



MORPHEUS

Morpheus – ServiceNow Integration

Last Updated: December 2020

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INTRODUCTION

IT Service Management (ITSM) is an important area of focus. By and large most organizations I come across have an ITSM solution in place. ITSM solutions have evolved over the years beyond just Change Management Database (CMDB) and incident management (Incident, Problem, Change, and more). CMDB tools enable an effective IT Service delivery model. Most organizations expect significant value from their CMDB, which is why so much time and cost is invested in them.

This is no different for Morpheus clients. They have invested in ITSM and use Morpheus' unified orchestration and automation CMP to manage their hybrid IT. Morpheus ITSM integrations include leading technologies such as ServiceNow, Remedy, and Cherwell.

This document will focus specifically on leveraging the Morpheus - ServiceNow integration.

MORPHEUS - SERVICENOW INTEGRATION

The Morpheus - ServiceNow integration covers primarily four use cases that organizations may choose to take advantage of. Here's a short overview of each use case (we will dig deeper in later sections).

[CMDB Integration](#)

Organizations leveraging ITIL want to be able to track resources in their CMDB. When provisioning resources - regardless if this is done from Morpheus directly or by using the Morpheus Plugin for ServiceNow - Configuration Items (CI) are created in ServiceNow. When any updates are made to a resource in Morpheus the respective CI record is updated as well. This integration is turned on at the Group or the Cloud constructs in Morpheus.

[Approvals Integration](#)

In Morpheus, users can create Provisioning Approval Policies. Provisioning policies are configured to leverage native Morpheus approvals or ITSM-integrated approvals, in this case ServiceNow. This integration is activated by creating a Provisioning Approval Policy and selecting the configured ServiceNow instance that will manage the approval workflow process.

[Incident Management Integration](#)

If resources provisioned by Morpheus experience performance or health-related issues that lead to resource degradation or negatively impact resource availability, incidents are automatically raised in Morpheus. These incidents will automatically close once the degradation or health related issues have been resolved. The

incidents can be modified and closed manually in Morpheus if desired. Organizations using ServiceNow would want these incidents to be visible in the ServiceNow portal. This integration is turned on in Morpheus by enabling the ServiceNow monitoring in Morpheus (in addition to the Morpheus monitoring).

[Morpheus ServiceNow Plugin Integration](#)

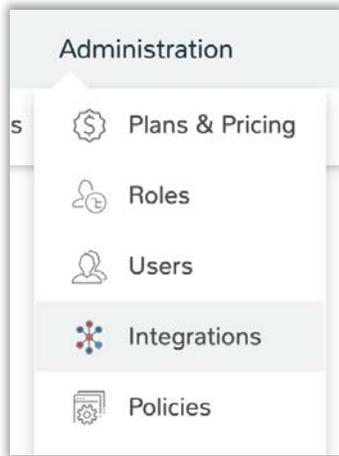
One of Morpheus' key strengths is Self-Service Orchestration and Automation. This is done in the Morpheus UI and can be consumed via CLI and API. Some ServiceNow users prefer to provision resources from the ServiceNow Service Catalog. Morpheus has released a plugin for ServiceNow. This can be installed from the ServiceNow Store. Once installed and configured, Morpheus library items and application blueprints can be presented in the ServiceNow Service Catalog for ordering. This integration is turned on by installing the Morpheus Plugin for ServiceNow and sharing the desired resources from Morpheus.

The remainder of this document will focus on the 4 integration areas mentioned above and provide more details on their setup, configuration, and consumption. Let's jump into the details...

INTEGRATION DETAILS

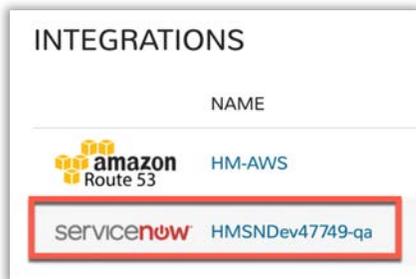
In order to take advantage of any of the above-mentioned integration use cases with ServiceNow, the very first step is to connect Morpheus to the ServiceNow instance(s).

To do this you will need the ServiceNow instance details. In Morpheus go to the **Administration** menu option and select **Integrations**. Select **+New Integration** and scroll down to the **ITSM** section and choose **ServiceNow**. Provide the ServiceNow details and then **Save Changes**. Please see figures below.



 A dialog box titled "EDIT SERVICENOW INTEGRATION" with a close button (X) in the top right. It contains several input fields: "NAME" with the value "HMSNDev47749-qa", "ENABLED" with a checked checkbox, "SERVICENOW HOST" with the value "https://dev47749.service-now.com", "USER" with the value "admin", "PASSWORD" with masked characters "*****", "CMDB CUSTOM MAPPING" (an empty text area), and "CMDB BUSINESS OBJECT" (an empty text area). A "SAVE CHANGES" button is at the bottom right.

Again, this initial step simply connects Morpheus with ServiceNow. In the list of integrations, you will now see the integration entry available.



If you have multiple ServiceNow instances that you would like to connect you can simply repeat the instructions above.

Integration dialog field descriptions

- **NAME:** Friendly name you would like to describe your ServiceNow instance integration
- **ENABLED:** Enable or disable this integration. An integration entry can exist, but this integration can be disabled by unchecking ENABLE
- **SERVICENOW HOST:** The ServiceNow instance you are connecting to. (remember you can create multiple ServiceNow integrations if you have multiple ServiceNow instances)
- **USER/PASSWORD:** The User credentials that Morpheus will use to interact with ServiceNow. This is a ServiceNow user with the appropriate roles assigned in order for these integration use cases to work properly. Here's a list of the ServiceNow roles necessary:

- **x_moda_morpheus_ca.integration** (will be available if/when the Morpheus ServiceNow Plugin is installed from the ServiceNow Store)
- **catalog_admin**
- **itil**
- **rest_service**
- **import_transformer**
- **CMDB CUSTOM MAPPING:** If there is a desire to populate some specific field in the ServiceNow table, specify the field mapping here. This is a JSON code snippet. In the example below we are mapping a field in ServiceNow which has a label of “object_id” and we are populating it with the value in the Morpheus variable “\${instance.name}”

```
{
  "object_id": "<${instance.name}>"
}
```
- **CMDB BUSINESS OBJECT:** By default, Morpheus will populate the ServiceNow table using the following configuration item (CI) class “cmdb_ci_vm_instance”. Users wanting to populate a different CI class would simply enter that class in this field

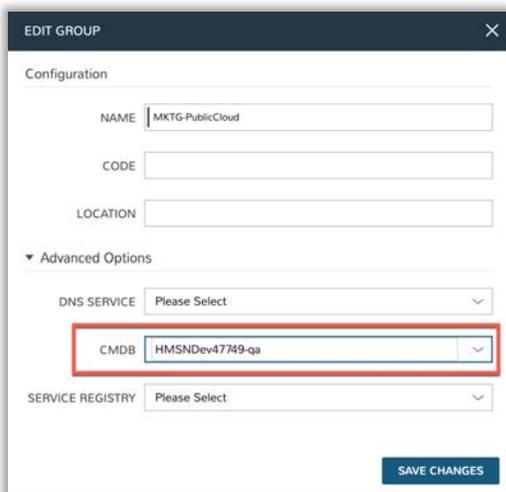
There are additional integration areas that will be discussed in the corresponding integration sections below.

