CMDB Data Loading & IRE Best Practices

August 15, 2024

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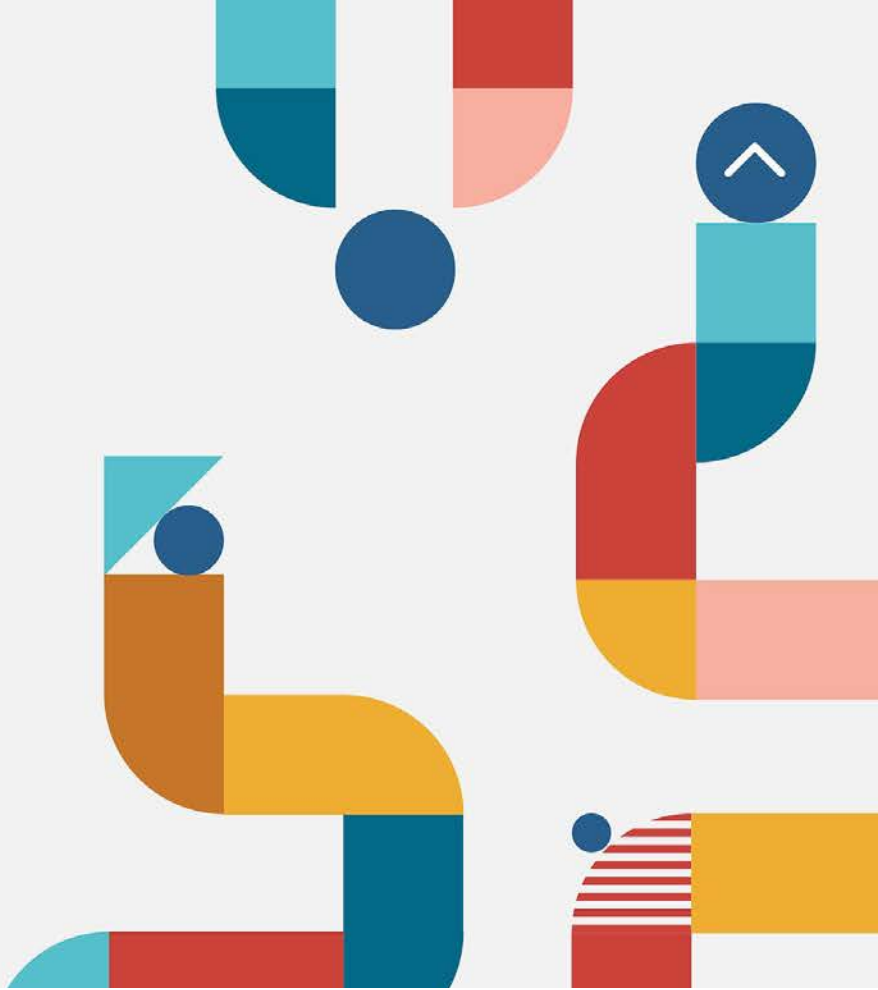
Agenda

CMDB and Discovery workshop consists of an overview of the CMDB Structure, Common Terms, How IRE Functions and Different Data Load Options

- CMDB Structure 101
- IRE Overview
- Discovery
- Service Graph
- IntegerationHUB ETL
- Transform Maps



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- **11** Product Line Achievements
- **900+** Certifications & Accreditations
- **4.62 CSAT** Leading ServiceNow Partner
- **150+** Apps Built on ServiceNow
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Cask is the only pure play ServiceNow partner with dedicated, fully certified practices across the platform.

- IT SERVICE MANAGEMENT
- IT OPERATIONS MANAGEMENT
- IT ASSET MANAGEMENT
- STRATEGIC PORTFOLIO MANAGEMENT
- EMPLOYEE WORKFLOW
- CUSTOMER WORKFLOW
- SECURITY & RISK
- APP ENGINE

STRATEGY

- Strategic Roadmapping
- Advisory Consulting
- Platform Strategy & Governance
- Demand Management

TRANSFORMATION

- App Modernization
- UX & UI Design
- Product Management
- Org Change Management
- Testing & Quality Engineering
- Program & Project Management
- Agile Transformation w/SAFe

IMPLEMENTATION & APP DEVELOPMENT

- Product Implementation
- Platform Engineering
- Data Management & Integrations
- App Development

OPERATIONS & ENHANCEMENT

- Continuous Cloud Innovation
- Platform Architecture & Engineering
- Functional Process Execution
- Cask Reserve

Introductions

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Cask

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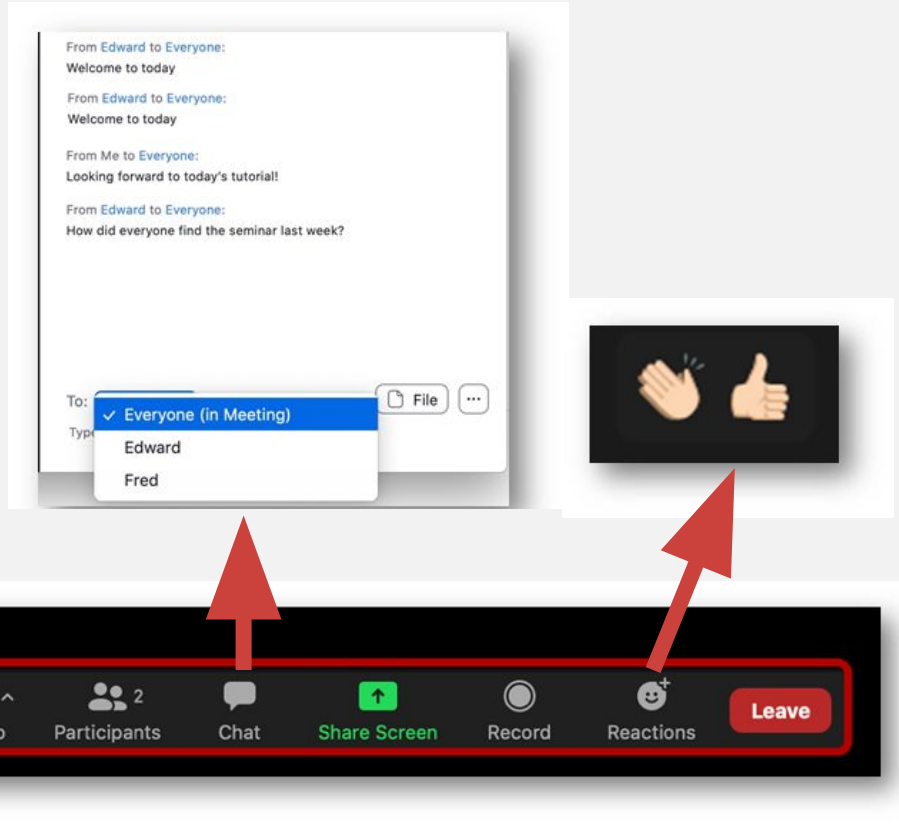
ITOM Practice Lead,
Cask

Join the Conversation: Using Zoom

Turn on Video – Let's get interactive and enjoy ourselves

Unmute – Click the microphone icon to unmute and participate
Chat – Message everyone or just one person
Get Help – Use Chat



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Why Are We Here?

Why CMDB Data Loading & IRE Best Practices?

CMDB Data Loading and Identification and Reconciliation Engine (IRE) best practices are crucial for maintaining the accuracy, reliability, and efficiency of your ServiceNow CMDB. Here's why:

- Data Integrity and Consistency
- Efficient Management of Complex Environment
- Reduced Operational Risks
- Enhanced Automation and Efficiency

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CMDB Structure 101

Key Concepts

Class

Describes a CMDB table that **contains and represents a specific type or group of CIs** that share common attributes such as a Operating System, Function or purpose (e.g., Windows Server, Router, Application, Service Offering)

Attribute

A unit of **information stored for each CI** either consistent across all assets (core) or specific to the type of asset (class). Describes a CI such as a name, serial number, manufacturer, operating system

Product Model

A product model **is a specific version or configuration** of a product

Model Categories

Model categories **associate CI classes with asset classes.** The CMDB uses this as referential data. The model category determines if an asset is created from a CI and if so, what class of Asset

Models

Models are specific versions or various configurations of an asset (e.g., Hardware, Software, Consumable)

Hardware Model

A hardware model can be discovered and populated in the CMDB. The Model will have a manufacturer, model number to identify that version of the hardware

Logical CI

Do not take up space. They perform specific functions requiring physical components in order to operate. Service Offering, Service, Business Application. Manually entered into CMDB

Physical CI

They have a specific location, take up space, and can be seen (e.g., servers, desktops, network devices, etc.). **Can often be detected through discovery**

