

HP Universal CMDB

for the Windows and Solaris operating systems

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HP Universal CMDB–Server Automation Reporter (SAR) Integration Guide

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1

Server Automation Reporter Discovery (SAR) Integration

This chapter includes the main concepts, tasks, and reference information for SAR integration with HP Universal CMDB (UCMDB).

Note: To obtain the field package for the HP Universal CMDB integration with Server Automation Reporter, together with its documentation, contact HP Software Support.

This chapter includes:

Concepts

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Overview

This chapter describes how to integrate SAR with UCMDB. This integration involves synchronizing hosts and host resources (including hardware configuration and software) of a customer's SAR database. This integration enables centralized maintenance (in UCMDB) of servers and software without requiring UCMDB/DDM to discover them.

The SAR application uses agents installed on each host to discover CIs. These agents enable integration with UCMDB for data reuse and end-to-end management.

The integration involves a UCMDB initiated discovery on the SAR Oracle database. Synchronized Configuration Items (CI's) includes hosts (Windows and UNIX), network devices (switches, routers, firewalls) and host resources (CPU, memory, disks, and installed software).

Supported Versions

This package was developed and tested on UCMDB 8.0 against SAR 7.x.

Prerequisites

The minimum VM installation requirements for SA integration are:

- 4 GB memory.
- 50 GB hard drive space.

CI Type Model

No changes are made to the CI Type model existing in UCMDB. The discovery returns the following types of CIs:

- Host
 - Windows
 - UNIX
 - Switch

- ▶ Router
- ▶ Firewall
- ▶ Host Resources
 - ▶ CPU
 - ▶ Disk
 - ▶ Memory
 - ▶ Software
- ▶ IP
 - ▶ Interface

How It Works

The DDM job runs SQL queries against the SAR Oracle database.

The UCMDB discovery job in this package uses a database CI as the trigger, and can be included in UCMDB's Spiral Discovery schedule. SQL queries executed by the discovery job retrieve detailed information to build CI's and populate UCMDB.

SAR maintains historical information in the same CMDB using a flag for the most current data. As a result only rows of data with the **LATEST_FLAG** set to True (1) are returned.

Hosts and Host Resource Details

This package retrieves details on hosts (including Windows and UNIX) from the SAS_SERVERBASE and SAS_SERVERS tables. The SAS_SERVERS.REPORTED_OS field is used to identify whether the host OS is either Windows or UNIX. If no information is available, a standard host CI Type is used. Only active and managed servers as identified by the SAS_SERVERS.LIFECYCLE_KEY are returned.

Interface MAC addresses are discovered later. As a result, the initial host CI is created with `ZZZZZZZZZZZZ` as the host key. The lowest available MAC address is computed and used throughout the process. If there are hosts with no interfaces in the SAR database, at least one host with the host key `ZZZZZZZZZZZZ` is created in UCMDB.

Details on host resources are retrieved from tables as follows:

- **CPU** SAS_SERVER_CPUS
- **Memory** SAS_SERVER_MEMORY
- **Disk** SAS_SERVER_STORAGE
- **Interface** SAS_SERVER_INTERFACE
- **Installed Software** SAS_SERVER_PACKAGES