Activating the CMDB Integration

As noted earlier, users wanting to update the ServiceNow CMDB with CI records of any services provisioned using the Morpheus CMP would enable this capability. Any updates made to a resource in Morpheus also have their respective CI record updated as well. To turn this on it's really a matter of assigning the ENABLED ServiceNow integration defined earlier to a Morpheus Group, or directly to a defined Cloud environment.

GROUP definition: A Group defines which resources a user has access to. This is defined by User Roles. Defined Clouds are then added to the group, and users can only access those assigned Cloud environments.

CLOUD definition: A cloud is a set of resources that reside in a private or public cloud or bare metal servers. These cloud integrations can belong to one or more groups.



The screenshot shows the 'EDIT GROUP' configuration window. The 'Configuration' section includes fields for NAME (MKTG-PublicCloud), CODE, and LOCATION. The 'Advanced Options' section is expanded, showing dropdown menus for DNS SERVICE (Please Select), CMDB (HMSNDev47749-qa), and SERVICE REGISTRY (Please Select). The CMDB dropdown is highlighted with a red box. A 'SAVE CHANGES' button is located at the bottom right of the window.

Above, I have a group named **MKTG-PublicCloud** and I've assigned the CMDB integration to be the ServiceNow integration created earlier. From the Morpheus platform any resources deployed to the **MKTG-PublicCloud** group will now have CI entries created in the ServiceNow CMDB. Any updates in Morpheus to the resource will also be reflected in the ServiceNow CMDB. If there is a preference to do this at the Cloud level, you would simply assign the CMDB integration at the Cloud object. Here's an example of that below where one of the many options in a Cloud configuration is CMDB integration.

BACKUP PROVIDER: Internal Backups

REPLICATION PROVIDER: None

GUIDANCE: Manual

COSTING: Costing and Reservations

DNS INTEGRATION: Please Select

SERVICE REGISTRY: Please Select

CMDB: HMSNDev47789-qa

AGENT INSTALL MODE: Cloud Init / Unattended (when available)

API PROXY: [Empty]

► Provisioning Command

SAVE CHANGES

Below is an example of provisioning a resource from Morpheus and then having it create the CI record in the ServiceNow CMDB

CREATE INSTANCE

ACTIVE MQ: MMDMACT1001

Summary

INSTANCE OPTIONS

NAME: MMDMACT1001

GROUP: MKTG-PublicCloud

CLOUD: HM-AWS

TYPE: ActiveMQ

PLAN: Amazon T2 Nano - 1 Core, 0.5GB Memory

VERSION: 5.11

LAYOUT: Amazon ActiveMQ

PRICE: \$5.2456 / Month

VOLUMES

ROOT: 10 GB gp2

NETWORKS

LABS_APP_1A (SUBNET1964389F2): DHCP

PREVIOUS COMPLETE

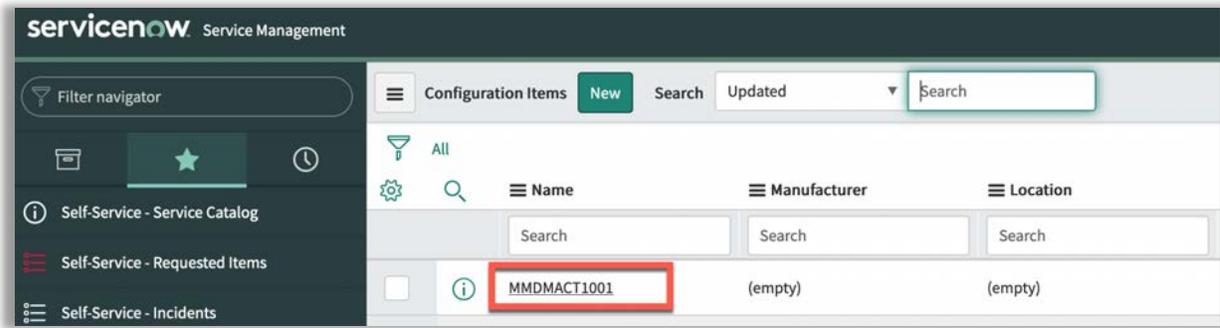
The instance I just created is alive and well (below)

INSTANCES

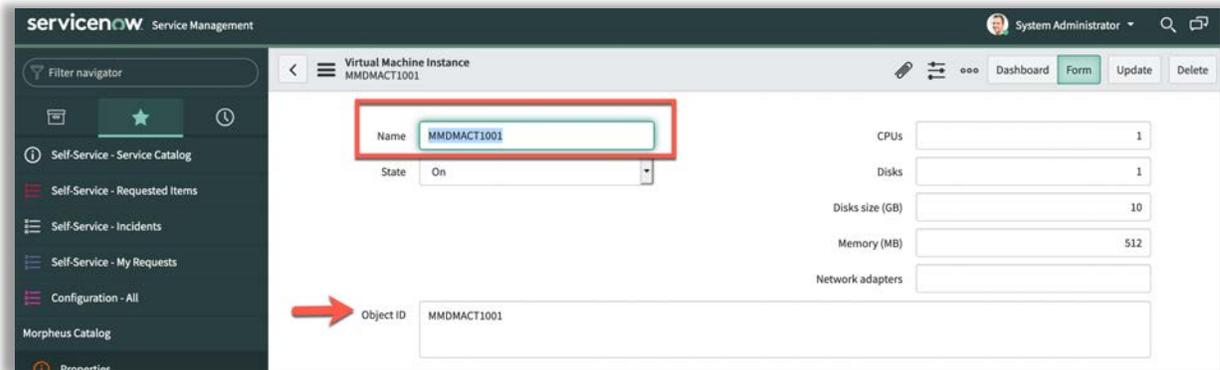
Search [] All Groups [] All Clouds [] All Statuses [] + ADD ACTIONS [] []

NAME	SUMMARY	LOCATION	STATS
<input type="checkbox"/> MMDMACT1001	Console: 10.226.12.244:8161 Version: 5.11 Virtual Machines: 1	Group: MKTG-PublicCloud Clouds: HM-AWS	STATUS: HEALTH: MAX CPU: 0 MEMORY: 54 STORAGE: 15

The corresponding CMDB entry in ServiceNow is now available too!



