

# Kelverion Automation Automated Patching Solution Solution

## User's Guide

Version 1.5

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## 1. Overview

This System Center Orchestrator driven solution delivers an automated patching solution that is designed to initiate from an approved weekly change control. Approved and pre-tested patches that are collated into ConfigMgr software update groups can be delivered to pre-defined schedules via a change control process. Device owners will be able to select which schedule their device is allocated too. The ConfigMgr patch deployment jobs are only enabled between defined patch windows, to provide additional control over the process and prevent unscheduled reboots of devices outside of the change control process.

The Kelverion Automated Patching Solution leverages the Persistent Data Store design philosophy and the Kelverion Orchestrator Integration Packs to provide a scalable and robust solution.

This solution is available for both the Kelverion Automation Portal and ServiceNow. Both configurations are included in a self-installation package. The solution is recommended for customers proficient with System Center.

For customers who are less familiar with System Center, Kelverion or our partners can provide as a complete installation and configuration solution where we work with you to customise the solution for your environment.

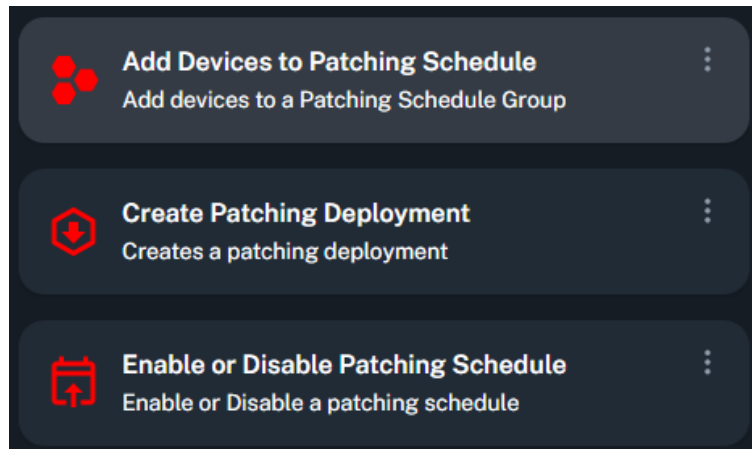
This document provides the guidance on how to setup and configure these Runbooks and Management Packs in your environment. It is aimed at an experienced System Center users. Users should also reference Microsoft supplied documentation for the System Center tools and Kelverion Integration Pack User Guides.

All the Runbooks are based around our experience of building these types of solutions for many customers. The Runbook sets are designed as solution which provides the foundations out of the box and allows extension and modification to tailor the solution to exact customer requirements.

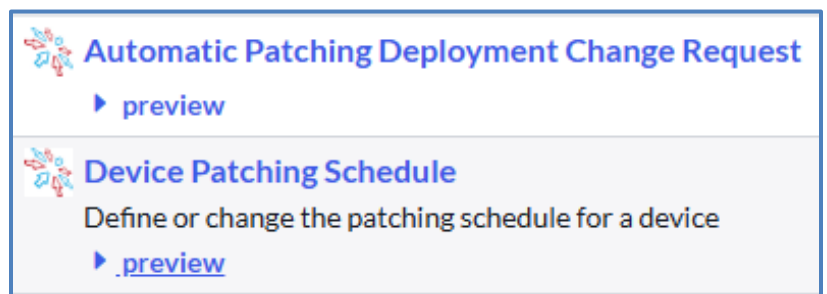
By using the Persistent Data Store approach any complex decision logic can be handled using the database and Orchestrator Runbooks. You can extend the Runbooks yourself or we can provide consultancy to help you with the design update and Runbook modifications.

## 2. Solution Overview

The solution comprises of three request offerings for the Kolverion Automation Portal.