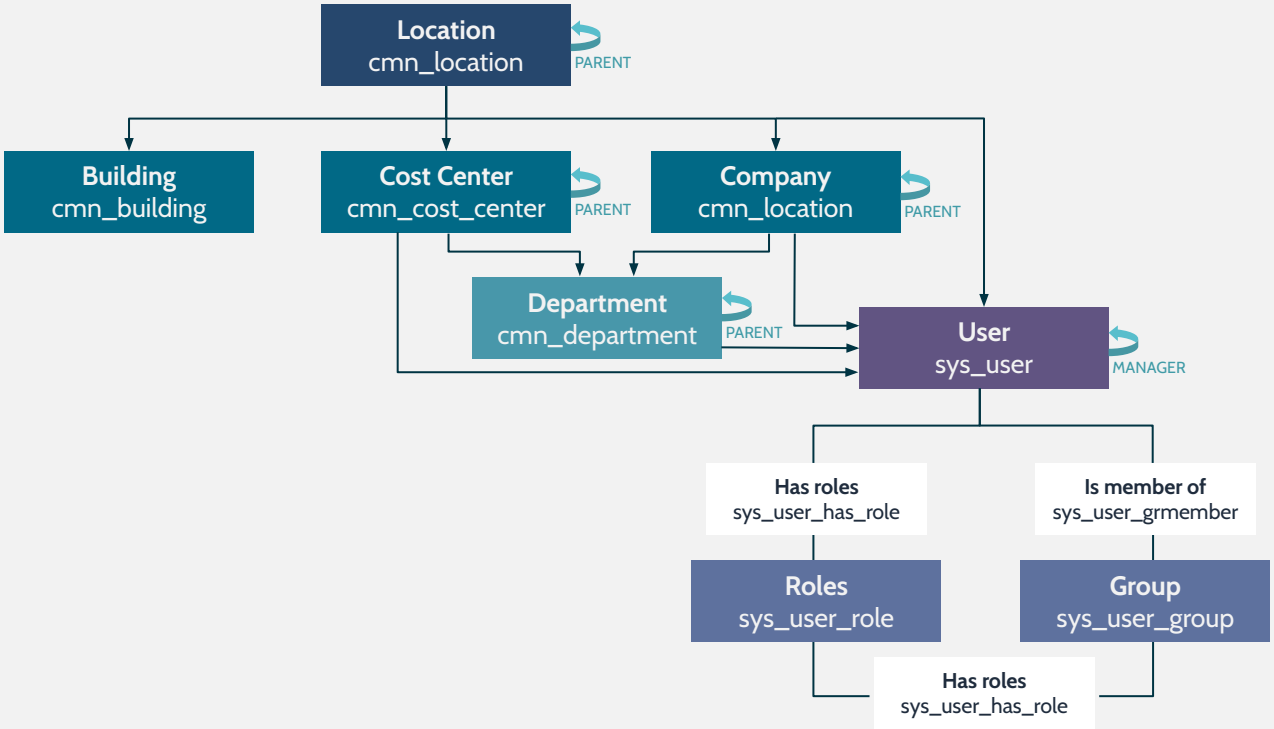
Conceptual Component

Representations of **physical and logical components that have been combined** to create a Service or System like an Application Service

Foundational Data

Common data tables which are shared across ServiceNow applications, processes or use cases

- Refers to Users, Groups, Locations, Business Units
- Not stored in CMDB
- Foundation data is often used for approvals - if this data is missing the workflow fails
- Location, Company, Cost Center, Role, Group, User, Building Department, Company

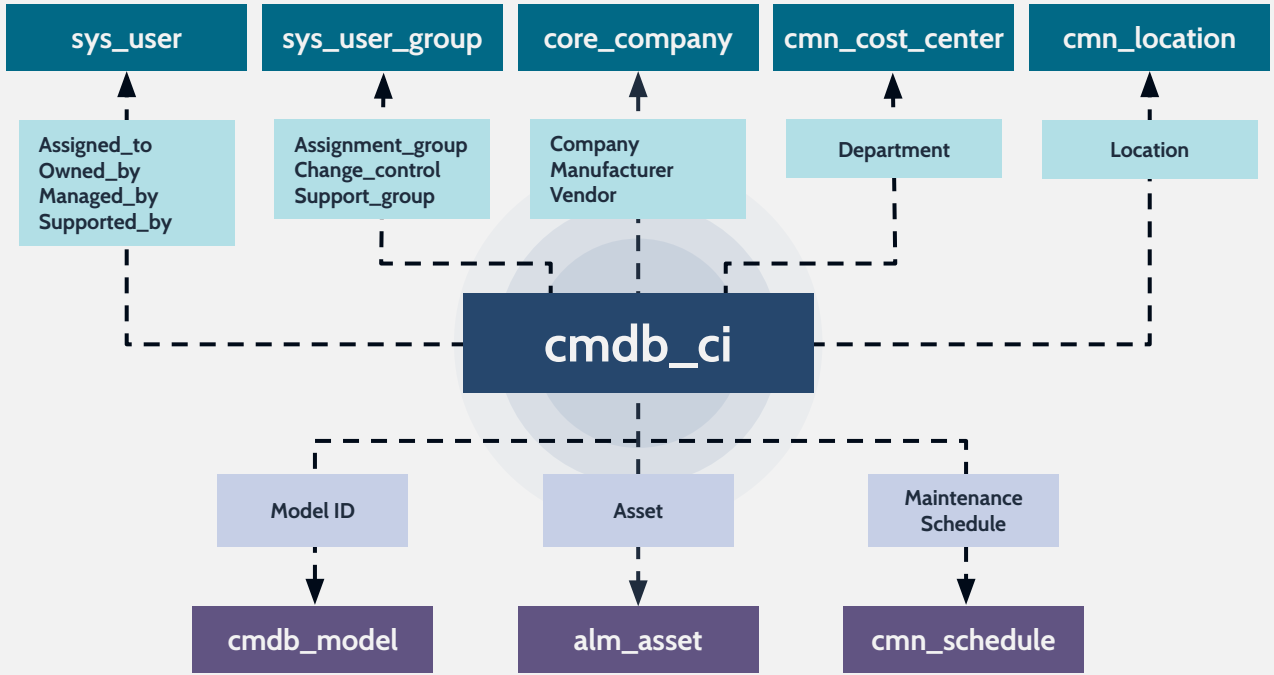


CMDB Base Table

CMDB CI schema related to common core and non-core tables

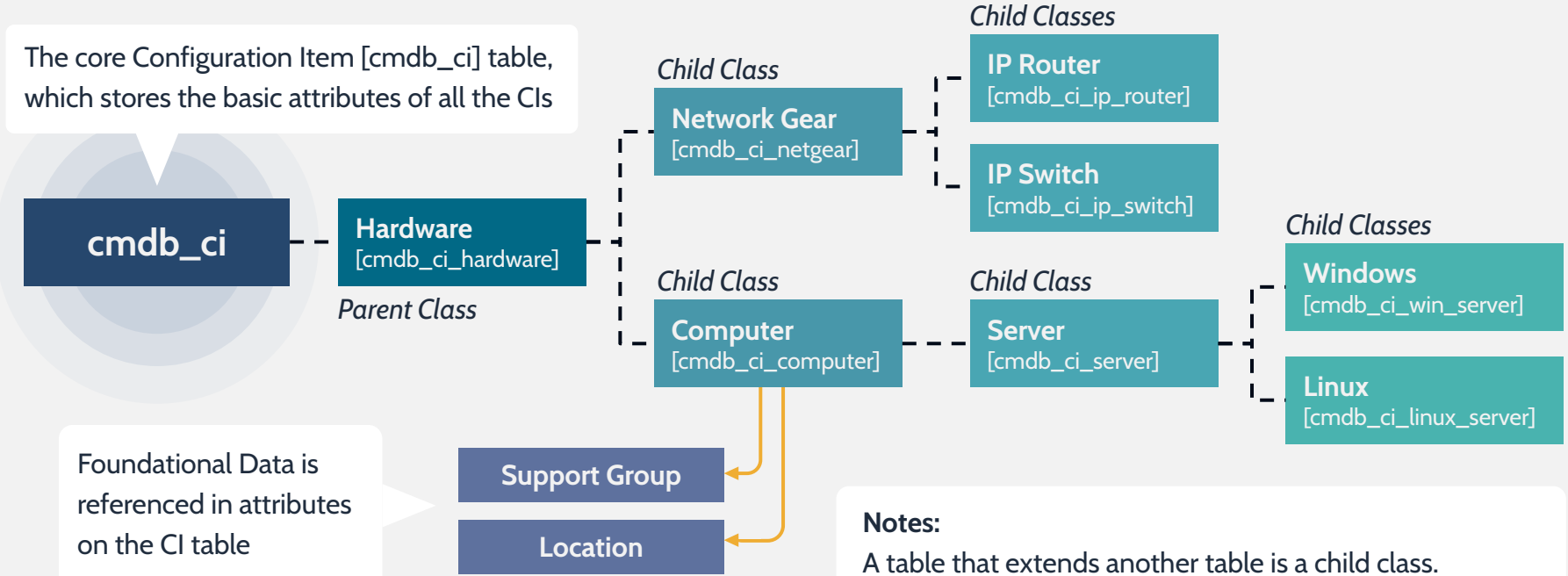
CMDB [cmdb_ci] base table and references to foundational or "core data"