Looking at the details of that record I see the following



Please note that I added a CMDB CUSTOM MAPPING JSON snippet (below) in the integration record, we also see the **Object ID** field populated with the corresponding value from Morpheus as indicated by the red arrow in the figure above. One can also have multiple fields in ServiceNow populated from Morpheus, simply add the field mappings to the JSON code snippet in the CMDB CUSTOM MAPPING area.

```
CMDB CUSTOM MAPPING {
  "object_id": "<%=instance.name%>"
}
```

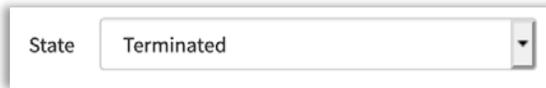
If you choose to have multiple field mappings, the code snippet will look like the following example. Lines 2 and 3 are just examples, please substitute the actual desired ServiceNow field labels, and Morpheus variables

```
CMDB CUSTOM MAPPING {
  "object_id": "<%=instance.name%>";
  "SN_field_id2": "<%=Morph.varname2%>";
  "SN_field_id3": "<%=Morph.varname3%>"
}
```

A list of the Morpheus variables can be found here:

https://docs.morpheusdata.com/en/latest/troubleshooting/Variables_Examples.html

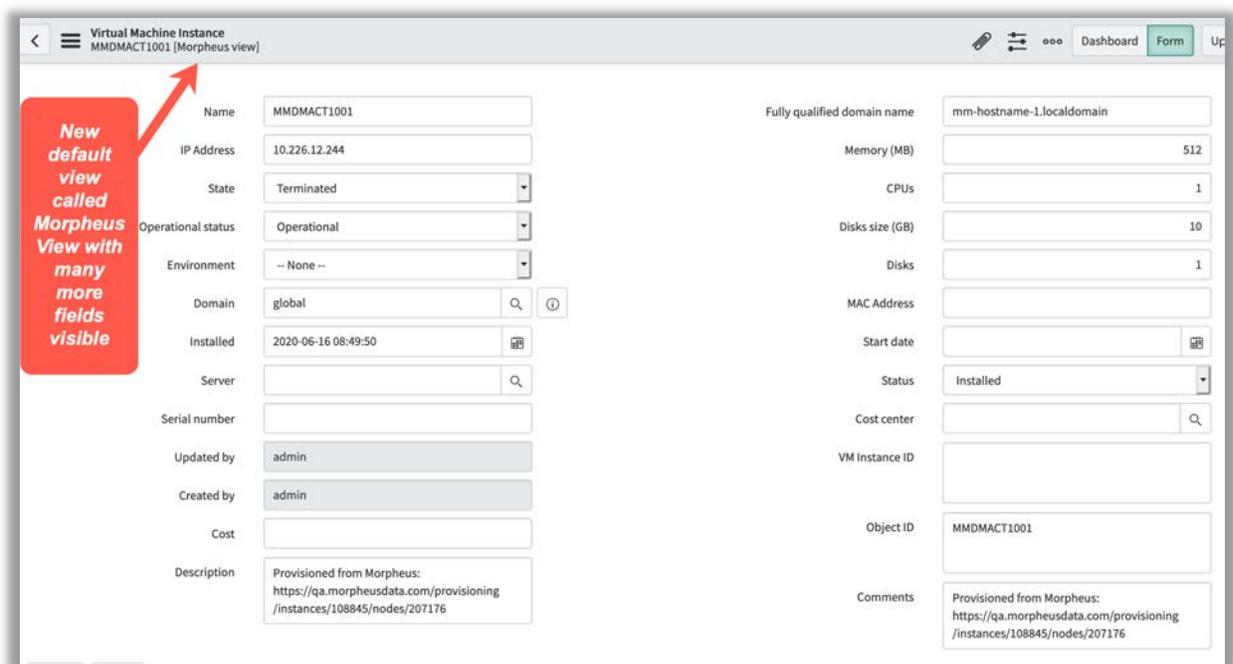
When a provisioned resource is deleted in Morpheus, the corresponding CI record in ServiceNow will change from **On** to **Terminated**.



A screenshot of a dropdown menu with the label 'State' on the left and 'Terminated' selected in the dropdown box.

NOTE: Morpheus does set quite a few more fields by default on the CI record. Fields like IP Address, FQDN, and more.

In ServiceNow you can edit or create a new view that has many more of these fields. Here's an example.

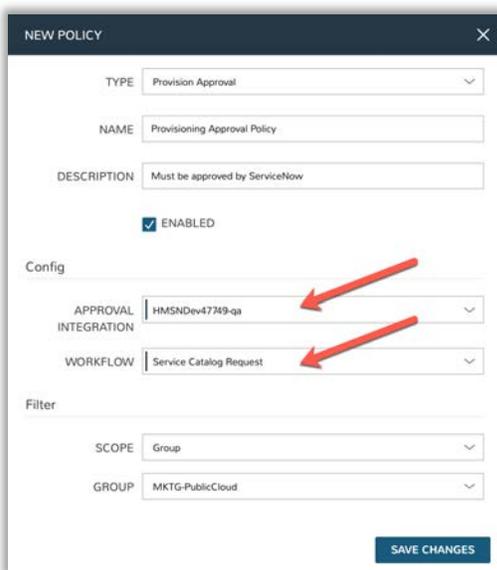


A screenshot of a ServiceNow form for a 'Virtual Machine Instance' (MMDMACT1001). The form is divided into two columns of fields. A red callout box on the left side contains the text: 'New default view called Morpheus View with many more fields visible'. An arrow points from this box to the 'State' dropdown menu, which is currently set to 'Terminated'. The form includes fields for Name, IP Address, State, Operational status, Environment, Domain, Installed, Server, Serial number, Updated by, Created by, Cost, Description, Fully qualified domain name, Memory (MB), CPUs, Disks size (GB), Disks, MAC Address, Start date, Status, Cost center, VM Instance ID, Object ID, and Comments. The 'Description' and 'Comments' fields contain text: 'Provisioned from Morpheus: https://qa.morpheusdata.com/provisioning/instances/108845/nodes/207176'.

Activating the Approvals Integration

Approvals can be handled in Morpheus; however, some organizations choose to have ServiceNow be the approval authority and take advantage of the ServiceNow approval workflows. To enable this capability, one must create a **Provisioning Approval** policy in Morpheus and assign the ServiceNow instance that will manage the approval workflow process and choose the scope this policy will be applied to. Once activated approval checks take place every 1 minute.