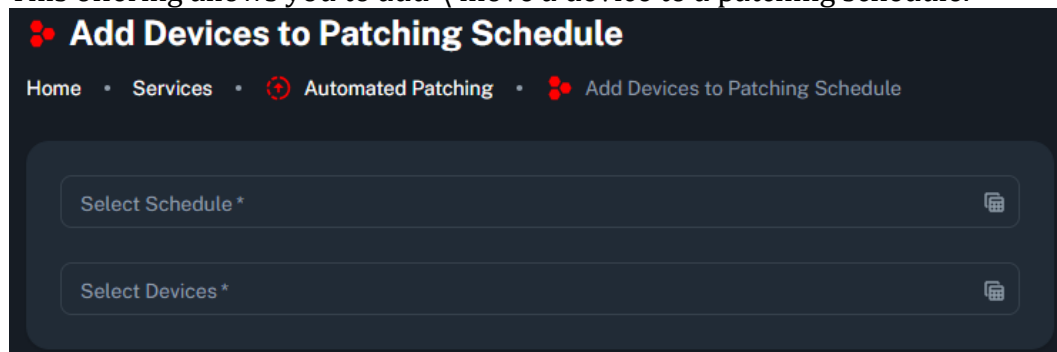


There are two options provided in the ServiceNow catalogue.

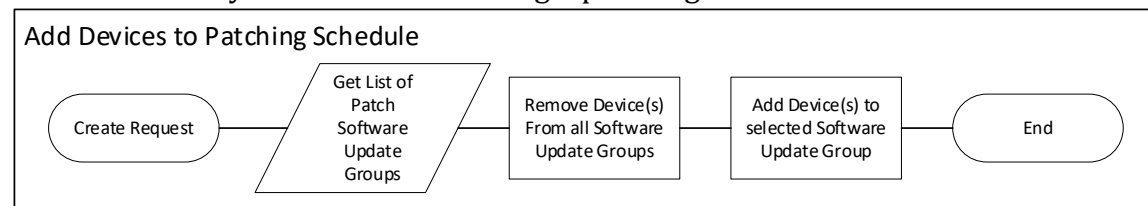


### 2.1. Add Devices to Patching Schedule

This offering allows you to add \ move a device to a patching schedule.



A device can only be a member of a single patching schedule.



If you require to have an option of not patching a device, then create a Configuration Manager collection that will not receive any update deployments

## 2.2. Create a Patching Deployment

This offering is to start the process of calculating when a patch deployment will run and creating that deployment.