Non-core tables are referenced against other ServiceNow applications



CMDB Class Structure

The core CMDB CI [cmdb_ci] table, stores the basic attributes of all the CIs

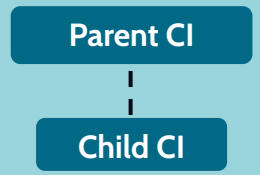


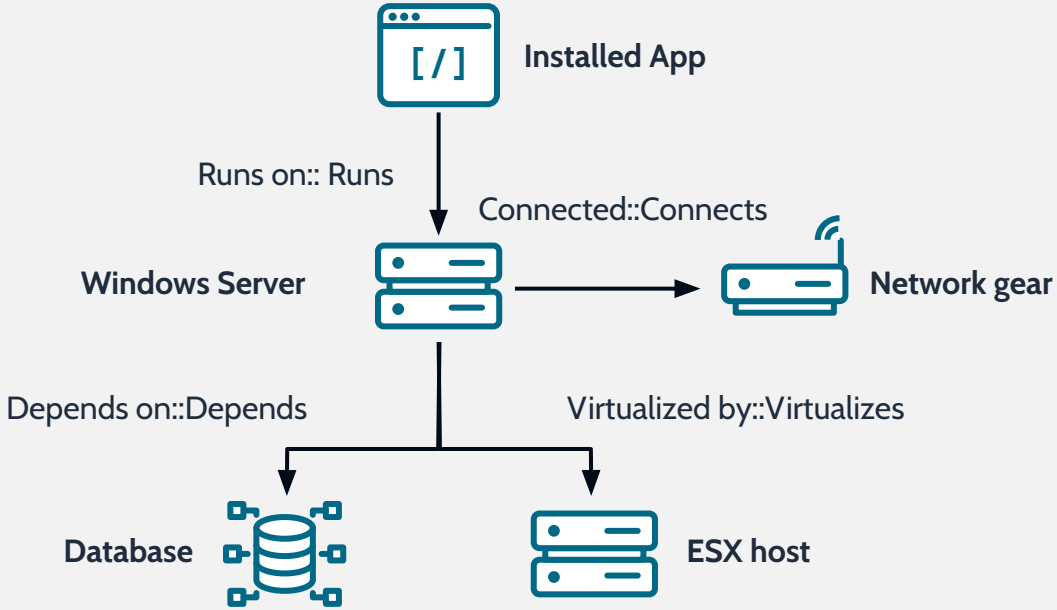
CI Relationships

CMDB helps track both the CI and their relationships to other CIs

The relationships between CIs can be automatically discovered. If you use Discovery, many relationships can be automatically loaded into the system through automated Discovery process. If you import your data from another system, you get some form of relationships.

A relationship in the CMDB consists of two CIs and a relationship type:





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Identification & Reconciliation Engine (IRE)

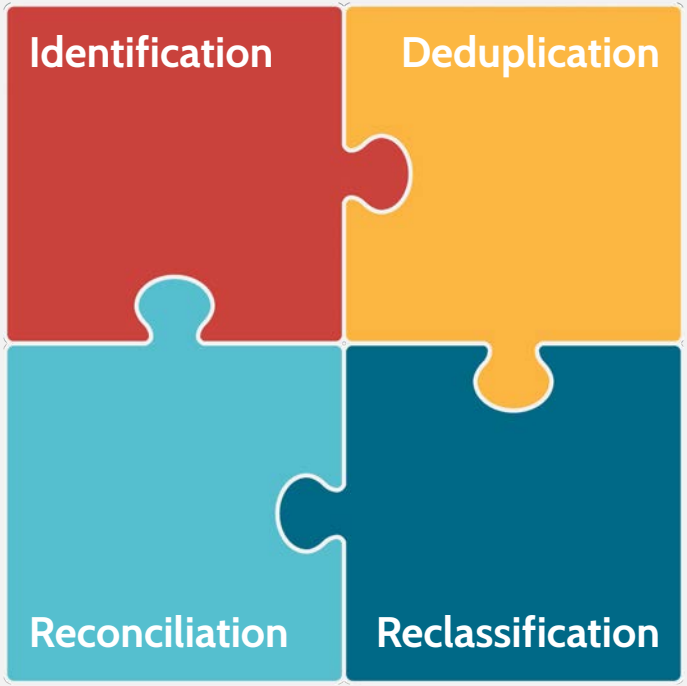
Identification & Reconciliation Engine

Identification

- Correctly identify CIs so you do not duplicate
- Does it exist or need to be created?
- Relies on identification

Reconciliation

- Only allow authoritative sources
- The CMDB is updated in real time; the process relies on reconciliation rules



Deduplication

- Duplicate CIs are grouped into de-duplication task
- Shows how it determined it was duplicate

Reclassification

A CI can be upgraded to a higher class, downgraded to a lower class, or switched to a different branch in the class hierarchy

Identification rules

- **An identification rule applies to a CI class and consists of:**
  - One or more identifier entries and related entries

- **They are hierarchical but can be overwritten at child class**
  - Parent Class = Server
  - Child Class = Windows Server

- **Most classes have an Identification IRE rules in the platform; it's an exception to have to create your own**

- **2 types of Rules –**
  - Independent (e.g., Server)
  - Dependent (e.g., Tomcat running on Server)

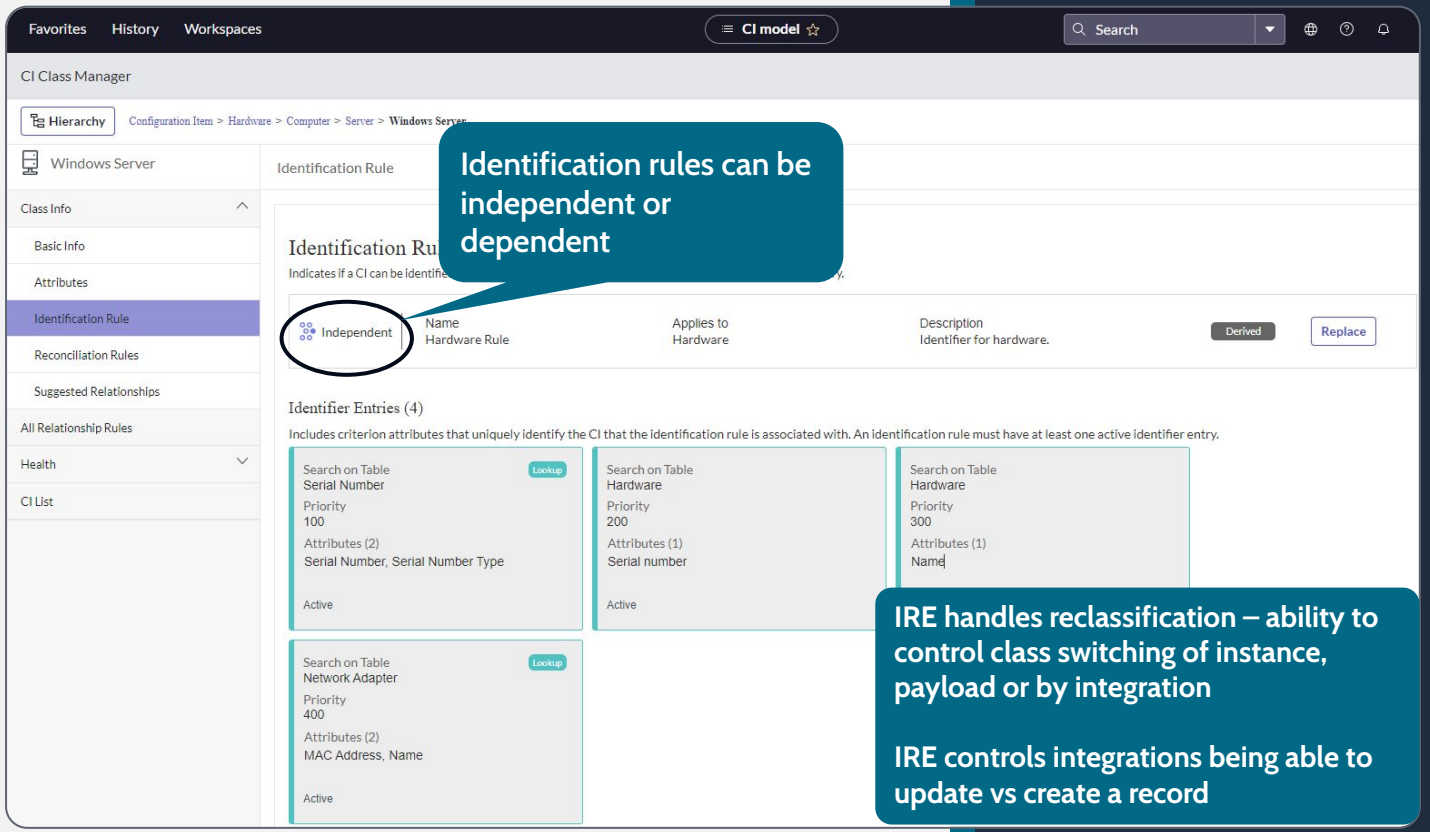
- **The identification process rules use the CIs attributes for identification:**
  - **Unique attributes**

    Designated attribute values that can be used to uniquely identify the CI. Unique attributes can be from the same table or from derived tables
  - **Required attributes**