From the **Administration** menu navigate to **Policies**, and then select **+ADD POLICY**



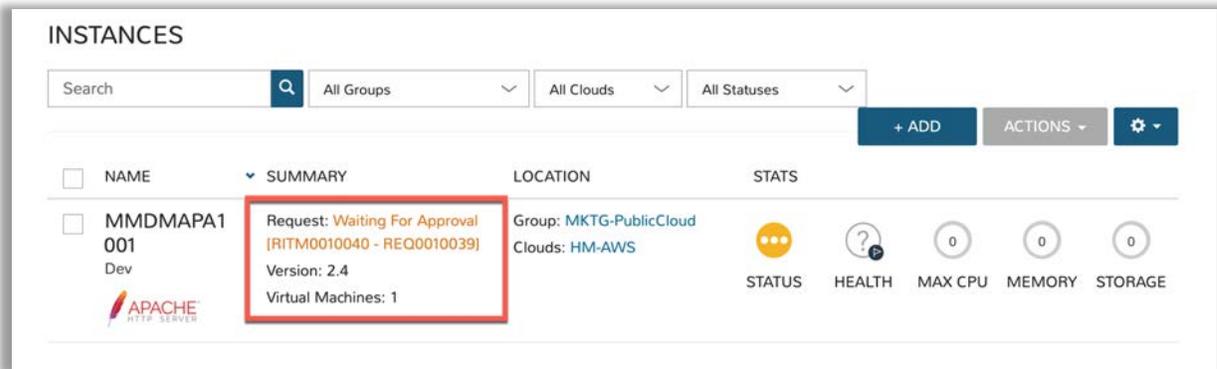
For the **TYPE**, select the **Provision Approval** from the dropdown. Provide the **Name** and **Description**.

The **Config** and **Filter** sections are the important sections.

For **APPROVAL INTEGRATION**, select the dropdown and change it from **Internal Approvals** to the ServiceNow Integration you desire (in this case it's **HNSNDev47749-qa**). The ServiceNow approval workflow you will want to use is **Service Catalog Request** (unless you have some other desired workflow).

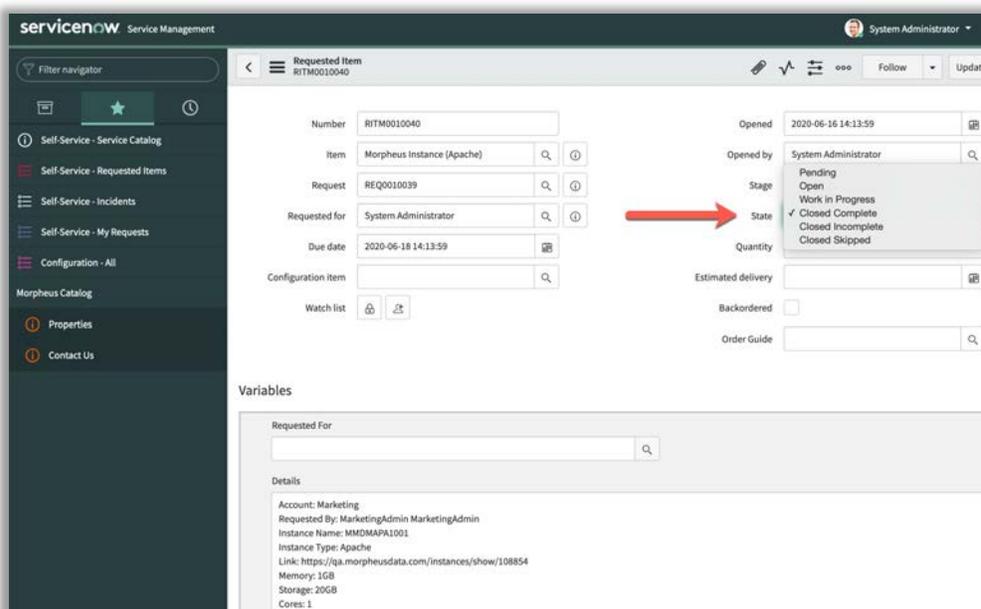
The **Filter** is how we decide what portion of the environment this policy applies to. The **SCOPE** has 5 options to choose from: **Global, Group, Cloud, Role, User**. We have selected **Group** and chose **MKTG-PublicCloud**. By doing so, anything provisioned in Morpheus to the **MKTG-PublicCloud** group must be approved in ServiceNow.

Let's demonstrate what this will look like now that we have an approval policy in place.



Upon provisioning an instance or application from Morpheus, the instance is now added to the instances list, but in a **Waiting for Approval** state. We are also presented with the ServiceNow Request Number and Request Item Number. Go to ServiceNow to approve (or reject) this service request.

In ServiceNow go to the **My Requests** page, and then find the request **REQ0010039**. From the request we will open the request item **RITM0010040** to approve it.



Change the State from **Open** to **Closed Complete** is the equivalent of approving this for request. You must then update this request item by clicking the **Update** button.

Now in the Morpheus UI we will see the instance transition to a blue **Provisioning** state, and eventually to a green **Running** state.

The screenshot shows the Morpheus UI 'INSTANCES' page. At the top, there is a search bar and three dropdown menus for 'All Groups', 'All Clouds', and 'All Statuses'. Below these are buttons for '+ ADD', 'ACTIONS', and a settings gear. The main content is a table with the following columns: NAME, SUMMARY, LOCATION, and STATS. The table contains one instance: MMDMAPA1001, Dev, with a summary of 'Http: 10.226.12.18:80', 'Version: 2.4', and 'Virtual Machines: 1'. The location is 'Group: MKTG-PublicCloud' and 'Clouds: HM-AWS'. The STATS column shows a play button icon (STATUS), a checkmark (HEALTH), '0' (MAX CPU), '33' (MEMORY), and '9' (STORAGE). A red arrow points to the play button icon.