**Create Patching Deployment**

Home • Services • Automated Patching • Create Patching Deployment

**Software Update Group \***

Select the software update group you want to assign to a schedule

**Schedule \***

Select the schedule(s) that you want to deploy the software update group too

**After Date \***

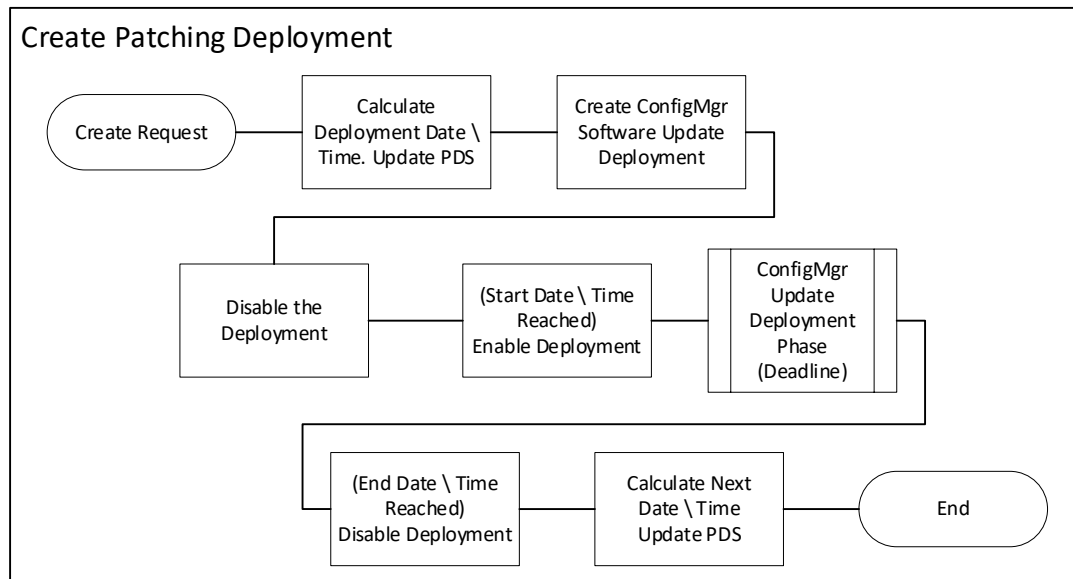
07/02/2025

The deployment will be created after this date

**Week Interval \***

Selecting 1 will choose the first time the day happens after "Patch Tuesday". e.g. Selecting 1 and a patch schedule starting Wednesday, will be the day directly after "Patch Tuesday"

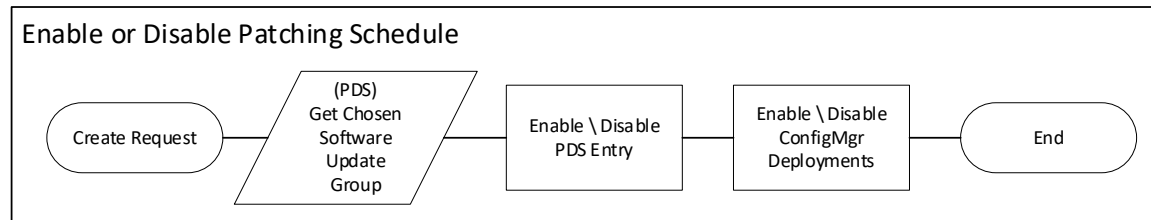
The runbook solution will calculate the next deployment after “Patch Tuesday” using the parameters “**After Date**” and “**Week Interval**”.



### 2.3. Enable or Disable Patching Schedule

This offering is to quickly allow an administrator to disable a patching schedule or enable a patching schedule.

The screenshot shows a web interface titled "Enable or Disable Patching Schedule". The breadcrumb navigation is: Home > Services > Automated Patching > Enable or Disable Patching Schedule. There is a search bar labeled "Schedule \*". Below it, a toggle switch is currently turned on, labeled "Enable". Underneath the toggle, it says "Enable = True \ Disable = False".



Enabling a schedule will enable any deployments that are associated with that schedule for the next patching cycle and make it available through the portal offering.

Disabling a schedule will disable any deployments previously created for that schedule and remove it as an option in the portal.

### 3. General Configuration Steps

This solution was designed with the Kerverion Automation Portal or ServiceNow. The following configuration steps are a guideline for setting the solution with either of these frontend portals.

**Important:** If you are using a different service desk to drive the runbooks then you will need to adjust the runbooks.

#### 3.1. Pre-Installation Information

The runbook solution contains the following elements:

- Persistent Data Store (PDS) SQL configuration script
- Kerverion Automation Portal import file
- Solution Orchestrator runbook file
- Runbook support files
- ServiceNow Update Set

#### 3.2. Kerverion Items Required

The solution requires the following Kerverion products:

- Kerverion Automation Portal
- Kerverion IP for SQL Server
- Kerverion IP for Runbook Management
- Kerverion IP for the Kerverion Automation Portal
- Kerverion IP for Text Manipulation
- Kerverion IP for ServiceNow

#### 3.3. Other Products Required

The following additional items are required:

- Microsoft System Center 2022 Configuration Manager Integration Pack

#### 3.4. Installation Steps

As a guide the steps taken are as follows:

1. Configure the PDS database
2. Create the required ConfigMgr collections \ AD Groups
3. Import and configure the Portal Service (If using the Kerverion Automation Portal)
4. Import the ServiceNow update set (If using ServiceNow)
5. Copy the runbook support files to the Runbook Servers
6. Import the Orchestrator Integration Packs
7. Configure the Orchestrator Integration Packs
8. Import the Runbooks
9. Configure the Runbook Variables

## 4. Persistent Data Store

The Persistent Data Store or PDS is a SQL Server database that is used by this Solution to allow all the actions that the Runbooks take to be carried out in a robust way. The use of the database at each “step” allows us to design the Runbooks such that each Runbook is simple and can be considered a discrete unit. In programming terms, it allows the Runbooks to be modular.

