All deployed VMs and replica will be deleted
 - c. Reservation will go into cancelled state
 - d. Future occurrence will not run
4. Preparing Reservations
 - a. Controller will first create job for cancelling the preparing reservations
 - b. It will wait for the running deployment/preparing job
 - c. On completion, all deployed VMs and replica will be deleted
 - d. Reservation will go into cancelled state
 - e. Future occurrence will not run

Cancelling This Occurrence

1. Select the reservation to be cancelled
2. Click on **Cancel** button

Reservations										
Add New Reservation Edit Reservation Delete Reservation Cancel Reservation Redeploy										
Filter All Enter text to search... Go! 										
Name	Reservation For	Classroom	Gold Master Name	Reservation Creator	Desktop Count	Start Date & Time	End Date & Time	Action	Current Status	
<input checked="" type="radio"/>	Res-G3UUGQ		LH06	AUT-Jap-KYOTO-Windows 10	ptpladmin	2	2018/02/23 12:10 午後	2018/02/23 16:00 午後	-	Not Running Starts In 13 Hr : 10 Min

3. Dialog will be presented to cancel the whole series or this occurrence
 - a. Select option **This Occurrence**



4. Click on **OK** button
5. Reservation will first go into cancelling mode and then will be shown Cancelled. The flow will be explained in the next section of the document.

This Occurrence Cancellation Flow

The flow of cancellation of this occurrence will follow different flows for volatile and non-volatile reservations:

Cancellation flow for Non-volatile Reservations

Non-volatile reservations referred to as for the reservations which reuses the VMs for all occurrences and VMs are preserved on occurrence completion. While deleting the single occurrence of non-volatile reservations following flow will be used:

1. Not Running (Scheduled Reservations):
 - a. Reservation will go into cancelled state and next occurrence will not be started.
2. Running Reservations:
 - a. Reservation will go into Cancelling state
 - b. All VMs will be powered off
 - c. Reservation status will get changed to cancelled and RMS users will not be able to use the current occurrence
 - d. On next occurrence, it will run as expected.
3. Reservations with completed occurrences:
 - a. Reservation will go into cancelled state and next occurrence will not be started.
 - b. Future occurrences will continue to work as expected.
4. Reservation with Preparing State:
 - a. Controller will first create job for cancelling the preparing reservations
 - b. It will wait for the running deployment/preparing job
 - c. All deployed VMs will be turned-off and remaining VMs will not be deployed any more.

- d. Next reservation will not start, and future occurrences will work as expected with already created VMs.

Note:

- if VMs are powered off (due to cancellation) when Sysprep is in progress, the VMs may get corrupted and may not recovered.

Cancellation flow for Volatile Reservations

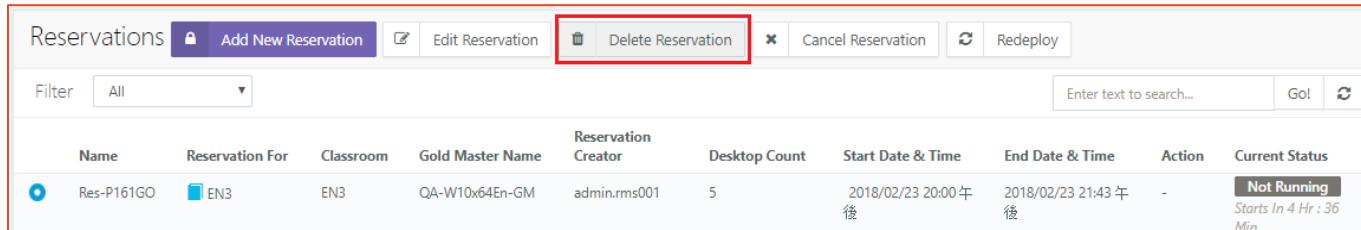
Volatile reservations refer to the reservations where VMs will be deleted after the reservation and for next cycle of reservations fresh VMs will be created. While cancelling next occurrence of volatile reservation following flow will be used:

1. Not Running (Scheduled Reservations):
 - a. Reservation will go into cancelled state and next occurrence will not be started.
2. Running Reservations:
 - a. Reservation will go into Cancelling state
 - b. All VMs will be powered off and will be deleted
 - c. Reservation status will get changed to cancelled and RMS users will not be able to use the current occurrence
 - d. On next occurrence, it will run as expected.
3. Reservations with completed occurrences:
 - a. Reservation will go into cancelled state and next occurrence will not be started.
 - b. Future occurrences will continue to work as expected.
4. Reservation with Preparing State:
 - a. Controller will first create job for cancelling the preparing reservations
 - b. It will wait for the running deployment/preparing job
 - c. All deployed VMs will be turned-off and remaining VMs will not be deployed any more.
 - d. Next reservation will not run as cancelled
 - e. Future occurrence will work as expected with already created VMs.

Deleting Reservations

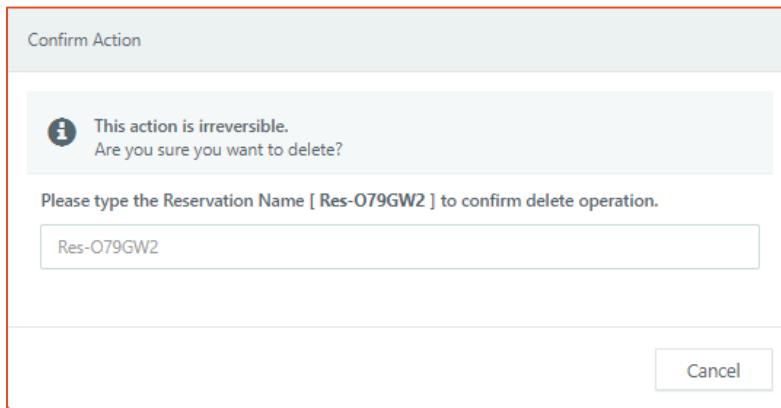
Deleting a reservation, removes the reservation configuration from RMS and deletes the associated VMs and replica from session provider as well. To delete a reservation, follow the below steps:

1. Select the reservation to be deleted
2. Click on **Delete Reservation** button



Name	Reservation For	Classroom	Gold Master Name	Reservation Creator	Desktop Count	Start Date & Time	End Date & Time	Action	Current Status
Res-P161GO	EN3	EN3	QA-W10x64En-GM	admin.rms001	5	2018/02/23 20:00 午後	2018/02/23 21:43 午後	-	Not Running Starts In 4 Hr : 36 Min

3. Confirm the action by clicking on **Delete** button on **Confirm Action** dialog



4. Reservation will be removed from RMS and will be having following impact:
- a. Scheduled (Not Deployed) Reservation:
 - i. Will be removed from RMS and will not be deployed in future.
 - b. Scheduled (Deployed) Reservations:
 - i. All associated VMs will be deleted from provider
 - ii. Reservation will be removed from RMS
 - iii. Reservation will not be deployed in future.
 - c. Running reservations:
 - i. All associated VMs will be powered off and will be deleted from provider.
 - ii. Reservation will be removed from RMS and no future occurrences will occur.
 - d. Preparing Reservation:
 - i. Delete operation is not available on reservations with **Preparing** state
 - e. Expired Reservation:
 - i. Reservation will be removed from RMS (All associated VMs are already deleted on reservation expiry)

Deployment Options for Reservations

Multiple deployment options are supported with HyLabs to enable administrators run labs smoothly and as automatically as they can.

HyLabs provides following deployment options for labs:

- o **Deploy Now:** To start the deployment immediately
- o **Redeploy Now:** To redeploy whole reservation immediately
- o **Deploy More:** To deploy more VMs immediately
- o **Reduce Count:** To delete VMs from existing deployed reservations
- o **Fix Reservation:** To fix erroneous reserved VMs in running reservations
- o **Retry:** To re-attempt deployment for failed reservations

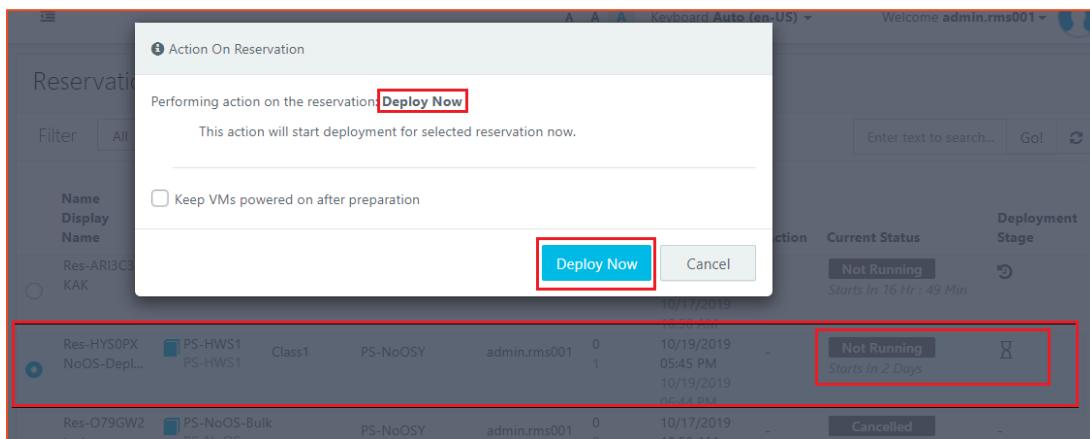
Detailed information about each of these operations will be provided in this section.

Immediately Deploy Reservations using **Deploy Now**

When reservation is created, they are not deployed immediately and, in some cases, administrator may need to deploy reservations in advance. For such use case, HyLabs enables administrator to deploy reservations immediately.

Reservation in following state will show option Deploy Now:

- Deployment Pending (See below screenshot for reference)



For any reservation having deployment pending and administrator can follow below steps to deploy reservation immediately:

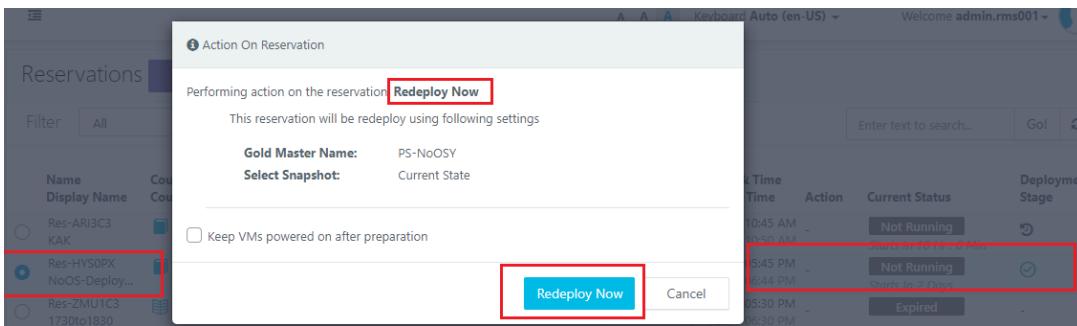
1. Login as reservation admin and go to **Reservations** page
2. Select reservation to be deployed (Must be in **Not Running** and **Deployment Pending state**)
3. Click on button **Deploy**
4. **Action on Reservation** dialog will open, displaying that reservation can use function Deploy Now
5. Select checkbox **Keep VMs powered on after preparation**: If reserved VMs should be kept powered on after reservation is deployed until next schedule comes
6. Click on button **Deploy Now**
7. Reservation will go into preparing state and will be deployed immediately
 - a. Reserved VMs will be kept powered on as per selection of option **Keep VMs powered on after preparation**

Redeploy Reservation Immediately using Redeploy Now

In some cases, administrator wants to initiate redeployment of reservation immediately and below steps can be used to redeploy reservations immediately

Reservation in following state will show option Redeploy Now:

- Not Running and already deployed



For a deployed reservation, currently in not running state, administrator can redeploy it using below steps:

1. Login as reservation admin and go to **Reservations** page
2. Select reservation to be deployed (Must be in **Not Running** and **deployed**)
3. Click on button **Deploy**
4. **Action on Reservation** dialog will open, displaying that reservation can use function **Redeploy Now**
5. Select checkbox **Keep VMs powered on after preparation**: If reserved VMs should be kept powered on after reservation is deployed until next schedule comes
6. Click on button **Redeploy Now**
7. Reservation will go into **Redeploying** state and will be redeployed immediately
 - a. Reserved VMs will be kept powered on as per selection of option **Keep VMs powered on after preparation**

Deploying More DVMs as per increased count of total VMs

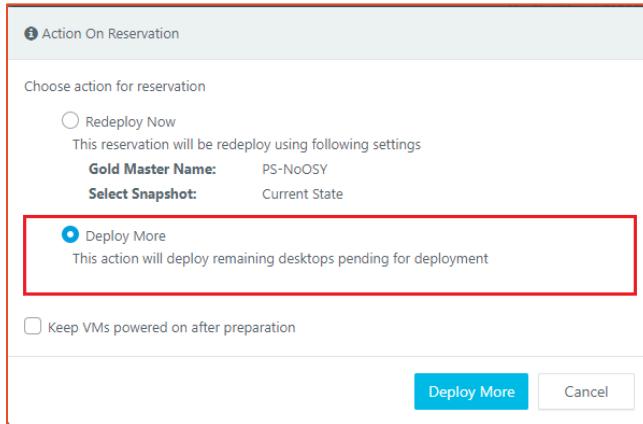
Sometime, administrator wants to increase the count of total VMs in a reservation and deploy additional VMs. For any such cases administrator can use option to deploy more.

Eligible Reservation for Deploy More

- Total VMs count - **Increased**
- Reservation is **Not running and deployed**

Use below steps to deploy additional VMs:

1. Login as reservation admin and go to **Reservations** page
2. Modify not running reservation and increase the count as per requirement
3. Select reservation and Click on button **Deploy**
4. **Action on Reservation** dialog will open, displaying that reservation can use function **Redeploy Now** and **Deploy More** -> Select option **Deploy More**



5. Select checkbox **Keep VMs powered on after preparation**: If reserved VMs should be kept powered on after reservation is deployed until next schedule comes
6. Click on button **Deploy More**
7. Reservation will go into **Preparing** state and will be deploy additional VMs as per new count
 - a. Deployed VMs will be kept powered on as per selection of option **Keep VMs powered on after preparation**

❖ Additional DVMs Deployment in normal condition

If administrator does not initiate **Deploy More** action, then additional VMs will get deployed as per preparation time of next schedule.

Sometimes preparation time is not enough to deploy VMs as per increased count and VMs may not get prepared on-time. Administrators can use **Deploy More** option to initiate immediate deployment of additional DVMs.

Remove Deployed VMs from Reservations

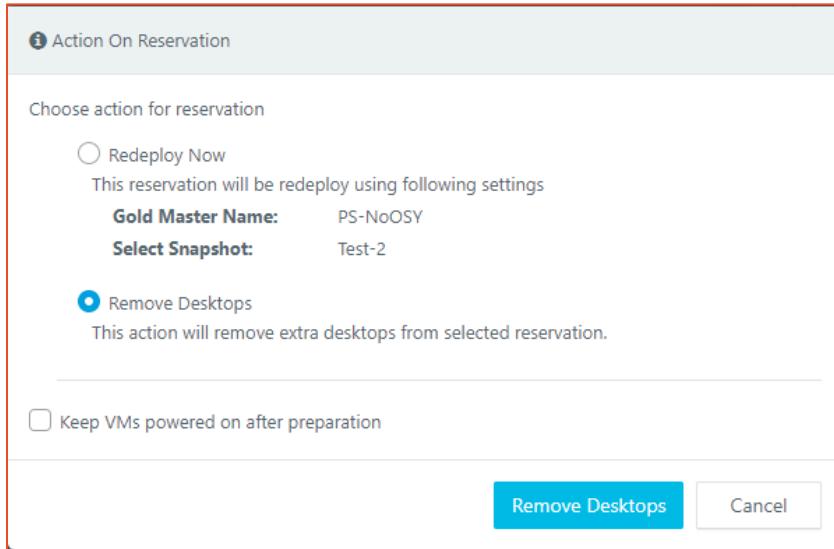
Sometime, administrator wants to reduce the count of total VMs in a reservation and delete additional VMs. For any such cases administrator can use option to **Remove Desktops**.

Eligible Reservation for Deploy More

- Total VMs count - **Reduced**
- Reservation is **Not running and deployed**

Use below steps to delete additional VMs:

1. Login as reservation admin and go to **Reservations** page
2. Modify not running reservation and reduce the count as per requirement
3. Select reservation and Click on button **Deploy**
4. **Action on Reservation** dialog will open, displaying that reservation can use function **Redeploy Now** and **Remove Desktops** -> Select option **Remove Desktops**



5. Select checkbox **Keep VMs powered on after preparation**: Option is not valid for removing desktops and will not have any impact
6. Click on button **Remove Desktops**
7. HyLabs will remove additional VMs as per new count. Desktop removal mechanism can be set from **Default Reservation Settings** as described below:
 - a. **Remove unassigned desktops only**: Remove only unassigned desktops even if it does not remove number desktops as desired.
 - b. **Remove unassigned desktops first**: HyLabs will first delete the free desktops and then will remove assigned desktops. Selecting this option makes sure that desktop count matches as needed.
 - c. **Any Desktops**: HyLabs will randomly delete desktops without checking if its assigned or unassigned.

Fix Reservation

Fix Reservation option appears for **Running** reservations on meeting following conditions:

1. Reservation has been updated in running condition and count has been increased
2. Reserved VMs in reservation is not in powered on state or HyWorks DVM Agent as not responding – one or more reserved VMs in reservation

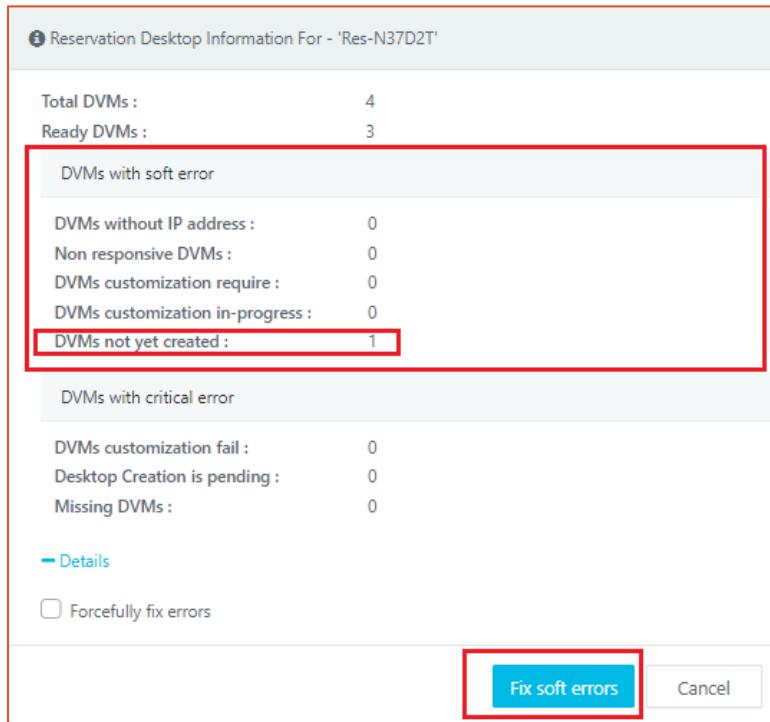
Case# 1: Increase VM count for running reservations

In this case, reservation status will be shown with **red** background to seek administrator's attention (Usually running reservations are shown with green background in case of no error conditions)

The table shows a list of reservations. The columns are: Name, Display Name, Course Name, Course Code, Classroom, Gold Master, Reservation Creator, Ready VMs, Total VMs, Start Date & Time, End Date & Time, Action, Current Status, and Deployment Stage. Two rows are highlighted with red backgrounds for the "Current Status" column.

Name Display Name	Course Name Course Code	Classroom	Gold Master	Reservation Creator	Ready VMs Total VMs	Start Date & Time	End Date & Time	Action	Current Status	Deployment Stage
Res-N37D2T testx	PS-HWS1 PS-HWS1	Class1	PS-W7x66	admin.rms001	3 4	10/16/2019 11:15 PM	10/16/2019 11:50 PM		Running Ends In 0 Hr : 25 Min	Green
Res-HYSOPX NoOS-Deploy...	PS-HWS1 PS-HWS1	Class1	PS-NoOSY	admin.rms001	0 4	10/16/2019 11:08 PM	10/17/2019 12:04 AM		Running Ends In 0 Hr : 39 Min	Green

For running reservations, button will be displayed as **Fix Reservation**. Clicking on **Fix Reservation** button will show **Reservation Desktop Information** dialog, having all detailed information of reservation deployment:



As above screenshot suggests, the reservation status is shown as red (running with error), because few DVMs deployment is not completed and it can be fixed simply by clicking on button **Fix Soft Errors**.

Fix Soft Errors will simply create desktops pending for creation and reservation status will become green again. This is a normal case for reservation administrators to increase the count of total VMs in running reservations.

Case# 2: Reservation is running with errors

Fix reservation feature allows RMS administrator to fix the state of reservation which has some VMs in not ready state. Fix reservation function is applicable for reservations that are in running state.

When Fix Reservation button appears:

Fix reservation is applicable only for reservations that are in running state. Fix reservation button will be displayed for running reservations when Ready VM count is less than Total VM indicating that some VMs are not ready for connection.

Fix reservation option is not displayed for reservation in preparing or not running or in other states

Error Categorization:

There are multiple reasons why a VM is not in state ready for connection. These states are divided into 2 categories:

- ❖ Soft Errors
- ❖ Critical Errors

❖ Soft Errors

- DVMs without IP address
- Non-responsive DVMs
- DVMs customization require
- DVMs customization in-progress

- DVMs not yet created
- ❖ Critical errors
 - DVMs customization fail
 - Desktop Creation is pending
 - Missing DVMs

Critical errors can be fixed by recreating the VM.

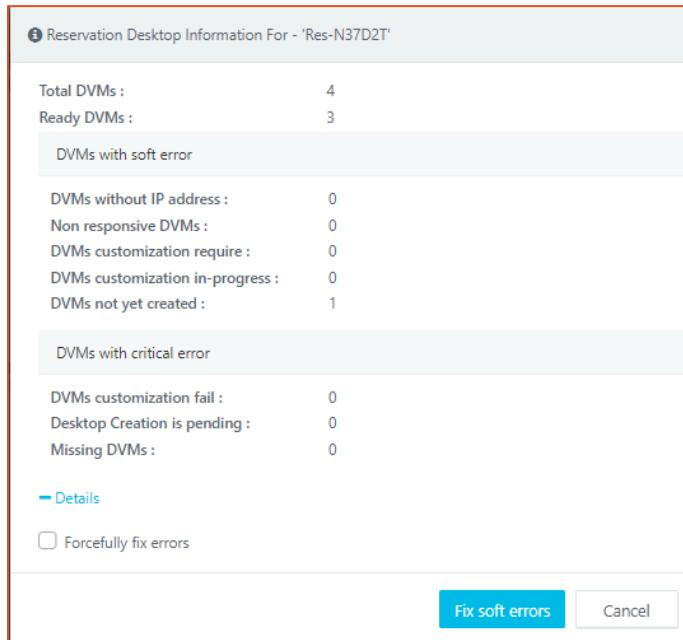
Available Details:

When a reservation has Ready VMs less than Total VMs, RMS will consider the reservation has problems. This state is called as **Reservation Running with Error**

It is displayed as below. ON hovering mouse over it will display count of desktops that are not ready to connect

		fix	QA_WIN8-rc6	rmsadmin2	0 7	2018/08/03 02:45 午後 2018/08/03 03:05 午後	-		Running	
~		Self-connect			0	2018/08/01 10:30 午後			7 desktops are not ready to connect	

1. If reservation has errors, then select the reservation it will show **Fix Reservation** button.
2. Click on **Fix Reservation** button
3. A modal popup will be opened which will show Error details in mini mode
4. When clicked on "+Details" it will display details information about soft and critical errors i.e. how many DVMs are running with Soft errors and how many DVMs are running with Critical errors



Reservation fixing options: Reservation fixing has 2 options

1. Fix soft Errors
2. Forcefully Fix Errors

Following actions are done for above specified error conditions:

- **Powered Off VMs:** If a VM is found powered off during fix reservation operation then send power-on command for VM.
- **Non-responsive VMs :** Non-responsive VMs are VMs having IP address but Desktop agent in not responding state.
 - Send a call to refresh desktop agent status and wait for specified time.
 - If agent is still not responding after specified time, then restart VM
- **VMs without IP address:** These are VMs not having IP address
 - Send Desktop refresh call to session provider and wait for specified time
 - If IP is now present, then send a call to refresh desktop agent status and wait for specified time
 - If agent still not responding, then restart VM
- **VMs with customization required:** These are VMs with customization required flag as true.
- **VMs with customization in progress** These are VMs with customization in progress
- **VMs with customization fail :** These are VMs with Sysprep status as failed
- **Missing VMs :** VMs that are in missing state

Fix Soft Errors:

1. Select reservation running with errors and Click on **Fix Reservation**.
2. Click on **Fix Soft Errors**
3. This will start desktop fix operation for VMs having soft errors only. Fix action is taken depending on above mentioned steps

Forcefully Fix Errors:

1. On fix reservation modal, check **Forcefully fix errors** and click on button **Fix all errors**
2. If this option is checked and desktop issue is not fixed, then it will re-create desktop or if desktop is not created/ missing state then directly recreate

Note:

If fix reservation process is already in running state, then another fix reservation operation cannot be initiated
In this case below popup is displayed

Retry for reservations with failed status

In some rare cases, when reservation deployment is failed which means that HyLabs has failed to deploy number of intended VMs then selecting such reservation will show option to retry the deployment or redeploy.