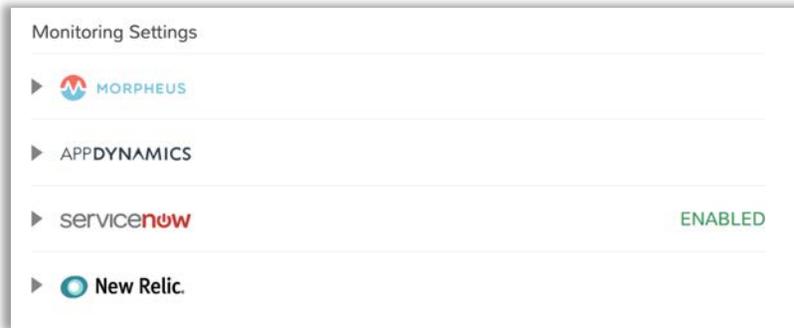
NAME	SUMMARY	LOCATION	STATS
MMDMAPA1001 Dev	Http: 10.226.12.18:80 Version: 2.4 Virtual Machines: 1	Group: MKTG-PublicCloud Clouds: HM-AWS	STATUS HEALTH MAX CPU MEMORY STORAGE

Note: In the example above the resource request was initiated from Morpheus. If you are provisioning resources from the ServiceNow Service Catalog by using the Morpheus Plugin for ServiceNow (discussed later), this approval process will function the same way. A ServiceNow user would request the service from the ServiceNow Service Catalog. Morpheus would present the instance or application in a **Waiting for Approval** state. A ServiceNow approver would have to approve the request before the provisioning would proceed in Morpheus.

Activating the Incident Management Integration

As noted earlier, incidents in Morpheus will open and close based on the health of their respective resource services. Organizations using ServiceNow may prefer to have these incidents be visible in the ServiceNow portal. This integration must be enabled in Morpheus.

From the **Administration** menu navigate to Monitoring. Note there are other integrations possible.

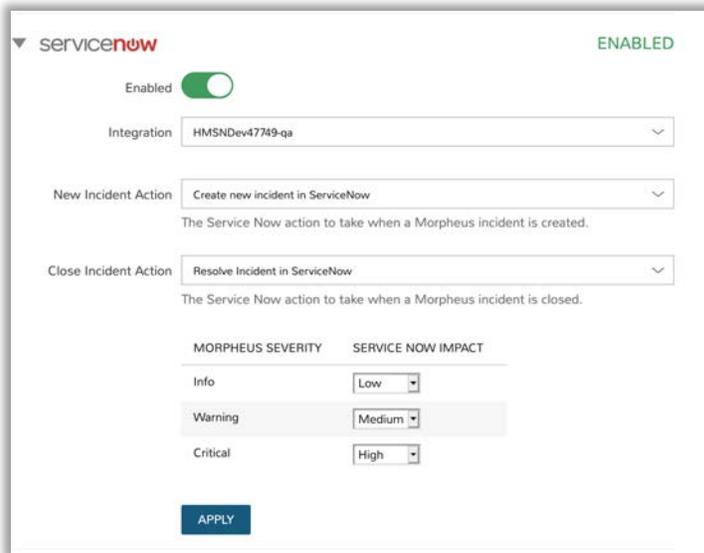


Expand the ServiceNow section to enable and choose the desired configuration and behavior. Select **Enabled**. From the Integration dropdown select the desired ServiceNow instance (remember you can have multiple ServiceNow instances configured for integration in Morpheus).

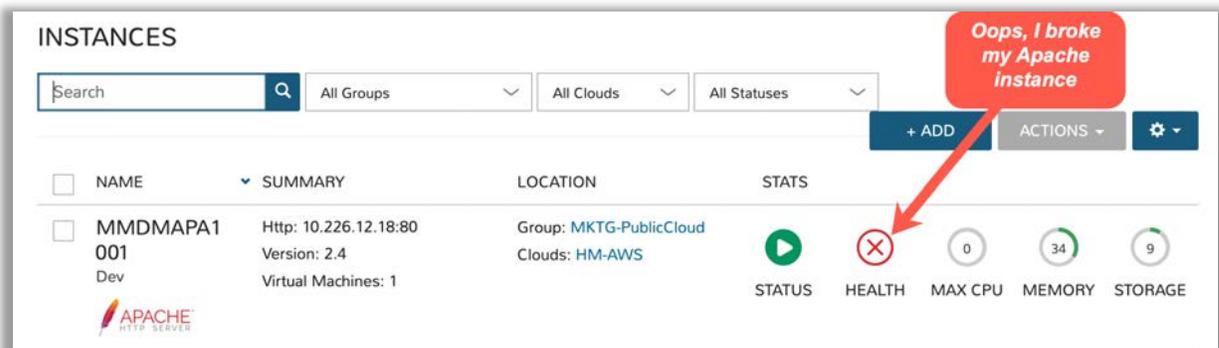
For the **New Incident Action** selection there are two options, **No Action** or **Create new incident in ServiceNow**. I always choose the later - **Create new incident in ServiceNow**.

For **Close Incident Action** there are three options, **No Action**, **Add Activity to Incident in ServiceNow**, or **Resolve Incident in ServiceNow**. Again, I choose the later - **Resolve Incident in ServiceNow**.

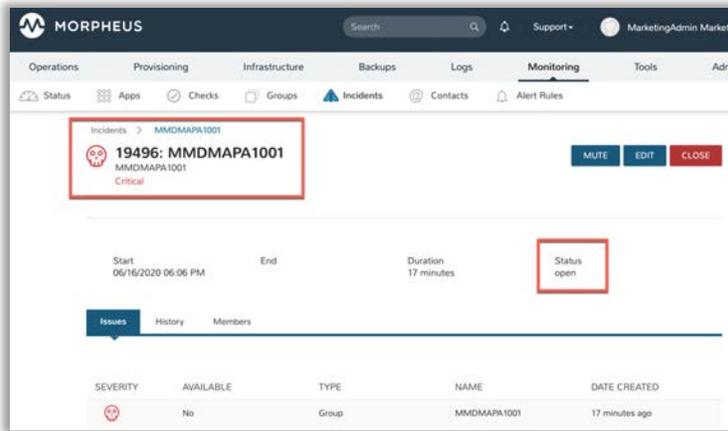
The ServiceNow Impact can also be modified against the Morpheus severity levels. These are mostly left at the default levels.



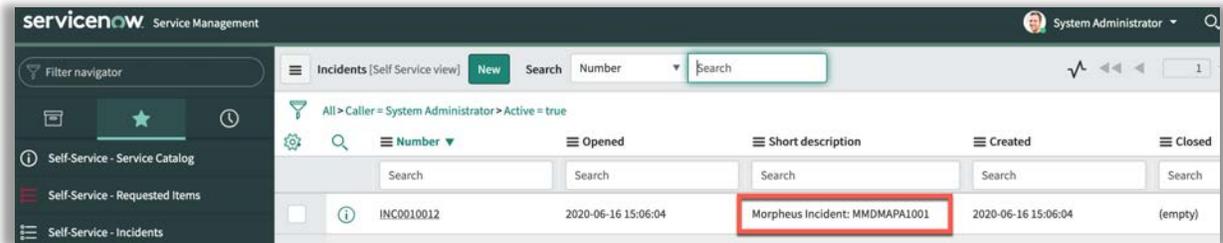
To demonstrate the behavior, I will purposely break an instance to cause an incident creation to trigger in Morpheus and then in ServiceNow.



