

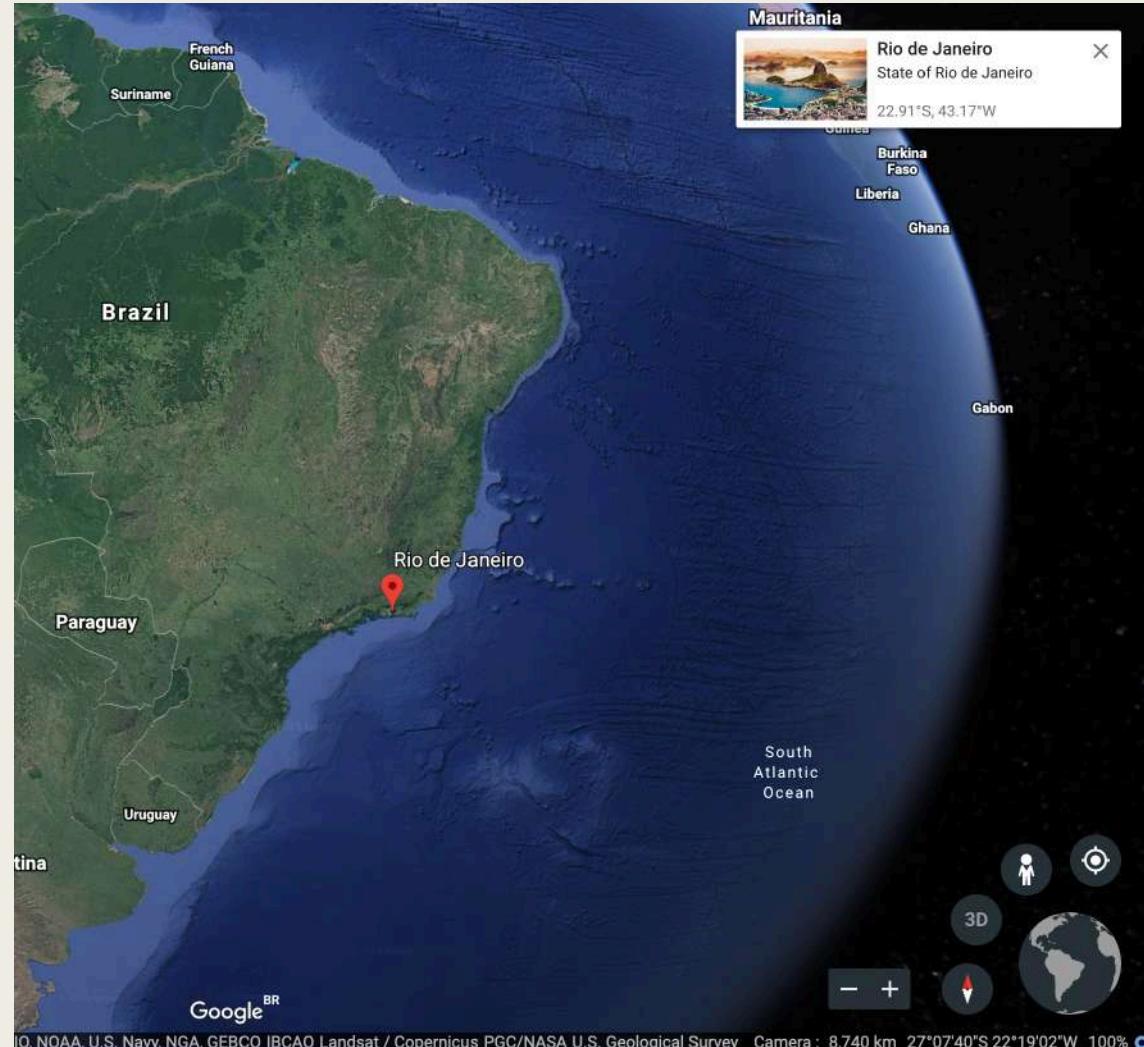
Deep dive into Oracle Cloud metadata (and how to build custom reports)



About



- Since Nov/2016
- Oracle Security Enthusiast / Cloud / Performance HC / HA deployments / etc



Rodrigo Jorge



- 4x OCM: 11g / 12c / MAA / Cloud
- OCEs 11g / 12c / ...
- (...)