- **Retry:** Retry will try to deploy all VMs remaining
- **Redeploy:** It will delete all deployed VMs and will attempt to recreate them

Expired/ Cancelled Reservations Clean-up

HyLabs or RMS deletes expired or cancelled reservations automatically in a periodic manner.

Default configuration is to delete expired/ cancelled reservation after **5** days and can be changed by HyWorks Super-administrator from **HyWorks Management Console -> System -> Advanced Settings -> Purge Reservations**

Reserved VMs

Reserved VMs section will be available to reservation admin only. Showing the list of all reserved VMs being created as part reservations. Following information is displayed for reserved VMs:

Reserved VMs							
<input type="text" value="Enter text to search..."/> <input type="button" value="Go!"/> <input type="button" value="Reset"/>							
VM Name	Gold Master Name	Reservation Name	Reservation For	Course Code	Classroom	Assign To	Power State
 AUT-Jap-KYOTO-Windows 8-Res-Y66KNG-1	AUT-Jap-KYOTO-Windows 8	Res-Y66KNG	UbuntuOpenSource	L46	-	nand	

Column Name	Description	Sortable	Searchable
VM Name	Name of reserved VM	Yes	Yes
Gold Master Name	Name of the gold master (from which the reserved VM has been created)	Yes	Yes
Reservation Name	Name of the reservation with which this VM is associated	Yes	Yes
Reservation For	Name of the course with which reserved is associated	Yes	No
Course Code	Course code as specified during course creation	Yes	Yes
Classroom	Classroom name as specified during course creation	No	No
Power State	Current power state of the reserved VM	No	No

Power Operations on Reserved VMs

Following power operations are available on reserved VMs:

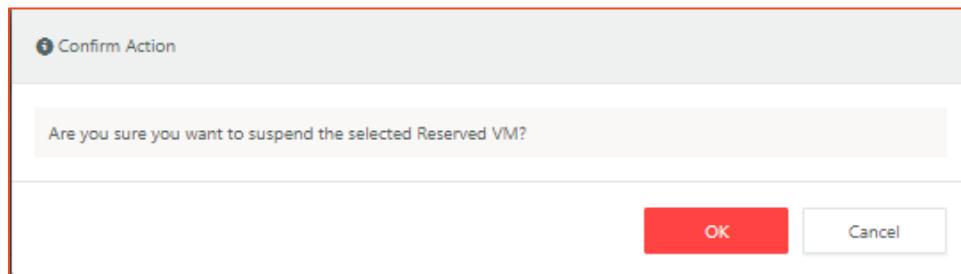
1. Desktop is in Power Off State: Following power operation will be enabled:
 - a. Power On
2. Desktop is already in powered On State: Following power operation will be enabled:
 - a. Power Off
 - b. Shutdown
 - c. Restart
 - d. Suspend
3. Desktop is in Suspended State: Following power operation will be enabled:
 - a. Resume

To perform any power operation on reserved VM, follow the below steps:

1. Select the reserved VM
2. Based on its current power state appropriate power operations will be displayed (e.g. Desktop is in Power on State and thus Power Off, Shutdown, Reboot and Suspend buttons will be displayed)

Reserved VMs		Power Off		Shut down		Suspend		Restart
VM Name	Gold Master Name			Reservation Name		Reservation For		
AUT-Jap-KYOTO-Windows 8-Res-Y66KNG-1	AUT-Jap-KYOTO-Windows 8			Res-Y66KNG		UbuntuOpenSource		

3. Click on button as per required power operations e.g. Suspend
4. Click on **OK** button on Confirm Action dialog box (if displayed, based on the initiated operation) to continue performing operation



5. Power operation will be initiated by HyWorks Controller and will be forwarded to Dedicated Session Provider, meanwhile wait dialog will be displayed
 - a. Please wait until the operation is completed; the dialog will be dismissed automatically
Or
 - b. Click on **OK** button to dismiss the dialog, the task will be completed, and desktop's status will be updated automatically.
6. Power operation will be performed and on refresh will display the updated power state of the reserved VM.

Configurations

Provisioning Profile

Provisioning profile in RMS defines following attributes of a reservation:

1. While creating reservations, how the provisioned VMs will be customized
2. Deployment Configurations: Defining the datastore and resource pool locations for provisioned VMs to be created for reservation
3. Advanced desktop pool configurations specifying special configurations (if needed)

For any gold master to be used in RMS, one customization profile must be associated so whenever reservations are created, the customization will be done using specified profile.

Default Provisioning Profile

- By default, there are no provisioning profile available in HyLabs, but every dedicated session provider must have one **default** provisioning profile so that any gold master can be used to provision new VMs for reservations.
- If no provisioning profile exists, then gold master will not get imported and this applies to both types of mechanism i.e. using CSV import or added from RMS admin portal.
- When multiple provisioning profiles exist, then **Default** provisioning profile will be used while importing (if provisioning profile information is not used)

Add Provisioning Profile

To add a provisioning profile, follow the below steps:

1. Go to Configurations – Provisioning Profile
2. Click on **Add** button

Name	Session provider
PS-NOOS	VCA
Windows7-PS	VCA

3. In **Add Provisioning Profile** wizard

- a. In **Basic Info** tab
 - i. Provide **Profile Name**
 - ii. Select Connection profile to be used (Selected connection profile will get applied to all reservations deployed from Gold Master using this provisioning profile)
 - iii. Select checkbox **Default** – to make the profile as default

The screenshot shows the 'Add Provisioning Profile' dialog box. The 'Basic Info' tab is active. The 'Profile Name' field contains 'Test'. The 'Connection Profiles' dropdown is set to 'None'. The 'Default' checkbox is unchecked.

- b. Click on **Next** button to go to **Deployment** tab. In **Deployment** tab,
 - i. Select **Session Provider** to which this provisioning profile will be applied

Add Provisioning Profile

Basic Info Deployment Customization Advance

Session Provider* Select Provider ▾

Replica VM Deployment Settings :

Store Default

Pool Default

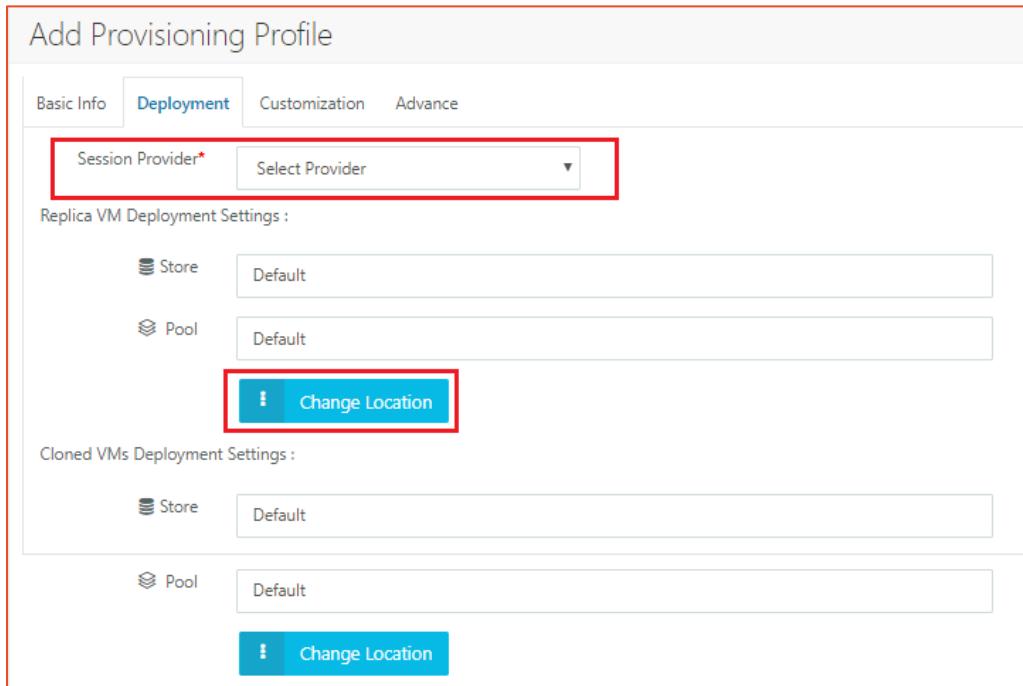
Change Location

Cloned VMs Deployment Settings :

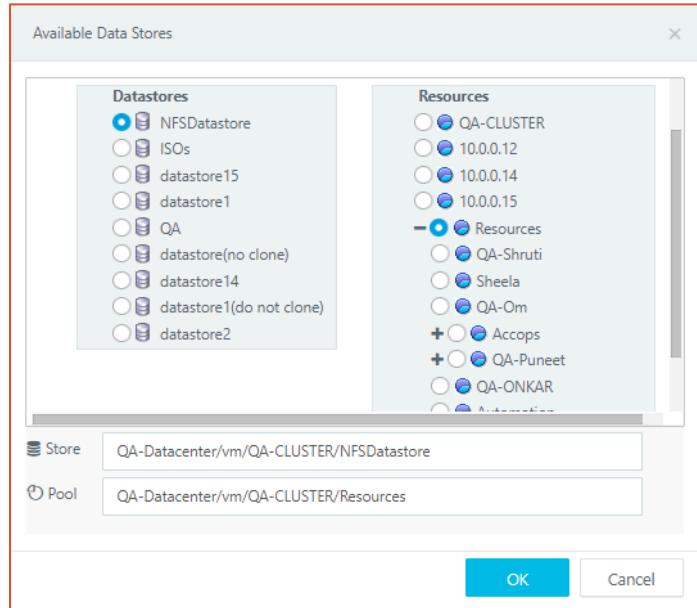
Store Default

Pool Default

Change Location



- ii. For deployment, two sections are available to set datastore and resource pool configurations for
 1. Replica VM: Defining the datastore and resource pool, where the replica VM will be placed while creating reservations
 2. Cloned VM Deployment Settings: Defining the datastore and resource pool, where the Cloned VMs will be placed while creating reservations
- iii. To change deployment, deployment configuration of **Replica VM** – click on **Change Location** button shown in the section **Replica VM Deployment Settings**
 1. It will display **Available Datastore** dialog, with option to select resource pool and datastore
 - a. Expand the respective option to select appropriate datastore and resource pool



- iv. Repeat the above step for configuring the **Cloned VM Deployment Settings** as well
- 4. Once **Session Provider**, **Replica VM Deployment Settings** and **Cloned VM Deployment Settings** are configured, click on **Next** button
- 5. Next **Tab** is **Customization**, which defines the cloned VMs customization behavior. E.g. if an organization wants all the cloned VMs to join domain then such configurations can be set in **Customization** section of **Provisioning Profile**. In **Customization** tab
 - a. **Owner Name:** Owner name of the Desktop (Optional)
 - b. **Organization Name:** Organization name of the Desktop (Optional)

- c. **Computer Name:** 4-character computer name prefix can be specified. For maintaining uniqueness, HyLabs automatically appends reservation Id (Dynamically generated during reservation creation) and number. e.g. if Computer name prefix is set as ITW8 then actual computer name to be set will be ITW8-ResId-0001
- d. **Local Username:** The new local user to be created on new Desktop. (Optional)

Note:

- If leaving Local Username field blank then, it should be made sure that at least one local admin (other than Administrator) user is already available on gold image, because post Sysprep administrator user gets disabled and could lead to configuration with no local administrator.

e. **Local Password:** Password to be set for new local user (* Mandatory field if local username is provided)

f. **Workgroup/ Domain Configurations:**

- i. **Join a workgroup** is selected by default and requires entries in Workgroup textbox

The screenshot shows a configuration interface for joining a workgroup. At the top, there is a radio button labeled "Join a Workgroup". Below it is a text input field containing the value "Test".

ii. **Join a Domain:** If new Desktops need to be joined to existing Domain then this option can be selected while enable following fields:

1. Domain Name: e.g. propalmsnetwork.com (* Mandatory if Join a domain combo box is selected)
2. Username: User with privileges to join a machine to domain e.g. domain admin user (* Mandatory if Join a domain combo box is selected)
3. Password and Confirm Domain Password: Password for domain admin user (* Mandatory if Join a domain combo box is selected)

The screenshot shows a configuration interface for joining a domain. It includes the following fields:

- Domain Name: A text input field.
- Username: A text input field.
- Password: A text input field.
- Confirm Domain Password: A text input field.
- Preferred DNS - Specify preferred DNS entry to be configured post provisioning.: A text input field.
- Alternate DNS - Specify alternate DNS entry to be configured post provisioning.: A text input field.
- AD Path: A text input field.

At the bottom, there is a note: "Example Path: OU=SpecificOU, DC=example, DC=com".

g. **DNS Configurations:**

i. **Preferred DNS:** Preferred DNS to be configured in network settings (Optional)

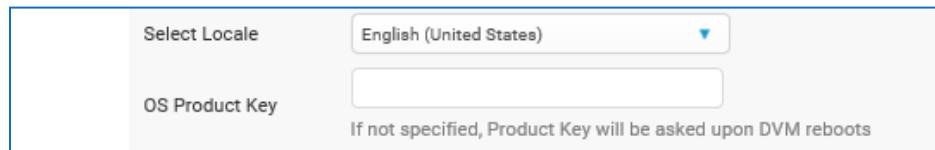
ii. **Alternate DNS:** Alternate DNS to be configured in network settings (Optional)

h. **AD Path:** Full OU path to which this computer should be registered. The provided domain username should have adequate rights to create objects in specified OU. (Optional)

i. **Select Locale:** For configuring local language of new Desktop



- j. **OS Product Key:** Provided product key will be applied on new Desktop however if creating multiple Desktops then this should be mass activation key or should be left blank for activating the OS later manually.



To understand the customization process, refer section [Provisioning and Customization Process](#)

6. Once appropriate information for customization is provided, click on **Next** button to proceed to **Advance** tab. In **Advance** tab, following configurations are available:
 - a. **Assign Network Ready Desktops:** Option **Assign Network Ready Desktops** to check reserved VMs RDP readiness has been added. Enabling this option on desktop pool, keeps on checking the RDP readiness of the desktops and only those desktops are assigned to the users which are currently network ready and thus avoiding assignment of those VMs which are not ready.
 - i. Network readiness of a desktop is determined by checking the availability of desktop on its RDP Port (RDP port can be configured while adding the session provider, default RDP port is 3389)
 - b. **Dedicated Linux Pool:** This option should be checked if this reservation profile is being used to deliver Linux based pools (Accops Ubuntu/CentOS) will be delivered using this mechanism.
 - c. **Gold Master OS Type:** Defines the kind of gold master to which this customization profile will be used. Available options are:
 - i. **Windows(WXXX):** For Windows based gold master VMs
 - ii. **Ubuntu(LUXX):** For Linux – Ubuntu gold master VMs
 - iii. **CentOS(LCXX):** For Linux – CentOS gold master VMs

Add Provisioning Profile

Basic Info Deployment Customization Advance

Assign Network
Ready Desktops

Dedicated Linux
VM Pool

Gold Master OS Windows(WXXX) CentOS(LCXX) Ubuntu(LUXX)
Type

7. Configure appropriate advance options (as needed) and click on **Save** button to save the provisioning profile.
8. Provisioning profile will be saved and now the same can now be assigned to gold master VMs, so that whenever reservations are being created, reserved VMs will be deployed according the configurations.

Edit Provisioning Profile

To edit an existing provisioning profile, follow the below steps:

1. Go to Configurations – Provisioning Profiles
2. Select Provisioning profile to be modified
3. Click on button **Edit Provisioning Profile**

Provisioning Profile		
		<input type="button" value="Add Provisioning Profile"/>
		<input type="button" value="Edit Provisioning Profile"/>
Name	Session provider	Default
<input checked="" type="radio"/> Prov-EN	VC100	<input type="button" value=""/>

showing of items

4. In **Edit Provisioning Profile** wizard (Similar to Add Provisioning Profile), following options can be modified:

- a. **Basic Info** tab
 - i. Change **Profile Name**
 - ii. Changing associated **Connection Profile**
 - iii. Marking provisioning profile as default
- b. **Deployment** tab
 - i. Replica VM Deployment Settings
 - ii. Cloned VMs Deployment Settings
- c. **Customization** tab

- i. Any of the configurations can be changed and all new VMs deployed in RMS using this provisioning profile will get customized as per new configurations
- d. **Advance** tab
 - i. All configurations from Advance tab can be changed.
5. Once all desired changes have been made in provisioning profile, click on **Save** button
6. Provisioning profile will be saved, and **new** reservations will use the new configurations.

Note:

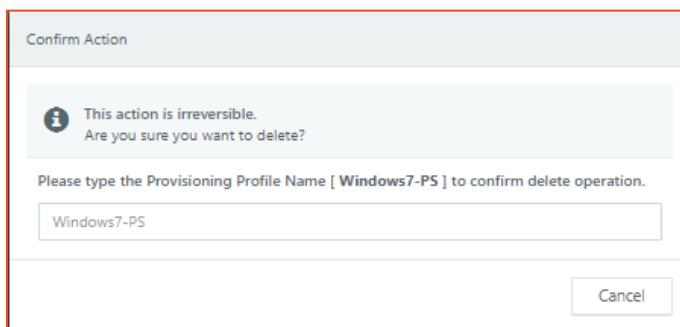
- Once a session provider is configured in provisioning profile, provider cannot de-associated with any other profile
- Modification done in provisioning profile does not affect already deployed reservations and will only be applied on new reservations to be deployed using this provisioning profile.

Delete Provisioning Profile

To delete a provisioning profile, follow the below process:

1. Go to Configurations – Provisioning Profiles
2. Select Provisioning profile to be modified
3. Click on button **Delete Provisioning Profile**

4. On **Confirm Action** dialog, type profile name to be deleted and click on **Delete** button to continue



5. Provisioning profile will get deleted
 - a. New deployments using Gold Master which was associated with the deleted provisioning profile will start using default provisioning profile for the session provider
 - i. If default provide profile is also deleted, the new deployment may go into error state as there is no profile available for new deployments

Note:

- If provisioning profile is associated with any gold master, then it will not get deleted and will show error for assigned gold master. Which means if administrator needs to delete a provisioning profile, then it must delete the associated Gold Master first.

Provisioning and Customization Process

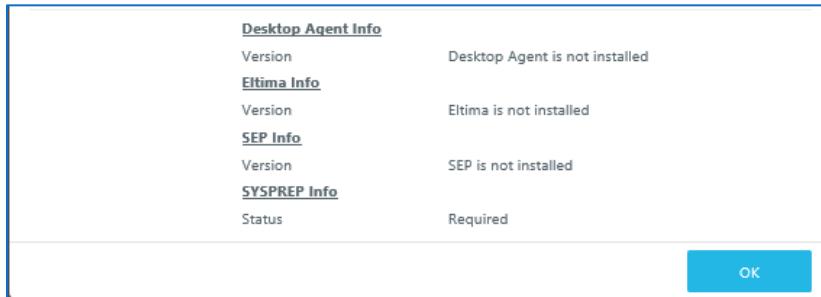
The Desktop Customization in HyWorks deployment is done using the following flow sequence:

1. Once all the customization attributes are properly configured and administrator committed the pool changes by completing the Desktop Pool wizard, HyWorks Controller will mark that the new Desktops will require customization. (This can be observed in Desktop Details dialog -> SYSPREP Info)
2. Source VM will be powered off and will be cloned multiple times as specified - New Desktops will be created as per provided deployment options
3. Desktops will be powered on automatically if configured or will require manual power on from administrator if **Power on Desktop Post Provisioning** is not enabled
4. After Desktops are powered on, HyWorks Controller will try to communicate with HyWorks Desktop Agent on each Desktop

Note:

- This step requires that the source VM must have VMware tools and HyWorks Desktop Agent is installed

5. Till step# 4, new Desktops are exact replica of the source VM, Desktop details will display attribute **SYSPREP Info** as **Required**, which specifies that the new Desktop will require customization



6. Once HyWorks Controller can communicate with HyWorks Desktop Agent on new Desktops, it will share the customization details with each Desktop
7. Desktops will be rebooted and will run setup to customize the Desktop as per provided parameters (This step may take some time depending on the hardware, software resources and network settings)
8. Once the setup is completed, all new Desktops will be having a unique name, same local user with same password, joined with specified domain or workgroup, set with specified locale and activated with provided OS Product key.
9. The Desktop status will start displaying as Responding in **Desktops VMs** tab with **Sysprep Info** attribute showing as **completed**.

Notification Settings in HyLabs

HyLabs supports e-mail notifications to all registered users, provided SMTP servers are configured correctly in HyWorks and Notifications Settings are configured correctly in RMS Portal. The detailed information about notification is given in this section.

Notification Settings

Notification Settings allows the administrator to define e-mail alert configurations for different events. Below configurations are available:

1. **Self-study Reservations:** Defining the self-study events on which e-mail notifications will be sent and what type of RMS users should receive notifications. Following events can be configured:
 - a. **When created:** When reservation is created in HyLabs
 - b. **Before Start:** X minutes before self-study reservation starts, send alerts to participant, incharge and/or admin
 - c. **When Ready:** When self-study reservation is ready, send alerts to participant, incharge and/or admin
 - d. **When Modified:** When self-study reservation is modified, send alerts to participant, incharge and/or admin
 - e. **When Cancelled:** When self-study reservation is cancelled, send alerts to participant, incharge and/or admin
 - f. **When Failed:** When self-study reservation fails, send alerts to participant, incharge and/or admin
 - g. **When Deleted:** When self-study reservation is deleted by user

The screenshot shows the 'Notification Settings' page with a red border around the 'Self-Study Reservations' tab. The tab is active, showing configuration options for sending emails 5 minutes before a reservation starts. A table below lists various mail events and their recipients: Participant, Admin, and Creator. All checkboxes are checked for every event.

Mail Events	Participant	Admin	Creator
When Created	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Before Start	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
When Ready	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
When Modified	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
When Cancelled	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
When Failed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
When Deleted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2. **Course Reservations:** Defining the course reservation events on which e-mail notifications will be sent and what type of RMS users should receive notifications. Following events can be configured:
 - a. **When Created:** When reservation is created, send alerts to incharges, assistants, participants, administrator and/or creator
 - b. **Before Start:** X minutes before course reservation starts, send alerts to incharges, assistants, participants, administrator and/or creator

- c. **When Ready:** When course reservation is ready, send alerts to incharges, assistants, participants, administrator and/or creator
- d. **When Modified:** When course reservation is modified, send alerts to incharges, assistants, participants, administrator and/or creator
- e. **When Cancelled:** When course reservation is cancelled, send alerts to incharges, assistants, participants, administrator and/or creator
- f. **When Failed:** When course reservation fails send alerts to incharges, assistants, participants, administrator and/or creator
- g. **When deleted:** When course reservation is deleted from HyLabs

Notification Settings

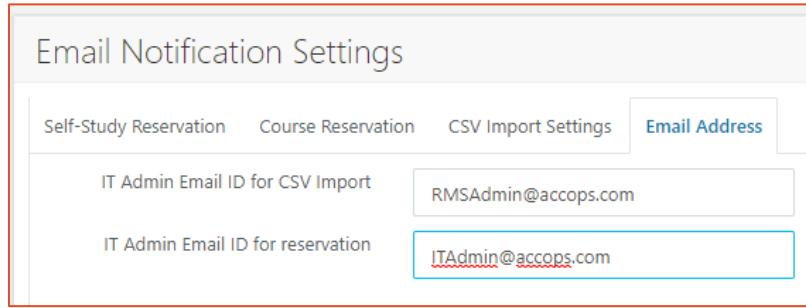
Course Reservations					
Self-Study Reservations	Course Reservations	CSV Import Settings	Email Addresses		
Send Email	5	minutes before reservation starts			
Mail Events	Participant	Incharge	Assistants	Admin	Creator
When Created	<input checked="" type="checkbox"/>				
Before Start	<input checked="" type="checkbox"/>				
When Ready	<input checked="" type="checkbox"/>				
When Modified	<input checked="" type="checkbox"/>				
When Cancelled	<input checked="" type="checkbox"/>				
When Failed	<input checked="" type="checkbox"/>				
When Deleted	<input checked="" type="checkbox"/>				

- 3. **CSV Import Settings:** Defining the CSV Import events (Pass/Fail) on which e-mail notifications will be sent to configured administrator e-mail Ids.