    Designated attributes of a CI that cannot be empty

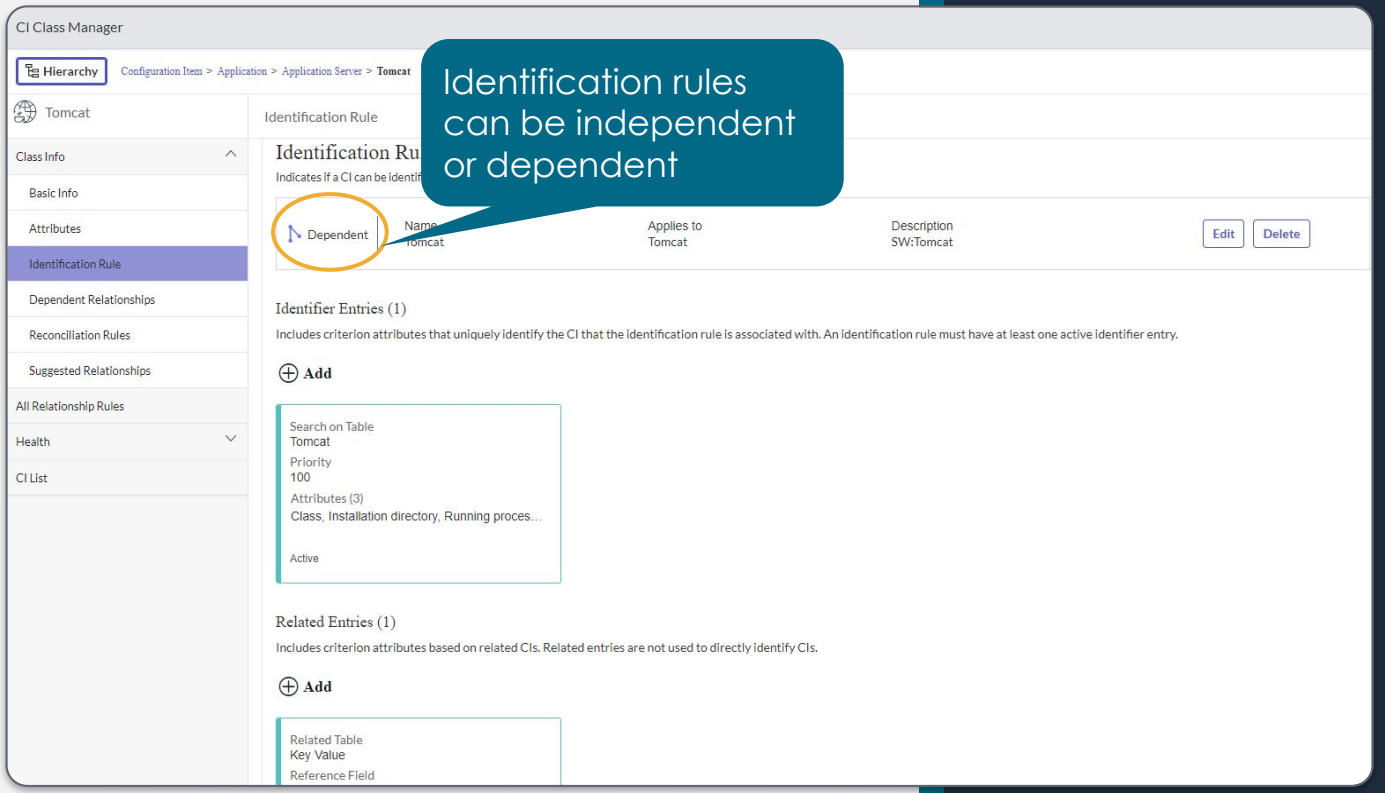
Identification rules – Independent

- Navigate to CI Class Manager
- Locate the CI Class
- Review the Out of Box Identification Rule
- Most “Discoverable” classes come with an OOB identification rule
- Identification rules support hierarchy

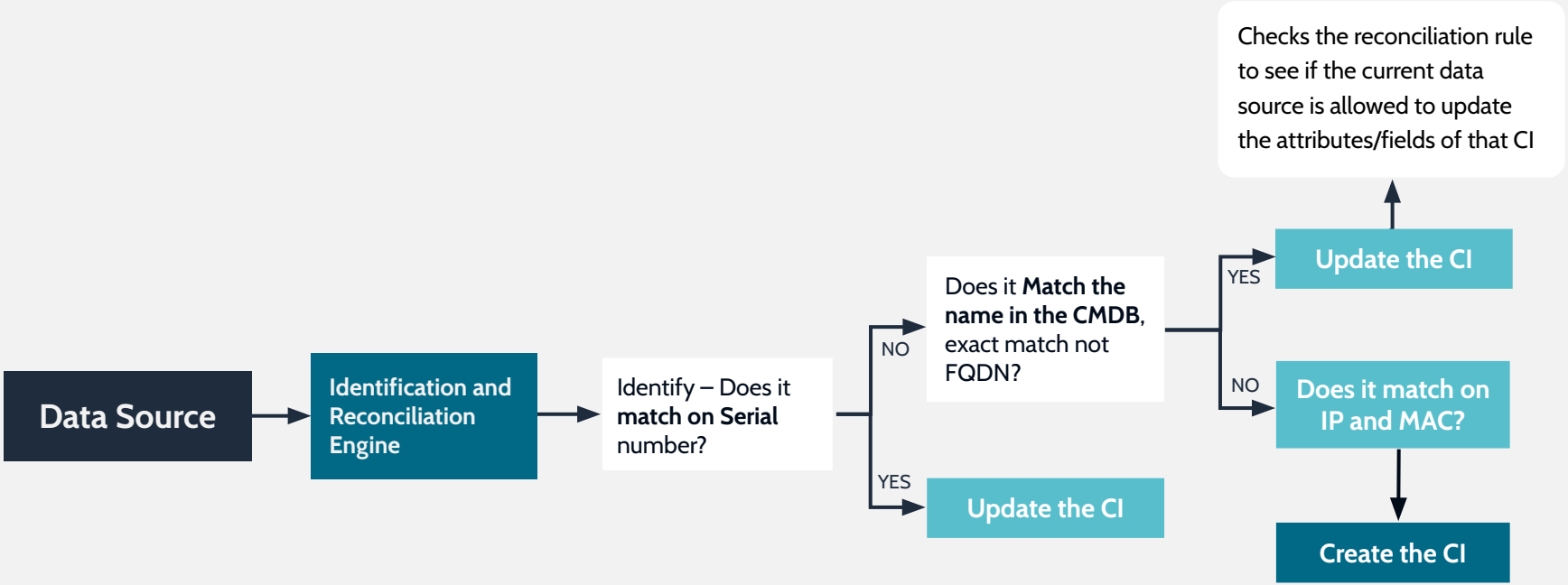


Identification rules – Dependent rule

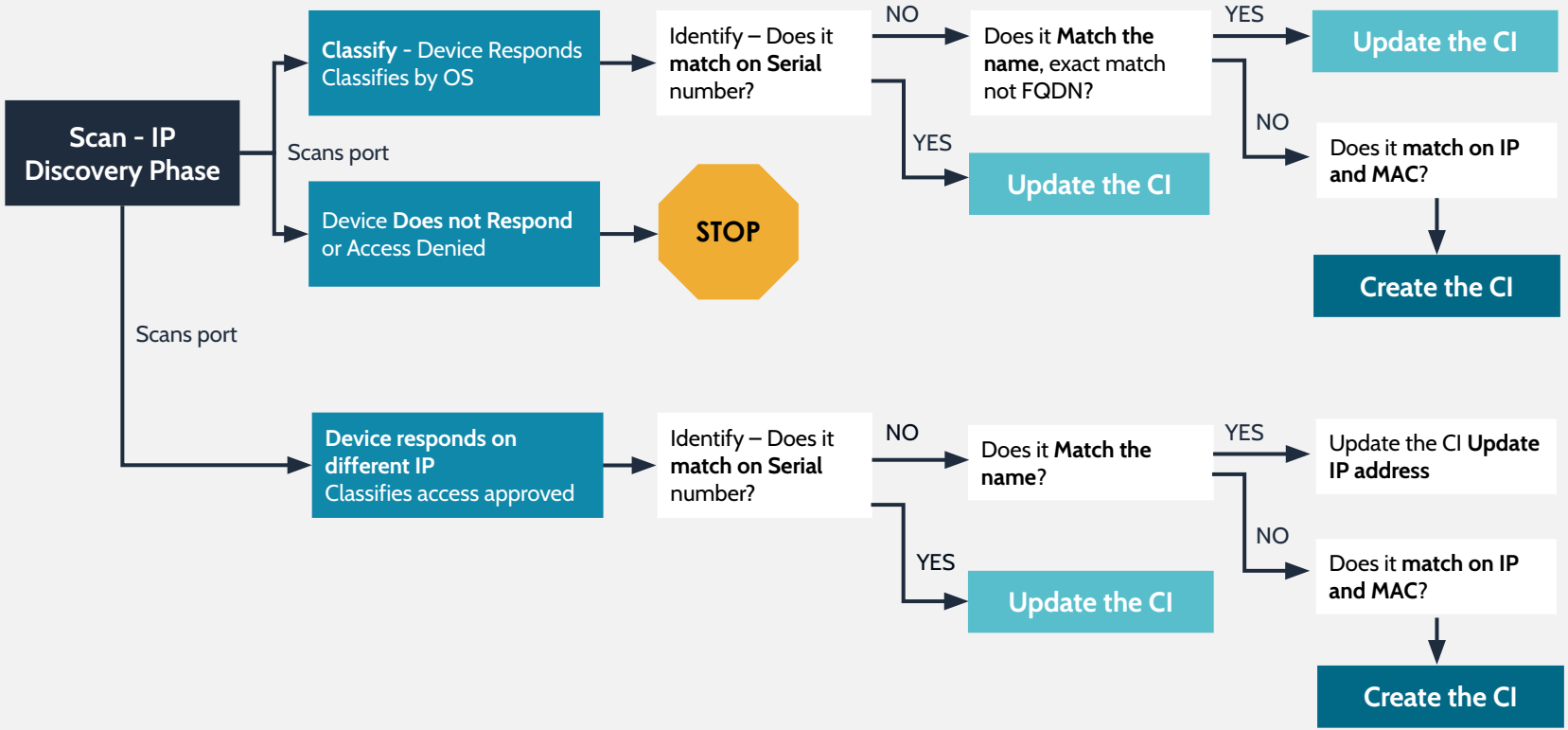
CI Class Manager is the place to manage Identification Rules



