

HPE IT Business Analytics Cloud Analytics End-to-End Guide



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This document provides an end-to-end guide for the integration of IT Business Analytics (ITBA), Cloud Service Automation (CSA), Amazon Web Services, Microsoft Azure (Azure), and Cloud Optimizer (CO).

This document includes:

Overview	2
Support Matrix	3
Configuration Steps	4
CSA Content Preconditions	4
Installation	4
Prepare the Dashboard Pages in ITBA	5
Embed Dashboard Pages in the CSA Portal	6
Consumer Permission Control	6
KPIs, Metrics, Dashboard Pages, and Webi Reports and the Integrations with CSA, AWS, AWSCW, Azure, and CO	7
Troubleshooting	16
Document Change Notes	17
Additional Resources	18

Overview

The CSA CAP pages, KPIs, and Metrics display data extracted from CSA, AWS, AWSCW, Azure, and CO.

Support Matrix

Product	Versions	Supported Databases
Amazon Web Services (AWS)	Amazon Web Services Note: Working with this data source requires a working Internet connection from the Data Warehouse machine.	All supported database servers
Amazon Web Service CloudWatch (AWSCW)	Amazon Web Service CloudWatch Note: Working with this data source requires a working Internet connection from the Data Warehouse machine.	All supported database servers
Microsoft Azure (AZURE)		All supported database servers
Cloud Service Automation (CSA)	4.6, 4.50 with patch 4.50.0001, 4.2, 4.1, 4.0, 3.2 and 3.1	All supported database servers
Cloud Optimizer (CO)	3.0	All supported database servers

For details, see in the *Support Matrix*..

Configuration Steps

To configure the integrations, follow the below steps.

CSA Content Preconditions

1. All VMs must be created from the CSA portal, but only the following OOTB designs are supported:

Note: ITBA only certifies the CSA OOTB service design versions listed below. For other customized service design, see look at the section [Customize CSA Service Designer for your Resource Provider](#) in the *Content Reference Guide*.

AZURE	CSL_BP_MICROSOFT_AZURE_COMPUTE_3.20_CP3.0
Amazon	Sequence: Amazon EC2 Compute with ELB
	Topology: Amazon EC2 topology (version: 15.07.0000)
Helion	OpenStack Compute with Storage v5.0
vCenter	vCenter Compute – EEM (version: 1.0.2)
	vCenter Compute (version: 1.0.1)

2. When you create a VM in CSA, you create a resource provider (which includes an account message) and a design, but you have to install resource provider the relevant category in the below list:

CSA Category	Resource Provider
VMware vCenter	VCenter
Amazon AWS	Amazon
OpenStack	Helion
Microsoft Azure	Azure

Installation

To install and configure this integration:

1. Install ITBA. For details, see in the *Installation Guide*. . You can install ITBA using a GUI, silent, or console installation.
2. Optional:
 - [Optional - Install BOE on a Linux Server](#) or [Optional - Install BOE Client on Windows Server](#) in the in the *Installation Guide*..
 - [Optional - Install the Vertica Driver in the BOE Server and the BOE Client Server](#) in the in the *Installation Guide*..
3. Integrate ITBA with the BOE server. For details, see [Update the BOE Linkage](#) in the in the *Utility Tools Guide*..

Prepare the Dashboard Pages in ITBA

CSA CAP.

1. Create data in source systems: CSA, AWS, AWSCW, Azure, and CO.
2. Install and connect to data source for CSA, AWS, AWSCS, Azure, and CO
 - a. [Integration with CSA](#) in the *Content Reference Guide*.

Note: For CSA: If you want to change the default exchange rate of each currency, see "[Change the default exchange rate of each currency](#)" in the *Content Reference Guide*.
 - b. [Integration with AWS](#) in the *Content Reference Guide*.
 - c. [Integration with AWSCW](#) in the *Content Reference Guide*.
 - d. [Integration with Azure](#) in the *Content Reference Guide*.
 - e. [Integration with CO](#) in the *Content Reference Guide*.

Note: For CO: If you want to change the default pricing model, see "[Change the default price of the CO private cloud resources](#)" in the *Content Reference Guide*.
3. Execute the ETL process. For details, see [Data Management - Run ETL - Content Flow Management](#) in the in the *Administrator Guide*..
4. Activate the CSA CAP. For details, see [Activate a CAP](#) in the in the *Administrator Guide*..

Note: Some KPIs/Metrics may have no data if some of the Content Packs have not been installed.

5. Check the CSA Dashboard pages.

Note: If a page is blank:

- a. Update the browser settings. For details, see [Browsers and BOE Reports](#) in the *Administrator Guide*.
 - b. Link again ITBA to the BOE server. For details, see [Update the BOE Linkage](#) in the *Utility Tools Guide*.
6. Add a scheduler for ETL. For details, see [Run a job instance using the Content Flow Manager](#) in the *Administrator Guide*.
 7. Add a trigger for the KPI calculation. For details, see [Use-Case - Trigger Business Context calculation from Content Flow Manager](#) in the *Administrator Guide*.