Notification Settings

CSV Import Settings					
Self-Study Reservations	Course Reservations	CSV Import Settings	Email Addresses		
Mail Events	Admin				
When Failed	<input checked="" type="checkbox"/>				
When Success	<input checked="" type="checkbox"/>				

- 4. **E-mail Address:** E-mail addresses for CSV Import and Reservations to be configured here.



Email Templates

Every notification e-mail from HyLabs is created using a pre-defined E-mail template.

These E-mail templates are generated **automatically**, whenever relevant operation (CSV Import, Self-study reservation or course reservation) is initiated.

Each template is stored in a different file and the file can be edited by logging into HyWorks controller using RDP or console access.

The E-mail templates are default kept with HyWorks Controller Service and RMS Service in following folders:

- **RMS Service:** C:\Program Files (x86)\Accops\HyWorks\RMSService\EmailTemplate
- **Controller Service:** C:\Program Files (x86)\Accops\HyWorks\Service\EmailTemplate

Keywords in Email Templates

In each template, standard keywords can be embedded to include details like course name, schedule, etc.

Following are the standard keywords that can be used in email templates:

1. {Reservation_Name}: Name of reservation
2. {Course_Name}: Course Name
3. {Next_Start_DateTime}: Next start time
4. {Next_End_DateTime}: Next end time
5. {Action}: Type of change

Type of Email Templates

Course Email

File location: C:\Program Files (x86)\Accops\HyWorks\Service\EmailTemplate\Course\Course

This email template is used when:

1. A Reservation is created
2. Reservation is updated and its schedule is changed
3. Reservation has cancelled
4. Reservation is failed during deployment
5. Reservation is deleted

CSV Import

File location: C:\Program Files (x86)\Accops\HyWorks\Service\EmailTemplate\CSV\CSVImport

This email template is used to send the result of CSV import. Once CSV import is completed, the result of CSV import including number of records imported or failed is sent via this email.

Self-study

File location: `C:\Program Files (x86)\Accops\HyWorks\Service>EmailTemplate\SelfStudy\SelfStudy`

This email template is used when sending email to participant about their self-study reservation

Customizing Email Contents

As E-mail templates are located at HyWorks controller and RMS Service both, administrator can modify them from any of the below locations, but updated template must be copied to other location as well.

Default location of Email Templates

- **RMS Service:** `C:\Program Files (x86)\Accops\HyWorks\RMSService>EmailTemplate`
- **Controller Service:** `C:\Program Files (x86)\Accops\HyWorks\Service>EmailTemplate`

To update Email Templates for customized E-mail notifications, follow below steps:

1. Login into HyWorks controller using RDP/ Console access
2. Delete existing email template files
3. Create new files and place them in appropriate folders as original files. Please save the files in the same encoding format as set in HyWorks email encoding setting
4. Make sure to set correct encoding from HyWorks management console
5. Repeat step 1-3 for secondary HyWorks controller also.

To restore the original email template files, delete the files from the location. HyWorks will automatically create default email template files when a new reservation is created.

Note:

If HyWorks Controller and RMS Services are running in HA on different Windows Servers then Email Templates must be copied on all Controller and RMS Servers.

Customizing Email Format

Encoding standards tell the web browser or email application how to interpret the text characters in your HTML or the body of the email

The default Email format is:

Email Type: HTML

Email Encoding: The encoding format is read from the OS settings.

To know the appropriate format that is used by your email server, you can look at char-set attribute in the email header content-type field.

```
Date: Wed, 16 Mar 2018 14:12:33 -0820
To: test@accops.com
From: testfrom@accops.com
Subject: Test
Message-ID: <e0irfueknwie94837dndmfkf@www.accops.com>
X-Priority: 2
```

X-Mailer: office365
MIME-Version: 1.0
Content-Transfer-Encoding: 8bit
Content-Type: text/html; **charset="UTF-8"**

To configure email format and encoding, please follow these steps:

1. On HyWorks Controller Management Console -> System -> Advanced Config
2. Find option "**RMS Email HTML Body**" and set its value to false to use plain text email format
3. Find option "**RMS Email Encoding Type**" and set the encoding type of the email. The various options are provided below
 - a. UTF-8 (Most Recommended)
 - b. ISO-8859-1
 - c. ISO-2022-JP (Only Japanese users)
 - d. Shift_JIS (Only Japanese users)
 - e. EUC-JP (Only Japanese users)
4. Click on **Update** button to save the advanced configurations.
5. The settings are automatically synced with the secondary controller, so there is no need to do the same setting on secondary controller. Please note that the email template files must be updated (or copied) manually on the secondary controller also.

Important Note:

Please make sure the email template file files are stored in the same encoding format as specified in Email Encoding setting. It is advised to use UTF-8 as email encoding and use notepad to create the email template files and store with UTF-8 encoding using save-as option in notepad.

Default Reservation Settings

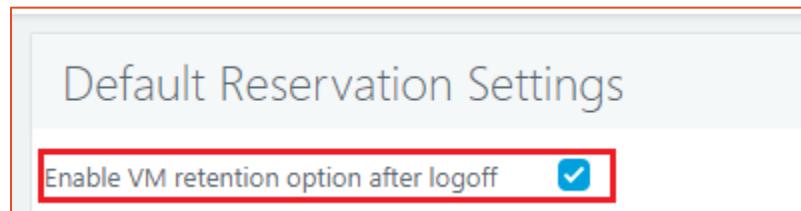
Default Reservation Settings allows administrator to define default values for few configurations which will be used while creating reservations (via using CSV or UI, but currently it gets applied to CSV imported records mostly.). Following configurations are available:

- ❖ **Enable VM retention option after logoff:** In case of temporary assignment life span, when a user connects to a reserved VM, it gets assigned to one reserved VM temporarily and the same DVM session will be provided to user for the current schedule.

In some cases, if a reserved VM gets stuck in error condition, users are not able to fix it and then also can not remove the assignment without administrator's intervention.

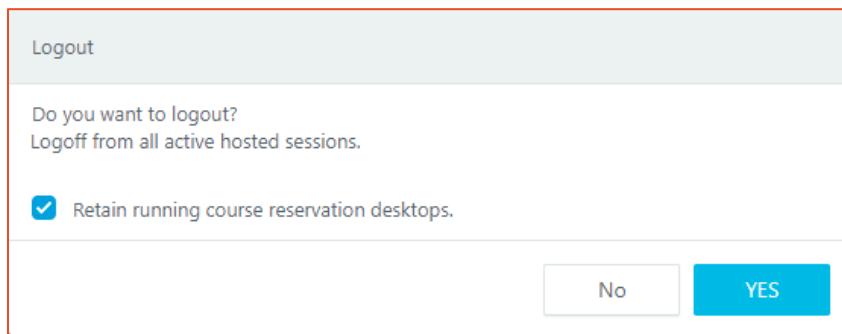
To make it automatic process, HyLabs provides option to the end-users to release their DVM on logout so that if any issues are occurring in currently assigned DVM, it can be released and a new DVM assignment can be done on next logon.

To keep login and logout process simple, this option is enabled for end-users, when reservation admin user selection option **Enable VM retention option after logoff** in Default Reservation Settings.



Impact of enabling Enable VM retention option after logoff: When reservation admin enables this option, following changes will happen:

- Users on logout will be shown with option to retain the currently assigned DVM and this option will be by-default checked.



If user needs to change assignment, it can try to logout the current session with unchecking option **Retain running course reservation desktops** and logon again -> A new free reserved DVM will be assigned to the user.

- ❖ **Course Allow Extensions:** Course reservations will by default use the configured values. E.g. if enabled, all reservations will have extensions allowed as per provided configurations.
 - **Extension Duration:** Duration of extension
 - **No. of Times:** Allowed number of extensions after the course reservation e.g. 2, then it will allow the reservation to be extended twice with duration as extension duration.

Course Allow Extensions	<input checked="" type="checkbox"/>
Extension Duration	15 Minutes
No. of Times	3

- ❖ **Enable Course Self-study:** All course reservations will by default use the configured value e.g. if enabled, all course reservations will be created with course self-study as allowed. Following configurations are available:
 - **Allow Extension:** Select if extensions to be allowed for course self-studies as well.
 - **Maximum Units to be Used:** Number of units to be used for course self-study
 - **Max Duration:** Max duration of allowed course self-study
 - **Allowed Time Window:** Specific time window to be used for reservations

Enable Course Self-study	<input checked="" type="checkbox"/>
Allow Extension	<input checked="" type="checkbox"/>
Maximum Units to be Used	5
Max Duration	3:00
Allowed Time Window	<input checked="" type="checkbox"/>
Allowed Time Window Start Time	22:00
Allowed Time Window End Time	2:00

- ❖ **Self-study Allow Extensions:** Applicable for self-study reservations. Defining if self-study reservations should be allowed extensions or not. Following configurations are available:
 - **Extension Duration:** Duration of extension
 - **No. of Times:** Allowed number of extensions after the course reservation e.g. 2, then it will allow the reservation to be extended twice with duration as extension duration.

Self-study Allow Extensions	<input checked="" type="checkbox"/>
Extension Duration	15 Minutes
No. of Times	3

- ❖ **Send warning message1/ Send warning message2:** Configurable time in minutes, as before how much time participants should be warned about reservation expiry.
- ❖ **Allow Connect:** Configuration in minutes, users can connect to assigned reservations before the actual start time.
- ❖ **Assignment Life Span:** (Temporary/Permanent)
 - **Temporary** assignments will not be retained after schedule completion
 - **Permanent** assignments will be retained after schedule completion and users will be given the same desktops for all occurrences of the reservations.
- ❖ **Reservation Display Name:** What name of reservation should be shown to end-users on connection from HyWorks Clients. Available options are:
 - **Reservation:** System generated reservation name (not very user friendly)
 - **Course:** Name of the course
 - **Pool:** Name of desktop pool created as part of reservation deployment (Not very user friendly)
 - **Reservation Display Name:** Display name as provided by administrator



- ❖ **Remove Desktops from Pool:** Configuration in Default Reservation Settings, defines which desktops will be removed, if administrator reduces the total VM count in reservation. Following options are available:
 1. **Remove unassigned desktops only:** Remove only unassigned desktops even if it does not remove number desktops as desired.
 2. **Remove unassigned desktops first:** HyLabs will first delete the free desktops and then will remove assigned desktops. Selecting this option makes sure that desktop count matches as needed.
 3. **Any Desktops:** HyLabs will randomly delete desktops without checking if its assigned or unassigned.

Saving Default Reservation Settings

As default reservation settings are very critical to RMS as they define the default behavior of the system. All of these configurations should be saved so that they do not conflict with the reservations in run-time. To save the default reservation settings,

1. Provide appropriate inputs for all the reservations
2. Click on Save button to save the settings.
3. All new CSV imports and UI governed reservations will start using default reservation settings.

Note:

- Not all configurations are applicable to the UI created reservations.

Deployment Settings

Deployment Settings in RMS determines the deployment pattern for the reservations. Following two types of deployment settings are supported in RMS:

1. **On Demand:** As the name suggests, on demand deployment, refers to configurations where deployment of reservation will occur before a predefined time reservation start.
2. **Specific Window:** The deployment for reservation will happen in the predefined reservation window.

In this section of document, detailed information of deployment settings will be provided.

On Demand Deployment

Configuring deployment settings as **On Demand** provides following configurable options to reservation administrator:

- **Deployment Type:** To be set as **On Demand**
- **Keep VM:** Configuration to decide if VMs being deployed should be kept as powered on or powered off post deployment.
- **Preparation Time:** Time in minutes. Deployed DVMs will be prepared (Powered-On) as per configured preparation time. E.g. 5 mins preparation times, will start the DVMs 5 minutes before the reservation start
- **Self-study Preparation Time:** Specific to self-study reservations. Self-study reservations will be prepared in given time. Being volatile in nature, **Self-study Preparation Time** should be kept high enough to allow (Cloning, Sysprep and Power Operation)
- **Deployment Time:** Time in minutes. RMS will start deploying (cloning) VMs as per the configured *Deployment Time*. E.g. if deployment time is configured as 60 mins, controller will start the deployment 60 mins before the reservation start time. If multiple reservations/ reservations with higher number of units to be deployed, the configuration should be kept high enough to support the cloning and Sysprep time for the reservations.
- **Preparation Fail Retry Count:** Number of times, for which Controller should attempt to deploy a failed reservation. E.g. 3 retry count, enables controller to attempt for 3 times to deploy a reservation.

Deployment Settings

Deployment Type	<input checked="" type="radio"/> On Demand <input type="radio"/> Specific Window
Keep VM	<input checked="" type="radio"/> Powered Off <input type="radio"/> Powered On
Preparation Time	<input type="text" value="12"/> minutes before reservation starts.
Self Study Preparation Time	<input type="text" value="60"/> minutes before reservation starts.
Deployment Time	<input type="text" value="20"/> minutes before reservation starts.
Preparation Fail Retry Count	<input type="text" value="3"/>

Save

Specific Window

Deployment in specific window refers to process where all the deployments will be scheduled for a specific time slot. Following configurations are available, while configuring **Specific Window** deployment settings:

- **Deployment Type:** To be set as **Specific Window**

- **Keep VM:** Configuration to decide if VMs being deployed should be kept as powered on or powered off post deployment.
- **Preparation Time:** Time in minutes. Deployed DVMs will be prepared (Powered-On) as per configured preparation time. E.g. 5 mins preparation times, will start the DVMs 5 minutes before the reservation start
- **Self-study Preparation Time:** Specific to self-study reservations. Self-study reservations will be prepared in given time. Being volatile in nature, *Self-study Preparation Time* should be kept high enough to allow (Cloning, Sysprep and Power Operation)
- **Deployment Start Time:** Specific time to start the DVMs deployment.
- **Deployment End Time:** End time to stop provisioning. Please note all the started deployments will be completed, once started.
- **Next Deployment Start Time:** Next scheduled deployment start time
- **Next Deployment End Time:** Next scheduled deployment end time
- **Specific Days:** Option to specify days on which deployment should be scheduled. Admin can select one or more days.
- **Number of Concurrent Deployments:** Number of parallel replica cloning tasks to be executed on configured provider. This should be considering as per the available resources.
- **Preparation Fail Retry Count:** Number of times, for which Controller should attempt to deploy a failed reservation. E.g. 3 retry count, enables controller to attempt for 3 times to deploy a reservation.

Deployment Settings

Deployment Type	<input type="radio"/> On Demand	<input checked="" type="radio"/> Specific Window
Keep VM	<input type="radio"/> Powered Off	<input checked="" type="radio"/> Powered On
Preparation Time	40	minutes before reservation starts.
Self Study Preparation Time	30	minutes before reservation starts.
Deployment Start Time	09:55	<input type="button" value=""/>
Deployment End Time	21:10	<input type="button" value=""/>
Next Deployment Start Time	-	
Next Deployment End Time	-	
Specific Days	<input checked="" type="checkbox"/> Monday <input checked="" type="checkbox"/> Tuesday <input checked="" type="checkbox"/> Wednesday <input type="checkbox"/> Thursday <input type="checkbox"/> Friday <input checked="" type="checkbox"/> Saturday <input checked="" type="checkbox"/> Sunday	
No. Of Concurrent Deployments	2	
Preparation Fail Retry Count	3	
<input type="button" value="Save"/>		

Exceptions for Specific Window Deployment

1. **Self-study** deployments will always be deployed as per Self-study preparation time and will not follow specific window defined.

2. **Course Self-study** deployments for volatile course reservations will be deployed as per preparation time instead of specific time window

CSV Configurations

A very advanced configuration of RMS, which allows administrators to automatically run the whole RMS system using CSVs.

Using automatic CSV import, administrators can configure the whole RMS deployment. In this section of documents, details of CSV settings will be explained.

RMS Configurations to be Processed using CSVs

Following RMS Configurations can be processed using automatic import of CSVs:

1. **Gold Master VMs:** Gold Master VMs can be added into RMS and can be assigned to specific courses
2. **Courses:** Courses can be processed using automatic import of Course specific CSVs
3. **RMS Users:** Adding users from authorization server into RMS and association of users with specific courses
4. **Reservations:** Defining reservations to be created using above specified RMS objects
5. **Client Group:** Enabling client group creation using CSV import

CSV Specifications

This section will provide details of different CSV formats, definition of columns and possible values and validation details:

Gold Master CSV

All specifications of Gold Master CSV are provided in tabular format:

Column	Description	Mandatory	Type	Max Length	I18N	Allowed Characters	Default Value if missing	Example data
UseVDI	If enabled, import. If already imported and set to do not use, then disable or delete from database	No	Int	1	1 byte	1,0, blank	0	-
Provider	hostname (or IP address) of the provider server. It can be the hostname or IP address of vCenter server from which gold master will be imported. This provider must be already registered within RMS	No	String	64	1 byte	Allowed hostname and IP address characters	Read from RMS settings	172.17.23.256 OR vcenter.accops.com

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Gold Master Name	Name of gold master as on VMWare	Yes	String	64	2 bytes	[A-Za-z0-9-_SPACE] Check VMWare Specs	error	Maths_gm_001
Max Total VM	Maximum number of virtual machines created from this VM which are in running state at a specific time. This means total VM of all running reservations for this gold master 0 means no limit max is 99999	No	Number	5	1 byte	0-99999	Unlimited	500
Max Active VM	Maximum number of virtual machines created from this VM which are in running state as well as standby state. This means total of all VMs from this gold master across all reservations for any time 0 means no limit max is 99999	No	Number	5	1 byte	0-99999	Unlimited	5000
Assignment Type	Assigned for course, faculty or self-study only, or default gold master C: course S: self-study only F: faculty D: default GM for all users	No	Character	1	1 byte	[CSFD]	D	C
Gold Master Type	GM with Windows OS, Ubuntu OS, CentOS WXXX: Windows, WS16-Win2016 LUXX: Ubuntu LCXX: CentOS	Yes	String	4	1 byte	[<WXXX><LUXX><LCXX>]	Error	LUXX
Realmname	Organization name in RMS. It is useful when	No	String	64	2 bytes	[A-Za-z0-9-_]	default	College of Economics

	there will be multiple colleges using same RMS, but each college has different authentication settings and different resources								
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Courses CSV

Column	Description	Mandatory	Type	Max Length	I18N	Allowed Characters	Default Value if missing	Example data
UseVDI	If enabled, import. If already imported and set to do not use, then disable or delete from database	No	Int	1	byte	1,0, blank	0	-
Class Code	Unique code for each course	Yes	String	16	byte	[A-Za-z0-9-_]	error	MATH-001
Class Display Name	Display name of the class	Yes	String	64	bytes	[A-Za-z0-9-_SPACE, Unicode]	error	Mathematics
Classroom	Classroom	No	String	16	bytes	[A-Za-z0-9-_SPACE, Unicode]		LAB 1
Department	Department	No	String	64	bytes	[A-Za-z0-9-_SPACE, Unicode]		Science
Group	?	No	String	64	bytes	[A-Za-z0-9-_SPACE]		
Max Participant	Number of participants	Yes	Number	5	byte	0-99999	0	50
Realmname	Organization name in RMS. It is useful when there will be multiple colleges using same RMS, but each college has different authentication settings and different resources	No	String	64	bytes	[A-Za-z0-9-_]	default	College of Economics

RMS Users CSV

Column	Description	Mandatory	Type	Max Length	I18N	Allowed Characters	Default Value if missing	Example data
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UseVDI	If enabled, import. If already imported and set to do not use, then disable or delete from database	No	Int	1	1 byte	1,0, blank	0	-
Role	Role of this participant Participant: Participant/Student Incharge: Faculty Assistant: Assistant XXXXXX: Any custom role on RMS	Yes	String	64	1 byte	[A-Za-z0-9-_SPACE]	Participant	Super Faculty
Display Name	User display name	Yes	String	64	2 bytes	[A-Za-z0-9-_SPACE] Check AD Specs	error	Vijender Yadav
Username	AD UserId	Yes	String	64	2 bytes	[A-Za-z0-9-_SPACE] Check AD Specs	error	vijenderyadav
Class Code (M)	Code of the course	No If custom role	String	64	2 bytes	[A-Za-z0-9-_]	error if RMS Role	MATH-001
Realmname	Organization name in RMS. It is useful when there will be multiple colleges using same RMS, but each college has different authentication settings and different resources	No	String	64	2 bytes	[A-Za-z0-9-_]	default	College of Economics

Reservations CSV

Column	Description	Mandatory	Type	Max Length	I18N	Allowed Characters	Default Value if missing	Example data
UseVDI	If enabled, import. If already imported and set to do not use, then disable or delete from database	No	Int	1	1 byte	1,0, blank	0	-

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Reservation Type	Whether course reservation or Self-study reservation C: for course (possible for self-study) S: Only self-study	No	Character	1	1 byte	[CS]	C	
Class Code	Unique code for each course	Yes	String	64	2 bytes	[A-Za-z0-9-_]	error	MATH-001
Gold Master Name	Name of gold master as on VMWare This gold master must be already imported into RMS using CSV or from UI and this gold master assignment type must be [Course or Default]	Yes	String	64	2 bytes	[A-Za-z0-9-_SPACE] Check VMWare Specs	error	Maths_gm_001
Max Participant	Number of VM to create This number must be less than or equal to = students + [faculty + assistant]	Yes	Number	5	1 byte	1-99999	error	50
Start Date	Date from when to create this reservation format: DD/MM/YYYY	Yes	Date	10	1 byte	[0-9-/]	error	19/12/2017
End Date	Date on which reservation will expire	Yes No	Date	10	1 byte	[0-9-/]	No End Date	19/12/2018

	Format: DD/MM/YYYY Y							
Schedule Code	This is a unique code for each schedule as per timetable. For e.g. M1, T3, F4, etc	Yes	String	3	1 byte	[MTW?FS?0-50]	error	M12
Recurrence Pattern	If the recurrence happens every day or every week D: Daily, W: Weekly, 0: not recurring	No	Character	1	1 byte	[0DW]	0 (not recurring)	W
RecurringFrequency	Decide if the recurrence happen every day/week or x day/week 0: not recurring 1: every 1 day/week 2: every 2 day/week 3: every 3 day/week 4: every 4 day/week	No	Int	1	1 byte	[0-5]	0 (not recurring)	1
DaysofSchedule	In case of reservation for multiple days (but same time), use this flag. This is bitwise operator Bit wise operation None = 0x0, Monday =	No	Int	2	1 byte	[0/1/2/4/8/16/32/64]	0	1

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	0x1(1) Tuesday = 0x2(2), Wednesday = 0x4(4), Thursday = 0x8(8), Friday = 0x10(16), Saturday = 0x20(32), Sunday = 0x40(64),							
Start Time	start time of the reservation	Yes	Time	4	1 byte	[XXXX] [0-9]	error	0900
End Time	end time of the reservation	Yes	Time	4	1 byte	[XXXX] [0-9]	error	1030
Enable course extension	If faculty can extend the reservation beyond end time	No	Int	1	1 byte	[0-1]	0 (disable extension)	
course reservation Extension step count	If extension allowed, how many times reservation can be extended. For e.g. faculty can extend the session only maximum 5 times In case of self-study reservation, this field is for student	No	Int	2	1 byte	[0-9]	5 (5 times extensions allowed if extension permission)	5
course res Extension step interval in minutes	Interval in minutes for which the reservation can be extended in	No	Int	2	1 byte	[0-9]	15 (maximum extension per try)	30

	each extension. For e.g. each time faculty can extend the reservation only for 15 minutes In case of self-study reservation, this field is for student							
Enable Self-study	Allow students to reserve VM from this reservation for self-study 0: disable self-study 1: allow self-study	No	Int	1	1 byte	[0-1]	0 (not enabled)	1
Self-study max count	Maximum self-study VM usage from this reservation	No	Int	5	1 byte	1-99999	same as max participant	13
Self-study max duration	Maximum duration of self-study reservation in minutes 0: no limit X: minutes	No	Int	4	1 byte	[0/30/60/120/180/240/300]	0 (no limit)	120
Self-study Allow time extension	Allow student to extent their reservation	No	Int	1	1 byte	[0-1]	0 (disable extension)	1
Self-study Window start time	Self-study reservation can be used only after this time (say after	No	Time	4	1 byte	[XXXX] [0-9]	no limitation	1730

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	(university work hours)							
Self-study Window end time	Self-study reservations must finish before this time (say before University work hour start)	No	Time	4	1 byte	[XXXX] [0-9]	no limitation	0630
delete VM after reservation finish	Delete the linked clones after reservation end. When the reservation starts again, recreate the linked clones 0: keep the linked clones 1: delete linked clones after reservation time over (not expire)	No	Int	1	1 byte	[0-1]	0 (keep VM)	0
Realmname	Organization name in RMS. It is useful when there will be multiple colleges using same RMS, but each college has different authentication settings and different resources	No	String	64	2 bytes	[A-Za-z0-9-_]	default	College of Eco

Client Group CSV

Column	Description	Mandatory	Type	Max Length	I18N	Allowed Characters	Default Value if missing	Example data
ClientGroupName	<p>Name of client group which will be unique</p> <p>If operation is add and group not found with provided name then new group will be created</p> <p>If operation is adding and group found with provided name then new rule will be added in existing group</p>	Yes	String	250		[A-Za-z0-9-_SPACE]	Error	Lab1

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	If operation is deleting and group not found with provided name, then throw error							
Para-Type	<p>Rule Type:</p> <p>M- MAC address of client device</p> <p>L- LAN IP address of client,</p> <p>W-WAN IP address of client,</p>	Yes	Char	1	1	M/L/W	Error	L
Add/Delete	<p>To determine add or delete rule</p> <p>A- Add new client group with rule or Update existing rule for client group,</p>	Yes	Char	1	1	A- Add, D- Delete	Error	A

Accops HyLabs (Previous name RMS - Reservation Management System)

	D-Delete existing rule and if no more rules available then client group will be deleted						
Para-Value	<p>Value for client group rule</p> <p>data are allowed in following Form</p> <p>1) Mac-00:0a:95:9d:68:16 OR E6-02-9B-8A-D3-51</p> <p>2) IP - 172.16.4.123</p> <p>3) IP Subnet- 192.168.100.14/24</p> <p>4) Ip range- 172.16.0.1-172.16.0.50</p>	Yes	String	100	A-Za-z0-9:-/	Error	172.16.8.12

Realmname	Organization name in RMS. It is useful when there will be multiple colleges using same RMS, but each college has different authentication settings and different resources	No	String	64	2 bytes	[A-Za-z0-9-_-]	default	College of Economics
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CSV Import Mechanism

HyWorks and especially RMS in HyWorks, enables administrators to completely manage infrastructure using CSVs. Let us try to understand the CSV Import mechanism in RMS.