Data Source and IRE Engine Process Flow

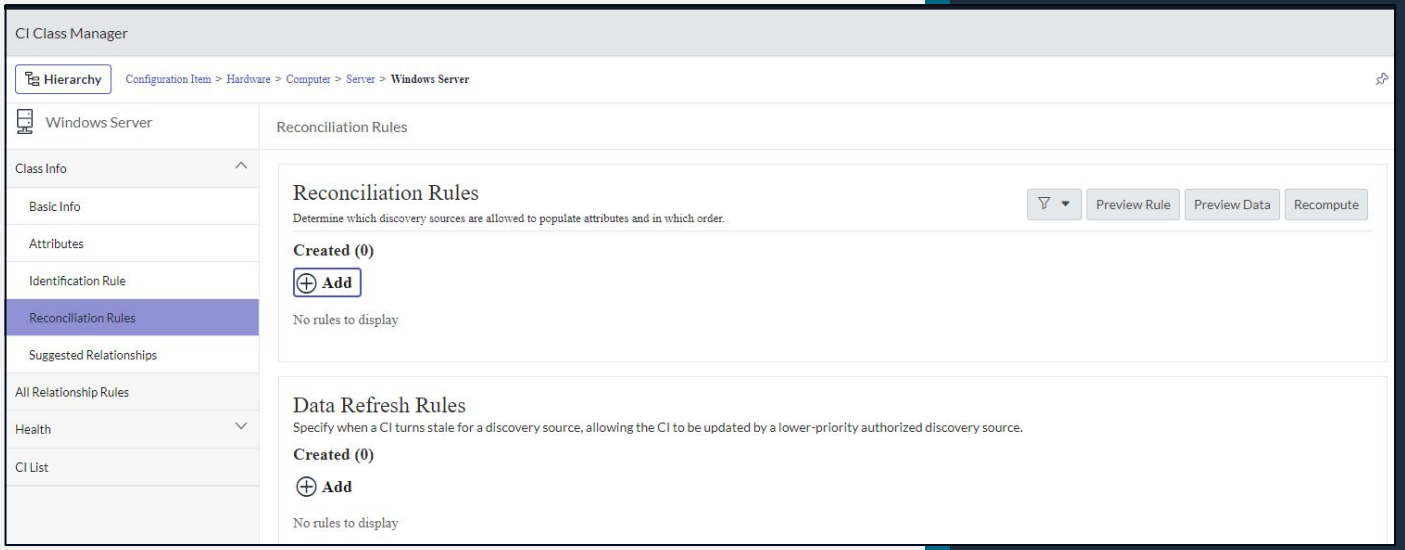


Discovery and IRE Engine Process Flow



Reconciliation rules

- Determine which data sources can update CI attributes
- Data sources with highest priority determine what an attribute value will be
- Create a static or dynamic CI reconciliation rule
- No OOB reconciliation rules



- **Reconciliation can be per class, per attribute**
- **Child class rules have higher precedence over parent rules**
- **Dynamic rules requires multi-source engine**

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Discovery

What is Discovery?

ServiceNow Discovery is a method of populating your CMDB with relevant hardware and software assets within your enterprise environment

- Utilizing a specific step, or phased, process Discovery remotely discovers your Windows and Unix computers/servers, network devices, powering and printing equipment
- The platform then maps specific Application to Host and Application to Application dependencies including Layer 2 Physical Hardware relationships

Key Concepts

Horizontal Discovery

The discovery of like **devices in the same CI class** creates direct relationships between Cis. Discovery is not 'service' aware and **does not create relationships based on the Business/Technical or Application service they support.**

Top Down Discovery

Used by Service Mapping, finds CIs and maps to other CIs based on the Business/Technical or Application service. **Works with Discovery together, to run horizontal discovery first to find Cis, and then Service Mapping runs top-down to establish the relationships between the services.**

Discovery Technology

ServiceNow Discovery technology uses industry established ports and protocols to identify and assess what equipment is within your environment

1. **DNS/WINS** IP Resolution
2. **SNMP (v1/2/3)** for Network, printers and powering devices
3. **SSH** for Unix based computers
4. **WMI** for Windows Systems including PowerShell discovery
5. **CIM** for Storage Servers (Moving away from CIM to REST)

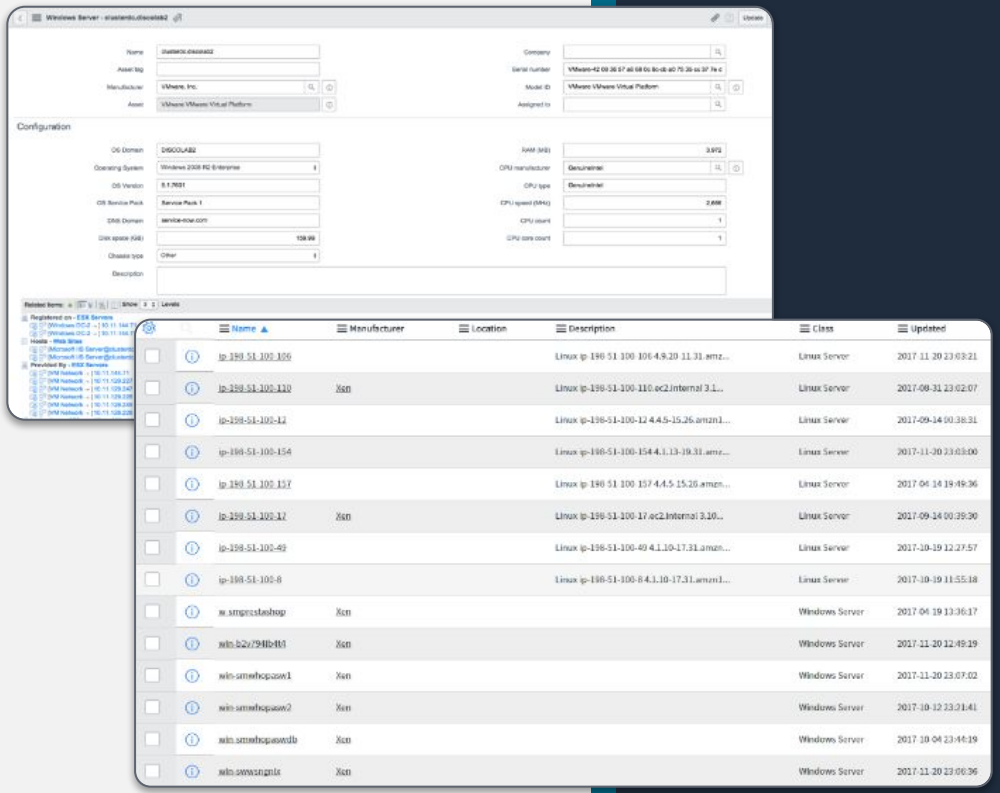
No secret protocols or agents to deploy.