The query used is as follows:

```
SELECT serverbase.item_id, serverbase.serial_num, serverbase.manufacturer,
serverbase.model, server.host_name, server.display_name, server.reported_os,
server.asset_tag, server.primary_ip, server.is_hypervisor, cpu.slot_number,
cpu.cpu_family, cpu.vendor, cpu.model, cpu.speed_mhz, cpu.cachesize_kb,
cpu.stepping, interface.slot, interface.mac_address, interface.interface_type,
interface.ip_address, interface.net_mask, memory.installed_kb, disk.drive,
disk.manufacturer, disk.model, disk.bus_type, disk.capacity_mb,
software.package_name, software.software_version, software.software_release
FROM cmdb_data.sas_servers_base serverbase, cmdb_data.sas_servers server,
cmdb_data.sas_server_cpus cpu, cmdb_data.sas_server_interfaces interface,
cmdb_data.sas_server_memory memory, cmdb_data.sas_server_storage disk,
cmdb_data.sas_server_packages software
WHERE server.item_id=serverbase.item_id AND server.latest_flag=1 AND
server.lifecycle_key='MANAGED' AND cpu.item_id=serverbase.item_id AND
cpu.latest_flag=1 AND memory.item_id=serverbase.item_id AND memory.latest_flag=1
AND memory.memory_type='RAM' AND interface.item_id=serverbase.item_id AND
interface.latest_flag=1 AND interface.mac_address IS NOT NULL AND
disk.item_id=serverbase.item_id AND disk.latest_flag=1 AND disk.media!='CDROM'
AND software.item_id=serverbase.item_id AND software.latest_flag=1
GROUP BY serverbase.item_id, serverbase.serial_num, serverbase.manufacturer,
serverbase.model, server.host_name, server.display_name, server.reported_os,
server.asset_tag, server.primary_ip, server.is_hypervisor, cpu.slot_number,
cpu.cpu_family, cpu.vendor, cpu.model, cpu.speed_mhz, cpu.cachesize_kb,
cpu.stepping, interface.slot, interface.mac_address, interface.interface_type,
interface.ip_address, interface.net_mask, memory.installed_kb, disk.drive,
disk.manufacturer, disk.model, disk.bus_type, disk.capacity_mb,
software.package_name, software.software_version, software.software_release
ORDER BY serverbase.item_id
```

Results from the query above produce a very large data set with significant data redundancy. To avoid this, the discovery script uses dictionaries to store CIs of each type, and duplicates are eliminated on the fly.

Network Device Details

This package retrieves details on network devices (including switches, routers, and firewalls) from the NAS_DEVICES table. The **NAS_DEVICES.DEVICE_TYPE** field is used to identify whether the host is a switch, router, or firewall.

Since MAC addresses are not discovered for network devices, the primary IP address is used as part of its weak key. This IP address is available in the NAS_DEVICES.PRIMARY_IP field. If this field is blank, the device is ignored.

```
SELECT netdevice.item_id, netdevice.primary_ip, netdevice.hostname,  
netdevice.serial_number, netdevice.asset_tag, netdevice.software_version,  
netdevice.firmware_version, netdevice.vendor, netdevice.model,  
netdevice.device_type, netdevice.geographical_location, netdevice.memory,  
netdevice.total_ports, netdevice.free_ports, netdevice.rom_version,  
netdevice.processor, netdevice.policy_in_compliance  
FROM cmdb_data.nas_devices netdevice'  
WHERE netdevice.latest_flag=1 AND netdevice.primary_ip IS NOT NULL AND  
netdevice.hostname IS NOT NULL AND (lower(netdevice.device_type) LIKE  
'%switch%' OR lower(netdevice.device_type) LIKE '%router%' OR  
lower(netdevice.device_type) LIKE '%firewall%')  
ORDER BY netdevice.item_id'
```

Deployment

The integration includes a UCMDDB package **SAR_Integration.zip**. This package contains a view, its corresponding TQL, a discovery job **SAR Integration by SQL** including a discovery pattern and script, and a discovery module **SAR**.

The UCMDDB discovery job in this package uses the SAR database CI as the trigger, and can be included in UCMDDB's Spiral Discovery schedule. Since SAR allows customers to use any SID and port for the database, the trigger for this discovery job has no conditions on it, and returns all Oracle CIs in the CMDB. To prevent the job from running against all databases, discovery probe limits are set such that the job does not run on any trigger CI automatically.

This task includes the following steps:

1 Initiate Discovery

To initiate discovery, check the DDM parameters and activate DDM to discover the SAR Oracle database as follows:

- a** IP address of the Oracle database server Class C IPs by ICMP or Range IPs by ICMP (under Network – Basic).
- b** Database TCP ports on the IPs discovered: Database TCP Ports (under Database – Oracle).
- c** Oracle server instance Oracle Connection by SQL (under Database – Oracle).
- d** SAR SAR Integration by SQL (under Integration – SAR) – Once the SAR Integration by SQL job is active, manually add the Oracle CI representing the SAR database as a trigger CI.

2 Deploy SAR Integration

To deploy SAR:

- a** Using the Package Manager, extract the UCMDB package.
- b** Manually select the Oracle database.