Embed Dashboard Pages in the CSA Portal

1. Create a user in ITBA with the same logon name as in CSA or make sure ITBA and CSA are configured on the same LDAP server.
2. Configure single sign-on on both the ITBA and the CSA server. For details, see [LW-SSO](#) in the *Administrator Guide*.
3. Generate the embedded page URL for the CSA dashboard pages. For details, see [Embed an ITBA Dashboard page in another application](#) in the *Business Analyst Guide*.
4. Access the ITBA pages in the CSA system.

Consumer Permission Control

1. Integrate LDAP with ITBA, BOE and CSA. For details, see [Users and Roles - LDAP Management](#) in the *Administrator Guide*.
2. Configure permission in BOE universe tool. For details, see [Configure the Showback report for the Consumer Organization Administrator](#) in the *Content Reference Guide*.

KPIs, Metrics, Dashboard Pages, and Webi Reports and the Integrations with CSA, AWS, AWSCW, Azure, and CO

KPIs and Metrics	KPI and Metrics Related Target Entities	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS + AWSCW +Azure +CO
Average Cost of IT Services KPI. The average cost of services provided by IT.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> SERVICE_OFFERING 	X	X	X	X	X
Average Cost of Resource Providers KPI. The average cost of the Resource Providers during the measurement period.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 		X	X	X	X
Average Expense for Services KPI. The average expense of services consumed by the organization.	CSA: <ul style="list-style-type: none"> SERVICE_OFFERING BILLING ORG 	X	X	X	X	X
Average Revenue of Services KPI. The average revenue of services provided by IT during the measurement	CSA: <ul style="list-style-type: none"> SERVICE_OFFERING BILLING 	X	X	X	X	X

KPIs and Metrics	KPI and Metrics Related Target Entities	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS + AWSCW +Azure +CO
period.	<ul style="list-style-type: none"> ORG 					
Number of Service Subscriptions KPI. The number of Service subscriptions created during the measurement period.	CSA: <ul style="list-style-type: none"> SUBSCRIPTION PERSON ORG SERVICE_OFFERING SERVICE_CATEGORY 	X	X	X	X	X
Percentage of DiskSpace Utilization KPI. The average of percentages of disk space utilization at instance level.	AWS and AWSCW, CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_UTILIZATION CSA: <ul style="list-style-type: none"> ORG 		X		X	X
Percentage of Memory Utilization KPI. The average of percentages of memory utilization at instance level.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_UTILIZATION CSA: <ul style="list-style-type: none"> ORG 		X	X	X	X
Percentage of Pagefile Utilization KPI. The average of percentages of pagefile utilization at instance level.	AWS and AWSCW: <ul style="list-style-type: none"> SERVICE_PROVIDER_UTILIZATION CSA: <ul style="list-style-type: none"> ORG 		X			X

KPIs and Metrics	KPI and Metrics Related Target Entities	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS + AWSCW +Azure +CO
Percentage of Server Utilization KPI. The average of percentages of CPU utilization at instance level.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none">SERVICE_PROVIDER_UTILIZATION CSA: <ul style="list-style-type: none">ORG		X	X	X	X
Percentage of Swap Utilization KPI. The average of percentages of swap utilization at instance level.	AWS and AWSCW: <ul style="list-style-type: none">SERVICE_PROVIDER_UTILIZATION CSA: <ul style="list-style-type: none">ORG		X			X
Percentage of Volume Utilization KPI. The average of percentages of volume utilization at instance level.	AWS and AWSCW: <ul style="list-style-type: none">SERVICE_PROVIDER_UTILIZATION CSA: <ul style="list-style-type: none">ORG		X			X
Public vs Private Cloud Spending KPI. The ratio between the public and the private spending.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none">SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none">ORG		X	X	X	X
Service Profit Margin KPI. The profit margin of the services provided by IT during the measurement period.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none">SERVICE_PROVIDER_BILLING		X	X	X	X

KPIs and Metrics	KPI and Metrics Related Target Entities	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS + AWSCW +Azure +CO
	CSA: <ul style="list-style-type: none"> • ORG 					
Service Subscription Lifespan KPI. The average lifecycle time of a subscription to a service during the measurement period.	CSA: <ul style="list-style-type: none"> • SUBSCRIPTION • ORG • SERVICE_OFFERING 	X	X	X	X	X
Total Cost of IT Services KPI. The total cost of services provided by IT during the measurement period.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> • SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> • ORG 		X	X	X	X
Total Cost of Resource Providers KPI. The total cost of the Resource Providers during the measurement period.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> • SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> • ORG 		X	X	X	X
Total Expense for Services KPI. The total expense of services consumed by the organization.	CSA: <ul style="list-style-type: none"> • SERVICE_OFFERING • BILLING • ORG 	X	X	X	X	X
Total Revenue of Services KPI. The total revenue of services provided by IT during the measurement period.	CSA: <ul style="list-style-type: none"> • SERVICE_OFFERING • BILLING 	X	X	X	X	X

