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TECHNICAL WHITE PAPER

# ServiceNow Discovery Patterns for Rubrik CDM Overview

Tim Hynes  
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## INTRODUCTION

ServiceNow is a software platform, delivered through a Software-as-a-Service (SaaS) model, and enables IT business functions such as:

- IT Service Management (ITSM)
- IT Operations Management (ITOM)
- IT Asset Management
- Security Operations (SecOps) Management
- IT Service Delivery

Through the ServiceNow platform's extensibility, operational coverage, and delivery model, it seeks to quickly enable customers to deliver user-friendly, service-driven IT services while adhering to Service Management principles.

This document seeks to describe the ServiceNow Discovery Plugin, how it relates to the ServiceNow product stack, and how it can benefit Rubrik customers.

## AUDIENCE

The intended audience for this document includes sales engineers, field consultants, professional services, partner engineering, and customer architects and engineers who wish to learn more about how ServiceNow's Discovery Patterns help to map their Rubrik CDM environment and configuration.

## OBJECTIVES

This white paper aims to describe the ServiceNow Discovery Patterns for Rubrik CDM, how they work, and how they can benefit Rubrik and ServiceNow customers.

## TAKE CHARGE OF YOUR IT INFRASTRUCTURE AND DIGITAL SERVICES WITH SERVICENOW® ITOM VISIBILITY

### THE IT CHALLENGE

If you can't see your IT environment, you can't manage it. Unless you have visibility of your infrastructure—and know how this delivers your mission-critical digital services—there's no easy way to diagnose and fix service outages, resolve performance issues, assess the risk of changes, optimize infrastructure costs, minimize software compliance issues, or respond quickly to security threats. Many IT organizations still rely on traditional discovery tools and slow, error-prone manual processes to document their infrastructure and digital services. This results in long discovery delays, and there's no easy way to map discovered infrastructure to the actual services their business consumes. They spend weeks mapping services by hand using stale discovery data—by which time, the map is already out of date. While this approach may have worked in the past, it's no match for today's dynamic virtualized and cloud environments. When change is measured in minutes, lumbering tools and manual processes just can't keep up. The result? Broken services, escalating operating costs, and an inability to respond quickly and effectively to business needs.

### THE SERVICENOW SOLUTION

ServiceNow®ITOM Visibility discovers your end-to-end IT infrastructure and automatically maps it to your digital services, creating a complete, accurate, up-to-date, and consistent record in your ServiceNow®CMDB. And it's built to keep pace with dynamic public and private cloud environments while still providing support for legacy on-premises infrastructure.

## CONFIGURATION MANAGEMENT DATABASE (CMDB)

The Information Technology Infrastructure Library, or ITIL, grew from a set of best practices for IT management developed by the UK Government in the 1980s. The Configuration Management Database, or CMDB, is defined in the IT Infrastructure Library as 'A database used to store Configuration Records throughout their Lifecycle. The Configuration Management System maintains one or more CMDBs, and each CMDB stores Attributes of Configuration Items (CI), and Relationships with other CIs. This forms the system of record from which businesses can coordinate the other tenets of ITIL: Incident Management, Change Management, Problem Management etc.

In order to provide this, it is important that the CMDB has the following characteristics:

- **Complete** - the CMDB should ideally include every Configuration Item (CI) in the scope of management, each CI should have as much useful information as possible including the relationships to other CIs
- **Up to Date** - data in the CMDB should be up to date to ensure an accurate picture can be formed from the data it holds
- **Correct** - the data must be correct, if the data in the CMDB is not correct, then decision making based on the data held within is potentially flawed

Assuming the business holds a complete, correct, and up to date CMDB, they can use this to make decisions connected to many areas of IT management and service delivery, for example:

- Financial management - report on which CIs are reaching end-of-life, require support renewals, etc.
- Change management - identify which CIs may be impacted through a planned change, and assess the impact of the change accordingly
- Incident management - understand which other CIs may be affected in the case that a CI fails and impacts the organization's ability to deliver service

The ServiceNow Now platform includes a pre-built CMDB in which organizations can either create CIs manually, or preferably use automation to keep data up to date, this is discussed further in the next section. This CMDB is extensible, allowing organizations to add additional information, CI classes, relationships, and more, tailored specifically to their requirements.