Pre-Conditions for CSV Processing

Automatic CSV import requires following prerequisites to be available:

- **Prerequisites for Gold Masters Import using CSV**
 - Appropriate **Dedicated Session Provider (vCenter Server)** is already added and reachable
 - Appropriate **Provisioning Profile** is already configured for added session provider
- **Prerequisites for Course Import using CSV**
 - None
- **Prerequisites for RMS Users Import using CSV**
 - Appropriate authentication server is added and configured in the Authentication Domain of that organization
 - Appropriate courses are already imported or created in RMS
- **Prerequisites for Reservations' Processing using CSV**
 - Gold Masters are imported into RMS
 - Courses are defined into RMS with appropriate users are now
 - RMS Users (Incharges, Assistants and Participants) are imported and added into respective courses

CSV Processing Order

Once all CSVs are added into CSV Import Profile, then the import will follow the below order while processing the CSVs.

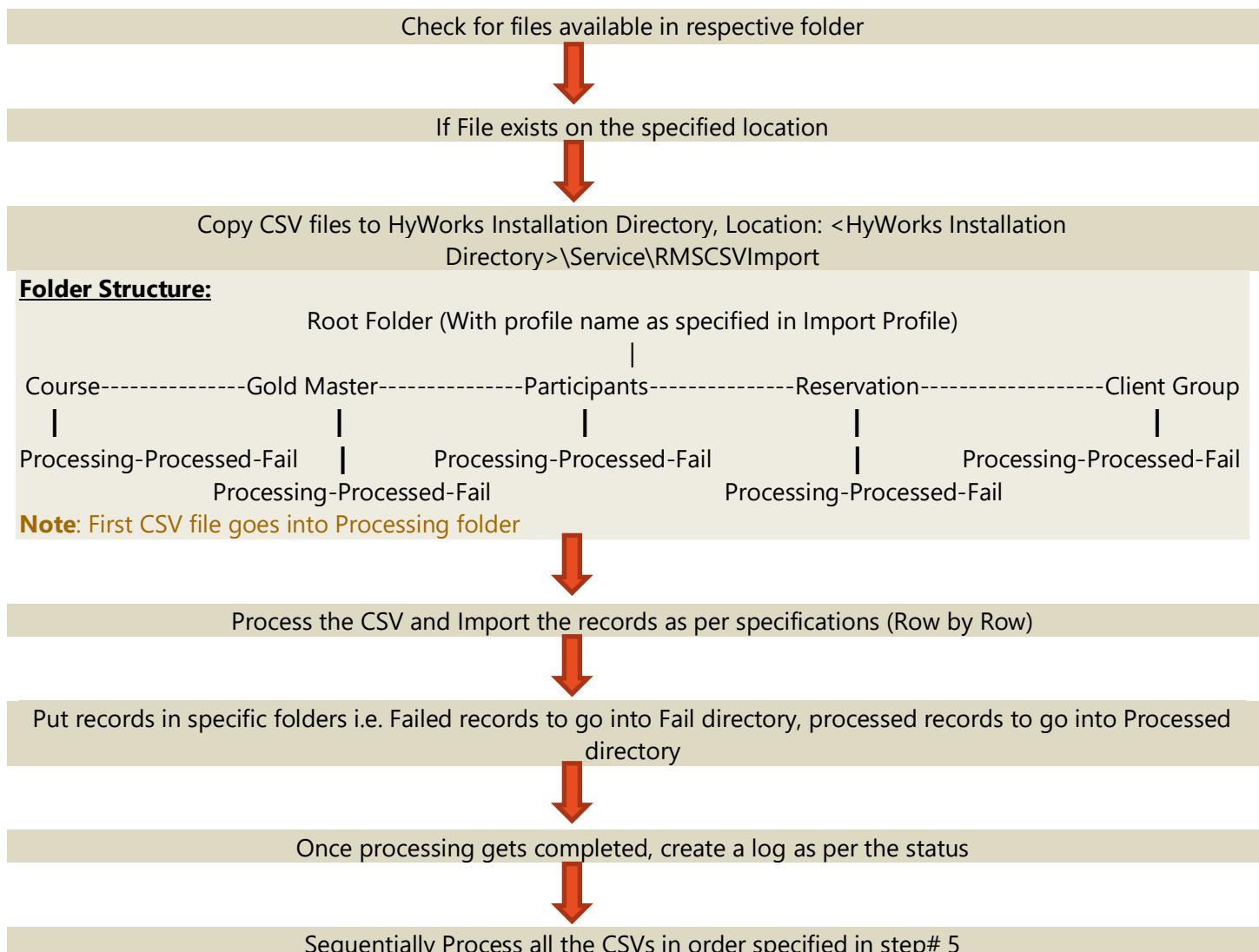
CSV Import Functioning

This section will provide detailed step by step information on CSV processing along with configurations required by administrators to deploy RMS using CSV import:

1. All pre-requisites to process different CSVs are in place (Refer section [Pre-Conditions for CSV Processing](#))
2. The Root path (Directory on shared or local server) to be used for CSV processing is created and consists of subfolders (for different CSV files)
3. Administrator has created all CSV files as needed
4. Configure CSV Import Profile as specified in section [Configuring CSV Import Settings](#)
5. As per CSV Import Profile, CSVs will be imported either manually or using Import Frequency (Hourly or daily).
The CSVs are imported in following order:



6. As soon as import is triggered (automatic or manual), following process will be used to process the records:



Important Points and Recommendations for CSV Import

1. A CSV once imported (pass or failed) will not be imported again unless it has some modifications.
2. CSV import cannot be used to delete records from RMS.
3. CSV processing order is important as subsequent CSVs will use the configurations of objects being imported using previous CSVs.
 - a. Thus, all associated CSVs should be configured in single CSV import profile as HyWorks uses following sequence to import:

Course CSV => RMS Users CSV => Client Group CSV => Gold Masters CSV => Reservations CSV

4. If associate CSVs are specified in different CSV Import Profiles, then HyWorks may not follow the specified sequence and CSV import may fail.
5. For importing RMS Users using CSV following recommendations should be followed:
 - a. Uncheck the checkbox "**Fetch Users from Auth Server**"; as this option selecting this option will fetch the details of all users from authentication server and thus may increase the traffic, time and resource consumption to process CSV
 - b. **Distinguished Name Pattern Field Specification:** It must follow the below example without any exception:

CN={DisplayName},OU=India,DC=accops,DC=local

 - i. Distinguished name pattern must be in the same format as specified above
 - ii. Any difference between the CSV imported entry and same user being added or modified from portal will result in duplicate entries. An example should be, a user with actual DN as CN=john,OU=JP,dc=accops,dc=com
 1. While importing CSV, the distinguished name pattern is specified as
CN={DisplayName},OU=JP,DC=Accops,DC=com
 2. Later same user is added into different course from RMS portal and then it fetched the correct DN from AD which is not exactly same as being imported from CSV and thus it will create two entries of same user with different DN
6. Some configurations which are not provided in CSV, are defined from **Default Reservation Settings** and thus all such configurations should be appropriately defined in **Default Reservation Settings**.
7. For fields accepting multiple values, multi-value separator can be defined in CSV Import Settings and the provided separator should not be used in CSV data. E.g. if ";"
8. For Controllers in HA, CSVs should be imported from shared location (accessible from both the servers, so that in failure conditions secondary controller can take over for import).
9. All CSVs should be defined correctly as per the provided specification in section [CSV Specifications](#)

Configuring CSV Import Settings in HyLabs

CSV Settings page in RMS enables the configurations for CSV imports. To configure **CSV Settings**, follow the below steps:

1. Go to **Configuration – CSV Settings** page
2. Click on **Add CSV Settings** button
3. **Add CSV Import Settings** wizard will get opened, having following tabs:

4. The first tab in **Add CSV Import Settings** wizard is **CSV Details**, having following fields:

Note: Fields, marked with * asterisk, are mandatory.

- a. **Active** checkbox: To mark this CSV import settings as active or inactive
- b. **Name***: Unique name for CSV Import Settings
- c. **CSV For***: This CSV import settings will be used to import what CSV files:
 - i. **Course CSV**: Select this option to enable automatic course processing using CSV import
 - ii. **Participant CSV**: Select this option to enable automatic processing of RMS users (Incharges, Assistants, Participants) using CSV import
 - iii. **Gold Master CSV**: Select this option to enable automatic processing of Gold Master VMs using CSV import
 - iv. **Reservation CSV**: Select this option to enable automatic reservation schedules processing using CSV import
 - v. **Client Group**: Select this option to enable automatic client groups processing using CSV import
- d. **Read CSV from Line Number**: Specify the row number from where CSV data should be read. By default, it read from row number 1.
- e. **Encoding Type**: Type of encoding format to be used to read CSV.
- f. **Import Frequency***: Defines the import schedule as when the CSV should be automatically imported, available options are:
 - i. **Hourly**: Choose this option to import CSVs every hour
 - ii. **Daily**: Choose this option to import CSVs at a specific time of a day

Import Frequency* Hourly Daily

Time 15:10

Add CSV Import Profile

CSV Details	CSV Location Details
<div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"></div>	
Active <input checked="" type="checkbox"/>	
Name* <input type="text" value="Name"/>	
Enable CSV Import for* <input checked="" type="checkbox"/> Courses CSV <input checked="" type="checkbox"/> RMS Users CSV <input checked="" type="checkbox"/> Gold Master CSV <input checked="" type="checkbox"/> Reservations CSV <input checked="" type="checkbox"/> Client Group	
Read CSV From Line Number* <input type="text" value="1"/>	
Encoding Type* <input checked="" type="radio"/> ANSI <input type="radio"/> Unicode <input type="radio"/> UTF_8 <input type="radio"/> Shift_JIS <input type="radio"/> ISO_2022_JP	
Import Frequency* <input type="radio"/> Hourly <input checked="" type="radio"/> Daily	
Time 20:15 <input type="button" value="🕒"/>	
Fetch Users From Auth Server <input type="checkbox"/>	
Distinguished Names Pattern* <input type="text" value="Distinguished Names Pattern"/>	

- g. **Fetch Users from Auth Server:** Select this checkbox, while importing RMS Users, if user details i.e. E-mail address and Distinguished Name to be fetched from AD instead of CSV.

Note:

- Selecting this option will communicate with AD for each user record and thus may increase the traffic and processing time.

Distinguished Name Pattern: Distinguished Name Pattern defines, the distinguished name to be imported into RMS when processing CSV. An example of correct DN pattern should be:

CN={UserName},OU=India,DC=accops,DC=local

e.g. user john is being imported from CSV, then in RMS its entry will be created as per configured distinguished name pattern i.e. CN=john,OU=India,DC=accops,dc=local

Note:

- Distinguished name pattern must be in the same format as specified above
- Any difference between the CSV imported entry and same user being added or modified from portal will result in duplicate entries. An example should be, a user with actual DN as CN=john,OU=JP,dc=accops,dc=com
 - While importing CSV, the distinguished name pattern is specified as CN={UserName},OU=jp,DC=Accops,DC=com
 - Later same user is added into different course from RMS portal and then it fetched the correct DN from AD which is not exactly same as being imported from CSV and thus it will create two entries of same user with different DN

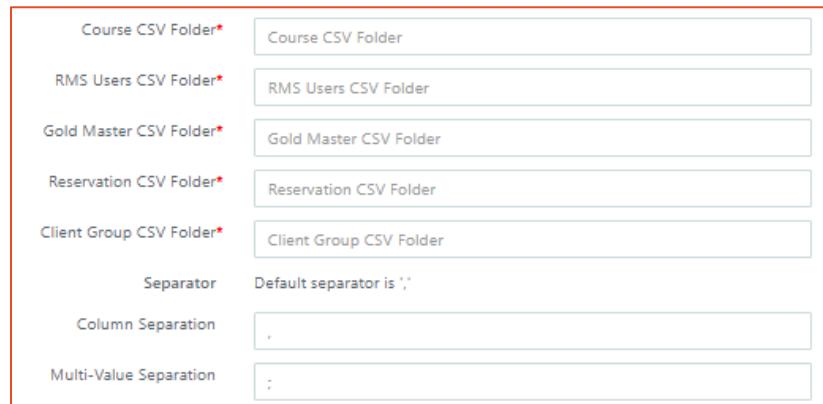
5. Click on **Next** button to move to the next tab **CSV Location Details**, having following configurations:

- a. **Import Location:** Defining the type of location from where CSV files will be imported, default selected option is **Folder Path**
- b. **Root Path*:** Root folder in which specific folders for specific CSV types will be available

Import Location*	Network Path
Domain Credentials	
User Name*	User Name
Password*
Root Path*	Root Path

- c. **Course Folder:** The field will be displayed, when **Course** is selected in first tab
 - i. Provide the name of the folder in which CSVs for Courses will be kept
- d. **Participants Folder:** The field will be displayed, when **Participant CSV** is selected in first tab
 - i. Provide the name of the folder in which CSVs for Participants will be kept
- e. **Gold Master Folder:** The field will be displayed, when **Gold Master CSV** is selected in first tab
 - i. Provide the name of the folder in which CSVs for Gold Masters will be kept
- f. **Reservation Folder:** The field will be displayed, when **Reservation CSV** is selected in first tab
 - i. Provide the name of the folder in which CSVs for Reservations will be kept

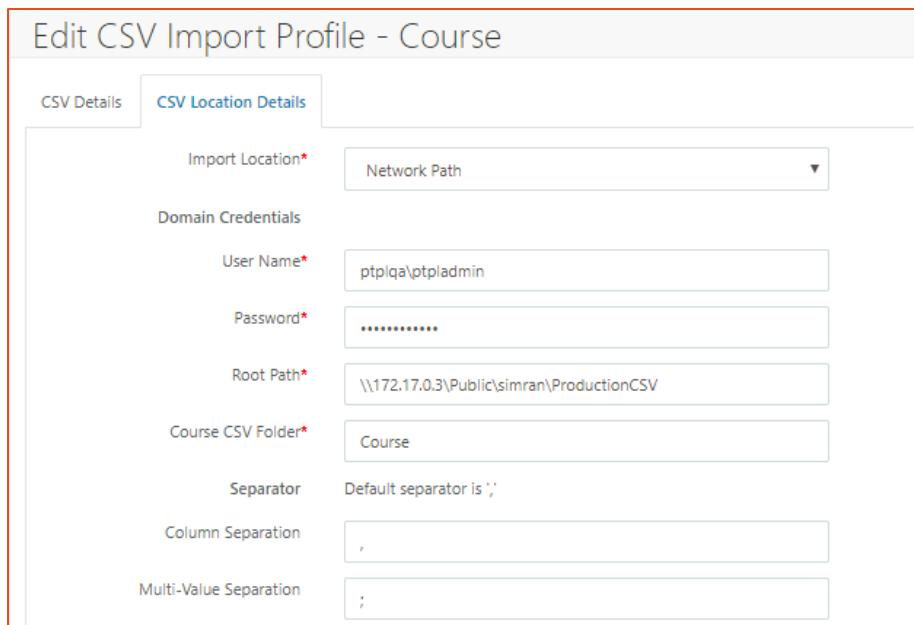
- g. **Client Group CSV Folder:** The field will be displayed, when **Client Group** is selected in first tab
 i. Provide the name of the folder in which CSVs for Client Groups will be kept



The screenshot shows a configuration interface for CSV location details. It includes fields for Course CSV Folder, RMS Users CSV Folder, Gold Master CSV Folder, Reservation CSV Folder, and Client Group CSV Folder, all set to 'Course CSV Folder'. Below these are separator settings: 'Separator' is set to a comma (,), 'Column Separation' is set to a comma (,), and 'Multi-Value Separation' is set to a semi-colon (;).

Course CSV Folder*	Course CSV Folder
RMS Users CSV Folder*	RMS Users CSV Folder
Gold Master CSV Folder*	Gold Master CSV Folder
Reservation CSV Folder*	Reservation CSV Folder
Client Group CSV Folder*	Client Group CSV Folder
Separator	Default separator is ','
Column Separation	,
Multi-Value Separation	;

- h. **Separator:** Definition of default separator to be used. Default separator is comma (,)
 i. **Column Separator:** Default provided in comma. If needed enter any new separator for columns.
 j. **Multi-Value Separator:** Default multi-value (Multiple entries in a single cell) separator is semi-colon (;), enter a new separator if needed to be used.



The screenshot shows the 'Edit CSV Import Profile - Course' page. It displays the 'CSV Location Details' tab. The 'Import Location' is set to 'Network Path'. Under 'Domain Credentials', 'User Name' is 'ptplqa\ptpladmin' and 'Password' is masked. The 'Root Path' is '\\172.17.0.3\Public\simran\ProductionCSV'. The 'Course CSV Folder' is set to 'Course'. Below these are separator settings: 'Separator' is set to a comma (,), 'Column Separation' is set to a comma (,), and 'Multi-Value Separation' is set to a semi-colon (;).

Import Location*	Network Path
Domain Credentials	
User Name*	ptplqa\ptpladmin
Password*	*****
Root Path*	\\172.17.0.3\Public\simran\ProductionCSV
Course CSV Folder*	Course
Separator	Default separator is ','
Column Separation	,
Multi-Value Separation	;

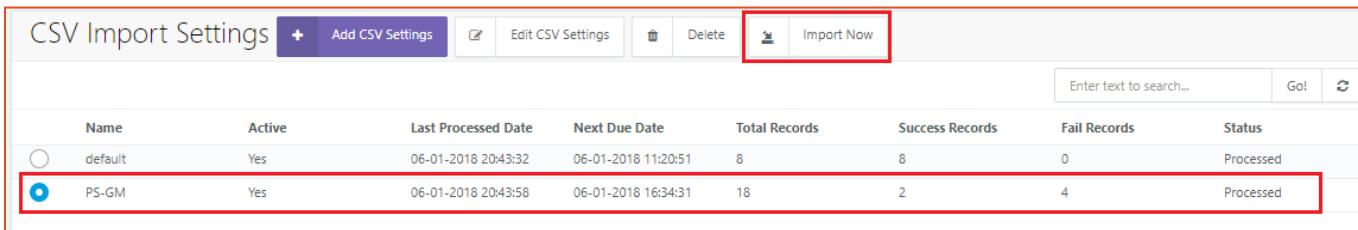
6. Click on **Next** button to save **CSV Import Settings**.
 7. **CSV Import Settings** will be saved, and all specified CSV will start getting processed as per configured frequency.

Manually Initiating CSV Import

Reservation admins will also be able to manually initiate the CSV import using the following process:

1. Create CSV import settings as specified in above section
2. Select specific CSV Import Settings from the displayed list

3. Click on button ***Import Now***



Name	Active	Last Processed Date	Next Due Date	Total Records	Success Records	Fail Records	Status
default	Yes	06-01-2018 20:43:32	06-01-2018 11:20:51	8	8	0	Processed
PS-GM	Yes	06-01-2018 20:43:58	06-01-2018 16:34:31	18	2	4	Processed

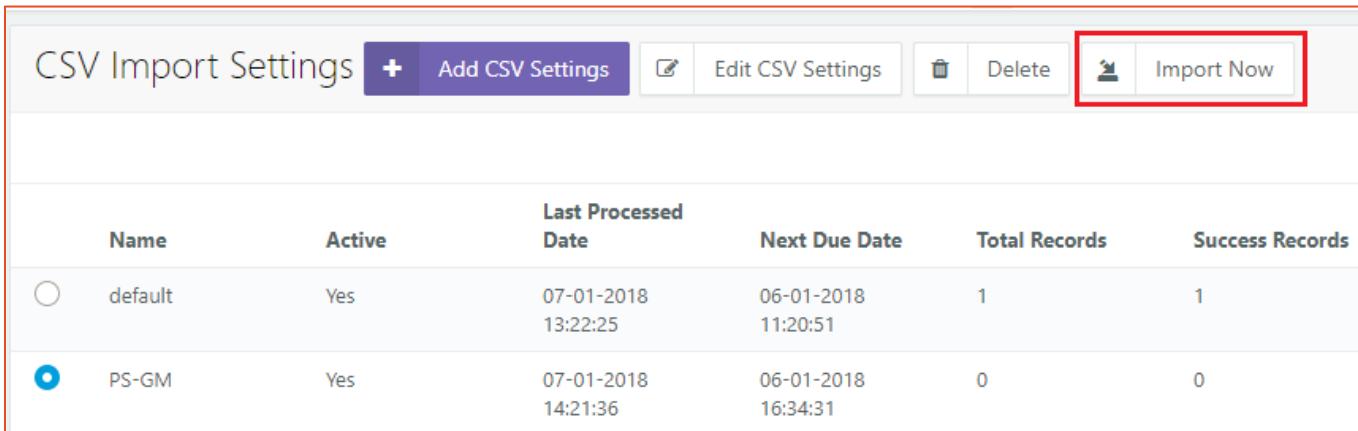
4. CSV import will be initiated, and success status will be shown. All CSVs placed in respective folders as per the configurations in the selected ***CSV Import Settings***, will get processed.