KPIs and Metrics	KPI and Metrics Related Target Entities	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS + AWSCW +Azure +CO
	<ul style="list-style-type: none"> ORG 					
Amount of Used Disk Metric. The product of the amount of disk provisioned and the number of days the VM has been running. For example, if a VM has been running with 20 GB of hard disk for 5 days, the DiskDays is calculated as $20 \times 5 = 100$ Disk (GB)-Days.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 				X	X
Amount of Used Memory Metric. The product of the amount of memory allocated and the number of days the VM has been running. For example, if a VM has been running with 4 GB of memory for 5 days, the MemDays is calculated as follows: $5 \times 4 = 20$ Memory (GB)-Days.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 				X	X
Amount of Used Storage Metric. The number of TBs of storage that are currently in use.	AWS and AWSCW: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 		X			X
Computer Hours Metric. The number of hours during which the VM has been running.	AWS and AWSCW, Azure: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA:		X	X		X

KPIs and Metrics	KPI and Metrics Related Target Entities	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS + AWSCW +Azure +CO
	<ul style="list-style-type: none"> ORG 					
Incoming Network Traffic Metric. Network Download.	AWS and AWSCW: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 		X			X
Network Traffic Metric. Total network traffic.	AWS and AWSCW: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 		X			X
Number of Used CPUs Metric. The product of the number of CPUs and the number of days the VM has been running. For example, if 4 CPUs are used for the first 15 days and 8 CPUs are used for the next 15 days in a month, the CPUDays is calculated as follows: (4x15)+(8x15) = 180 CPUDays	CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 				X	X
Number of Used Instances Metric. The number of dedicated instances you are running in your hybrid cloud environment.	AWS and AWSCW, Azure, CO: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 		X	X	X	X

KPIs and Metrics	KPI and Metrics Related Target Entities	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS + AWSCW +Azure +CO
Outgoing Network Traffic Metric. Network Upload.	AWS and AWSCW: <ul style="list-style-type: none"> SERVICE_PROVIDER_BILLING CSA: <ul style="list-style-type: none"> ORG 		X			X

Reports

Webi Reports	Webi Report Related Target Entities	AWS +AWSCW	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS+ AWSCW +Azure +CO
CSA - Amazon EC2 Instance Usage and Utilization	AWS and AWSCW: <ul style="list-style-type: none"> SERVICE_PROVIDER_UTILIZATION SERVICE_PROVIDER_BILLING NODE 	X		X			X
CSA- Showback for Cloud Services (Billing Statement for Cloud Services)	CSA: <ul style="list-style-type: none"> BILLING SERVICE_INSTANCE SUBSCRIPTION PERSON ORG 		X	X	X	X	X
CSA- Showback Detail for Cloud	CSA: <ul style="list-style-type: none"> BILLING SERVICE_ 		X	X	X	X	X

Webi Reports	Webi Report Related Target Entities	AWS +AWSCW	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS+ AWSCW +Azure +CO
Services	INSTANCE • SUBSCRIPTION • PERSON • ORG • REQUEST_OPTION • OPTION_PROPERTY • SERVICE_REQUEST						
CSA-Showback for Consumer	CSA: • BILLING • SERVICE_INSTANCE • SUBSCRIPTION • PERSON • ORG		X	X	X	X	X
CSA-Showback Detail for Consumer	CSA: • BILLING • SERVICE_INSTANCE • SUBSCRIPTION • PERSON • ORG • REQUEST_OPTION • OPTION_PROPERTY • SERVICE_REQUEST		X	X	X	X	X

Webi Reports	Webi Report Related Target Entities	AWS +AWSCW	CSA	CSA +AWS +AWSCW	CSA +Azure	CSA +CO	CSA +AWS+ AWSCW +Azure +CO
CSA-Resource Usage and Utilization for Consumer	CSA: <ul style="list-style-type: none"> • COMPONENT • SERVICE_INSTANCE • SUBSCRIPTION • PERSON • ORG AWS and AWSCW, Azure, CO <ul style="list-style-type: none"> • SERVICE_PROVIDER_UTILIZATION • SERVICE_PROVIDER_BILLING • NODE 			X	X	X	X
CSA-Resource Usage and Utilization for Resource Supplier Manager	CSA: <ul style="list-style-type: none"> • COMPONENT • SERVICE_INSTANCE • SUBSCRIPTION • PERSON • ORG AWS and AWSCW, Azure, CO <ul style="list-style-type: none"> • SERVICE_PROVIDER_UTILIZATION • SERVICE_PROVIDER_BILLING • NODE 			X	X	X	X

Troubleshooting

- Some KPIs/Metrics may have no data if some of the Content Packs are not installed.
- Blank report or Dashboard page.
 - a. You must update the browser settings. For details, see [Browsers and BOE Reports](#) in the *Administrator Guide*.
 - b. If you changed the host name of the ITBA server or of the BOE server, you must link again ITBA to the BOE server.

Document Change Notes

The following table provides details of any changes introduced in this version of this document.

Date	Change
April 2016	Original release of this document
September 2016	Fixes to KPIs and Webi report lists

Additional Resources



HPE Software Support Online



HPE Live Network



HPE Software Solutions and Integrations



Forum Discussions:

- <https://hpln.hpe.com/node/10214/og/forum/373>

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- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches
- Manage support contracts
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- Review information about available services
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HPE Software Solutions Now accesses the Solution and Integration Portal website. This site enables you to explore HPE Product Solutions to meet your business needs, includes a full list of Integrations between HPE Products, as well as a listing of ITIL Processes. The URL for this website is <https://softwaresupport.hpe.com/>.