3 Discover the Database Server

To discover the SAR database server:

- a** Make sure that the IP of the server running SAR's MySQL database exists in the UCMDB. Verify by running DDM or by manually inserting the CI.

The trigger CI for the DDM job is called **IP**. It encompasses all the IPs in the UCMDB.

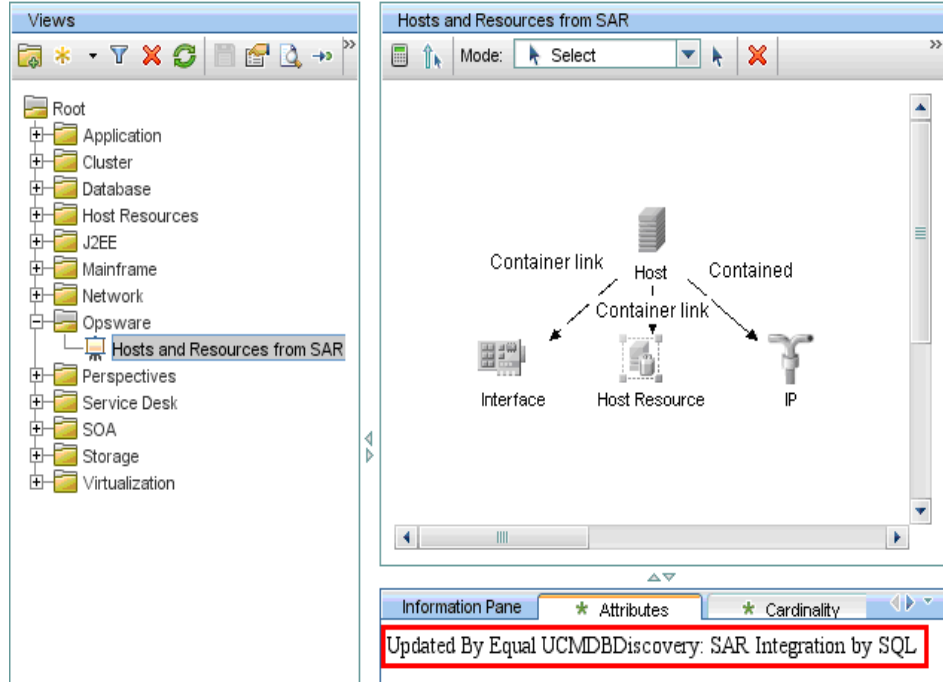
- b** Add a new node condition to this trigger TQL or manually invoke the pattern against a particular IP to avoid mass attempts at connecting to the MySQL port across the enterprise.
- c** Create a specific MySQL user (unless it already exists) in the SAR interface.

- d** To add a new MySQL user in SAR:
- e** Enter the SAR Web UI.
- f** Expand the **View Manager** in the navigation tree, .
- g** Expand the Opsware folder.
- h** Click **Add an account**.
- i** Enter the username and password information and click **Add User**.

4 Discover the SAR on the Server

The view below shows all hosts and host resources retrieved by the SAR integration discovery job. The host node at the top level is grouped by CI Type to show each Windows, UNIX, Switch, Router, and so on in its own group. Host resources are mapped below each host in the tree and also grouped by CI Type. Interfaces and IPs are mapped under the host.

Since a host is not required to have all components in this view to be functional, container links stemming from the host have a cardinality of zero-to-many, which means the view will show hosts with ZERO or more interfaces, host resources, and so on.



Note: The Attributes tab shows the updated status.

DDM Parameters

The following table lists the parameters that should be checked before activating DDM.

Name	Value	Description
Password	Test	Password for MySQL user as it exists in the SAR database
Port	8108	MySQL listening port
Server	1	Flag. Defines whether to discover servers (1) or not (0). If software discovery is enabled, this flag also denotes whether software for this device type is enabled
Software	1	Flag. Defines whether to discover software (1) or not (0)
UserID		UserID for MySQL user as it exists in the SAR database
Workstation		Flag. Defines whether to discover workstations (1) or not (0). If software discovery is enabled, this flag also denotes whether software for this device type is enabled