Editing CSV Import Settings

Administrator can also edit ***CSV Import Settings*** at a later point of time if any configurations get changed.

To modify ***CSV Import Settings***, follow the below steps:

1. Select ***CSV Import Settings*** from the displayed list
2. Click on ***Edit*** button



Name	Active	Last Processed Date	Next Due Date	Total Records	Success Records
default	Yes	07-01-2018 13:22:25	06-01-2018 11:20:51	1	1
PS-GM	Yes	07-01-2018 14:21:36	06-01-2018 16:34:31	0	0

3. Edit ***CSV Import Settings*** dialog will be displayed, enabling admin to modify following configurations:

- a. In ***CSV Details*** tab
 - i. Make CSV Import Settings as active/inactive
 1. Marking any CSV Import Settings as inactive will stop automatic processing of CSVs for configured RMS objects.
 - ii. Changing name of configuration
 - iii. Modifying ***CSV For*** settings to enable/disable different CSVs import
 - iv. Change ***Import Frequency***
- b. In ***CSV Locations*** tab, following fields can be modified:
 - i. Root Path
 - ii. Reservation Folder
 - iii. Participants Folder
 - iv. Gold Masters Folder
 - v. Courses folder
 - vi. Column Separator

- vii. Multi-Value Separator
4. Click on **Save** button to save the settings.

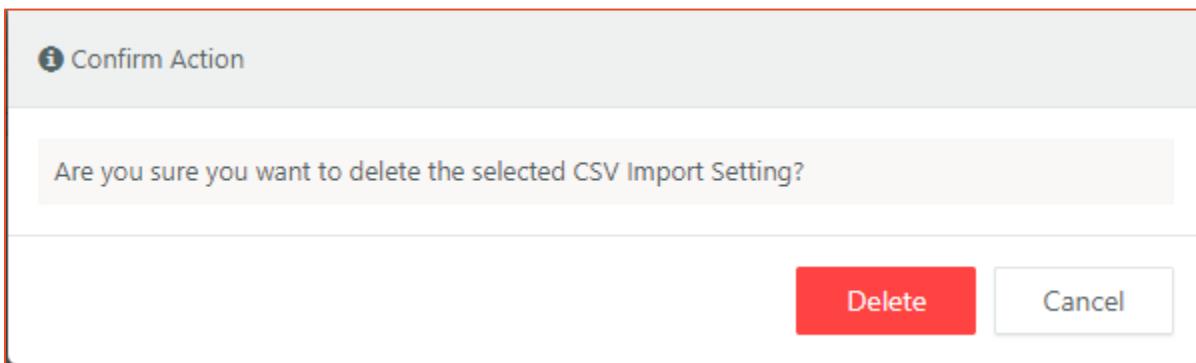
Delete CSV Import Settings

To delete **CSV Import Settings**, follow the below settings:

1. Select **CSV Import Settings** from the displayed list
2. Click on **Delete** button

Name	Active	Last Processed Date	Next Due Date	Total Records	Success Records
<input type="radio"/> default	Yes	07-01-2018 13:22:25	06-01-2018 11:20:51	1	1
<input checked="" type="radio"/> PS-GM	Yes	07-01-2018 14:21:36	06-01-2018 16:34:31	0	0

3. **Confirm Action** dialog will be displayed, click on **Delete** button to continue deleting the profile



4. **CSV Import Settings** will be deleted, and processing of configured CSVs will be stopped.

Client Groups

For restricting lab access to only defined set of endpoints, client groups can be defined and can be associated with Gold Master or reservations.

Once client groups are defined and configured on Gold Master or reservations, the reservations will only be accessible from the endpoints belonging to allowed client groups. Following types of parameters can be used to define a client group:

- LAN IP (Applicable for HyWorks Clients only)
- MAC Address (Applicable for HyWorks Clients only)
- WAN IP (Applicable for HyLite and HyWorks Clients)

Following flow can be used to define and use client group restrictions:

- Import client group CSV with appropriate entries or Add using Client Group screen
- Configure gold master access to selected client groups: To restrict all the reservations from the gold master
- Configure reservations with client groups: To restrict the reservation access to selected client groups only

Import Client Group CSV

In existing RMS – CSV Configurations, option to import Client Group CSV has been added. Rest of the configurations e.g. CSV Format, CSV Location details will remain same.

- Following types of parameters can be used to define a client group:
 - LAN IP (Applicable for HyWorks Clients only)
 - MAC Address (Applicable for HyWorks Clients only)
 - WAN IP (Applicable for HyLite and HyWorks Clients)
- A single client group can have one or multiple types of parameters
- Below are some examples of CSV entries:

ClientGroupName	Para-Type	Add/Delete	Para-Value	realmname
CG_LAB-AE-MAC	M	A	aa-bb-cc-dd-ee-11	
CG_LAB-AE-MAC	M	A	aa:bb:cc:dd:ee:12	
CG_LAB-AE-MAC	M	A	aa:bb:cc:dd:ee:13	
CG_LAB-BE-LAN	L	A	172.16.0.16	
CG_LAB-BE-LAN	L	A	172.16.0.0/24	
CG_LAB-BE-LAN	L	A	172.16.1.2-172.16.1.127	
CG_LAB-BE-WAN	W	A	192.168.0.0/16	
CG_LAB-BE-WAN	W	A	123.201.54.132	
CG_LAB-BE-WAN	W	A	123.201.54.133	
CG_LAB-BE-WAN	W	A	123.201.54.134	
CG_LAB-CSE-MIX	L	A	172.17.0.1-172.17.0.254	
CG_LAB-CSE-MIX	L	A	192.168.0.10	
CG_LAB-CSE-MIX	M	A	aa:bb:cc:dd:xy:13	
CG_LAB-CSE-MIX	M	A	aa:bb:cc:dd:xy:14	

So now there will be four client group definitions:

1. CG_LAB-AE-MAC: aa-bb-cc-dd-ee-11 <OR> aa:bb:cc:dd:ee:12 <OR> aa:bb:cc:dd:ee:13
2. CG_LAB-BE-LAN: 172.16.0.16 <OR> 172.16.0.0/24 <OR> 172.16.1.2-172.16.1.127

3. CG_LAB-BE-WAN: 192.168.0.0/16 <OR> 123.201.54.132 <OR> 123.201.54.133 <OR> 123.201.54.134
4. CG_LAB-CSE-MIX: (172.17.0.1-172.17.0.254 <OR> 192.168.0.10) <AND> aa:bb:cc:dd:xy:13 <OR> aa:bb:cc:dd:xy:14

CSV Import Wizard

Following options are available in CSV import wizard in HyLabs. To enable Client Group import, option should be checked in CSV Import Profile and appropriate file should be placed at defined location of CSVs.

Please see more details about CSV import in section [CSV Configurations](#)

Client Group Examples

Consider the above client groups are associated with different reservations as described below:

1. RES#1 - CG_LAB-AE-MAC
 2. RES#2 - CG_LAB-BE-LAN
 3. RES#3 - CG_LAB-BE-WAN
 4. RES#4 - CG_LAB-CSE-MIX
 5. RES#5 – CG_LAB-AE-MAC, CG_LAB-BE-LAN
- o RES#1: Users logging-in from device with having MAC addresses defined for Client Group “CG_LAB-AE-MAC” will have access whereas any user logging in from HyLite or other devices will not be able to access
 - o RES#4: will only be accessible from clients where the MAC address is either aa:bb:cc:dd:xy:14 or aa:bb:cc:dd:xy:13 and having the IP as 172.17.0.1-172.17.0.254 or 192.168.0.10
 - With multiple types of parameters defined in single client group, both types of conditions should meet to give the access
 - o RES#5: Will be accessible from clients having MAC addresses defined in CG_LAB-AE-MAC or clients having IP defined in CG_LAB-BE-LAN
 - If a reservation is having multiple client groups, then member of any client group will be able to access the reservations.

Configure gold master access to selected client groups

Once client groups are imported, the next action can be assigning the client groups to Gold Master.

- By default, gold master VMs and reservations will be unrestricted
- While adding/editing Gold Master or reservation administrator or incharge will be able to modify client group configurations.
- One or multiple client groups can be added to Gold Masters
- Gold Master client group configurations will have higher precedence and thus once restricted to specific client group; all reservations made from this gold master will also inherit the access policy. E.g. if a Gold Master VM is restricted to be accessed by Client Group#1 and Client Group#2, then reservations made from this Gold Master will be by default restricted to Client Group#1 and Client Group#2, however admin can modify the reservations further restrict to more limited client groups.
 - New client groups additions will not be allowed for reservations, having restrictions at the Gold Master level
- While modifying the client groups access policies at Gold Master level, warning will be displayed with the affected reservation lists and thus administrator should be able to check and update the reservations accordingly.
- Access policies defined on Gold Master will also be applicable for self-study and course self-study reservations created from it.

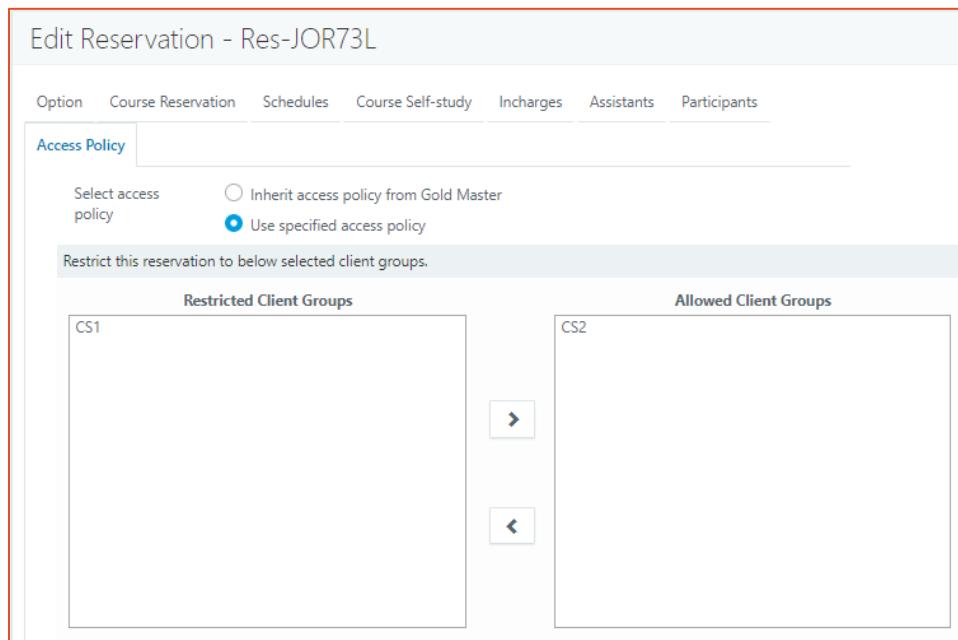
Configure reservations with client groups

Reservations can use two types of access policies:

1. Inherit from Gold Master:
 - a. If Gold master is configured with unrestricted access, then reservations inheriting access policies from Gold Master will also have unrestricted access
 - b. If Gold master is configured with restricted access, then reservation inheriting access policies from Gold Master will also have restricted access only from defined client groups
2. Use specified access policy

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- a. For reservation from unrestricted gold master, specifying the client groups will only affect the current reservations and addition of any client group will be allowed.
- b. For reservations where gold master is restricted, specifying client groups will be limited to client groups which are given access at gold master level. Client groups can be reduced from such reservations but cannot be added



Flow of Client Group Usage



Permissions to Modify Client Group Configurations

1. All users having access to modify Gold Master configurations will be able to modify the access policies.
2. All users having access to modify reservations will be able to modify the access policies of the reservations as well.

Client Access Behavior

1. Access from HyLite to restricted reservation will be shown as disabled
2. Reservations will not be shown on client application tray if reservation is not available or not having access due to access policies

Known Behavior with Client Groups Feature

1. Access from HyLite will only use the WAN based client groups and thus if any reservation must be restricted to be accessed from HyLite, specific rule with WAN IPs must be specified.
2. While connecting from HyWorks Clients WAN IP rules can also be used as LAN IPs.

Settings - My Settings

My Settings page in RMS provides options to save e-mail and mobile configurations which will be used to send e-mail.

Follow the below steps to save your settings:

1. Login into RMS with appropriate RMS user credentials
2. Go to section **Announcement Settings – My Settings**
3. Provide appropriate e-mail address

The screenshot shows a 'My Settings' page with the following fields:

- Email Address: admin.rms001@ptplqa.local
- Notification: A checked checkbox.

At the bottom are three buttons: 'Send test email' (blue), 'Save' (green), and 'Reset' (white).

4. Select checkbox **Notification** to allow RMS to send notifications
5. Click on **Test Mail** button to send a test e-mail,
6. Click on **Save** button to save the configurations – settings will be saved and if this user is part of any reservation – the user will be notified on configured e-mail

Announcement(s)

Announcements in RMS is another way of sending the notification to the RMS users and these announcement notifications will be displayed on the dashboard of RMS users, hence an internal customized notification mechanism for RMS users.

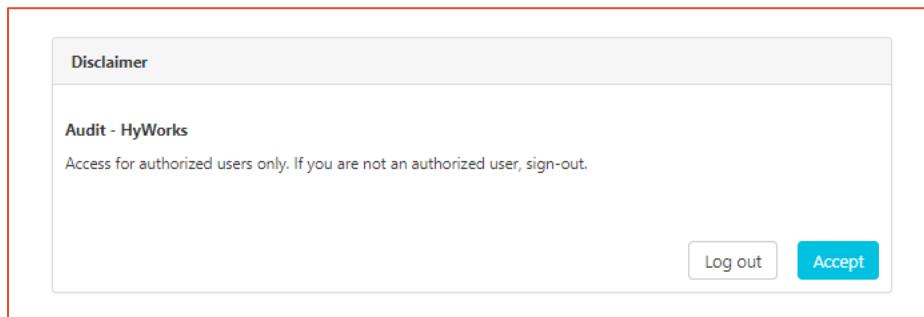
RMS supports following types of announcements:

- **Audit Announcements:** The announcement allows user to continue to access RMS portal only after accepting the displayed message. Audit announcements are shown on every login.
- **Maintenance Announcement:** Announcements to suggest critical server maintenance. Maintenance announcements are shown after logon and having high weightage than General announcement in default display order at user portals
- **General Announcements:** General purpose announcements for end-users to be displayed after logging into RMS portal. The display priority is lower than Maintenance announcements.

Audit Announcement Behavior for RMS Login

Once any audit announcement is added, the users will be required to accept them to complete the login process:

- Provide appropriate credentials and click on Sign-in button
- Audit announcement page will be displayed:
 - On accepting the audit announcement, user can continue to access the assigned applications and desktops



Announcement Operations

Following management operations are available:

1. Add Announcements
2. Edit Announcements
3. Delete Announcements

Add Announcements

Reservation admin can create announcements to be displayed for defined duration. To create an announcement, follow the below steps:

1. Go to **Announcement Settings – Announcements** page
2. Click on button **Add Announcement**

3. In **Add Announcement** wizard, following details are required:

The screenshot shows the 'Add Announcement' form. It includes fields for 'Announcement Type' (set to 'General'), 'Title' (empty), 'Content' (empty, with character counts 0/100 and 0/4000), 'Start Date' (10/17/2019 at 2:31), 'End Date' (10/17/2019 at 3:31), 'Propagate To Child Organization' (unchecked), and 'Active' (checked). At the bottom are 'Save' and 'Cancel' buttons.

- a. Announcement Type: Type of announcement to be added i.e. Audit, Maintenance or General
 - b. Title*: Title or subject of announcement
 - c. Content*: Any specific message for receivers
 - d. Start Date*: As in when the announcement should start to be displayed on RMS users' page, default value is current time of the system
 - e. End Date*: Probable end date of announcement when it should stop to be shown on RMS users' page.
4. Once all the information is filled, click on button **Update** to save announcement
5. Announcement will be created and will be shown on all RMS users' dashboard on configured time.

Edit Announcement

To modify an announcement, follow the below steps:

1. Go to **Announcement Settings – Announcements** page
2. Select an existing announcement and click on **Edit Announcement** button
3. Change the details as needed
 - a. Announcement Type
 - b. Title
 - c. Content
 - d. Start Date/Time
 - e. End Date/Time
4. Click on **Update** button to save the changes.
5. The modified announcement will be displayed as per the scheduled time.

Delete Announcements

An existing announcement or multiple announcements can also be removed from RMS. RMS users will not be able to see the deleted announcements. Below steps can be followed to delete announcements:

1. Go to **Announcement Settings – Announcements** page

2. Select one or more announcement and click on **Delete Announcement** button
3. **Confirm Action** dialog will be displayed, click on **Delete** button to continue deleting the announcements.
4. Announcements will be deleted and will no longer be shown on RMS Users.

RMS Users Permission Matrix

In HyWorks, the following roles are created with installation and cannot be modified:

1. Reservation Admin
2. Incharge
3. Assistant
4. Participant

This section will provide details of default permission sets for system created RMS users.

Note:

- Few of the modules are renamed but still not modified in HyWorks – Roles section
- Not all configurations support, Add/Update/Delete operations but may be marked as allowed or disallowed e.g. Dashboard
- Not all permissions are defined using the permission table and thus won't be listed over here but may still get applied on User logon.

Module Name	Role	Privileges			
		Add	Update	Delete	View
Announcement	Reservation Admin	(NA)	(NA)	(NA)	(Y)
	Incharge	(X)	(X)	(X)	(Y)
	Assistant	(X)	(X)	(X)	(Y)
	Participant	(X)	(X)	(X)	(Y)
Course	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(Y)	(X)	(Y)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Course Import	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Gold Master	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(Y)
	Assistant	(X)	(X)	(X)	(Y)
	Participant	(X)	(X)	(X)	(X)
Gold Master Connect	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(Y)	(Y)	(Y)	(Y)

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	Assistant	(X)	(X)	(X)	(Y)
	Participant	(X)	(X)	(X)	(X)
Gold Master Operation	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(Y)	(Y)	(Y)	(Y)
	Assistant	(X)	(Y)	(X)	(Y)
	Participant	(X)	(X)	(X)	(X)
Gold Master Reservation	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(Y)	(Y)	(Y)	(Y)
	Assistant	(X)	(Y)	(X)	(Y)
	Participant	(X)	(X)	(X)	(X)
Gold Reservation Connect	Reservation Admin	(NA)	(NA)	(NA)	(Y)
	Incharge	(Y)	(Y)	(Y)	(Y)
	Assistant	(X)	(Y)	(X)	(Y)
	Participant	(X)	(X)	(X)	(X)
Participant	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(Y)	(Y)	(Y)	(Y)
	Assistant	(Y)	(Y)	(Y)	(Y)
	Participant	(X)	(X)	(X)	(X)
Participant Import	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Reservation Dashboard	Reservation Admin	(NA)	(NA)	(NA)	(Y)
	Incharge	(NA)	(NA)	(NA)	(Y)
	Assistant	(NA)	(NA)	(NA)	(Y)
	Participant	(NA)	(NA)	(NA)	(Y)
Reservation Extension	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(Y)	(Y)	(Y)	(Y)
	Assistant	(Y)	(Y)	(Y)	(Y)
	Participant	(Y)	(Y)	(Y)	(Y)
Reservation Notification Setting	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Reserved VM (All) Operation	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Reserved VM (All) Operations	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Deployment Settings	Reservation Admin	(Y)	(Y)	(Y)	(Y)

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	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Default Reservation Settings	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
CSV Configurations (CSV Import Settings)	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)
Provisioning Profile	Reservation Admin	(Y)	(Y)	(Y)	(Y)
	Incharge	(X)	(X)	(X)	(X)
	Assistant	(X)	(X)	(X)	(X)
	Participant	(X)	(X)	(X)	(X)

RMS Delivery Flows

Using Reservation Management System administrators can deliver following different types reservations for RMS users (Incharges, Assistants or Participants):

- Course based reservations for RMS users
- Course Self-study by Students
- Self-study reservations by administrator
- Gold Master Assignments for Incharges
- RMS Management using CSV

This section will provide details of these delivery options and their respective configurations by Reservation admins.

Course based Reservations for RMS Users

To deliver a course-based reservations reservation admin can follow the following two methods:

Reservation Creation by Incharge for Course by Reservation Admin



Reservation Creation by Reservation Admin (E2E)



Reference Documents

Please refer to following other documents related to Accops HyWorks

1. Accops HyWorks Admin Guide
2. Accops HyWorks Installation Guide
3. Accops HyWorks Quick Start Guide

Contact Support

In case your questions are not answered by this guide and you need technical assistance from Accops team, please contact technical support by following means:

Email: support@accops.com

Ticketing Portal: <http://support.accops.com>

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User Guide for Incharge

Accops Reservation Management System

Last Updated: 31 October 2018

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Introduction

Incharge is faculty responsible for course and basically an AD user which can be added as an incharge while creating course.

In Accops Reservation Management System, when a user is assigned with **Incharge** role, enables it to perform following actions in RMS:

1. Viewing the announcements (notifications) shared by reservation admin
2. Connecting to assigned Gold Master VM and making changes as per lab (course) requirements
3. Reservation Management of the course
 - a. Creating reservations for the courses
 - b. Modifying course reservations
 - c. Cancelling course reservations
 - d. Deleting course reservations
 - e. Fixing the reservations (running with errors)
4. Creating Self-study and Course Self-study reservations
5. Managing RMS users for Courses
6. Viewing notification settings under screen **My Settings**

All above operations will be covered in detail in later section of this document.

How does an incharge user get added in RMS?

A user can be designated as Incharge in following two manners:

- User is added under incharge category while creating course from RMS portal
- RMS Users CSV is being imported into RMS and users are given role of Incharge

Once assigned with **Incharge** role, user will be able to perform above specified activities.

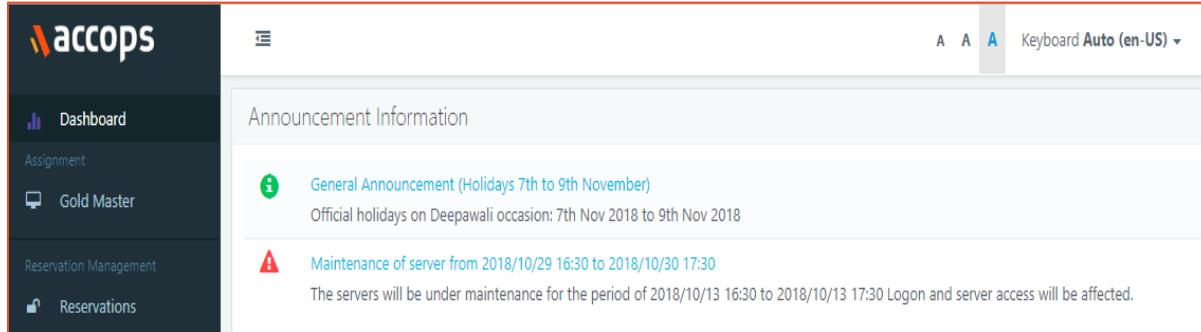
Authorized Operations by Incharge User

In this section, all operations which an incharge user can perform in RMS are explained in detail.

Viewing Announcements

The default landing page for RMS user is Dashboard and for user with **Incharge** role, it displays the announcements created by reservation admin.

Incharge will be able to view the announcements but will not be able to modify it.



A screenshot of the Accops RMS dashboard. On the left, there is a dark sidebar with the Accops logo at the top, followed by navigation links: Dashboard, Assignment, Gold Master, Reservation Management, and Reservations. The main content area has a light blue header bar with the text "Announcement Information". Below this, there are two items listed: a green info icon followed by "General Announcement (Holidays 7th to 9th November)" and a red warning icon followed by "Maintenance of server from 2018/10/29 16:30 to 2018/10/30 17:30". Both items have descriptive text below them. At the top right of the main area, there are font size and keyboard settings options.

The announcements are shown in a list view and user can click on title (Link) to view more details.



A screenshot of a modal dialog box titled "Announcement Content". Inside, there is a "Title" section with the text "General Announcement (Holidays 7th to 9th November)" and a "Content" section with the text "Official holidays on Deepawali occasion: 7th Nov 2018 to 9th Nov 2018". At the bottom right of the dialog is a blue "OK" button.