Support Matrices

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http://support.openview.hp.com/sc/support_matrices.jsp

You can also download the HPE Support and Compatibility Matrix for this release from the HPE Self-solve documentation portal:

<http://support.openview.hp.com/selfsolve/manuals>

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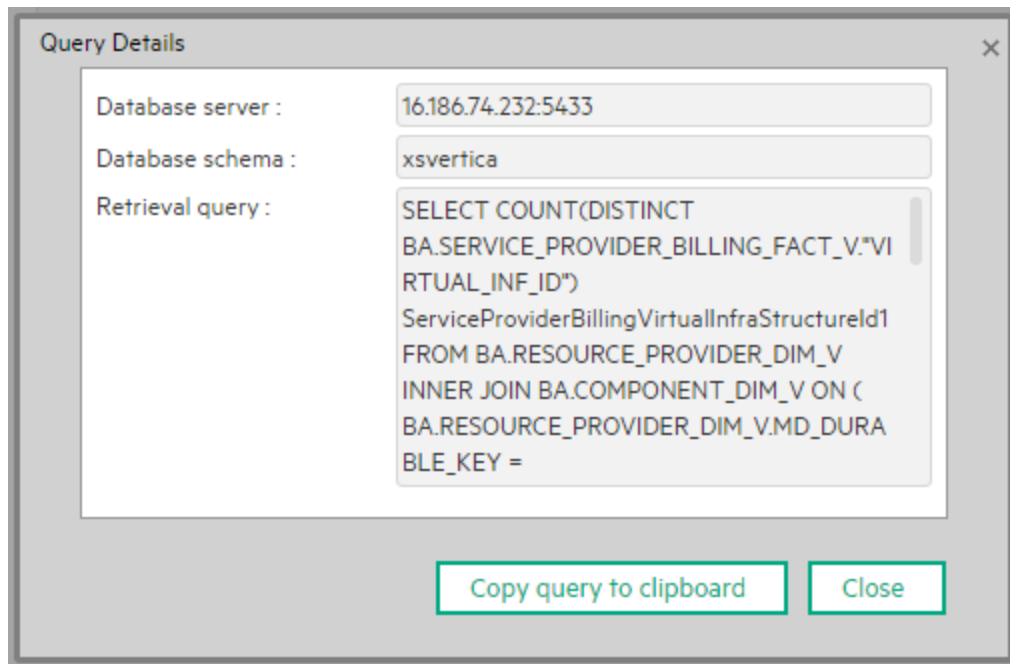
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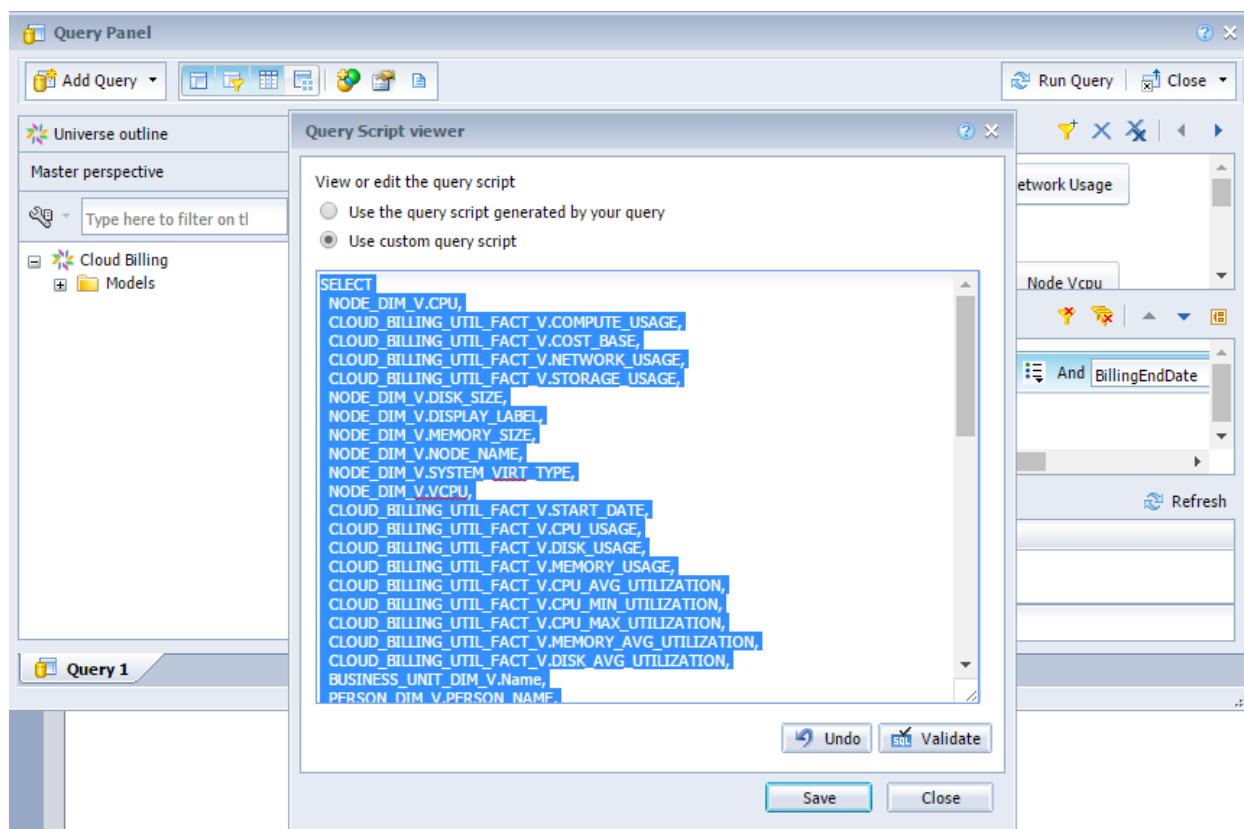
[Send documentation feedback to](#)