In your environment there may be a number of constraints that control the creation of a new database. For example, the location of the log and data files, the recovery options that should be used, and the collation of the server. These requirements are typically specified by the DBA responsible for your database server. These options do not affect the Runbooks so please use the appropriate options for your environment.

### Location

Typically, the PDS is created on the same database instance as is used for the Orchestrator database. There is no specific requirement that this must be the case. In environments where there is very high load you may find that creating the PDS on a different database instance advantageous.

### Database version

The Runbooks provided, have been tested against SQL2022 with the latest patches / updates applied. You may need to modify the SQL Script to get it to operate in your environment or to install it on older versions of SQL Server.

### Collation

The Runbooks have all been developed on systems using **Case Insensitive** collations as per the Microsoft System Center Orchestrator implementation guidelines, the specific collation setting used for your environment must be case insensitive other than that though the setting can be chosen as appropriate for your environment.

### Sizing

The minimum recommended size of the PDS is 1GB.

The amount of space required will depend on the two following factors:

- Number of requests processed

Housekeeping frequency as defined by your DBAs

Each Kolverion Runbook Solution uses a set of common tables within the PDS Database and a set of tables specific to itself.

#### 4.1. PDS Installation Script

As part of each solution package you are provided with a SQL script which will generate the PDS database tables required for the solution. When the SQL scripts are executed they check for the existence of each table they required in the PDS database. If this is a new installation they will create both the Common Tables and their Solution Specific database tables. If you are already using a Kolverion Runbook Solution then the script will detect that some of the tables this solution requires already exist and the script skips these table creation steps and creates only the tables which do not exist in your installation.

This means you can easily deploy one or more Kolverion Runbook Solution to an existing PDS database without damaging and tables which already exist. This also means when installing multiple Runbook Solutions in a new installation of the PDS you can run each Solution PDS creation script in any order you like and know that when done you will have all the tables you need for all your Runbook Solutions to operate.

##### 4.1.1. PDS Creation Steps

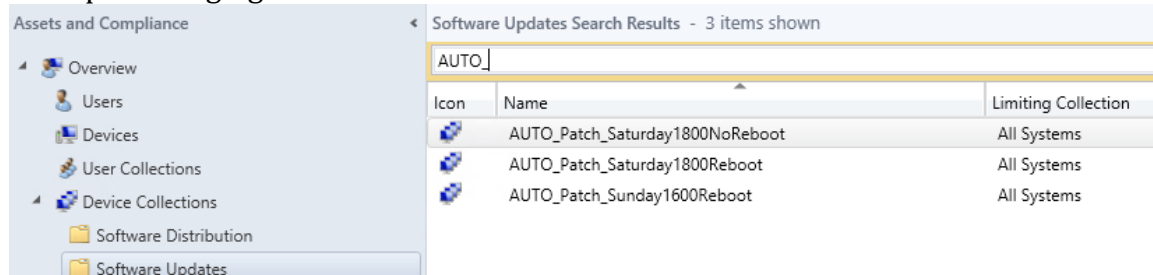
1. Create a New Database on your SQL Server called PDS\_LIVE or connect to your existing PDS\_LIVE database
2. Then execute the SQL Script provided within the PDS\_LIVE database you created.
3. Once the PDS\_LIVE database is created you must ensure the Orchestrator Runbook Server Service Account has as a minimum Read and Write Access permissions to the PDS\_LIVE database.

## 5. Configuration Manager Setup

For the Automated Patching Solution to operate successfully, it is assumed that ConfigMgr has the required collections and (optional) linked Active Directory groups created. Each patching schedule will require its own ConfigMgr device collection and (optional) corresponding active group to populate it.

**N.B.** ConfigMgr will need 'Active Directory Group Discovery' enabled on the OU that you have your AD groups located, if you are using AD groups.

Example ConfigMgr Device Collections:



The screenshot shows the 'Software Updates Search Results' window in ConfigMgr. The search criteria is 'AUTO\_'. The results table lists three device collections, all with a limiting collection of 'All Systems'.