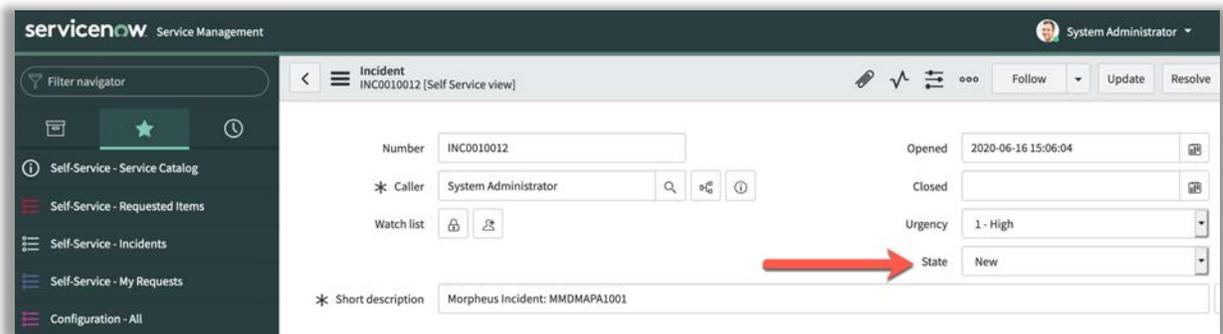
In Morpheus the incident looks like the following. Its severity is critical, and the status is open.



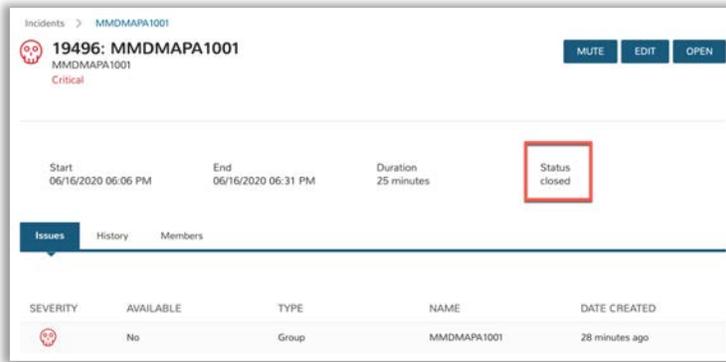
In ServiceNow navigate to the **Self-Service - Incidents** page to see the new incident. The description will indicate that it was a Morpheus Incident and the resource name.



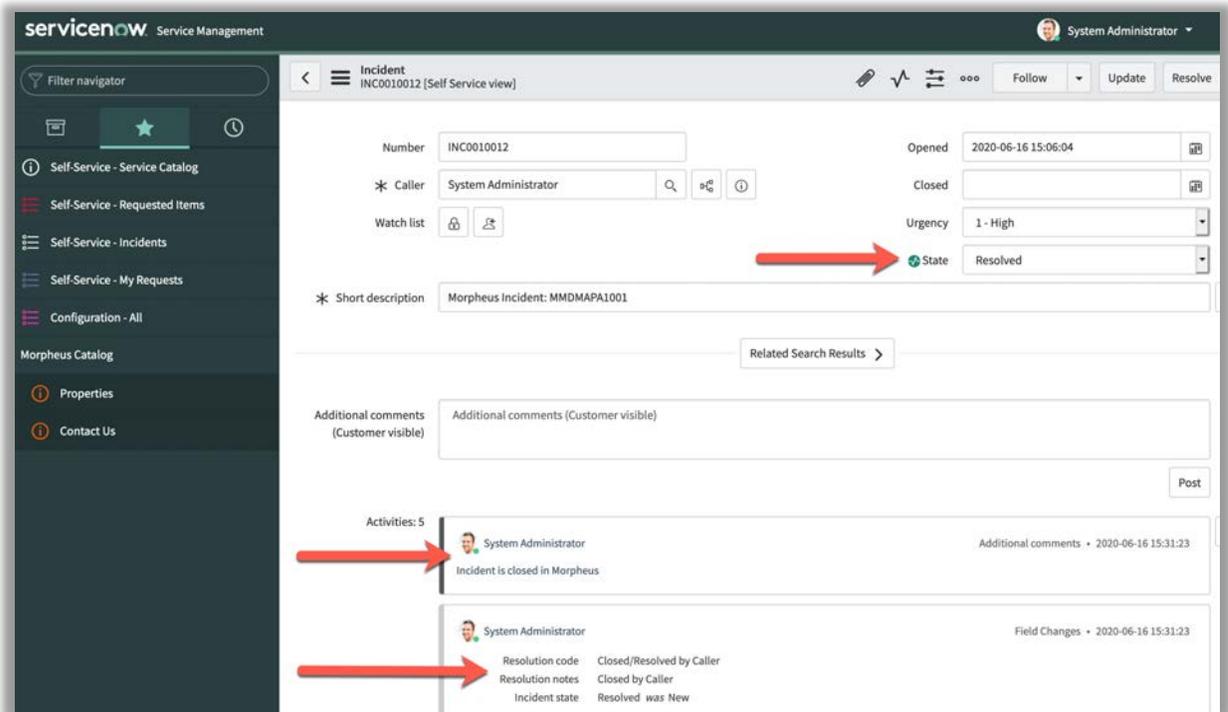
Expand this incident in ServiceNow to get additional details.



Resolving the health condition on the Apache server will cause the incident to close in Morpheus and therefore ServiceNow.

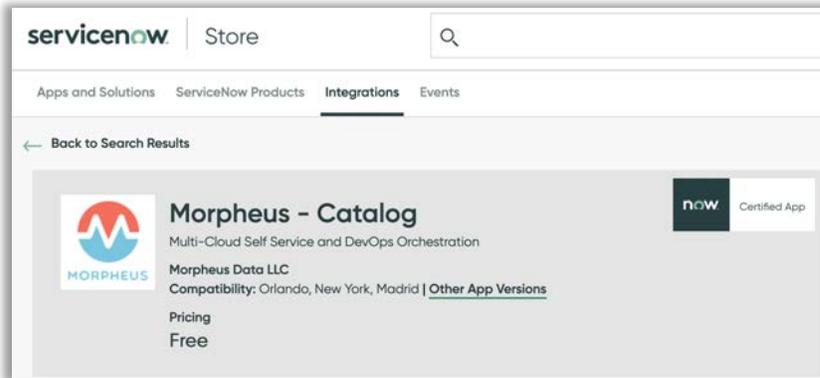


In ServiceNow this will be indicated as **Resolved**.