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DBA - Rodrigo Jorge - Oracle Tips and Guides

Blog about Databases, Security and High Availability



Elite



Expertise



Success



Thought
Leadership

- Global systems integrator focused on the Oracle platform
- Consultants average 15+ years of Oracle experience
- Worldwide specialist in Engineered Systems implementations
- 13 Oracle ACE members, recognized by Oracle for their technical expertise

Oracle Specializations*

- Oracle Exadata
- Oracle Exalogic
- Oracle Database
- Oracle GoldenGate
- Oracle Data Integrator
- Oracle Data Warehouse
- Oracle Real Application Cluster
- Oracle Performance Tuning
- Oracle Database Security

Oracle Engineered Systems Numbers

- 1000+ Oracle Engineered Systems which AEG have configured, patched or supported.
- 120+ AEG resources which have an average 15+ years of Oracle experience
- AEG Support across 9 countries
- 200 Oracle Engineered Systems (Exadata/Exalogic, etc) currently under management directly by AEG
- 200+ customers in either the AEG Managed Services program or remoteDBA program
- 50,000 Accenture Oracle IDC resources that can be leveraged for Level 1 & Level 2 support



Our consultants have been published in multiple subject areas and additional online resources that demonstrate Accenture's experience and expertise with the OES platform



**BEFORE ANYTHING
HOW THIS ALL
STARTED..**



Questions:

- Which volumes I have across all compartments in all regions that are unallocated?
- I want a list of all computes I have across all regions..
- What is the total boot+block storage allocated per compute?
- Which security list I have that are not being used by any subnet?
- What is the linear regression cost trend of my tenancy?
- Which users created volumes in my prod compartment yesterday?
- ...

```

#!/bin/bash
compartment=ocid1.compartment.oc1..aaaaaaaaecfyyp6fpwtbrv54irhpeywjifxekm3rwrkndsg46rz2ecjbon3q

# Fetch all compute instances for compartment
echo "Getting computes..."
computes=$(oci compute instance list -c $compartment)

# Fetch all VNIC attachments for compartment
echo "Getting vnicAttachments..."
vnicAttachments=$(oci compute vnic-attachment list -c $compartment)

# Loop through compute instances
for computeIdx in $(echo "$computes" | jq '.data | keys | .[]'); do

    # Extract instance OCID
    computeOCID=$(echo "$computes" | jq -r ".data[$computeIdx].\"id\"")

    # Extract instance name
    computeName=$(echo "$computes" | jq -r ".data[$computeIdx].\"display-name\"")

    # Extract VNIC attachment OCIDs for this instance
    vnicIds=$(echo "$vnicAttachments" | jq -r '.data[] | select(.\"instance-id\" == "'$computeOCID'") | .\"vnic-id\"')

    echo "$computeIdx $computeName"

    # Loop through VNICs of this instance
    for vnicId in $vnicIds; do

        # Extract various attributes and print them
        vnic=$(oci network vnic get --vnic-id $vnicId)
        privateIp=$(echo $vnic | jq -r '.data | ."private-ip"')
        publicIp=$(echo $vnic | jq -r '.data | ."public-ip"')
        vnicName=$(echo $vnic | jq -r '.data | ."display-name"')

        printf "    VNIC $vnicName (${vnicId:(-5)}) :  Public: $privateIp Private: $publicIp\n"

    done
done

```

Compartment Explorer ...

≡ ORACLE Cloud Search for resources, services, and documentation

Governance

Audit

Compartment Explorer

Quota Policies

Limits, Quotas and Usage

Tag Namespaces

Compliance Documents

Tag Filters [add](#) | [clear](#)

no tag filters applied

Select Compartment

SHOW RESOURCES IN SUBCOMPARTMENTS

Search compartments

- dbarj (root)
 - compt_dev
 - compt_dev_app
 - compt_dev_db
 - compt_dev_net
 - compt_prod
 - compt_prod_app
 - compt_prod_db
 - compt_prod_net
 - compt_ss
 - compt_ss_net
 - compt_test

Compartment Explorer

Name: [dbarj.\(root\)](#)

Description: dbarj

Don't see what you're looking for? These results include only resources supported by [Search](#). Updates made to resources might not immediately appear here.