Gold Master Connect and Content Management

An incharge will be able to connect to following types of Gold Master VMs:

- Incharge Gold Master VMs assigned by reservation admin to incharge
- Course default Gold Master (not restricted to admin only)
- Gold Master which is assigned to course and incharge is member of that course

Connection to Gold Master enables incharges for managing contents, which will be required for course.

How to connect

If a Gold Master is powered-on and ready for connection, incharge user will be able connect to it by:

1. Select Gold Master from the list view
2. Click on **Connect** button

Gold Master Name	OS	HDD (GB)	CPU	Memory (MB)
AutomationNOOS-2	Microsoft Windows Se...	0	1	4
QA_Ugnome_Onkar	Ubuntu Linux (64-bit)	20	4	4096
QA_WIN10_1803	Microsoft Windows 10...	40	2	4096

3. Remote session to Gold Master will be initiated on new tab and incharge will be able to make the changes into Gold Master.
 - a. On logon incharge user is also provided local administrator privileges.

Power Operations on Gold Master

Incharge will also be able to perform power operations on assigned Gold Master VMs. The power operations are displayed as per current power state of Gold Master.

- For Powered on VMs: Shutdown, Power off, Suspend and Restart operations are available
- For Powered off VMs: Option to Power on will be shown
- For Suspended VM: Option to Resume/Power on will be displayed

Reservations Management

As introduced briefly, incharge will have full control of all course reservations in which he is having the incharge role.

Detailed information on reservation management is provided in this section of document:

Managing Course Reservations

Incharge is having full authority on its assigned course reservations and an Incharge can create/edit/delete/cancel operations on course reservations.

Course Reservation Creation

To create a course reservation:

Once the prerequisites are in place, a reservation can be scheduled using following steps:

1. In RMS portal go to **Reservations** page
2. Click on button **Add New Reservation**
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Course**

The screenshot shows the 'Add Reservation' interface. At the top, there's a header 'Add Reservation'. Below it is a navigation bar with tabs: 'Option' (which is highlighted in blue), 'Course Reservation', 'Schedules', 'Course Self-study', 'Incharges', and 'Assistants'. Underneath the tabs, there are two more buttons: 'Participants' and 'Access Policy'. At the bottom of the interface, there's a section labeled 'Reservation For' with a dropdown menu. The 'Course Reservation' option is selected and highlighted with a blue border. A small downward arrow icon is located to the right of the dropdown menu.

- b. Click on **Next** button to navigate to **Course Reservation** tab

The screenshot shows the 'Add Reservation' page with the 'Course Reservation' tab selected. Key configuration settings include:

- Clone From Snapshot:** Current State (selected)
- Select Snapshot:** Browse, Current State
- Total VMs:** 4
- Allow Extensions:** Enabled (checked)
 - Extension Duration:** 15 Minutes
 - No. of Times:** 1
- Reuse VMs for each run of reservation:** Enabled (checked)
- Assignment Life Span:** Permanent
- Allow Connect:** 0:00, Before Reservation Start

- In **Course Reservation** tab, select the course for which reservation must be created
- Selecting a course auto-fills the Classroom details and lists down the Gold Master VMs associated with the selected course
- Select Gold Master to be used for this course reservation (List of all gold master VMs i.e. course default and gold master assigned to this course)
- Clone from Snapshot:** Incharge is not allowed to change **Clone from Snapshot** configuration and setting will remain disabled for incharge user
- Selection of course also auto-fills the field **Total VMs**, which defines total number of VMs to be cloned from Gold Master
 - Total VMs**
 - By default, it will be populated with the total number of RMS users added to the course i.e. Incharges, Assistants and Participants, but admin can choose to change the count as well.
 - The reservation will deploy linked clones as per the given number only.
- Allow Extensions:** On enabling option **Allow Extensions**, incharge during course reservation will be able to extend the reservation by certain time as specified in the configuration. The extensions will be limited to number specified in the course configurations. Following configurations are available for extensions:

- i. **Extension Duration:** Duration of extension
 - ii. **No. of Times:** Allowed number of extensions after the course reservation e.g. 2, then it will allow the reservation to be extended twice with duration as extension duration.
 - i. **Reuse VMs for each run of reservation:** Checkbox enables the reuse of provisioned VMs in every cycle of reservation, which means the provisioned VMs won't get deleted after the first cycle is completed. Unchecking this option will provision new VMs before every occurrence of this reservation
 - j. **Assignment Life Span:** Defines the assignment life span for reservation. Available options are:
 - i. **Permanent:** User will be given the same desktop for all the schedules and all the occurrences of the reservation
 - ii. **Temporary:** User assignment will be limited to single occurrence and on completion of the schedule the assignment will be reset.
 - k. **Allow Connect Before Reservation Start:** The configuration allows the users to connect the reservation before the actual start time. By default, the setting is configured as zero which means the users will only be able to connect to VMs when reservation is running.
4. Click on **Next** button to navigate to **Schedule** tab
5. **Schedule** tab defines the date, time and pattern, when the VMs will be delivered to end users. In **Schedule** tab,
- a. Define if reservation should be scheduled **One Time** or **Recurring**

One time		Recurring	
Add Reservation		Add Reservation	
Option	Course Reservation	Schedules	Course Self-study
<input checked="" type="radio"/> One Time	<input type="radio"/> Recurrence	<input type="radio"/> One Time	<input checked="" type="radio"/> Recurrence
Code	1st	Code	Re2
Start Time	19:35	Start Time	19:35
End Time	20:31	End Time	20:31
Start Date	2018/10/29	Start Date	2018/10/29
End Date	2018/10/29	End Date	2018/11/07
Add		Add	

- i. For **One Time** schedule,
 1. **Schedule Code:** Provide a unique code for reservation.
 2. Provide appropriate **Start Time/End Time**

3. Provide appropriate **Start Date/ End Date**
- ii. For **Recurring** schedule -> Define recurring pattern as daily or weekly
 1. **Daily Recurring Reservation**
 - a. Provide Course **Start Time** and **End Time**: On which reservation will run (**Duration** field will be auto-calculated as per provided time range)
 - b. Select **Recurrence Pattern** as **Daily** and provide numeric value from 1-7 for field **Recur Every** (Recur every field will define the recurring schedule, e.g.
 - i. Recur every = 1, means the schedule will occur on daily basis
 - ii. Recur every = 2, means the schedule will occur on alternate day
 - iii. Recur every = 3, means the schedule will occur on every two days and so on
 - c. Select **Recurrence Range** (Start Date and End Date: schedule can also be defined to run infinitely with no End Date)
 2. **Weekly Recurring Schedule**
 - a. Provide **Course Start Time** and **End Time**: On which reservation will run (**Duration** field will be auto-calculated as per provided time range)
 - b. Select **Recurrence Pattern** as **Weekly** and provide numeric value from 1-52 for field **Recur Every Week(s)** (**Recur every** field along with selected **Day** will define the recurring schedule, e.g.
 1. For a weekly Monday reservation: Recur every = 1 and selected day will be Monday
 2. For a bi-weekly Tuesday, Wednesday reservation: Recur every = 2 and selected day will be Tuesday and Wednesday
 3. Select **Recurrence Range** (Start Date and End Date: schedule can also be defined to run infinitely with no End Date)
6. Once schedule is confirmed, click on **Add** button
7. Proceed to next screen using **Next** button
8. **Course Self-study Screen:** Applicable when reservation is having multiple schedules or recurring pattern. Allows the admin to enable/disable the course self-study for participants. If allowed, participants will be able to create self-study reservation after the course reservation. Following configurations are available:

Add Reservation

Option	Course Reservation	Schedules	Course Self-study	Incharges
Enable Course Self-study	<input checked="" type="checkbox"/>			
Maximum Units to be Used	<input type="text" value="4"/>			
Max Duration	3:00	<input type="button" value=""/>		
Allow Extension	<input checked="" type="checkbox"/>			
Reservation Window	<input checked="" type="checkbox"/>			
Start Time	19:35	<input type="button" value=""/>		
End Time	22:31	<input type="button" value=""/>		

- a. **Enable Course Self-study:** To allow course self-study for the course reservation
 - b. **Maximum Units to be used:** The number of units to be allowed for self-study.
 - c. **Max Duration:** Maximum allowed duration for which a participant can request for self-study.
 - d. **Allow Extension:** Will be enabled only if extension is allowed for course. If checked, extensions will be allowed as per configurations of reservation configuration. If unchecked, the extensions in course self-study won't be allowed irrespective of configuration in course.
 - e. **Reservation Window:** If enabled, course self-study reservation will be allowed only in the defined timeslot and this should not be conflicting with the course reservation timing. If enabled, the start time and end time must be defined.
9. Next three tabs are for viewing and editing RMS Users i.e. **Incharges**, **Assistants** and **Participants** respectively.
- a. It displays the list of all RMS users
 - b. Incharges, assistants or participants cannot be removed from course in **Reservation** wizard, but they can be excluded by unchecking the undesired RMS user in respective tab
 - i. VMs are not created for excluded users and they won't be able to access any reserved VMs from the respective reservations.
 - c. In **Access Policy** wizard, appropriate client groups can be selected which determines if reservation access should be restricted from any defined group of endpoints only.
 - i. Gold Master configuration is having highest priority
 - ii. Default **Access Policy** is **Inherit access policy from Gold Master**

- iii. Incharge can opt to use specific policy as well but this can either be sub-set of the Gold Master configuration.

The screenshot shows the 'Add Reservation' interface with the 'Access Policy' tab selected. Under 'Select access policy', the 'Use specified access policy' option is selected. Below this, there are two lists: 'Restricted Client Groups' on the left containing 'LAN2', 'LAN-ClientGroup', and 'Onkar', and 'Allowed Client Groups' on the right which is currently empty. Between the two lists are two small rectangular buttons with arrows: one pointing right above one pointing left.

10. Click on **Save** button on to schedule the reservation.
11. Once reservation is saved, it will be listed in the **Reservations** tab.

Connecting Course Reservations

An incharge is authorized to connect to one of the reserved VMs from the course reservations, created in RMS; to connect to a course reservation:

1. In RMS portal go to **Reservations** page
2. Currently running reservations, will be shown with **Connect** button
3. Click on **Connect** button
4. One of the reserved VM will be assigned and configured for incharge user access and connection will be opened in a new tab

Edit Course Reservation

An Incharge can modify an existing course reservation by selecting a reservation of list view and click on **Edit** button.

Reservation modification can be done to make changes in following properties:

- **Total VMs:** Change the count to a newer value. Reducing the numbers will not delete any existing deployed VMs but increasing the number will deploy new VMs on next preparation cycle.

- **Allow Extensions:** Enable disable or change configuration
- **Reuse VMs for each run of reservation:** Enable or disable the configuration
- **Assignment Lifespan:** Interchanging between option **Permanent** and **Temporary** is possible
- **Modify existing schedules:** Edit the schedule configurations of existing schedules. Existing schedules can also be deleted from edit wizard
- **Add new schedules:** New schedules can be added
- **Modify RMS Users (Incharges, Assistants, Participants)**
- **Modify Access Policies**

On saving reservations new configurations will be come into effect.

Note:

- When editing a reservation, reservation type, associated course or gold master cannot be changed.

Cancel Course Reservation

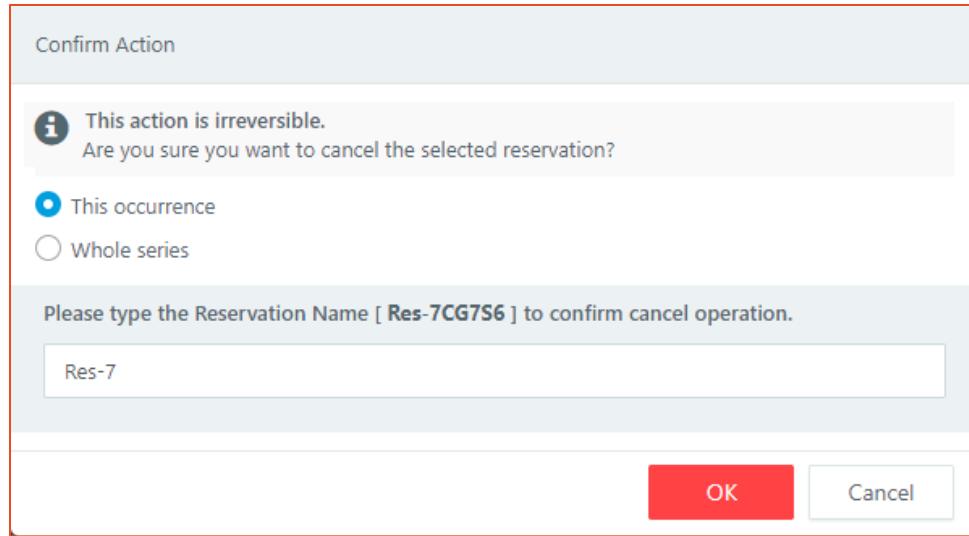
Cancelling refers to an action which will end the reservation. While cancelling a reservation, incharge can opt to cancel only the current or upcoming run of the reservation or can cancel the whole series or all occurrences of that reservation.

To cancel a reservation, follow the below steps:

1. Select a reservation from list
2. Click on **Cancel** button
3. In Confirm **Action Dialog**,
 - a. Select appropriate option **This Occurrence** or **Whole Series**
4. Re-enter the reservation name to confirm cancel operation and click on **OK** button

Note:

- **OK** button is not shown in **Confirm Action** dialog by default and only gets enabled when user types or pastes first 5 letters of reservation Id correctly, for information, reservation Id is shown in **Confirm Action** Dialog itself.



Important Points for Reservation Cancellation

- Cancel operation is irreversible and hence should be performed carefully and only when required.
- Once cancelled, a reservation will not be accessible and will get deleted automatically from RMS as per default removal period.
- Reservation cancellation can be done, when reservation is in any of the following steady state:
 - Not Running and Not deployed
 - Not Running and deployed
 - Running and Deployed

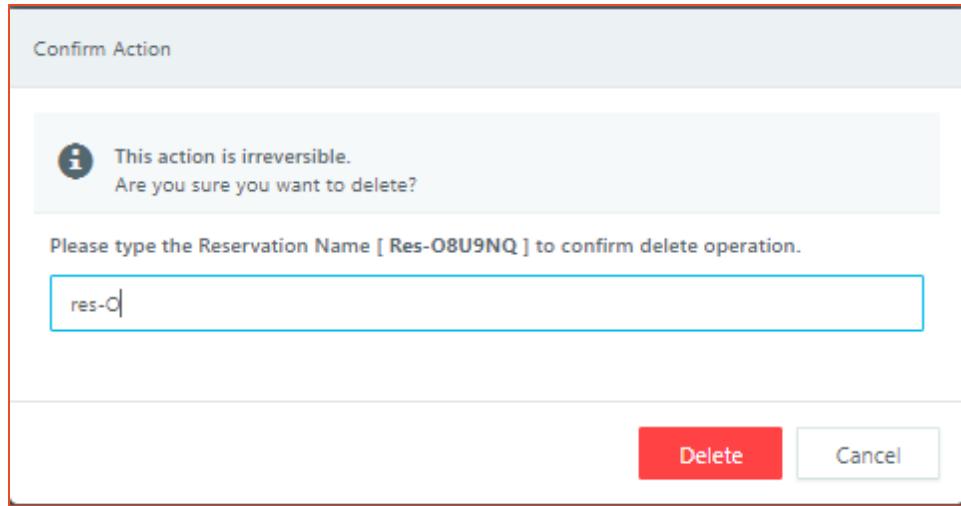
Reservation cancel option will not be shown when reservation is in any intermediate state, e.g. preparing, cancelling, expiring etc.

Delete Reservation

Delete refers to operation which will delete reservation and all associated entities from RMS and respective dedicated session provider.

Incharge can delete a course reservation for which he is part of. Delete reservation operation is irreversible and will delete all associated deployed VMs in backend. Thus, delete operation should be performed carefully and only when needed. To delete a reservation, follow the below steps:

1. Select a reservation from list
2. Click on **Delete** button
3. In Confirm **Action Dialog**,
 - a. Re-enter the reservation name to confirm cancel operation and click on **OK** button



Extend Reservation

If a course reservation is configured to allow extensions, then incharge is having option to extend the reservation as per configurations.

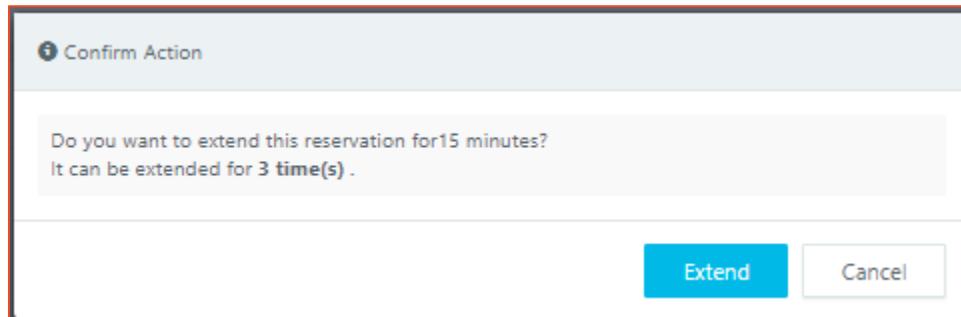
When incharge extends a course reservation, it applies for complete class and the current occurrence will be extended.

Pre-requisite for extending Course reservation:

- Course reservation must be configured to allow extensions.
- Course must be in running state

For extending a course reservation, following steps can be used:

1. Select a running reservation
2. Click on **Extend Reservation** button
3. Confirm the action and course reservation will now run extended up to configured time



Fix Reservation

Fix Reservation refers to action, which enables incharge to heal the reserved VMs, not running in appropriate state for user connection.

Error Conditions and categorization:

Based on the nature of error conditions, they can be kept in following two categories:

- **Soft Errors**
 - Reserved VMs not having any IP address
 - Reserved VMs with agent status as not responding
 - Reserved VMs having customization pending or in progress
- **Critical Errors**
 - Some VMs were failed to deploy during preparation time
 - VMs are deployed but now cannot be located on DVM Provider (Known as Missing)
 - Reserved VMs with customization failed

Fix Reservation Algorithm

As explained in above section, errors can be categorized into soft and critical error categories and to fix them two different mechanisms can be used:

- **Fix Soft Errors:** On using **Soft Error Fix**, followed backend events will happen:
 1. Check if VMs are powered on
 - a. If not, then power them on
 2. Check if VMs are having IP addresses
 - a. If not, re-fetch details from dedicated session provider
 3. If IP is available, check DVM Agent status
 - a. If not responding then try to refresh agent status, by connecting to fetched IP
 4. If after above three steps, desktop does not come into responding state, then attempt to restart the DVM
 5. It will go for a wait of 2 minutes (refresh interval)
 6. As per the status of above operations, log the status and exit
- **Forcefully Fix Errors:** Selecting this option will use the following mechanism:
 1. VMs having soft errors:
 - a. Apply soft-fix for the VMs having soft errors
 - b. If soft-fix does not work, then delete and recreate those VMs
 2. VMs having critical errors:
 - a. Deploy missing or failed VMs
 - b. Delete VMs having customization running, pending or failed status and recreate them

Fix Reservation Process

To fix a reservation following process can be followed:

1. **Identify Reservations running with error:**
 - When ready VMs count in running reservation is less than total VMs then reservation is running with error and status is displayed as **Red**. On mouse hover, it also displays the number of reserved VMs having issues.

Name	Course Name Course Code	Classroom	Gold Master	Reservation Creator	Ready VMs Total VMs	Start Date & Time End Date & Time	Action	Current Status	Deployment Stage
Res-7CG7S6	HIMANSHU HIMANSHU		CentOS 7 Self Study	Himanshu Patil	4 5	03-10-2018 10:15 AM 31-10-2018 10:14 PM	Connect	Running	Green

Enter text to search... Go!

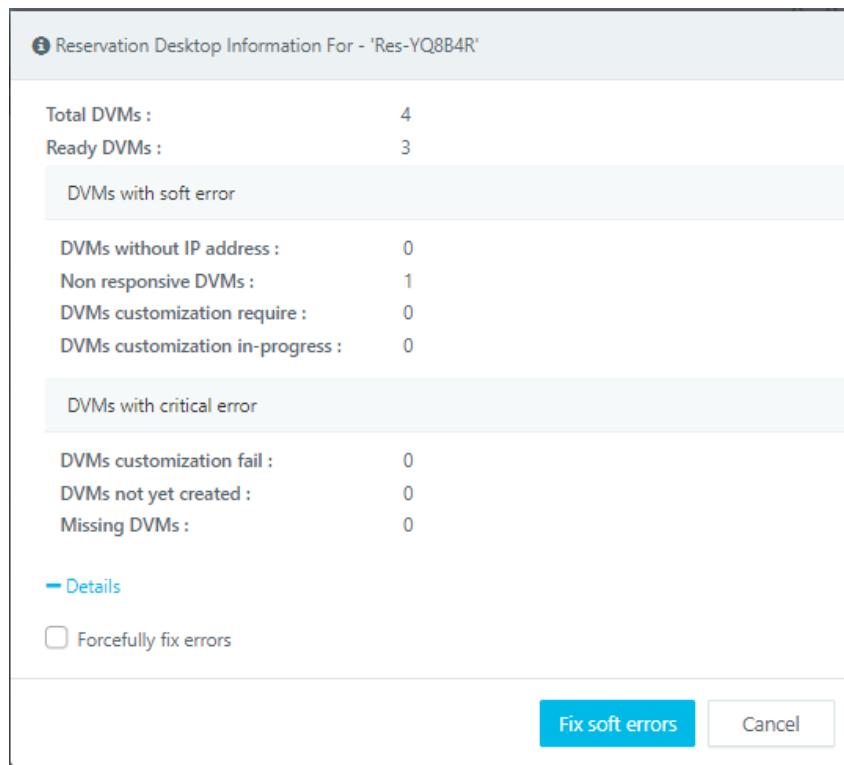
1 desktops are not ready to connect

- If reservation is running with no errors, its status will be shown as running with **Green** background.

2. Understanding Error Conditions:

Whenever any reservation is shown to be running with error and shown with Red – Running status, following steps can be used to understand the error conditions:

- Hover mouse on reservation status, it should display the number of reserved VMs having issues.
- Click on Fix Reservation button, it will display a dialog with detailed list of reserved VMs having errors:



Apply Fix

Based on error details, incharge can decide the type of fix mechanism to use, following two processes can be used:

- Fix Soft Errors:** If there are only soft errors, then incharge can opt to go for Fix Soft errors (**NOT** Selecting checkbox **Forcefully fix errors**)

2. **Forcefully Fix Errors:** The option can be used in following two conditions:
 - a. Errors are not corrected even after applying the soft fix
 - b. Reservation is having critical errors and forceful fix is required.

Incharge can choose to either fix soft errors or select Fix All errors.

Fix reservation process will take some time. Another fix reservation operation cannot be started until first fix reservation is done.

Fix reservation will reboot the VMs if needed.

Fix All reservation will recreate VMs that are not corrected after reboot

Managing Self Reservations

Though incharge manages course reservation, it can also create reservations for him/her self as well.

Following two types of self-reservations are possible:

- Course Self-study
- Self-study

Course Self-study Reservations

Course Self-study is reservation which re-uses the VMs from parent course reservation in off course reservation hours.

Incharge can create course self-study reservation for courses for which reservation is created with course self-study enabled.

Create Course Self-study Reservation

To create a course self -study reservation, follow the below steps:

1. In RMS portal go to **Reservations** page
2. Click on button **Add New Reservation**
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Course Self-study**
 - b. In **Course Self-study** tab, select **Course**, **Gold Master** and **Reservation** for which course self-study needs to be created and click on **Next** button

The screenshot shows the 'Add Reservation' interface. At the top, there are three tabs: 'Option' (selected), 'Course Self-study Reservation' (highlighted in blue), and 'Schedules'. Below the tabs, there are three dropdown menus: 'Course' (set to 'HIMANSHU - [HIMANSHU]'), 'Gold Master' (set to 'Windows 10 Gold Self Study'), and 'Reservation' (set to 'Res-9Z5U4I').