Steps to Check the CSA/AWS/CO/Azure KPI and Report Data Issue

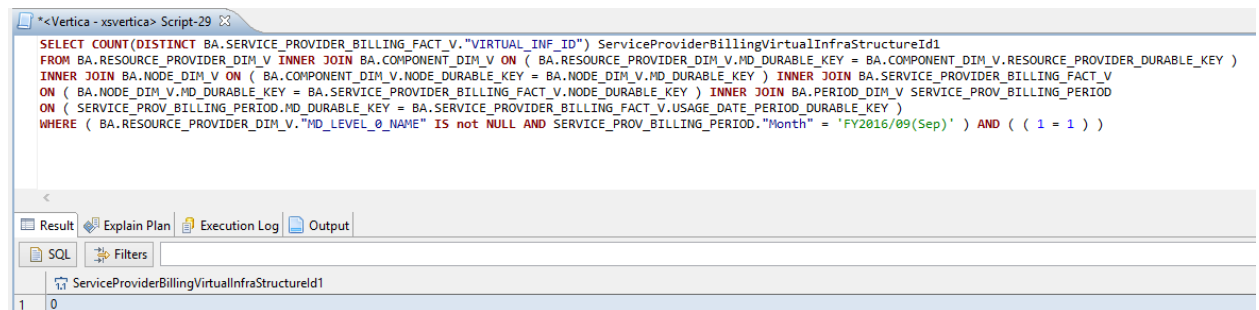
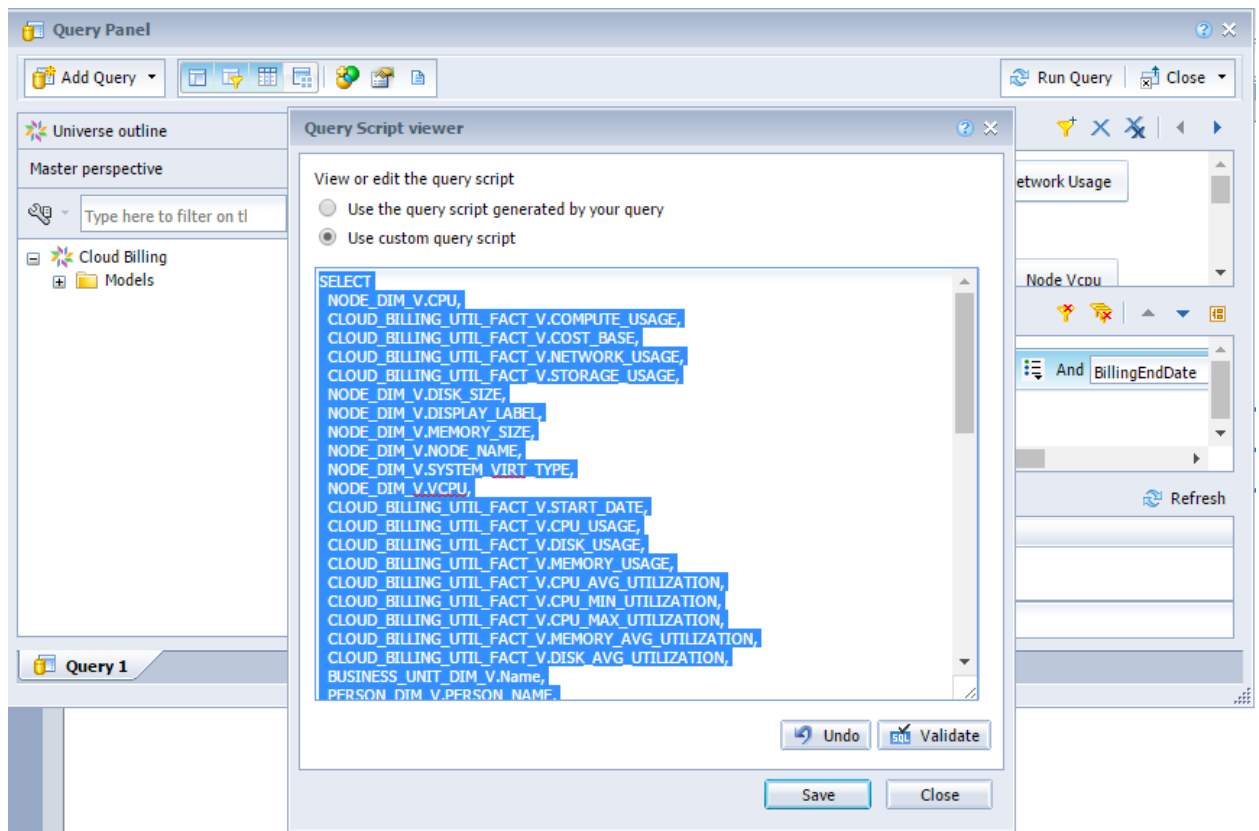
1. **For the KPI.** Click **Explorer**, select the relevant KPI, and click the **Data Set** tab, and click **Display SQL**.