Volume Backups (7) [X](#)

[View Work Requests](#) [Move Selected](#) [Delete Selected](#)

<input type="checkbox"/>	Name	Compartment
<input type="checkbox"/>	test.vol.full.1	dbarj (root)/compt_dev/compt_dev_app
<input type="checkbox"/>	test.vol.full.1	dbarj (root)/compt_dev/compt_dev_db
<input type="checkbox"/>	test.vol.incr.2	dbarj (root)/compt_dev/compt_dev_app
<input type="checkbox"/>	teste	dbarj (root)/compt_dev/compt_dev_app
<input type="checkbox"/>	u01.Full	dbarj (root)/compt_dev/compt_dev_app
<input type="checkbox"/>	u01.Full.2	dbarj (root)/compt_dev/compt_dev_app
<input type="checkbox"/>	u01.Incr.3	dbarj (root)/compt_dev/compt_dev_app

0 Selected

Advanced Resource Query ...

The screenshot shows the Oracle Cloud Advanced Resource Query interface. At the top, there is a navigation bar with the Oracle Cloud logo and a search bar. Below the search bar is the title "ADVANCED RESOURCE QUERY". A query editor window displays the following code:

```
query
all resources
where
systemTags.namespace = 'orcl-cloud' &&
systemTags.key = 'free-tier-retained' &&
systemTags.value = 'true'
```

Below the query editor, there is a note about filtering results with query language and a link to "Search Language Syntax". There is also a note about supported resource types and a link to "Supported Resources". A "Search" button is located below these notes.

On the left side of the page, there is a sidebar with "Categories" and a "Resources" section. The "Resources" section is currently selected, indicated by a blue border. A link "Don't see what you're looking for?" with an info icon is also present.

The main content area is titled "Resource Search Results". It includes a "Filter by resource types:" section with a dropdown menu set to "Choose one or more resource types to filter the results". Below this is a table listing five resources:

Display Name	Resource Type	OCID	Com
teste Always Free	Volume Backups	...nlcs4a	Show Copy ...b7d
u01_Incr_3 Always Free	Volume Backups	...6lweva	Show Copy ...b7d
u01_Full_2 Always Free	Volume Backups	...k2cjfq	Show Copy ...b7d
u01_Full Always Free	Volume Backups	...nmsvoq	Show Copy ...b7d
oci360_u01 Always Free	Block Volumes	...nlyf5a	Show Copy ...b7d

Structured Search ...

```
oci search resource structured-search \
--query-text "query all resources where ( \
    freeformTags.key = '$1' \
    && freeformTags.value = '$2')" \
--output table \
--query "data.items[*] | \
sort_by(@,&"resource-type") \
[].{ Name:\"display-name\", \
    Type:\"resource-type\", \
    ID:identifier, \
    AD:\"availability-domain\"}"
```

Cost Section ...

The screenshot shows the Oracle Cloud Cost Analysis page. At the top, there's a navigation bar with back, forward, and refresh buttons, a URL field showing "console.us-ashburn-1.oraclecloud.com/account-management/cost-analysis", and a search bar. Below the URL is the "ORACLE Cloud" logo and a search bar for resources, services, and documentation.

The main content area is titled "Cost Analysis". It features a yellow warning box stating: "Cost data may be delayed by approximately 4 days. We are working to resolve this issue and apologize for the inconvenience." Below this, a message says: "For dates older than 2020-04-01 switch to classic version".

On the left, a sidebar menu includes "Cost Analysis" (which is selected and highlighted in blue), "Cost and Usage Reports", "Budgets", "Invoices", and "Payment Method".

The main panel has three filter sections: "TIME PERIOD (UTC)" set to "This Month (Aug 2020)", "SHOW" set to "Cost", and "REPORTS" set to "Costs by Service". There are also "FILTERS" and "GROUPING DIMENSIONS" sections, both currently empty. At the bottom of this panel, there are "Apply", "Cancel", and "Clear All Filters" buttons.

At the very bottom of the main panel, it says "Time Period : Aug 2020" followed by an info icon.