Discovery Results

Discovery will populate the CMDB with all discovered devices such as

- Linux Servers
- Windows Servers
- Desktops
- Network Devices
- Printers

Each device will be represented as a record in the CMDB processed through the IRE



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Service Graph Connectors

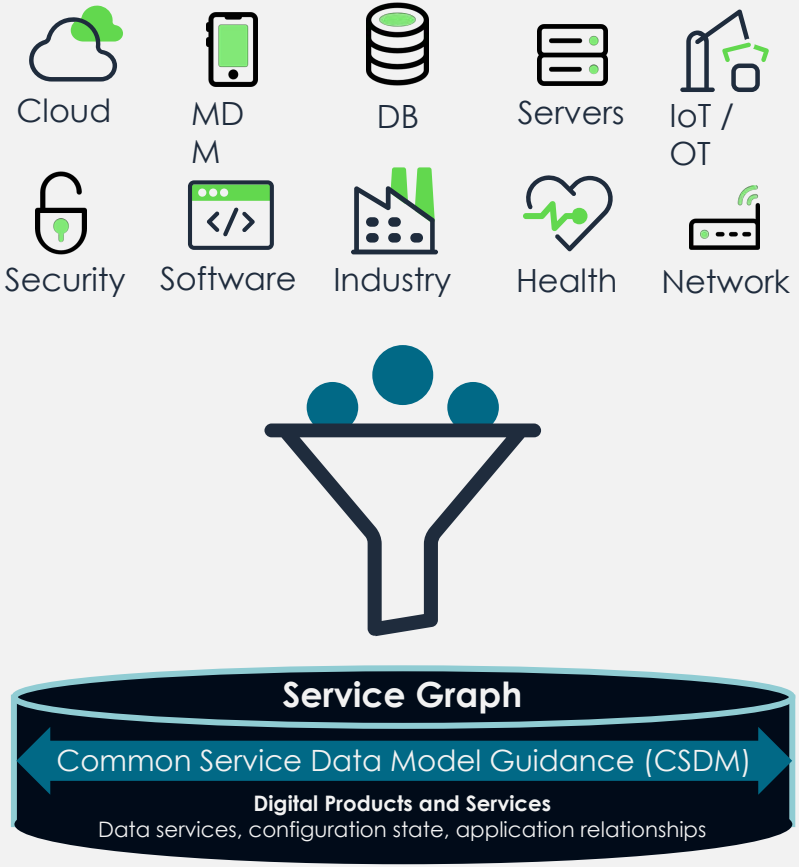
Use cases

Standard Service Graph Connector Features

- Data sources & Registered Discovery Source
- Predefined IH-ETL Mapping out-of-box
- RTE and IRE support
- Transforms and table cleaners
- Guided Setup
- Event Management Support (NOW-developed connectors)

Use Cases supported by connector

- ITAM
- ITOM
- Security
- IT/OT
- Industry



Service Graph Connectors

Connectors

Planned Beta

Cloud

aws

Google Cloud

Azure

SW/Server/Network

AVANTRA

apigee

Infoblox

paloalto NETWORKS

solarwinds

ExtraHop

CISCO ThousandEyes

Lansweeper

Kong

puppet

nexthink

Monitoring / Observability

APPDYNAMICS

ScienceLogic

elastic

sumologic

DATADOG

dynatrace

LogicMonitor

New Relic

Lightstep

Endpoint / IT Asset Management

airwatch by vmware

MOTEX Secure Productivity

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System Center Configuration Manager

Workspace ONE

TANIUM

BIGFIX

Microsoft Intune

1E

Manufacturing IoT / Telecom

EXFO

CYBERX

ar

meraki

NOZOMI NETWORKS

ForeScout

radiflow

CLAROTY

Security

Qualys.

REDSEAL

CROWDSTRIKE

servicenow

IH-ETL

Multisource IRE

Discovery
Service Mapping

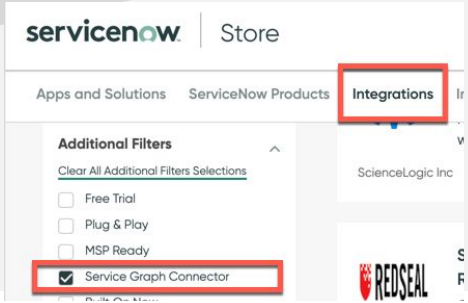
Service Graph

CSDM & CMDB

Why Service Graph Connectors?

- ✔ ServiceNow tested & supported
- ✔ ServiceNow or ISV Partner built
- ✔ Multisource & reconciliation enabled

https://store.servicenow.com



Service Graph Connector for Microsoft SCCM

Microsoft

ITOM Visibility

Detailed hardware and software inventory

ITSM

Create Incident/Problem/Changes on discovered CIs

Automatic device ownership assignment

SAM / HAM

Inventory software and track installations

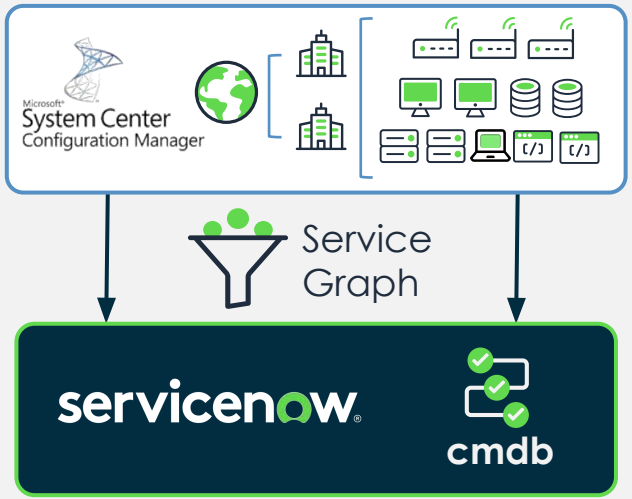
License reclamation

Supports software editions, publisher, product information, and SCCM asset intelligence

Summary:

Connector via MID Server to SCCM.

Enable software editions so that you can gather edition information for products such as Adobe Acrobat, Microsoft SQL Server, and Windows Exchange Server



Technology Workflow Use Cases Supported:

- Software Asset Management
- Hardware Asset Management
- Service Operations
- Endpoint Device monitoring

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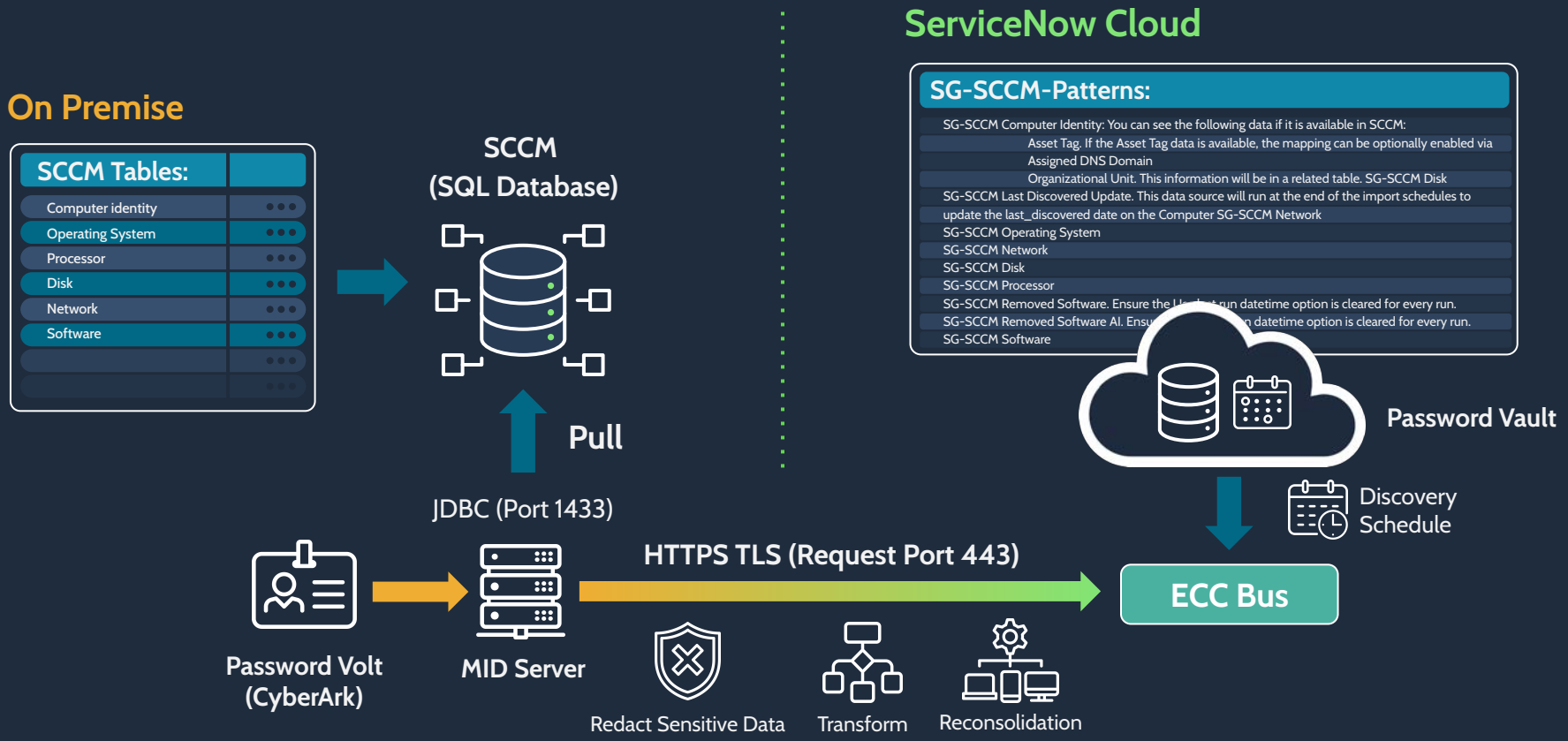
Service Graph Connector (SCCM)