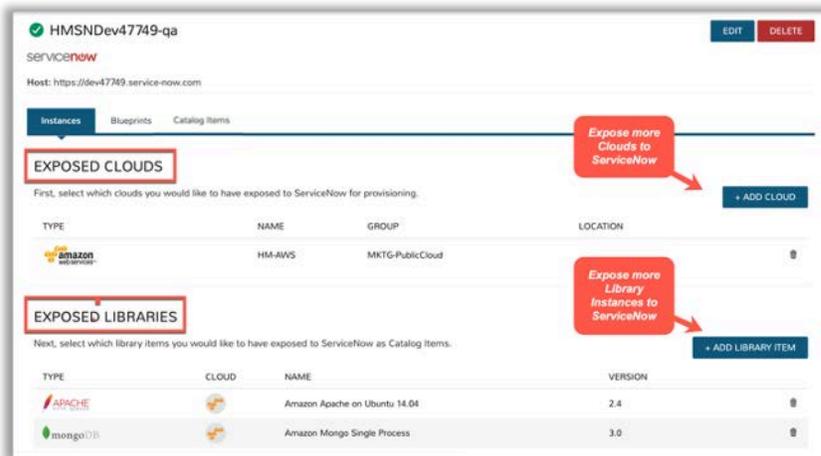
[Activating the Morpheus ServiceNow Plugin Integration](#)

ServiceNow users that prefer to provision resources from the ServiceNow Service Catalog can do so by installing the free Morpheus Plugin for ServiceNow. This can be installed from the ServiceNow Store. It does require you have your HI Credentials to get this plugin. The plugin currently supports the following ServiceNow releases: New York, Orlando, and Paris. Once installed and setup, Morpheus Instances, application blueprints, and self-service catalog items can be presented in the ServiceNow Service Catalog for ordering.

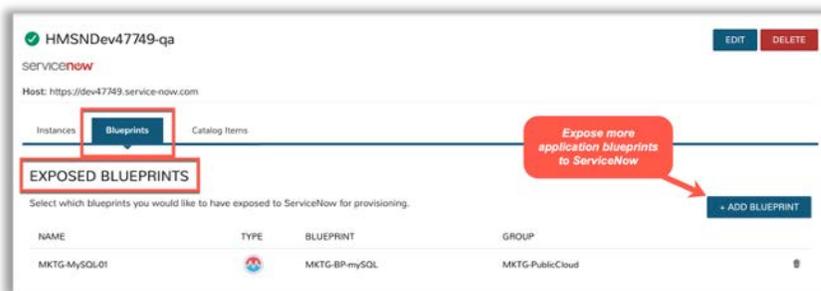


Once installed in ServiceNow, the Morpheus environment details must be configured in the Properties section. In ServiceNow go to **Morpheus Catalog** and select **Properties**. On this page provide the URL to the Morpheus appliance and the user credentials. This user in Morpheus must have the necessary Morpheus privileges to provision to the exposed clouds, library instances and blueprints. If using a MID server, you can also specify the name here and Morpheus will utilize it.

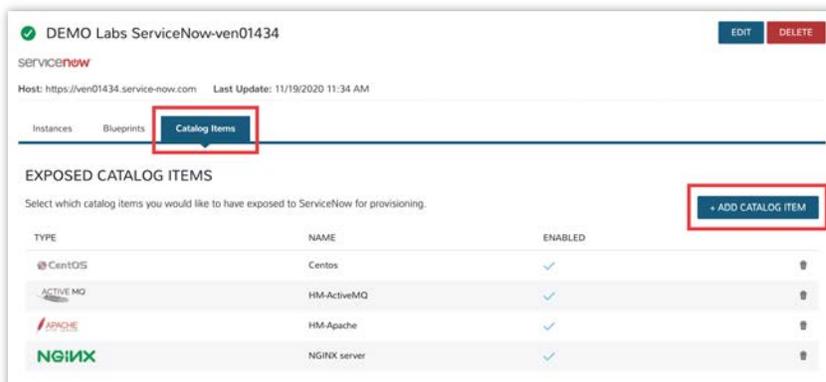
In the **EXPOSED CLOUDS** section, the name of the exposed cloud is **HM-AWS**, and it's assigned to the group **MKTG-PublicCloud**. Also notice that I've only exposed 2 Morpheus library instances here. More clouds and library items can be added if needed.



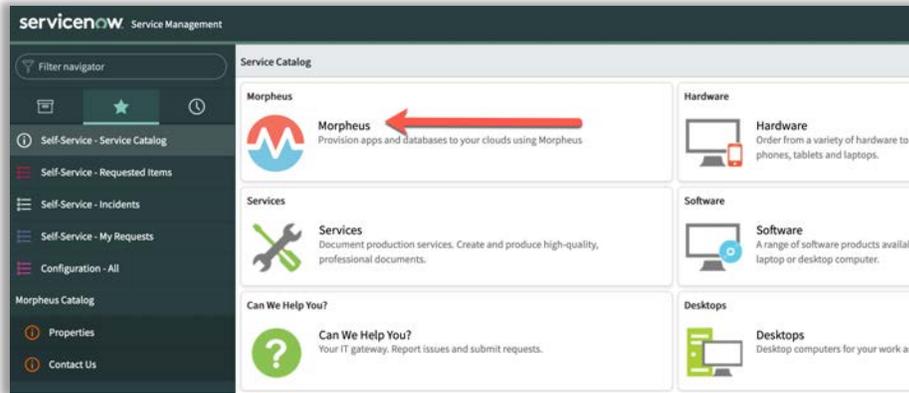
Application blueprints are exposed in the **Blueprints** tab. More application blueprints can be added if needed.



Self-Service Catalog Items are exposed in the **Catalog Items** tab. New Catalog Items are built by accessing **Self-Service** from within the Tools menu. New Catalog Items can be exposed in ServiceNow by clicking **+ADD CATALOG ITEM**.