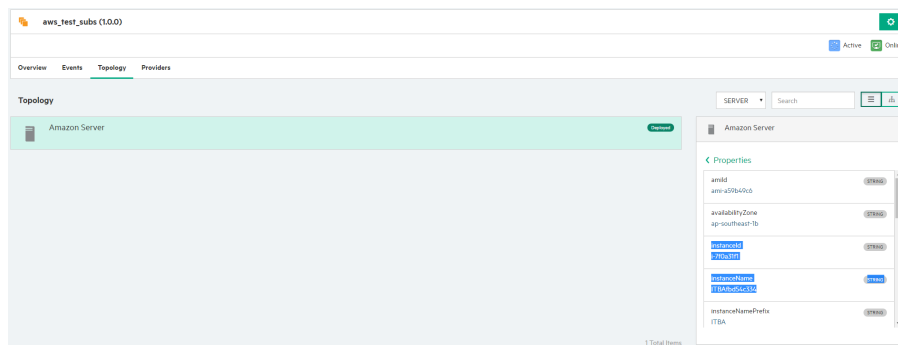
2. **For the report.** Open the relevant Report in the Dashboard, click **Design > Data Access > Edit > View Script**.



3. Make sure you have downloaded DBeaver: <http://dbeaver.jkiss.org/>.
4. Copy the SQL from Explorer or from the BOE panel, and paste it to an SQL client, in this case, DBeaver.

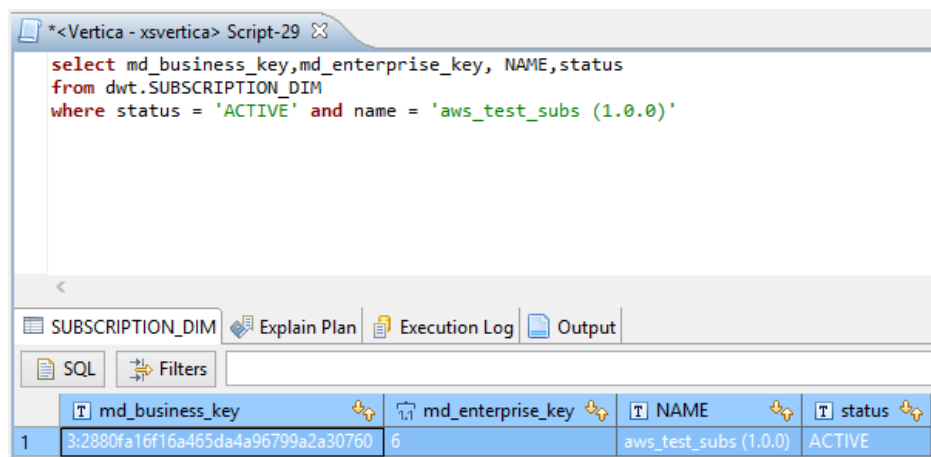


5. If the expected data is not displayed, then go the CSA portal to see which subscription related cost or VM are not counted or displayed in the KPI and reports. After that, the troubleshooting starts from this CSA subscription by giving the subscription name.
6. Go to CSA, click **Admin > Operations**, select one Organization group, select one user, select the active subscription that has a problem, and click **Topology**.
Make a note of the subscription name.
7. Check the Subscription Topology design for this subscription.
Make a note of the VM information highlighted below.



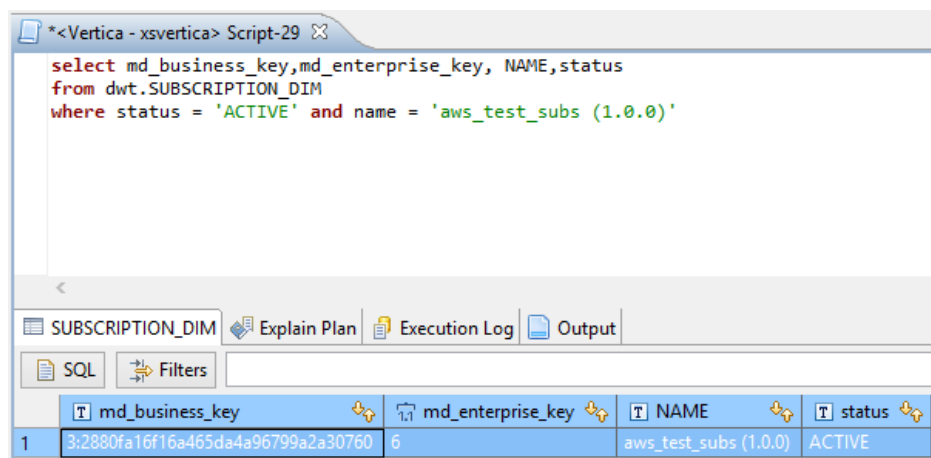
- Check the subscription table to see if the subscription data is correct through the subscription name.