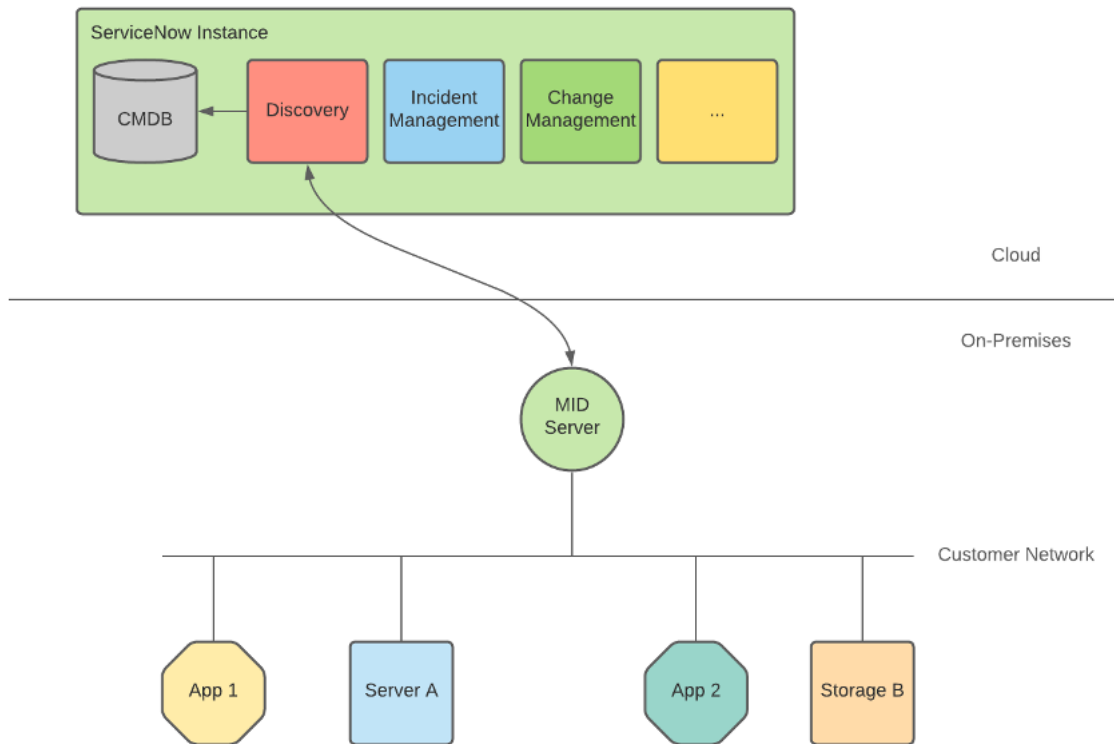
## SERVICENOW DISCOVERY

ServiceNow Discovery runs automatically to discover CIs in an organization's environment, classify these, identifying them as a given type, and populating the CMDB with them in an automated fashion.

Once CIs have been created in this way, the process can be repeated on a regular cadence to ensure that the CI remains up-to-date over time, or can be event-driven such as in a cloud environment.

### DISCOVERY PROCESS

At a high level, this process can be summarized as described below:



1. One or more credentials are added to the ServiceNow instance
2. Discovery is triggered by adding one or more IP ranges to discover to the ServiceNow Discovery application
3. Communication is made via the MID server, an on-premises proxy worker component of ServiceNow, which then scans the entered IP ranges
4. As each device is discovered, it is classified using Discovery Patterns, which use the entered credentials, and available ports and commands, to identify what type of device is being discovered
5. Once the device is classified, it is interrogated as per the matched Discovery Pattern
6. Either a new CI is then created in the CMDB, or the existing one is updated

As this process is repeated over time, and for the entirety of the organization's network, a complete and accurate picture of the environment is built up.

## CI CLASSES

A CI Class is a definition of the data model used to store information about a certain type of CI, and the relationships that exist between this class and other CI classes.

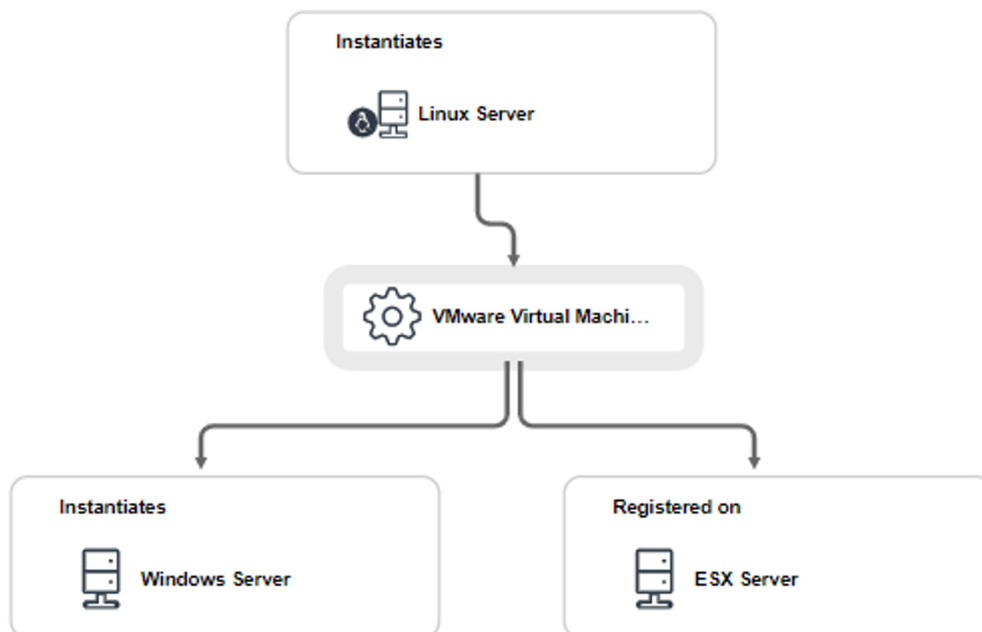
This data model is based upon a base schema (defined on the `cmdb_ci` table in ServiceNow) with additional fields being defined for the specific CI type defined in the class, an example of these additional fields is shown below for the VMware Virtual Machine instance type (`cmdb_ci_vmware_instance` table):