Service Graph Connector for AWS

ITOM Visibility

Detailed hardware and software inventory

Governance/Compliance outcome

SAM / ITAM

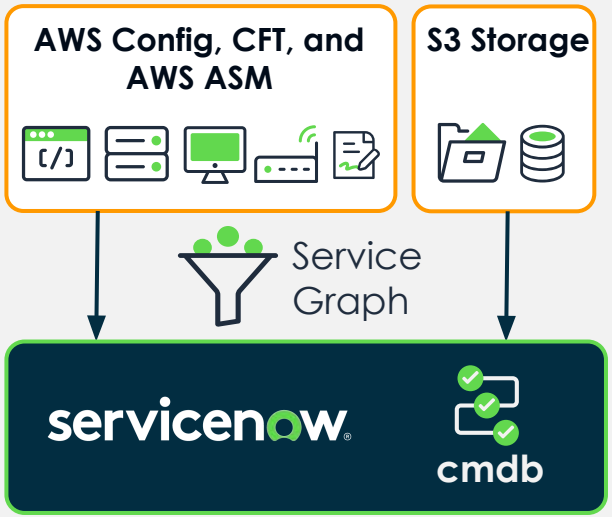
Inventory software and track installations

Deep Discovery of Applications

Correlate multiple cloud accounts for ITAM/SAM outcomes

Summary:

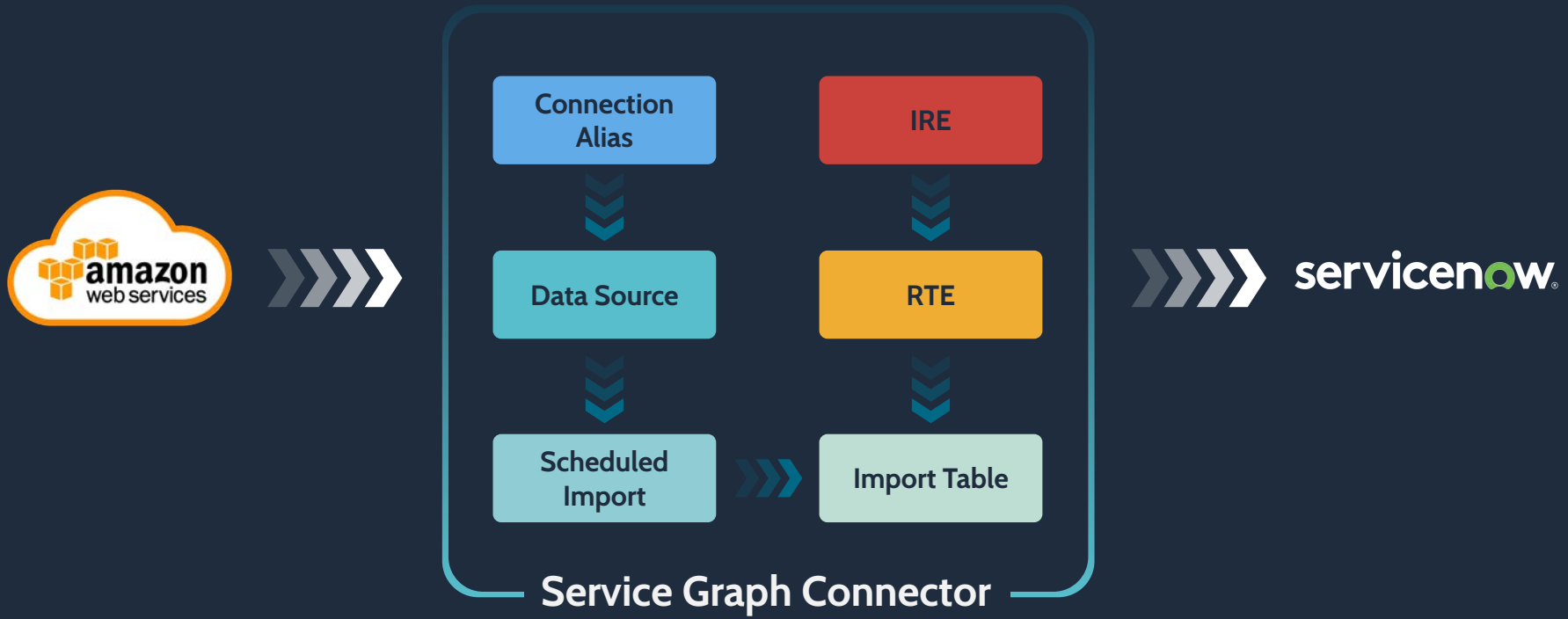
Connect to AWS EC2 and S3 to import the component EC2 ci and S3 storage ci from multiple accounts.



Technology Workflow Use Cases Supported:

- Cloud Governance
- Cloud Optimization
- Predictive AI Ops
- Health Log Analytics
- Service Operations

Service Graph Connector for AWS



Service Graph Connector for Jamf

ITOM Visibility

Detailed hardware and software inventory tracking for MacOS and iPhone/iPad

Compliance tracking for devices

ITSM

Create Incident/Problem/Changes on discovered CIs

Automatic device ownership assignment based on top user

SAM / ITAM

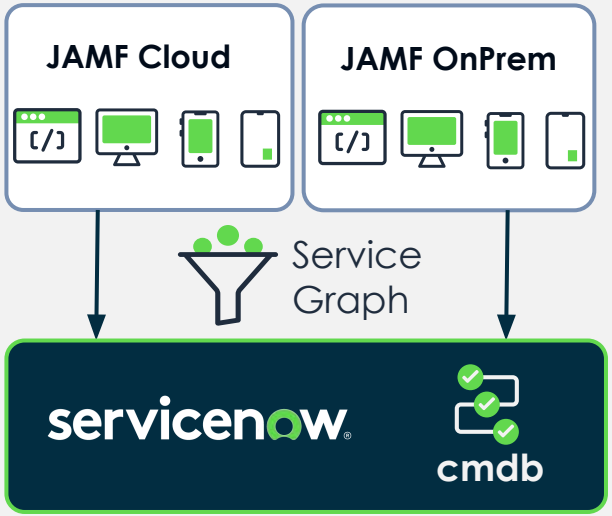
Inventory software and track installations

License reclamation

Software usage tracking

Summary:

Connect to any JAMF environment to import devices and related information into CMDB such as network, storage and software CI.



Technology Workflow Use Cases Supported:

- Software Asset Management
- Hardware Asset Management
- Service Operations
- Mobile Device monitoring

Service Graph Connector for Meraki

ITOM Visibility

Detailed hardware and software inventory

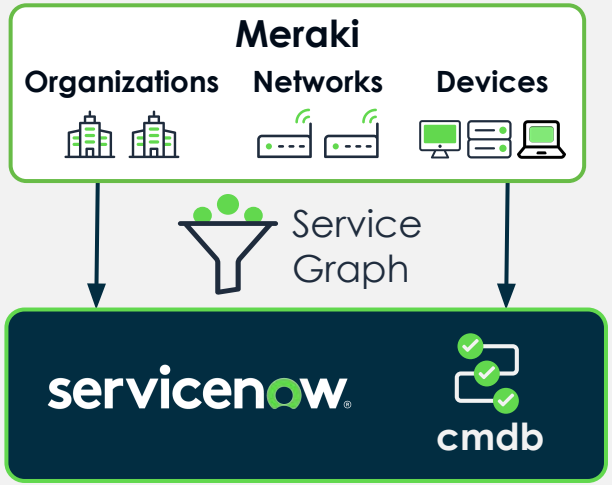
Event Management stream for alerting use cases

ITSM

Create Incidents on discovered CIs

Summary:

Connect to import Meraki Organizations which contain Networks and Devices under management, create Incidents from Meraki alerts with correlated ci and event data.