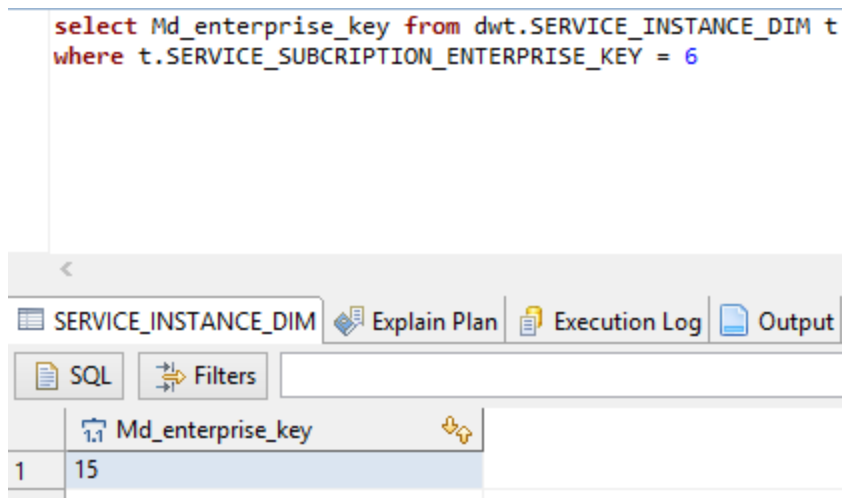
Make a note of the **md_enterprise_key**



- Check the service instance table through the subscription **md_enterprise_key**.

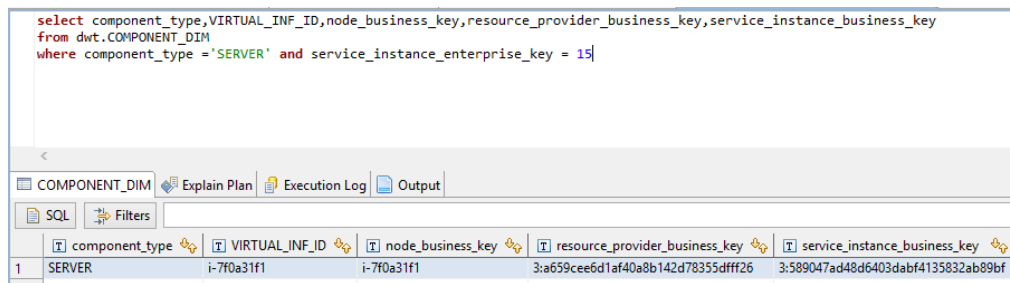
Make a note of the **md_enterprise_key**



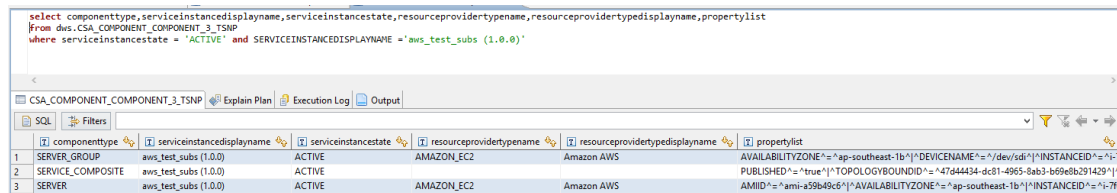


10. Check the component table through the service instance **md_enterprise_key**.

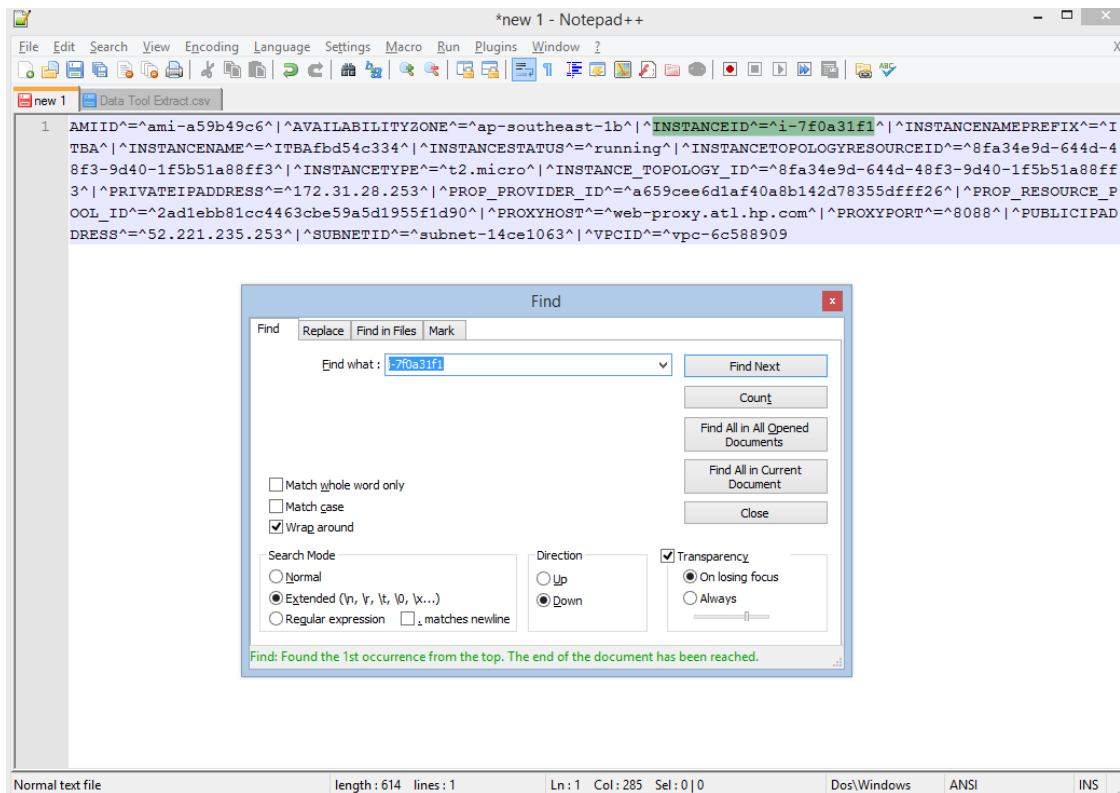
Make a note of the **md_enterprise_key**