Column label	Column name	Type	Reference	Max length	Default value	Mandatory	Display
<a href="#">BIOS UUID</a>	bios_uuid	String		40		false	false
<a href="#">Guest ID</a>	guest_id	String		40		false	false
<a href="#">Guest Reconciled</a>	guest_reconciled	True/False		40	false	false	false
<a href="#">Image path</a>	image_path	String		255		false	false
<a href="#">Template</a>	template	True/False		40		false	false
<a href="#">vCenter Reference</a>	vcenter_ref	Reference	VMware vCenter Instance	32		false	false
<a href="#">vCenter Instance UUID</a>	vcenter_uuid	String		255		false	false
<a href="#">VM Instance UUID</a>	vm_instance_uuid	String		40		false	false

These fields are specific information needed to correctly catalogue this specific CI type.

Relationships are likewise defined in the CI class, defined by a two way relationship such as 'stores / stored by' which can be used to define the relationship from one CI to another (in this example, we could say that a storage system **stores** a virtual machine, while the virtual machine is **stored by** the storage system).

Below is a screenshot of a subset of this kind of relationship mapping for the VMware Virtual Machine instance class:



It is also possible to extend CI class schema for existing CI classes. For example, for a VMware Virtual Machine Instance (as discussed earlier), we could choose to extend the class with 'Virtual Machine Notes', so that we can also include any notes added to the VM through vCenter to the class definition, and associated CIs in the CMDB. This would help in our goal to ensure the CMDB more exhaustively catalogues our environment configuration.

## DISCOVERY PATTERNS

Discovery Patterns define a set of commands which are used to identify the type of device discovered, and to extract the information needed to create or update the CI in the CMDB.

ServiceNow Discovery comes with a large number of patterns built in, but where customers want to discover and classify their own applications, they usually need to create custom Discovery Patterns and associated CI Classes.

Discovery Patterns can use multiple methods of connecting to applications or devices to determine their class and configuration, including:

- Secure Shell (SSH)
- PowerShell
- REST API
- Windows Management Interface (WMI)
- Simple Network Management Protocol (SNMP)

Through defining combinations of one or more of the supported discovery methods, it should be possible to identify that a device with, for example, an open SSH port, is accessible using administrator defined credentials, and through sending certain commands, is in fact a NetApp storage system, the pattern can then be used to identify the specific model, its configuration, operational status, and to create or update the associated CI in the CMDB with this information.

## DISCOVERY PATTERNS FOR RUBRIK CLOUD DATA MANAGEMENT (CDM)

In February 2021, ServiceNow introduced Rubrik CDM Discovery Patterns into the in-built [Discovery and Service Mapping Patterns](#) application. This provides a standardized, integrated way for ServiceNow Discovery users, and Rubrik customers, to automate classification and discovery of Rubrik devices and their configurations.

## INSTALLATION/DISCOVERY PROCESS

Once the above application has been installed from the store, ServiceNow Discovery administrators can add a username/password, enter the IP address of one of their Rubrik CDM cluster nodes, and the cluster, nodes, and protected objects will be classified, discovered, and added to or updated in the CMDB.

**NOTE:** existing CIs which are matched with Rubrik protected objects during initial discovery will be updated with their relationships to Rubrik clusters, policies, objects, etc.

The discovery and mapping is all carried out via a MID server (see the earlier Discovery Process section for more details on the process for this) and pulls data from Rubrik CDM's REST API. This means that there must be a network path from the selected MID server to the entered Rubrik cluster node IP on HTTPS port 443.