- c. In **Schedules** tab, select appropriate schedule and click on **Save** button

The screenshot shows a 'Add Reservation' form with tabs for 'Option', 'Course Self-study Reservation', and 'Schedules'. The 'Schedules' tab is active. It displays a calendar for 'OCTOBER 21, 2018' showing a timeline from 15:00 to 23:00. Several time slots are highlighted in red and green. A green slot from 19:00 to 20:30 is labeled 'Course Self-study Reservation'. A small 'X' icon is visible in the top right corner of this green slot. Below the calendar, a note says 'Reservation can only be scheduled after 5 minutes from now.'

- d. Course self-study reservation will be created and on scheduled time will be prepared for incharge.

Incharge can edit/delete/cancel/fix course self-study reservation created by him.

[Edit Course Self-study Reservation](#)

Incharge can edit course self-study reservation created by him to change time slot. For running course self-study reservations start time cannot be edited.

[Delete Course Self-study Reservation](#)

Incharge can delete course Self-study reservation created by him. Deletion operation is irreversible and hence should be performed carefully and when needed.

[Cancel Course Self-study Reservation](#)

Incharge can cancel course self-study reservation created by him. Cancel operation is irreversible and thus should be done carefully and when needed.

[Fix Course Self-study Reservation](#)

Incharge can fix course self-study reservation by him. Fix reservation process is same as defined in section [Fix Reservation](#).

[Self-study Reservations](#)

Apart from course reservations and course self-studies, institutions can also have one general purpose self-study reservations, which can be used by any RMS user to do self-study.

Incharge can manage self-study reservation for other users including himself.

[Create Self-study Reservation](#)

To create self-study reservation, following steps can be used:

1. In RMS portal go to **Reservations** page
2. Click on button **Add New Reservation**
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Course Self-study**
 - i. In **Self-study** tab, select appropriate, **Gold Master** and set count for **Number of units to be used** (This specifies the number of reserved VMs which will be created for self-study reservation)
 1. While creating self-study for self only, the count should be kept as 1 only.
 2. If self-study is being created for multiple RMS users, then count should be set as per requirement

Add Reservation	
Option	Self-Study Reservation
Gold Master	2018-104-6283-435
Number of Units to be used	1

- b. In **Schedules** tab, set appropriate time slot and move to **Participants** tab

Add Reservation	
Option	Self-Study Reservation
Schedules	Participants
Start Time	16:30
End Time	17:30
Date	2018/10/31
Allow Extensions	<input checked="" type="checkbox"/>
Extension Duration	15 Minutes
No. of Times	1

- c. In **Participants** tab, search and add appropriate participants
 - i. While creating self-study for self, incharge should add his user in the list of participants

- ii. If creating self-study for multiple participants, then all required participants should be added
- d. Click on **Save** button, self-study reservation will be prepared as per specified timeslot.

Edit Self-study Reservation

Incharge can edit Self-study reservation created by him to change VM count or time or participant. For running reservations start time cannot be modified.

Cancel Self-study Reservation

Incharge can cancel self-study reservation created by him. Cancelling reservation will delete the VMs. Cancel reservation operation is irreversible and should be done when needed.

Delete Self-study Reservation

Incharge can delete self-study reservation created by him. Deleting reservation will delete the VMs created. Delete reservation operation is irreversible hence should be done carefully and when needed.

Fix Self-study Reservation

Incharge can fix course self-study reservation by him. Fix reservation process is same as defined in section [Fix Reservation](#).

Courses

An Incharge can view and modify course configurations, in which he is designated as incharge. Please note, an incharge cannot create a new course and will only be able to manage it once designated as incharge.

To modify a course, follow the below steps:

1. In RMS portal go to **Courses** page
2. Select a course from list and click on **Edit** button
3. Following changes can be done:
 - a. Change **Course Details**: Course Code, Course Name, Description, Department, Group and Classroom
 - b. Add or remove incharges
 - c. Add or remove assistants
 - d. Add or remove participants
4. Click on **Save** button to save the changes

The screenshot shows a modal dialog titled "Edit Course - Science". At the top, there are tabs for "Course Details", "Incharges", "Assistants", and "Participants". The "Course Details" tab is active. Below the tabs, there are six input fields with labels: "Code*" (containing "Science"), "Name*" (containing "Science"), "Description" (containing "Science Class"), "Department" (containing "Engineering"), "Group" (containing "Group"), and "Classroom" (containing "S1"). At the bottom right of the dialog, there are "Next" and "Cancel" buttons.

My Settings

My Settings page will display the configured Email address for the Incharge. The configurations are fetched from authentication server and cannot be modified by incharge.

My settings configurations are used to send notifications to the user for his/her reservations.

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RMS Participant Operations Guide

Accops Reservation Management System

Last Updated: 17 October 2019

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Introduction

End-users from active directory added into Accops RMS with are referred as participants, who are going to view and connect to their respective reserved VMs from courses or self-study reservations. Participants will also be able to see announcements and their account settings.

Participants will be able to do following operations in RMS:

1. View announcements on dashboard
2. Connect to Course Reservations (Created by Admin/Incharge) users
3. Create and manage Self-study and Course Self-Study Reservations
4. View account settings

How does user get participant access?

Users are not authorized in RMS by default and if a user can be enabled as participant in following manner:

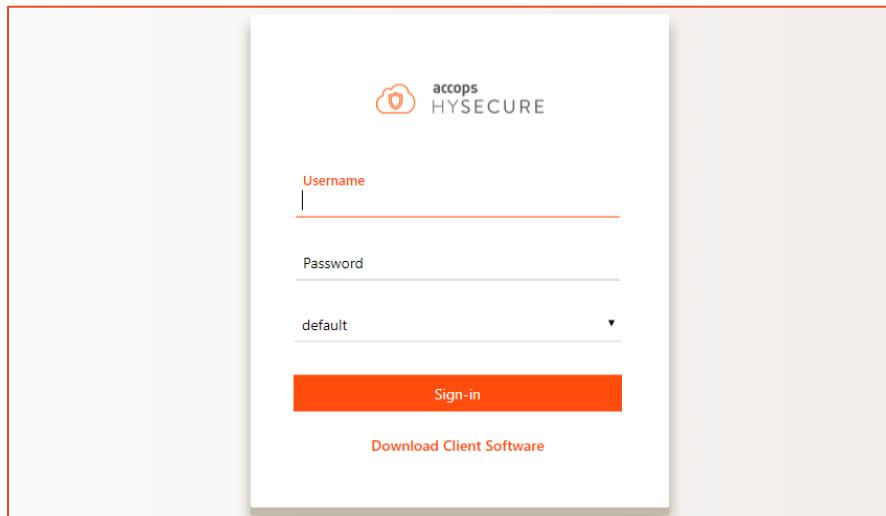
- User is added into a course or self-study reservation by administrator using
- Administrator has allowed RMS access to all authenticated users

If any authorization error is shown while logon, participants should contact incharges or reservation administrator for checking their participation in any course.

Login into RMS

To access RMS, follow below steps:

1. Open RMS URL on compatible browsers (Firefox/Chrome/IE/Edge)
2. On Login screen, provide appropriate username and password (Select organization is multiple organizations are there)



3. Click on Sign-in button
4. User will be authentication and navigated to RMS portal

What is there in RMS for Participants?

A participant user, after logging into RMS, can perform following actions:

- Dashboard - Viewing important announcements
- Viewing and accessing reservations created for it
- Creating and managing self-study reservations

Dashboard - Viewing Announcements

The default landing page for RMS user is Dashboard and for user with **Participant** role, it displays the announcements created by reservation admin.

Participant will be able to view the announcements but will not be able to create or modify it.

Announcement Information		
Announcement Type	Title	Content
⚠ Maintenance	Maintenance on 18-October-2019	HyLabs servers will be under maintenance as per following schedule: Date: 18-Oct-2019 Time: 07:00 A...
💡 General	Holiday on 21-October-2019	Due to election being held in Pune on 21-October-2019, holiday has been declared by Accops. So that ...
showing 1 - 2 of 2 items		

List View and default sorting: The announcements are shown in a list view (default sorted with announcement type, keeping maintenance announcements on top).

Search: User can also search specific announcements by providing appropriate search string.

Sort: All columns Announcement Type, Title or Content are sortable and clicking on column header sorts the announcements.

Viewing details of an announcement:

User can click on title (Link) to view the announcement content:

The screenshot shows a modal dialog box titled "Announcement Content". It contains two sections: "Title" and "Content". The "Title" section shows the link "Holiday on 21-October-2019". The "Content" section displays the text: "Due to election being held in Pune on 21-October-2019, holiday has been declared by Accops. So that everyone can practice their right to vote." Below the content, there is a "Thanks" message. In the bottom right corner of the dialog, there is a blue "OK" button.

My Reservations

On **My Reservations** page, participant can see all reservations, in which it is having membership. The possible types of reservations can be:

- **Course Reservations** (Created by administrators)
 - Connect to reserved VMs from reservation
 - Perform power operations: Shutdown, restart, power off
- **Course Self-Study Reservations** (created by participant itself)
 - Create Course Self-study reservations
 - Modify Course Self-study reservations
 - Cancel Course Self-study reservations
 - Delete Course Self-study reservations
 - Fix Reservation
- **Self-study Reservations** (created by participant itself)
 - Create Course Self-study reservations
 - Modify Course Self-study reservations
 - Cancel Course Self-study reservations
 - Delete Course Self-study reservations
 - Fix Reservation

A participant can filter reservations' list view by applying appropriate filter. Following filters are available:

1. **Active:** Active reservations are those that are in either Running, Not Running, Finished, Preparing, Cancelling.
2. **Upcoming:** Upcoming reservations are those that are in Not Running, Finished, Preparing, Cancelling state.
3. **Running:** These are reservations that are currently in running state.
4. **Cancelled:** Cancelled reservations are those that are cancelled by participant themselves or by admin. Cancelled reservations are deleted after 5 days.
5. **Expired:** Expired reservations are those whose schedules are finished. Expired reservations are deleted after 5 days
6. **All:** All filter displays all the reservations that are present for user irrespective of its state. These include Course reservations, course self-study reservations as well as self-study reservations.

Course Reservations

As specified briefly in above section, participant will be able to connect the reserved VMs from course reservation and will also be able to perform power operations on them:

Connecting Course Reservations

To connect a course reservation, a participant can follow below steps:

1. In RMS portal, go to **My Reservations** page
2. Click on **Connect** button shown for running reservation

Name	Reservation For	Course Code	Classroom	OS Information	Reservation Creator	Start Date & Time	End Date & Time	Action	Current Status
Res-JLEW2N	Java on Ubuntu	JAVA-ON-UB...		Ubuntu Linux (64-bit)	faculty2	02-11-2018 05:40 PM	02-11-2018 07:31 PM	Connect	Running Ends In 1 Hr : 56 Min

3. A reserved VMs will be assigned to participant and connection will be initiated in new tab.

Power Operations on Reserved VMs

Participant will also be able to perform power operations on reserved VMs, once it is assigned to him/her.

A reserved VM will get assigned to user on connect action only and thus, participant must attempt to connect to reservation at least once to enable the power operation.

Once connection attempt is done and a free reserved VM is assigned, following power operations can be initiate by participants:

- Power on reserved VM (Currently in powered off state)
- Power off/Shut down an already running reserved VM
- Restart the reserved VM

Name	Reservation For	Course Code	Classroom	OS Information	Reservation Creator	Start Date & Time	End Date & Time	Action	Current Status
Res-JLEW2N	Java on Ubuntu	JAVA-ON-UB...		Ubuntu Linux (64-bit)	faculty2	02-11-2018 05:40 PM	02-11-2018 07:31 PM	Connect	Running Ends In 0 Hr : 56 Min

Connection Issues – Try Power Operations

HyLabs enables power operations on reserved VMs by Participants. These power operations can also be used, if participant is failing to connect to their respective reserved VMs.

In some cases, due to some internal module initiation failures, connection issues can be faced by participants and then they can attempt to restart and connect again.

Course Self-study Reservations

Course Self-study is reservation, which re-uses the VMs from parent course reservation in off course reservation hours.

Participant can create course self-study reservation for courses having course self-study enabled.

Create Course Self-study Reservation

To create a course self-study reservation, follow the below steps:

1. In RMS portal go to **Reservations** page
2. Click on button **Add New Reservation**
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Course Self-study**
 - b. In **Course Self-study** tab
 - i. Select **Course, Gold Master and Reservation** for which course self-study needs to be created
 - ii. Provide **Display Name** for this reservation (Optional)
 - iii. Click on **Next** button

The screenshot shows the 'Add New Reservation' interface. The 'Self-Study Reservation' tab is active. The 'Reservation For' dropdown is set to 'Course Self-study Reservation'. The 'Course' dropdown shows 'PS-HWS1 - [PS-HWS1]'. The 'Gold Master' dropdown shows 'PS-W7x66'. The 'Reservation' dropdown shows 'Res-N37D2T'. The 'Display Name' field contains 'CSS-HyWorks01'. Below this, the 'Gold Master Information' section displays hardware specifications: Name - PS-W7x66, OS - Microsoft Windows 7 (32-bit), HDD(GB) - 30, RAM(MB) - 2048, and CPU - 2.

- c. In **Schedules** tab, select appropriate schedule and click on **Save** button

The screenshot shows the 'Add Reservation' page. On the left, there are input fields for Start Time (19:00), End Time (20:30), Date (2018/10/21), Max Duration (03:00), and Allowed Time Window (-). On the right, a calendar for October 21, 2018, displays several time slots. A red slot from 17:05 to 17:45 is labeled 'first - first'. A yellow slot from 17:45 to 18:30 is labeled 'first - first'. A green slot from 19:00 to 20:30 is labeled 'Course Self-study Reservation'. A small note at the bottom left says 'Reservation can only be scheduled after 5 minutes from now.' At the top right are 'Back', 'Save', and 'Cancel' buttons.

- d. Course self-study reservation will be created and on scheduled time will be prepared for participant.

Participants are also allowed to manage their self-study reservations, following management operations can be done by participants:

Edit Course Self-study Reservation

Participant can edit course self-study reservation created by him/her to change time slot.

For running course self-study reservations start time cannot be edited. To modify a Course self-study reservation, follow below steps:

1. In RMS portal go to **Reservations** page
2. Select Course Self-study reservation and click on button **Edit Reservation**
3. In **Course Self-study Reservation** tab,
 - a. Selected Course, Gold Master or Reservation **cannot** be changed
 - b. **Display Name** can be updated
4. Click on **Next** button
5. In **Schedule Availability** tab,
 - a. Update course self-study schedule as per requirement
 - i. **Running reservations:** Start Date and Start time cannot be modified, only End time can be changed
 - ii. **Not running reservations:** Start Date, Start time and End time can be updated
6. Click on **Update** button to update reservation. Course self-study reservation with new display name (if modified) will be accessible as per modified schedule.

Cancel Course Self-study Reservation

Participant can cancel course self-study created by him. Cancel operation is irreversible and hence should be done carefully. Cancelling course self-study will prevent you to connect to it.

To cancel a course self-study reservation:

1. In RMS portal go to **Reservations** page
2. Select Course Self-study reservation and click on button **Cancel Reservation**

Name	Display Name	Reservation For	Course Code	Classroom	OS Information	Reservation Creator
Res-CKJLRQ	CSS-HWS1	CourseSelfStu...	PS-HWS1	-	Microsoft Windows 7 (32-bit)	pa.rms001

3. Type **Reservation Name** and click on **OK** button on **Confirm Action** dialog to continue cancelling course self-study reservation

4. Reservation will be cancelled.
 - a. If reservation is in state o

Delete Course Self-study Reservation

Participant can delete course Self-study reservation created by him/her.

Deletion operation is irreversible and hence should be performed carefully. To delete a course self-study reservation:

1. In RMS portal go to **Reservations** page
2. Select Course Self-study reservation and click on button **Delete Reservation**
3. On **Confirm Action** dialog, type reservation name correctly and it will enable **Delete** button
 - a. Click on **Delete** button to continue deleting reservation.
4. Reservation will be deleted and will no longer be accessible or visible.

Self-study Reservations

Self-study reservation allows you to connect to a generic VM to do study. Participant can create a self-study reservation for him/herself or connect to a self-study reservation created for him by Admin or Incharge.

Connecting to Self-study Reservations Created by Admin/Incharge

Connection process for Self-study created by admin or incharge is similar as mentioned in section [Connecting Course Reservations](#).

Create Self-Study Reservation

To create self-study reservation, following steps can be used:

1. In RMS portal go to **Reservations** page
2. Click on button **Add New Reservation**
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Self-study**, it will load available Gold Master VMs for self-study
 - b. In **Self-study** tab, select appropriate, **Gold Master**
 - c. Provide appropriate Display Name for self-study

Add New Reservation

Self-Study Reservation Schedule Availability

Reservation For: Self-Study Reservation

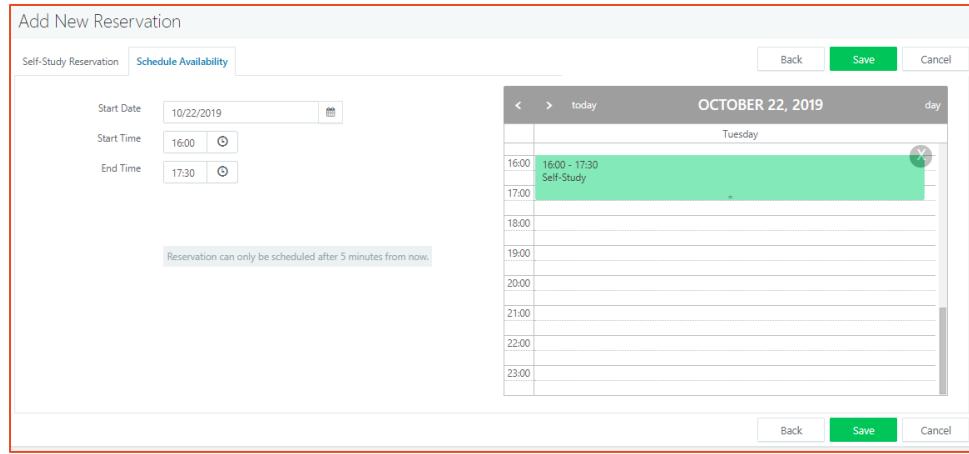
Gold Master: PS-W7x86-GM2-0001

Display Name: SS-Mon-19PM-20PM

Gold Master Information

	Name - PS-W7x86-GM2-0001
	OS - Microsoft Windows 7 (32-bit)
	HDD(GB) - 30
	RAM(MB) - 2048
	CPU - 2

- d. In **Schedules** tab, select appropriate timeslot for reservation and click on **Save** button



Participant can perform edit/cancel/delete reservation operations on self-study reservation created by him.

Edit Self-study Reservation

Participants will be able to modify self-study reservations to update following settings:

1. Display Name
2. Reservation Schedule

While modifying a not running all editable properties of self-study reservations can be changed but for running reservations it will not allow to modify **State Date** or **Start Time**, other properties e.g.

Display Name and **End Time** can be changed without any problems.

To modify a self-study reservation:

1. Login into RMS and go to **My Reservations** page
2. Select reservation to be modified
3. Change all required and allowed attributes
4. Click on **Update** button to continue modifying reservation
5. Reservation will get updated and will be delivered as per modified properties.

Cancel Self-study Reservation

Participant can cancel self-study created by him/her.

Cancel operation is irreversible and hence should be done carefully. Cancelling self-study will prevent you to connect to it. To cancel self-study reservation:

1. In RMS portal go to **Reservations** page
2. Select Self-study reservation and click on button **Cancel Reservation**
3. On **Confirm Action** dialog, type reservation name correctly and it will enable **OK** button
 - a. Click on **OK** button to continue deleting reservation.
4. Reservation will be cancelled and will not be available for connection anymore.

Delete Self-study Reservation

Participant can delete Self-study reservation created by him/her.

Deletion operation is irreversible and hence should be performed carefully. To delete a self-study reservation:

1. In RMS portal go to **Reservations** page

2. Select Self-study reservation and click on button **Delete Reservation**
3. On **Confirm Action** dialog, type reservation name correctly and it will enable **Delete** button
 - a. Click on **Delete** button to continue deleting reservation.
4. Reservation will be deleted and will no longer be accessible or visible.

My Settings

My Settings page will display the configured Email address for the Participant. Participant will receive RMS related emails on this address.

Troubleshooting and actions for error conditions

As HyLabs is designed to run with complete automation, participants are also enabled with certain level of administration of their own reservations.

This section of participant user guide will try to address some of such conditions and recommended actions for those reservations:

Reservation Category – Course, Course Self-study, Self-study

The actions defined in this section are applicable for all types of reservations.

Connect button is disabled - Reservations are restricted due to client group access policies

Administrators may deploy HyLabs to be accessed in restricted environment and restrict access by applying client group access policies.

In such cases, participants will be able to view reservations but **Connect** button will appear disabled.

Running Reservations									
Name	Display Name	Reservation For	OS Information	Reservation Creator	Start Date & Time	End Date & Time	Action	Current Status	
Res-AR13C3	KAK	PS-NoOS	Otherx86	admin.rms001	10/22/2019 02:55 PM	10/22/2019 02:59 PM	Connect	Running Ends In 0 Hr : 0 Min	
Res-3NZ5P6	SelfStudy	Self-study	Microsoft Windows 7 (32-bit)	pa.rms001	10/22/2019 02:45 PM	10/22/2019 05:39 PM	Connect	! Running Ends In 2 Hr : 40 Min	

Recommended Action: Contact administrator for allowing access, participants will not be able to solve above situation by themselves.

Connect button is shown with White background and click does not work

Actual start time of reservation has not come

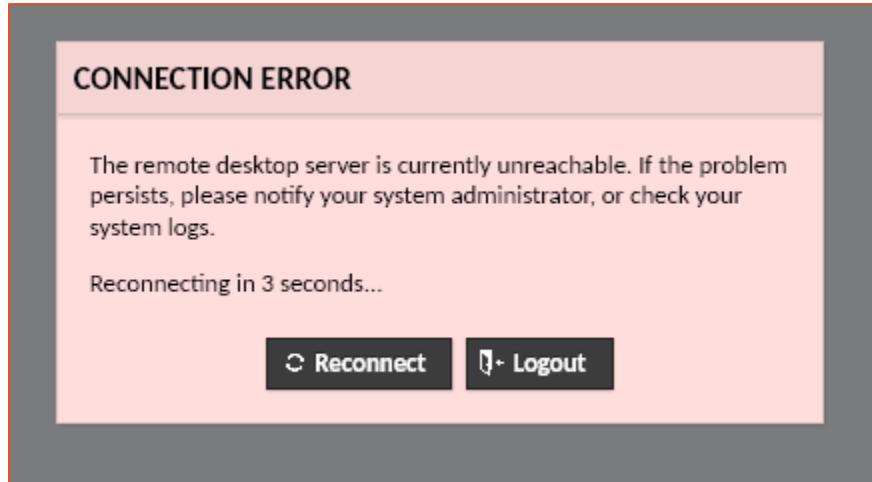
Running Reservations										
Name	Display Name	Reservation For	Course Code	Classroom	OS Information	Reservation Creator	Start Date & Time	End Date & Time	Action	Current Status
Res-P431J8	CSS-HWS1	CourseSelfStudy	PS-HWS1	-	Microsoft Windows 7 (32-bit)	pa.rms001	10/22/2019 03:40 PM	10/22/2019 05:31 PM	Connect	Running Starts In 0 Hr : 4 Min
Res-3NZ5P6	SelfStudy	Self-study	-	-	Microsoft Windows 7 (32-bit)	pa.rms001	10/22/2019 02:45 PM	10/22/2019 05:39 PM	Connect	! Running Ends In 2 Hr : 3 Min

Recommended Action: None, wait for reservation start time to occur

Running without error but connection is getting failed (Server unreachable)

Mostly system/network is causing connection failures e.g. user is not having remote access to virtual machine.

Running Reservations										
Name	Display Name	Reservation For	Course Code	Classroom	OS Information	Reservation Creator	Start Date & Time	End Date & Time	Action	Current Status
Res-AR13C3	KAK	PS-NoOS	PS-NoOS	-	Otherx86	admin.rms001	10/22/2019 02:55 PM	10/22/2019 02:59 PM	Connect	Running Ends In 0 Hr: 0 Min
Res-3NZSP6	SelfStudy	Self-study	-	-	Microsoft Windows 7 (32-bit)	pa.rms001	10/22/2019 02:45 PM	10/22/2019 05:39 PM	Connect	Running Ends In 2 Hr: 40 Min



Recommended Action:

Power operations: Some of connection issues can be solved by simply rebooting the reserved VM. Participants will be able to perform power operations, when they have click on **Connect** button at-least once. To perform, reserved VM reboot, follow below steps:

1. Select reservation from list
2. Click on button **Reboot**
3. Wait for some time (2-3) minutes to let restart get completed
4. Re-attempt connect operations to verify if machine has started working correctly.