Icon	Name	Limiting Collection
	AUTO_Patch_Saturday1800NoReboot	All Systems
	AUTO_Patch_Saturday1800Reboot	All Systems
	AUTO_Patch_Sunday1600Reboot	All Systems

Example AD Groups:

Name	Type	Description
AutoPatch-Sat-1800-NoReboot	Security Group...	AutoPatch Solution
AutoPatch-Sat-1800-Reboot	Security Group...	AutoPatch Solution
AutoPatch-Sun-1600-Reboot	Security Group...	AutoPatch Solution

ConfigMgr Query to link the AD groups:

*select*

*SMS\_R\_SYSTEM.ResourceID,SMS\_R\_SYSTEM.ResourceType,SMS\_R\_SYSTEM.Name,SMS\_R\_SYSTEM.SMSUniqueIdentifier,SMS\_R\_SYSTEM.ResourceDomainORWorkgroup,SMS\_R\_SYSTEM.Client from SMS\_R\_System where SMS\_R\_System.SecurityGroupName = "Domain\\ADGroupName"*

## 6. Configure the Automation Portal

Import the service request definition Automated\_Patching.export

### 6.1.1. Portal Queries

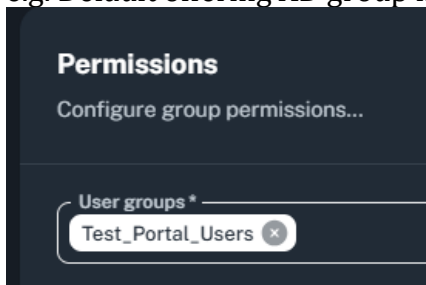
The following Connection must be updated to point to the customers PDS

- PDS\_LIVE
- SCCM

N.B. The portal service account needs db\_datareader to these databases.

### 6.1.2. Portal Offerings

Check the User Group matches the correct Group and change accordingly.  
e.g. Default offering AD group is Test\_Portal\_Users.



## 7. ServiceNow Update Set

The installation steps below assume there is an available ServiceNow instance. These steps should be followed by an experienced user.

### 7.1. ServiceNow Update Set Installation

The installation steps are as follows:

1. From System Applications > Applications, ensure that any previous version of the 'Kelverion Automated Patching Solution' application is removed from ServiceNow.
2. From System Update Sets > Retrieved Update Sets, ensure that any previous version of the 'Kelverion Automated Patching Solution' update set is removed from ServiceNow.
3. From the System Update Sets > Retrieved Update Sets, select 'Import Update Set from XML'.
4. Select the provided XML file **Kelverion\_AutoPatch\_UpdateSet\_v1\_5.xml** and click on Upload.
5. Select the 'Kelverion Automated Patching Solution' update set and choose 'Preview Update Set'.
6. From Service Catalog > Catalogs, select the + for 'Add Content'
7. Select the 'Kelverion Automated Patching Solution' and choose the location of where you wish to place the widget with the appropriate 'Add here'.

### 7.2. Kelverion Auto Patching Solution Patch Schedules

A 'Kelverion Auto Patching Solution Patch Schedules' table is included in the update set and must create at least one instance in this table before you use the solution.

Property	Type	Mandatory Field
Deployment AD Group	String	TRUE
Deployment Enable Day	List	TRUE
Deployment Enable Time	String	TRUE
Deployment End Day	List	TRUE
Deployment End Time	String	TRUE
Deployment Start Day	List	TRUE
Deployment Start Time	String	TRUE
Device Schedule Name	String	TRUE
Reboot	List	TRUE
SCCM Collection	String	TRUE
Schedule Name	String	TRUE

### Example Data

```
Schedule Name      : Sunday 16:00 Reboot
Reboot             : Allow Reboot
Deployment Enable Day : Sunday
Deployment Enable Time : 10:00
Deployment End Day   : Monday
Deployment End Time   : 04:00
Deployment Start Day  : Sunday
Deployment Start Time : 16:00
SCCM Collection     : AUTO_Patch_Sunday1600Reboot
```

```
Schedule Name      : Saturday 18:00 No Reboot
Reboot             : Suppress Reboot
Deployment Enable Day : Saturday
Deployment Enable Time : 12:00
Deployment End Day   : Sunday
Deployment End Time   : 06:00
Deployment Start Day  : Saturday
Deployment Start Time : 18:00
SCCM Collection     : AUTO_Patch_Saturday1800NoReboot
```

#### 7.2.1. Data Entry Notes

The ConfigMgr Administrator should ensure that any patching schedule created falls inside any previously created maintenance windows. The automated patching solution does not alter any maintenance windows.