11. If there is no data return, check the **csa_component_\$md_cp_id\$_tsnp** through the subscription name, double check the component type and the resource provider type if there is any customization.



Copy and paste the **propertylist** (key-pair string) values to the notepad, and search the key-pair string by **VM name/ID** according to your CSA subscription. Make a note of the key name for your **VM name/ID**, in this case, it is **INSTANCEID**. This will be your **virtual_inf_id** column.



12. If your component type name, resource provider type, resource provider type display name, and virtual info id are different from the OOTB supported default values listed below, (for example, the Amazon resource provider default component type is SERVER, but your component type may be XX_SERVER), then it means your CSA subscription uses a customized service design that is not supported by ITBA, by default. For the report and the KPI to work properly, you have to modify the ETL scripts.

Note: An optional value means that you can ignore it when doing the comparison.

	Result	Explain Plan	Execution Log	Output
	SQL	Filters		
	componenttype	resourceprovidertypename	resourceprovidertypedisplayname	virtual_inf_id
1	SERVER	AMAZON_EC2	Optional	INSTANCEID
2	SERVER	Optional	Microsoft Azure	VMNAME SERVICENAME
3	SERVER	OPENSTACK	Optional	SERVERID
4	SERVER	VMWARE_VCENTER	Optional	HOSTNAME

13. You also need to make sure that your subscription related VM info can be found in the service provider billing fact (node_business_key).

<code>select distinct node_business_key,service_instance_enterprise_key from dwt.SERVICE_PROVIDER_BILLING_FACT</code>		
SERVICE_PROVIDER_BILLING_FACT Explain Plan Execution Log Output		
SQL Filters		
	node_business_key	service_instance_enterprise_key
1	proa20160307113223	-1
2		-1
3	[NULL]	-1
4	gqportalvhdskp1cj2d58mdt	-1

14. Modify the **CSA_COMPONENT_CONF_DF.sql** file (highlighted below) for **component type name**, **resource provider type**, **resource provider type display name**, **virtual info id** under the **\$ITBA_HOME\$\ContentPacks\CSA\INBUILT\ETL\COMPONENT** directory.

```

select
  ext.md_cp_id ,
  ext.md_flag ,
  ext.md_business_key ,
  case
    when positionb('^|^'||ext.propertylist,'^|^'||'CUSTOMER'||'^=^') = 0 then null
    else
      split_part(split_part(substrb('^|^'||ext.propertylist,positionb('^|^'||ext.propertylist,'^|^'||'CUSTOMER'||'^=^')),'^|^',2),'^=^',2)
  end VIRTUAL_INF_ID ,
  -- as CSTM_PROPERTY_01 ,
  -- as CSTM_PROPERTY_02 ,
  -- as CSTM_PROPERTY_03 ,
  -- as CSTM_PROPERTY_04 ,
  -- as CSTM_PROPERTY_05 ,
  -- as CSTM_PROPERTY_06 ,
  -- as CSTM_PROPERTY_07 ,
  -- as CSTM_PROPERTY_08 ,
  -- as CSTM_PROPERTY_09 ,
  -- as CSTM_PROPERTY_10 ,
  ext.SERVICEINSTANCEID as SERVICE_INSTANCE_BUSINESS_KEY ,
  ext.RESOURCEPROVIDERID as RESOURCE_PROVIDER_BUSINESS_KEY ,
  ext.COMPONENTTYPE as COMPONENT_TYPE ,
  ext.COMPONENTNAME as COMPONENT_NAME ,
  trim(ext.COMPONENTDISPLAYNAME) as DISPLAY_LABEL ,
  ext.PARENTCOMPONENTID as PARENT_BUSINESS_KEY
from $(dws).CSA_COMPONENT_COMPONENT_$(MD_CP_ID) EXT ext
where ext.RESOURCEPROVIDERTYPE = 'VMWARE_VCENTER'
  and ext.COMPONENTTYPE = 'SERVER'

```

15. After the modification, clean the ETL data for CSA and rerun the ETL.