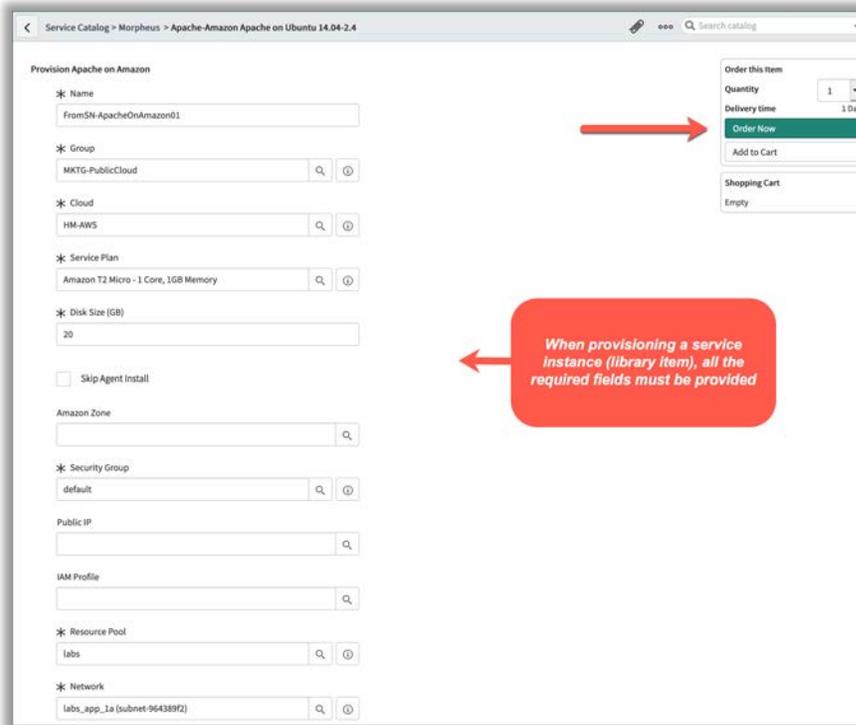
The Morpheus catalog items are made available in the **ServiceNow Self-Service - Catalog**



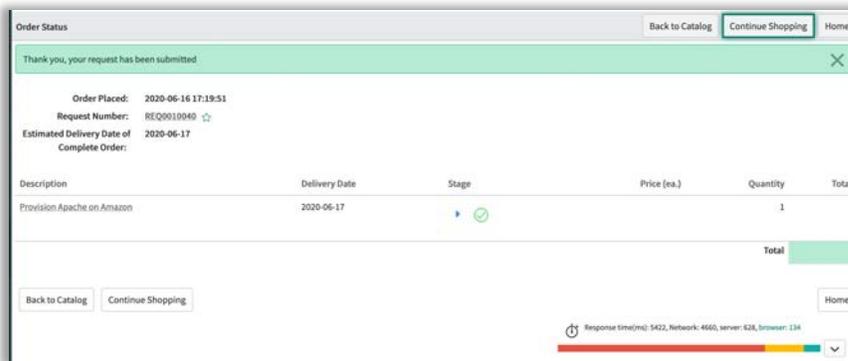
Selecting **Morpheus** will then show the exposed Morpheus items. From here a ServiceNow user would order any of the exposed services.



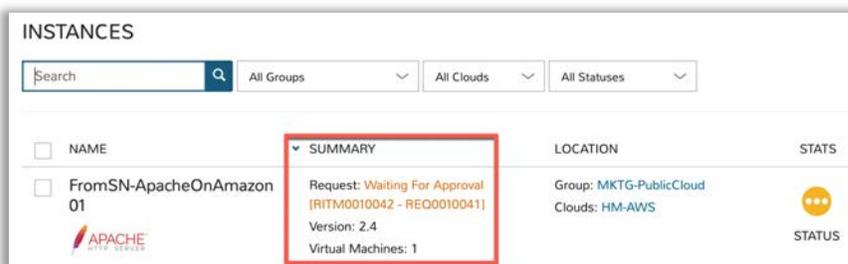
Let's demonstrate ordering a library item (service instance) first, and then a blueprint second. I'll choose the Apache-Apache on Ubuntu instance to order. All the mandatory fields marked with an asterisk (*) must be selected and populated.



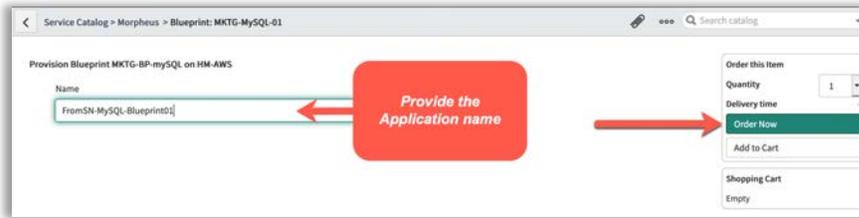
Once complete select **Order Now**.



Because the Approval Policy is still in place, this instance will be waiting for Approval. It must be approved in ServiceNow. Just before I approve it, I'll show what it will look like in Morpheus. After approval it will provision and move to a green running status.



Let's demonstrate ordering an application **Blueprint** item from the ServiceNow Service Catalog. Provide the application name and select **Order Now**.



Once approved in ServiceNow, Morpheus will provision the application, and it will transition from waiting for approval to provisioning to a green status of running.



NOTE: When provisioning a library item (service instance) one must populate all the mandatory fields. When provisioning the application Blueprint, we only populated the application name. When exposing an application blueprint from Morpheus there are some requirements that must be met.

Exposed Blueprint Requirements

- **Instance Group/Cloud/Environment configuration.** When adding an instance to a blueprint, you **MUST** populate all 3 fields, Group, Cloud and Environment.



- **Instance Configuration.** All the fields in the Instance Info section, AND the Configuration Options section must be populated and locked. This is what also allows for the simplified application ordering from ServiceNow, as only the application name needs to be provided.

STRUCTURE

- MKTG-BP-mysql
- App
- MySQL
- Environment: Production, Group: MKTG-PublicCloud, Cloud: HM-AWS

CONFIGURATION

ALLOW EXISTING INSTANCES

▼ Instance Info

- NAME: [lock]
- DESCRIPTION: [lock]

▼ Configuration Options

- LAYOUT: [lock]
- PLAN: [lock]
Cores: 1 Memory: 2 GB Price: \$18.836 / Month
- RESOURCE POOL: [lock]
- VOLUMES: GB [lock]
- NETWORKS: DHCP [lock]
- SECURITY GROUPS: [lock]
- ROOT PASSWORD: [lock]
- USERNAME: [lock]
- PASSWORD: [lock]
- PUBLIC IP: [lock]

SUMMARY

We've discussed the integration between Morpheus and ServiceNow; we dove into the details of the four areas of integration, and how they are setup, configured and consumed. I hope you found this information helpful and take advantage of these capabilities.

Morpheus Data is the market leader in unified and persona-based multi-cloud management. The Morpheus software platform gives enterprise organizations and service providers the ability to present a simple self-service catalog to users which can span dozens of on-premises and public clouds. As part of delivering on the promise of open and agnostic self-service, the Morpheus platform provides cost optimization, complete role-based access controls, and continuous automation for DevOps teams modernizing applications comprised of bare metal, VMs, containers, and public cloud PaaS services. With more built-in integrations and native functionality than any other platform, customers can standardize workflows, reduce tool sprawl, and unify existing teams and technologies.

To get started with Morpheus today, please visit www.morpheusdata.com
Request a demo of Morpheus at www.morpheusdata.com/demo/