## CI CLASSES

The patterns featured in this application create the following CI classes, and associated discovery patterns, for Rubrik cluster objects:

Cluster Object	Table Name
Rubrik Cluster	cmdb_ci_rubrik_cluster
Rubrik Node	cmdb_ci_rubrik_node
Rubrik Node Disk	cmdb_ci_rubrik_node_disk

The following classes are created for Rubrik cluster configuration constructs:

Cluster Object	Table Name
Rubrik SLA Domain	cmdb_ci_rubrik_sla_domain
Rubrik Fileset Template	cmdb_ci_rubrik_fileset_template

The following classes are created for Rubrik specific snappable object types:

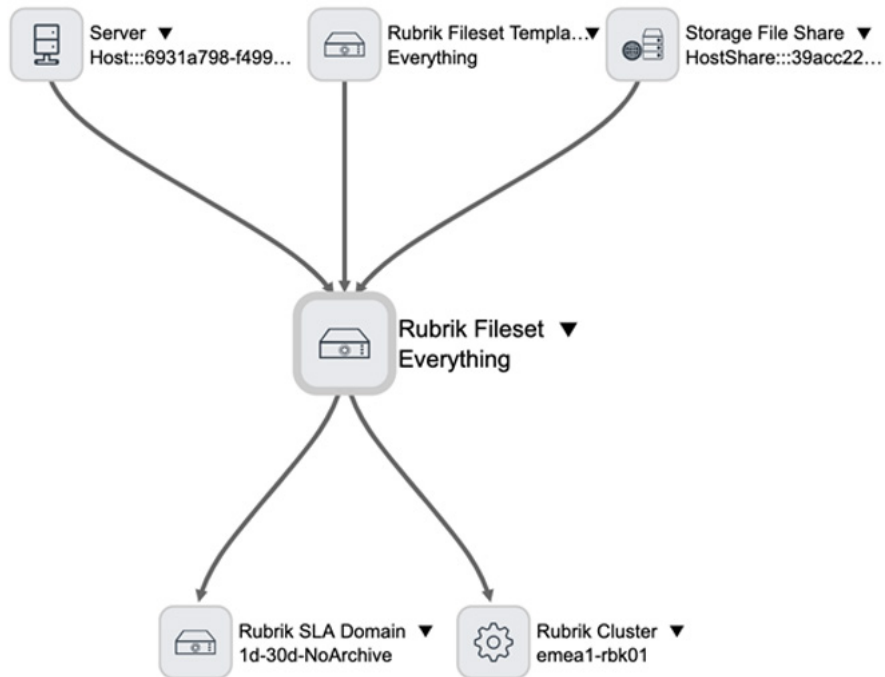
Object Type	Table Name
AWS EC2 Instance	cmdb_ci_rubrik_vm_instance
Oracle Database Host	cmdb_ci_rubrik_db_ora_host
Oracle RAC Cluster	cmdb_ci_rubrik_db_ora_rac
Rubrik Fileset	cmdb_ci_rubrik_fileset
Rubrik Volume Group	cmdb_ci_rubrik_volume_group

And finally, the following classes are extended through this application, adding new fields to the schema for the associated tables:

Object Type	Table Name
VMware Virtual Machine	cmdb_ci_vmware_instance
Hyper-V Virtual Machine	cmdb_ci_hyper_v_instance
Nutanix AHV Virtual Machine	cmdb_ci_nutanix_vm_instance
Microsoft SQL Database	cmdb_ci_db_mssql_database
Microsoft SQL Instance	cmdb_ci_db_mssql_instance
Oracle Database Instance	cmdb_ci_db_ora_instance
Rubrik Managed Volume	cmdb_ci_storage_volume
Rubrik Host	cmdb_ci_server cmdb_ci_linux_server cmdb_ci_win_server cmdb_ci_solaris_server cmdb_ci_aix_server
File share/export	cmdb_ci_storage_fileshare



In addition to cataloguing details on these objects and their configurations, relationships are created between objects, an example of this for filesets, hosts, clusters, and SLA domains is shown below:



Through this discovery and relationship mapping process, Rubrik CDM customers using the Discovery Patterns application are able to understand which of their CIs are protected by which Rubrik CDM clusters, and how this protection is configured.

## CONCLUSION

The updated ServiceNow Visibility application allows Rubrik CDM customers to quickly and easily discover, classify, and map their Rubrik CDM clusters, and how these are protecting their applications and assets. This provides enhanced visibility allowing for more intelligence in their IT management practices, and a more complete picture of how their environment is constructed. The simplicity of using ServiceNow Discovery to achieve this means that for ServiceNow customers, this is all achieved with very little investment, and using pre-existing, well understood and supported methods.

## VERSION HISTORY

Version	Date	Summary of Changes
1.0	February 2021	Initial Release



**Global HQ**

1001 Page Mill Rd., Building 2  
Palo Alto, CA 94304  
United States

1-844-4RUBRIK  
inquiries@rubrik.com  
[www.rubrik.com](http://www.rubrik.com)

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