The 'Day' will always be the following day after the change request has been approved.

**Enable** = When the deployment job is enabled and the patch content is made available for clients to download.

**Start** = Deployment deadline for starting patch installations

**End** = Sets when the deployment job is disabled

#### 7.3. Kolverion Auto Patching Solution Software Update Groups

The Kolverion Auto Patching Solution Software Update Groups table will be used for each of the software update groups detected in the ConfigMgr environment. The configuration items in this class are populated by the runbook solution.

Property	Type	Mandatory Field
Created By	String	FALSE
Date Created	Date Time	FALSE
Software Update Group Name	String	FALSE

### Example Data

```
Software Update Group Name : January 2016
Created By                 : Domain\SCCMAdmin
Date Created               : 01/14/2016 3:05:22 PM
```

```
Software Update Group Name : December 2015
Created By                 : Domain\SCCMAdmin
Date Created               : 12/10/2015 3:16:05 PM
```

## 8. Runbook Support Files

The runbook solution relies on a PowerShell module to calculate Patch Tuesday. This will need to be stored on each Runbook server.

This PC > Local Disk (C:) > Orchestrator > Automated Patching Solution

Name	Date modified	Type	Size
holidays.txt	10/14/2024 5:22 AM	Text Document	0 KB
PatchTuesday.psm1	1/14/2025 11:42 AM	Windows PowerS...	4 KB

There is an optional holidays.txt file that can be used to prevent these days being selected as possible patching deployment days.

**N.B.** It is important that the same directory structure is used across all runbook servers.

## 9. Integration Packs

The integration packs listed in section 3.2 / 3.3 will need to be registered in your Orchestrator environment and deployed to your runbook servers. The configuration of these integration packs is detailed below.

### 9.1. Kerverion SQL Server

The solution requires a connection to the PDS database. Ensure that there is a configuration called PDS\_LIVE.

If the Orchestrator Runbook Service is being used to connect, then you do not need to add the User Name \ Password to the configuration. Ensure that this service account has **db\_datareader** & **db\_datawriter** roles added to the PDS\_LIVE database.

Item	Configuration
Name	PDS_LIVE
Type	SQL Server Options
Server Name	<FQDN of the SQL Server>
Database Name	PDS_LIVE
Authentication Scheme	Windows Authentication
User Name	
Password	
Connection Timeout	15
Enable Column Encryption	False

### 9.2. Kerverion Runbook Management

The solution requires that the Orchestrator Web Service is configured. The Runbook Management IP will require a configuration called **RM**.

Item	Configuration
Name	RM
Type	Runbook Management
Web Service URL	https://<FQDN Orchestrator Web Server>:81/api
Username	<Service Account Name>
Domain	*****
Password	*****
Skip Certificate Validation	False
Use Legacy Web Service	False

### 9.3. Kerverion Automation Portal

If you are using the Kerverion Automation Portal for your request offerings, then you will need to configure this IP. It will require a configuration called AutomationPortal.

Item	Configuration
Name	AutomationPortal
Type	Kerverion Automation Portal
PortalUrl	https://<FQDN of portal>:8443/
TenantId	*****
ClientId	*****
ClientSecret	*****
Include Stack Trace with Errors	False

### 9.4. Kerverion ServiceNow

If you are using ServiceNow for your request offerings then you will need to configure this IP with a name of **ServiceNow**.