Technology Workflow Use Cases Supported:

- Visibility into Meraki Networks and Devices
- Service Operations

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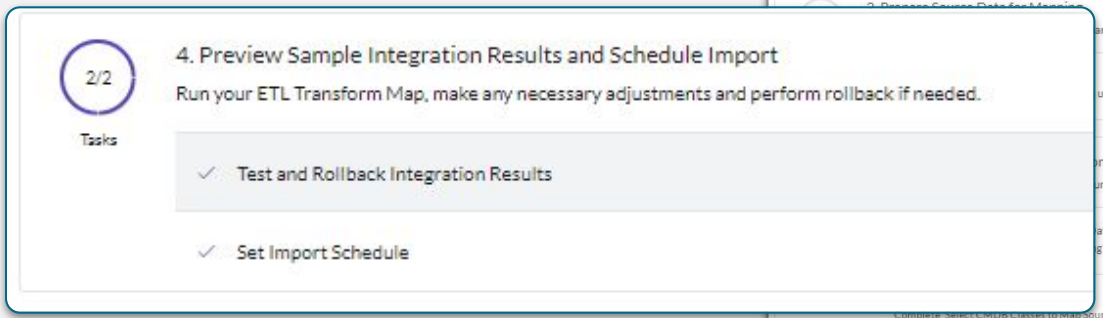
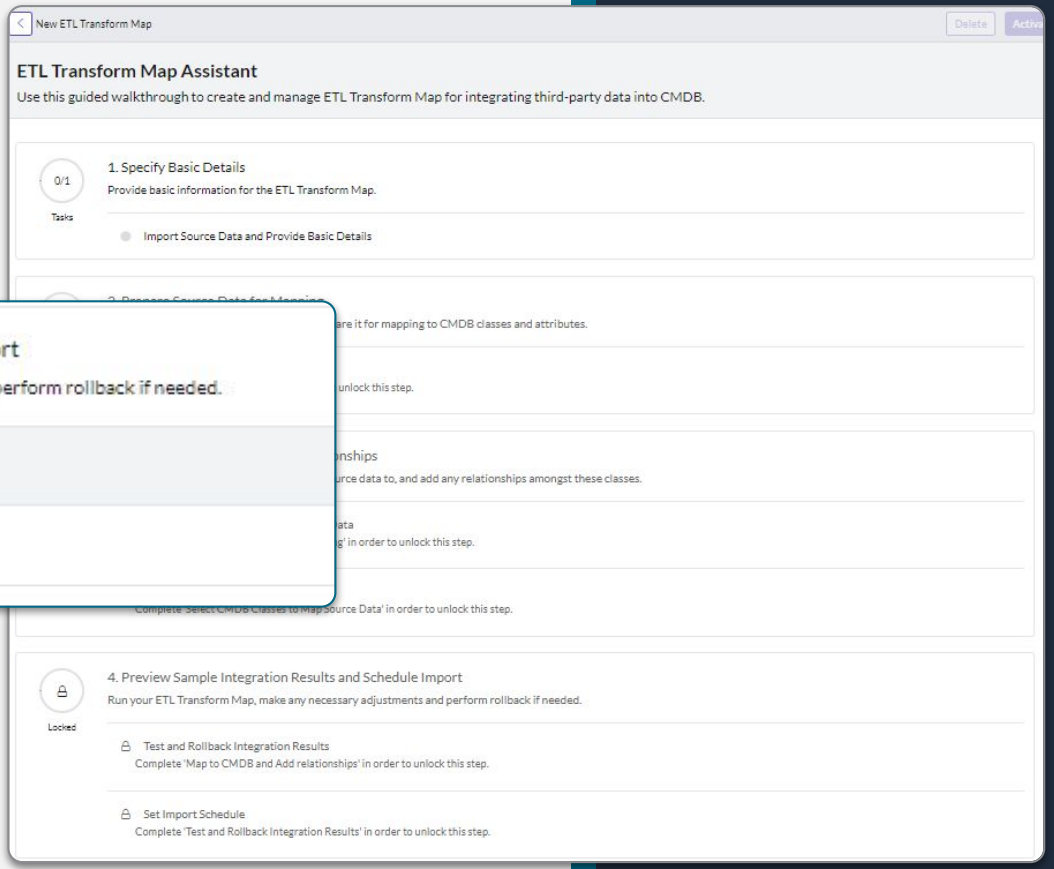
IntegrationHUB ETL

IntegrationHub ETL

Simplified user interface that guides the integration process end-to-end



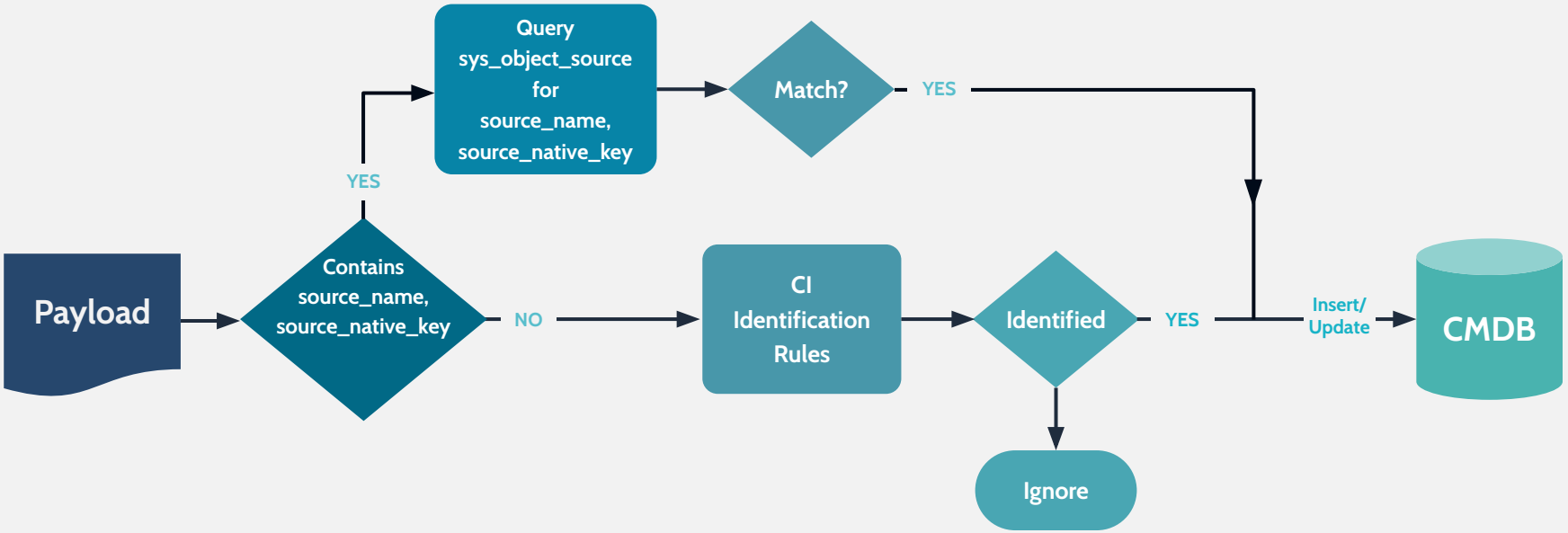
Test and adjust configuration settings before scheduling recurring integrations



IntegrationHub ETL Identification

1. The CMDB identification process relies on identification rules to uniquely identify CIs
2. Identification Rules can be slow to process due to the number of tables and data to query
3. To improve performance CIs can be uniquely identified using source_name and source_native_key values provided in the payload, against the Source [sys_object_source] table
4. If identification is not successful using that method, then identification rules will be used

IntegrationHub ETL Identification



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Transform Maps

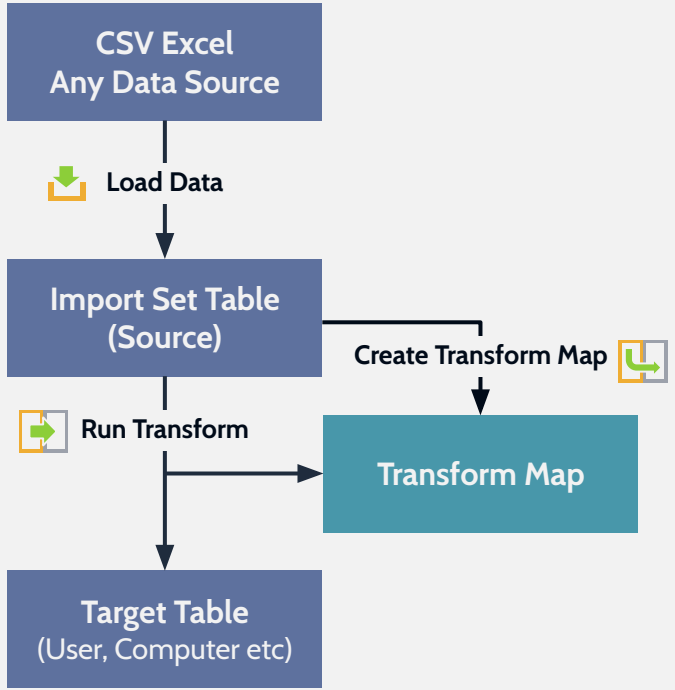
Manual Import

Import data from an import file such as CSV or Excel

Import best practices:

- Use the provided data load templates from target table
- Ensure the data is cleansed before import. Review for:
  - ✔ Completeness
  - ✔ Correctness
  - ✔ Compliance
- Need to add the following code to leverage IRE

```
(function runTransformScript(source, map, log, target) {
// Call CMDB API to do Identification and Reconciliation of current row
var cmdbUtil = new CMDBTransformUtil();
cmdbUtil.identifyAndReconcile(source, map, log);
ignore = true;
})(source, map, log, target);
```



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Summary

Getting Started Is Easy!

Cask meets you where your CMDB is today

Need a quick CMDB assessment and rapid remediation?

CMDB LAUNCHPAD

Need help managing your CMDB on an ongoing basis?

CMDB EXPERT ASSIST

Need to implement or overhaul ITOM including your CMDB?

IT OPERATIONS MANAGEMENT ESSENTIALS

LOOK FOR INSTALLMENT THREE COMING NEXT MONTH

Tell us what CMDB topics you want to learn more about!

Look for a survey following this session!

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Thank you!

Questions?

Email: Madan Raja, madan.raja@caskinc.com