Please note, **Fix Reservation** will not appear, unless it's of type self-study or course self-study and reserved VM is running with errors.

Reservation Category – Course Self-study, Self-study

The actions available here, are specifically for self-study reservations and will not work for course reservations.

Running with error (Red Color) and on connection displays Not ready error

Case#1: In most cases, the reservations are either recently created and still in customization (Desktop configuration) state

Case# 2: Reservation is deployed but customization is stuck or required services are not started.

Running Reservations								
Name	Display Name	Reservation For	OS Information	Reservation Creator	Start Date & Time	End Date & Time	Action	Current Status
Res-ARI3C3	KAK	PS-NoOS	Otherx86	admin.rms001	10/22/2019 02:55 PM	10/22/2019 02:59 PM		Running Ends In 0 Hr : 0 Min
Res-3NZ5P6	SelfStudy	Self-study	Microsoft Windows 7 (32-bit)	pa.rms001	10/22/2019 02:45 PM	10/22/2019 05:39 PM		Running Ends In 2 Hr : 40 Min

Alert

Desktop for 'pa.rms001' from reservation 'Res-3NZ5P6' is not ready. kindly try to connect after sometime.

Recommended Action:

Case# 1: If reservation is very recently created, wait for some time to get it configured correctly. Reservation should come into ready state – Green Color with Running state.

Case# 2: If reservation is created a long time ago may be 30-40 minutes back, then reservation can be fixed using below steps:

1. Select reservation from list
2. Click on button **Fix Reservation**
3. **Fix Reservation** dialog will be displayed with options to
 - a. **Fix soft errors**
 - b. **Fix all error**
4. Click on **Fix all errors**, which will first try to fix errors by applying soft-fixes (e.g. refreshing status, rebooting assigned reserved VM), if soft-fixes do not work, it will automatically recreate reserved VM

Reservation Category – Course

Actions defined in this section, can be used for course reservations and get participants fix some of the problems on their own.

Course reservation connection failure post power operations as well

As mentioned under troubleshooting topic [Running without error but connection is getting failed \(Server unreachable\)](#), reboot can help in solving some issues. But even after reboot as well, problems are not getting solved, then participants can attempt to get assigned with any other free reserved VM in course reservation.

Below steps can be used to get assigned with any other free reserved VM:

1. Attempt to logout from HyLabs by clicking on **Logout** button (Don't close browser)
2. **Logout** dialog will be displayed
 - a. Uncheck the checkbox '**Retain running course reservation desktops**' and click on button **Yes**
3. This will completely logout the user and will remove its current assignments
4. Re-login in to HyLabs, a new free reserved VM should get assigned and if last occurred issue is not a common problem – it should not happen in new assigned VM.

Note:

1. **Retain running course reservation desktops** option must be enabled by reservation admin then only it will be visible to end-users.
 - a. By default, '**Retain running course reservation desktops**' option is checked to assign same desktops to user every time
2. If no free desktops are available, then user will get assigned with same desktop and user should contact administrator for support.
3. Even when assignments are getting changed, users will not be able to see it on HyLabs portal and user should contact administrator, if problem persists even after logging out with selecting option '**Retain running course reservation desktops**'

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RMS Assistant Operations Guide

Accops Reservation Management System

Last Updated: 31 October 2018

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Introduction

An assistant is like faculty, an AD user with some more restrictions on reservation management system than incharge.

Assistant's role in RMS is for assisting, faculty or incharge in managing courses, reservation etc.

In Accops Reservation Management System, when a user is assigned with **Assistant** role, enables it to perform following actions in RMS:

1. Viewing the announcements (notifications) shared by reservation admin
2. Connecting to assigned Gold Master VM and making changes as per lab (course) requirements
3. Reservation Management of the course
 - a. Modifying course reservations
4. Creating Self-study and Course Self-study reservations for self-use
5. Viewing notification settings under screen **My Settings**

All above operations will be covered in detail in later section of this document.

Assistant User Creation in RMS

A user can be designated as **Assistant** role in following two manners:

- User is added under assistant category while creating course from RMS portal
- RMS Users CSV is being imported into RMS and users are given role of assistant

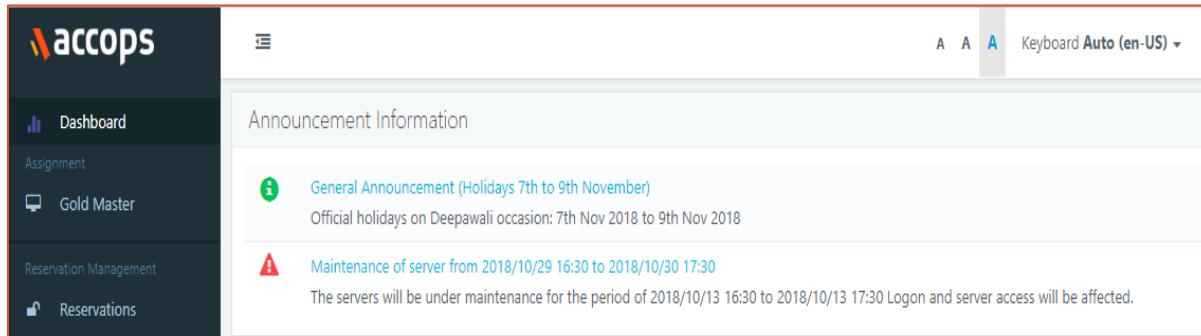
Once assigned with **Assistant** role, user will be able to perform above specified activities.

Assistant Operations in RMS

Viewing Announcements

The default landing page for RMS user is Dashboard and for user with **Assistant** role, it displays the announcements created by reservation admin.

Assistant will be able to view the announcements but will not be able to create or modify it.



The screenshot shows the Accops RMS application interface. On the left is a dark sidebar menu with the Accops logo at the top. Below the logo are four items: 'Dashboard' (selected), 'Assignment', 'Gold Master', and 'Reservation Management'. Under 'Reservation Management', there is a 'Reservations' item. To the right of the sidebar is a main content area with a title 'Announcement Information'. Below the title are two announcement entries. The first entry has an info icon and the title 'General Announcement (Holidays 7th to 9th November)'. The content below it reads 'Official holidays on Deepawali occasion: 7th Nov 2018 to 9th Nov 2018'. The second entry has a warning icon and the title 'Maintenance of server from 2018/10/29 16:30 to 2018/10/30 17:30'. The content below it reads 'The servers will be under maintenance for the period of 2018/10/13 16:30 to 2018/10/13 17:30 Logon and server access will be affected.' At the top right of the main content area, there are font size and keyboard settings options.

The announcements are shown in a list view and user can click on title (Link) to view more details.



The screenshot shows a modal dialog titled 'Announcement Content'. Inside the dialog, there is a section labeled 'Title' which contains the text 'General Announcement (Holidays 7th to 9th November)'. Below that is a section labeled 'Content' which contains the text 'Official holidays on Deepawali occasion: 7th Nov 2018 to 9th Nov 2018'. In the bottom right corner of the dialog, there is a blue 'OK' button.

Gold Master: Content Management and Power Operations

An assistant will be able to connect to following types of Gold Master VMs:

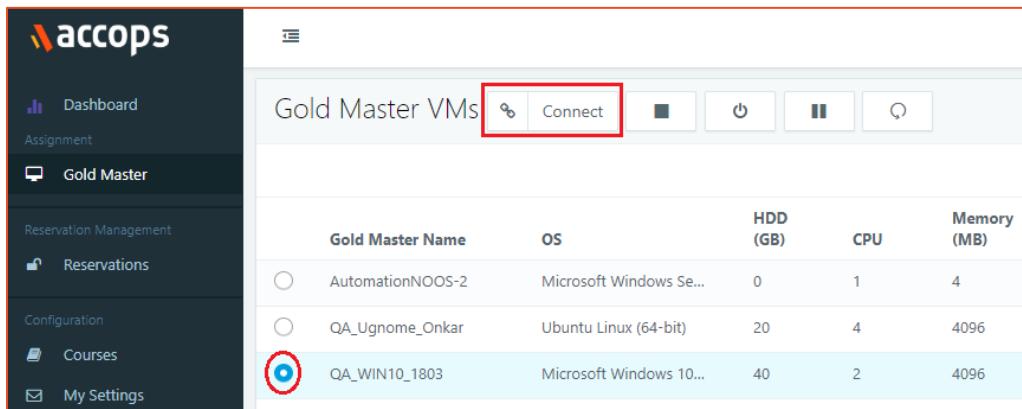
- Course default Gold Master (not restricted to admin)
- Gold Master which is assigned to course and assistant is member of that course

Connection to Gold Master enables assistant for managing contents, which will be required for course.

Connecting Gold Master

If a Gold Master is powered-on and ready for connection, assistant user will be able to connect to it by:

1. Select Gold Master from the list view
2. Click on **Connect** button



Gold Master Name	OS	HDD (GB)	CPU	Memory (MB)
AutomationNOOS-2	Microsoft Windows Se...	0	1	4
QA_Ugnome_Onkar	Ubuntu Linux (64-bit)	20	4	4096
QA_WIN10_1803	Microsoft Windows 10...	40	2	4096

3. Remote session to Gold Master will be initiated on new tab and incharge will be able to make the changes into Gold Master.
 - a. On logon assistant user is provided local administrator privileges, which helps in content management and doing privileged operations on Gold Master

Power Operations on Gold Master

Assistant will also be able to perform power operations on assigned Gold Master VMs. The power operations are displayed as per current power state of Gold Master.

- For Powered on VMs: Shutdown, Power off, Suspend and Restart operations are available
- For Powered off VMs: Option to Power on will be shown
- For Suspended VM: Option to Resume/Power on will be displayed

Assistant cannot make RMS configurational changes to gold master settings on RMS.

Reservations

User assigned with assistant role can connect to reservations and modify configurations. In this section, detailed information on reservation management by assistant will be provided.

Course Reservations

An Assistant can edit course reservations that are already created by Incharge/Reservation Admin/system.

Assistant cannot create a new course reservation. Assistant cannot Cancel or Delete a course reservation.

Connecting Course Reservations

An assistant is authorized to connect to one of the reserved VMs from the course reservations, created in RMS; to connect to a course reservation:

1. In RMS portal go to **Reservations** page
2. Currently running reservations, will be shown with **Connect** button
3. Click on **Connect** button
4. One of the reserved VM will be assigned and configured for incharge user access and connection will be opened in a new tab

Edit Course Reservation

An assistant can modify an existing course reservation by selecting a reservation from list view and click on **Edit** button.

Reservation modification can be done to make changes in following properties:

- **Total VMs:** Change the count to a newer value. Reducing the numbers will not delete any existing deployed VMs but increasing the number will deploy new VMs on next preparation cycle.
- **Allow Extensions:** Enable disable or change configuration
- **Reuse VMs for each run of reservation:** Enable or disable the configuration
- **Assignment Lifespan:** Interchanging between option **Permanent** and **Temporary** is possible
- **Modify existing schedules:** Edit the schedule configurations of existing schedules. Existing schedules can also be deleted from edit wizard
- **Add new schedules:** New schedules can be added
- **Modify RMS Users (Incharges, Assistants, Participants)**
- **Modify Access Policies**

On saving reservations new configurations will be come into effect.

Note:

- When editing a reservation, reservation type, associated course or gold master cannot be changed.

Fix Reservation

Fix Reservation refers to action, which enables Assistant to heal the reserved VMs, not running in appropriate state for user connection.

Error Conditions and categorization:

Based on the nature of error conditions, they can be kept in following two categories:

- **Soft Errors**
 - Reserved VMs not having any IP address
 - Reserved VMs with agent status as not responding
 - Reserved VMs having customization pending or in progress
- **Critical Errors**
 - Some VMs were failed to deploy during preparation time
 - VMs are deployed but now cannot be located on DVM Provider (Known as Missing)
 - Reserved VMs with customization failed

Fix Reservation Algorithm

As explained in above section, errors can be categorized into soft and critical error categories and to fix them two different mechanisms can be used:

- **Fix Soft Errors:** On using **Soft Error Fix**, followed backend events will happen:
 1. Check if VMs are powered on
 - a. If not, then power them on
 2. Check if VMs are having IP addresses
 - a. If not, re-fetch details from dedicated session provider
 3. If IP is available, check DVM Agent status
 - a. If not responding then try to refresh agent status, by connecting to fetched IP
 4. If after above three steps, desktop does not come into responding state, then attempt to restart the DVM
 5. It will go for a wait of 2 minutes (refresh interval)
 6. As per the status of above operations, log the status and exit

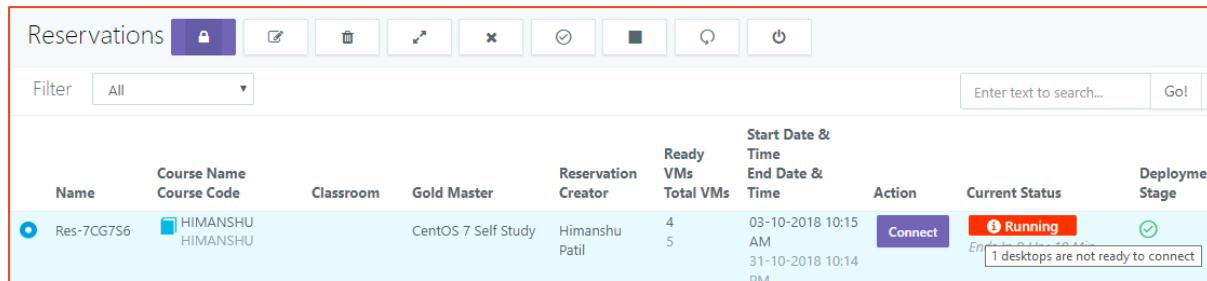
- **Forcefully Fix Errors:** Selecting this option will use the following mechanism:
 1. VMs having soft errors:
 - a. Apply soft-fix for the VMs having soft errors
 - b. If soft-fix does not work, then delete and recreate those VMs
 2. VMs having critical errors:
 - a. Deploy missing or failed VMs
 - b. Delete VMs having customization running, pending or failed status and recreate them

Fix Reservation Process

To fix a reservation following process can be followed:

1. Identify Reservations running with error:

- When ready VMs count in running reservation is less than total VMs then reservation is running with error and status is displayed as **Red**. On mouse hover, it also displays the number of reserved VMs having issues.



The screenshot shows a table titled 'Reservations' with the following columns: Name, Course Name/Course Code, Classroom, Gold Master, Reservation Creator, Ready VMs/Total VMs, Start Date & Time/End Date & Time, Action, Current Status, and Deployment Stage. A single row is selected, highlighted with a red border. The row details are: Name: Res-7CG7S6, Course Name: HIMANSHU, Classroom: HIMANSHU, Gold Master: CentOS 7 Self Study, Reservation Creator: Himanshu Patil, Ready VMs: 4, Total VMs: 5, Start Date & Time: 03-10-2018 10:15 AM, End Date & Time: 31-10-2018 10:14 PM, Action: Connect, Current Status: Running (red background), Deployment Stage: Pending. A tooltip on the 'Running' status cell indicates '1 desktops are not ready to connect'.

Name	Course Name Course Code	Classroom	Gold Master	Reservation Creator	Ready VMs Total VMs	Start Date & Time End Date & Time	Action	Current Status	Deployment Stage
Res-7CG7S6	HIMANSHU HIMANSHU		CentOS 7 Self Study	Himanshu Patil	4 5	03-10-2018 10:15 AM 31-10-2018 10:14 PM	Connect	Running <small>1 desktops are not ready to connect</small>	Pending

- If reservation is running with no errors, its status will be shown as running with **Green** background.

2. Understanding Error Conditions:

Whenever any reservation is shown to be running with error and shown with Red – Running status, following steps can be used to understand the error conditions:

- Hover mouse on reservation status, it should display the number of reserved VMs having issues.
- Click on Fix Reservation button, it will display a dialog with detailed list of reserved VMs having errors:

Reservation Desktop Information For - 'Res-YQ8B4R'

Total DVMs :	4
Ready DVMs :	3
DVMs with soft error	
DVMs without IP address :	0
Non responsive DVMs :	1
DVMs customization require :	0
DVMs customization in-progress :	0
DVMs with critical error	
DVMs customization fail :	0
DVMs not yet created :	0
Missing DVMs :	0
Details	
<input type="checkbox"/> Forcefully fix errors	
Fix soft errors Cancel	

Apply Fix

Based on error details, Assistant can decide the type of fix mechanism to use, following two processes can be used:

1. **Fix Soft Errors:** If there are only soft errors, then Assistant can opt to go for Fix Soft errors (**NOT** Selecting checkbox **Forcefully fix errors**)
2. **Forcefully Fix Errors:** The option can be used in following two conditions:
 - a. Errors are not corrected even after applying the soft fix
 - b. Reservation is having critical errors and forceful fix is required.

Assistant can choose to either fix soft errors or select Fix All errors.

Fix reservation process will take some time. Another fix reservation operation cannot be started until first fix reservation is done.

Fix reservation will reboot the VMs if needed.

Fix All reservation will recreate VMs that are not corrected after reboot

Extend Reservation

If a course reservation is configured to allow extensions, then assistant is having option to extend the reservation as per configurations.

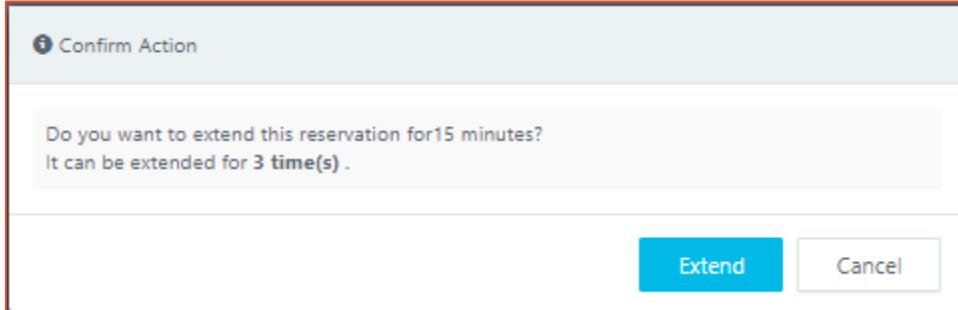
When assistant extends a course reservation, it applies for complete class and the current occurrence will be extended.

Pre-requisite for extending Course reservation:

- Course reservation must be configured to allow extensions.
- Course must be in running state

For extending a course reservation, following steps can be used:

1. Select a running reservation
2. Click on **Extend Reservation** button
3. Confirm the action and course reservation will now run extended up to configured time



Course Self-study Reservation

Course Self-study is reservation, which re-uses the VMs from parent course reservation in off course reservation hours.

Assistant can create course self-study reservation for courses having course self-study enabled.

Create Course Self-study Reservation

To create a course self-study reservation, follow the below steps:

1. In RMS portal go to **Reservations** page
2. Click on button **Add New Reservation**
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Course Self-study**
 - b. In **Course Self-study** tab, select **Course, Gold Master and Reservation** for which course self-study needs to be created and click on **Next** button

- c. In **Schedules** tab, select appropriate schedule and click on **Save** button

- d. Course self-study reservation will be created and on scheduled time will be prepared for Assistant.

Edit Course Self-study Reservation

Assistant can edit course self-study reservation created by him/her to change time slot. For running course self-study reservations start time cannot be edited.

Delete Course Self-study Reservation

Assistant can delete course Self-study reservation created by him. Deletion operation is irreversible and hence should be performed carefully and when needed.

Fix Course Self-study Reservation

Assistant can fix course self-study reservation by him. Fix reservation process is same as defined in section [Fix Reservation](#).

Self-study Reservation

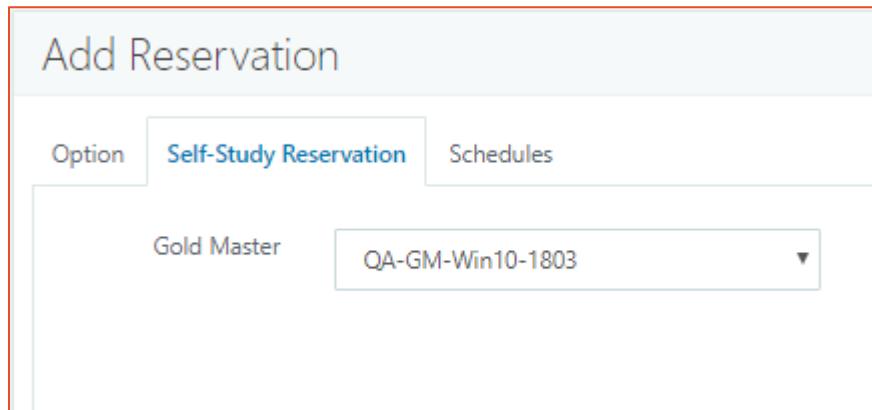
Self-study reservation refers to a reservation created for doing the self-studies. Apart from course reservations and course self-studies, institutions can also have one general purpose self-study Gold Master, which can be used by any RMS user to do self-studies.

An assistant can manage self-study reservation for himself/herself.

Create Self-study Reservation

To create self-study reservation, following steps can be used:

1. In RMS portal go to **Reservations** page
2. Click on button **Add New Reservation**
3. In **Add Reservation** wizard,
 - a. In **Option** tab, select **Reservation For** as **Self-study**, go to next tab
 - b. In **Self-study** tab, select appropriate, **Gold Master** and go to next tab



- c. In **Schedules** tab, select appropriate time-slot for reservation and click on **Save** button

Add Reservation

Option Self-Study Reservation Schedules

Start Time 20:00

End Time 21:30

Date 2018/11/02

Allow Extensions

Extension Duration 15 Minutes

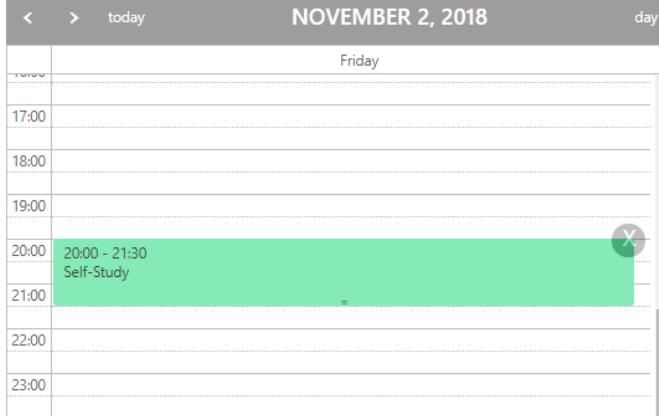
No. of Times 1

Reservation can only be scheduled after 5 minutes from now.

NOVEMBER 2, 2018

20:00 - 21:30 Self-Study

Back Save Cancel



Assistant can perform edit/delete/fix reservation operation on course self-study reservation by him.

Edit Self-study Reservation

Assistant can edit self-study reservation created by him. Time window can be edited
For running self-study reservations start time cannot be edited.

Delete Self-study Reservation

Assistant can delete self-study reservation created by him.
Delete operation is irreversible and should be done carefully and only when needed.

Confirm Action

This action is irreversible.
Are you sure you want to delete?

Please type the Reservation Name [Res-CQU9XX] to confirm delete operation.

res-C

Delete Cancel

Fix Reservation

Assistant can do Fix reservation operation on self-study reservation created by him. Fix soft errors will attempt to correct VM by rebooting it. Fix All errors will attempt to correct VMs that is not fixed by reboot by recreating them.

My Settings

My Settings page will display the configured Email address for the Assistant. The configurations are fetched from authentication server and cannot be modified by Assistant.

My settings configurations are used to send notifications to the user for his/her reservations

About Accops

Accops Systems Private Limited, under "Accops" brand is a globally leading developer and provider of Enterprise Mobility solutions involving Application and Desktop Virtualization, Secure Remote Access and Privilege Access Management solutions.

Accops' s software and hardware products enable businesses to efficiently virtualize, secure and deliver business applications, corporate workspace and network services to their employees, partners, vendors, home users and mobile users, enabling instance access from anywhere using any device.

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