Item	Configuration
Name	ServiceNow
Type	ServiceNow Configuration
ServiceNow URL	https://<ServiceNow Server>
User Name	*****
Password	*****
User Date Format	Yyyy-MM-dd

User Time Format	HH:mm:ss
Proxy Server URL	
Proxy Server Name	
Proxy Password	
Proxy Domain	
Skip Certificate Validation	False
Client ID	
Client Secret	
Access Token URL	
Refresh Token	

### 9.5. Microsoft System Center 2022 Configuration Manager

The solution requires the Microsoft System Center 2022 Configuration Manager IP configured with the name **SCCM**.

Item	Configuration
Name	SCCM
Server	<Name of ConfigMgr Server>
Username	*****
Password	*****

## 10. Runbook Installation and Configuration

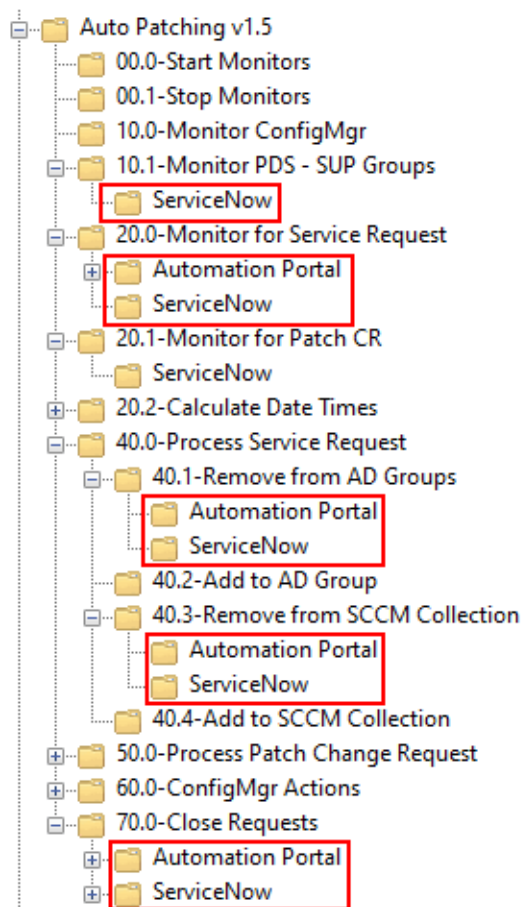
To use the solution, you must do a series of simple configuration steps to make the runbooks operate in your environment.

Import the runbooks using the file **AutoPatch\_1.5.ois\_export**.

### 10.1. Selecting your Service Desk Application

As the solution comes with both Kolverion Automation Portal and ServiceNow runbooks, you can choose to either ignore or delete the runbooks that you do not require.

Each folder that has a runbook for these applications will have two child folders called Automation Portal and ServiceNow. You just simply need to delete the unwanted folders in each case, as shown below.



## 10.2. Variables

The runbook solution has several variables that will require configuration.

Variable	Description	Allowed Value
Patch.PSModule	Path to the Patch PowerShell Module	C:\Orchestrator\Automated Patching Solution\PatchTuesday.psm1
Runbooks root path	Solution root folder	\Auto Patching v1.5
SCCM	NETBIOS name of the ConfigMgr server that has the ConfigMgr console and PowerShell cmdlets installed.	Server Name
SCCM Sitecode	3 Digit ConfigMgr Site Code	XXX
SCCM_PowerShellPath	Path to PowerShell module on the ConfigMgr site server. e.g. C:\Program Files (x86)\Microsoft Configuration Manager\AdminConsole\bin	C:\InstallDirectory\
SCCM_ServiceAccount	Domain and account name of the service account that has rights to the ConfigMgr console. N.B: Ensure you test this first by opening the console with the account.	Domain\AccountName
SCCM_ServiceAccount_Password	Password for the service account. N.B: Select the encrypted check box after typing the password.	
SCOM_InstallFails	<b>True:</b> SCOM is notified of deployment failures of the patch deployments <b>False:</b> SCOM is not notified of any patch deployment failures	True \ False

## 11. PDS Data

This section lists the details of the PDS tables. Some of these tables will require data pre-populated before you use the solution.

The PDS contains the following tables:

- **DeviceSchedules**  
This table is used for moving devices between schedules. It will list the device name and associated schedule.
- **PatchCR**  
This table stores data for the Patch Deployment offering. It will list the deployment date \ times and associated request.
- **PatchSchedules**  
This table must be populated with at least one entry before you can use the solution. See the next section on this for some example data.  
**N.B.** This table is not used for ServiceNow and you must configure the equivalent table that is included in the Update Set.
- **SUPGroups**  
This table is populated by discovery runbooks. The Automation Portal will directly reference this table. ServiceNow will use this table to update its list of SUP Groups.

### 11.1. Configuring the Patch Schedules

The patch schedules are defined in the PDS under the table (PatchSchedules).

Column	Type	Mandatory Field
_created	datetime	
_owner	nvarchar	
_state	nvarchar	
AD_Group	nvarchar	
Enable_Day	nvarchar	TRUE
Enable_Time	nvarchar	TRUE
End_Day	nvarchar	TRUE
End_Time	nvarchar	TRUE
Start_Day	nvarchar	TRUE
Start_Time	nvarchar	TRUE
Reboot	nvarchar	TRUE
SCCM_Collection	nvarchar	TRUE
Schedule_Name	nvarchar	TRUE
Environment	nvarchar	FALSE
WeekNum	Int	TRUE

You must create at least one instance in this table.

### Example Data

```
_created          :
_owner            : Admin
_state            : New
AD_Group           : AUTO_Patch_Sunday1600Reboot
Enable_Day         : Sunday
Enable_Time        : 10:00
End_Day            : Monday
End_Time           : 04:00
Start_Day          : Sunday
Start_Time         : 16:00
Reboot             : Allow Reboot
SCCM_Collection    : AUTO_Patch_Sunday1600Reboot
Schedule Name      : Sunday 16:00 Reboot

_created          :
_owner            : Admin
_state            : New
AD_Group           : AUTO_Patch_Saturday1800NoReboot
Enable_Day         : Saturday
Enable_Time        : 12:00
End_Day            : Sunday
End_Time           : 06:00
Start_Day          : Sunday
Start_Time         : 18:00
Reboot             : Suppress Reboot
SCCM_Collection    : AUTO_Patch_Saturday1800NoReboot
Schedule Name      : Saturday 18:00 No Reboot
```

#### **11.1.1.1. Data Entry Notes**

The ConfigMgr Administrator should ensure that any patching schedule created falls inside any previously created maintenance windows. The automated patching solution does not alter any maintenance windows.

The 'Day' will always be the following day after the change request has been approved.

**Enable** = When the deployment job is enabled, and the patch content is made available for clients to download.

**Start** = Deployment deadline for starting patch installations

**End** = Sets when the deployment job is disabled

## 12. Installing Temporary License of Kelverion Integration Packs

To run the solution, you will need a full or evaluation licence key for Kelverion Integration Packs.

The licence files need to be copied into a folder called C:\Program Files\Kelverion Automation\Licenses. If this folder does not already exist on your system please first create the folder

C:\Program Files\Kelverion Automation\Licenses  
and then copy the attached files into it.

The license key is regularly updated as it includes a specific license end date after which the product will no longer work. If you have a license or date format error on trying to run this product please contact [info@kelverion.com](mailto:info@kelverion.com) detailing date of download and error details.

To purchase a license please contact your Kelverion representative, reseller or email [info@kelverion.com](mailto:info@kelverion.com)

### **13. Upgrade Warning**

The Runbooks provided in this Automated Patching solution are provided for installation in a clean Orchestrator environment. If you have deployed any previous versions of this Runbook Solution, then installing this version will overwrite any changes you have made to the currently deployed Runbooks.

You can either delete you existing Runbook deployment and then install this new Runbook Solution set or manually upgrade your existing deployment.

## 14. Notes

Kelverion UK Limited  
Compass House, Vision Park  
Chivers Way  
Histon  
Cambridge CB24 9AD  
United Kingdom  
Email: [info@kelverion.com](mailto:info@kelverion.com)  
Web: [www.kelverion.com](http://www.kelverion.com)