Account Management

Cost Analysis

Cost and Usage Reports

Budgets

Invoices

Payment Method

Cost and Usage Reports

Cost and usage reports are CSV files generated daily that show

Name

[reports/usage-csv/000100000265882.csv.gz](#)

[reports/usage-csv/000100000265133.csv.gz](#)

[reports/usage-csv/000100000264388.csv.gz](#)

[reports/cost-csv/000100000123713.csv.gz](#)

[reports/cost-csv/000100000122859.csv.gz](#)

[reports/usage-csv/000100000263635.csv.gz](#)

[reports/cost-csv/000100000122353.csv.gz](#)

[reports/usage-csv/000100000262864.csv.gz](#)

[reports/cost-csv/000100000121405.csv.gz](#)

OEM 13c

ORACLE Enterprise Manager Cloud Control 13c

Information Publisher Reports

Search

Title: [] Target Type: All
Owner: All Target Name: []

Go | Delete | Create Like | Edit | Create | Expand All | Collapse All

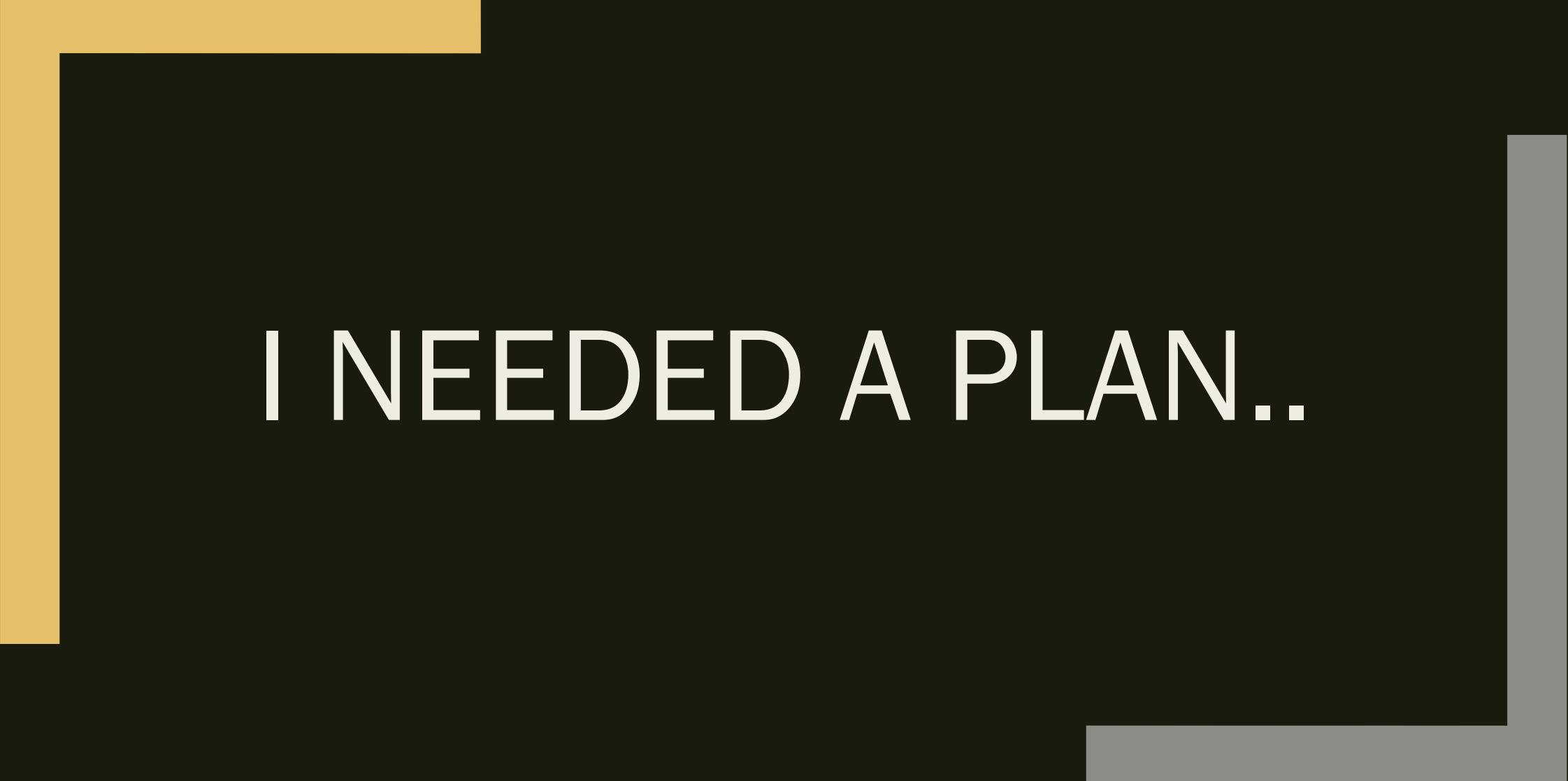
Select	Title	Description	Date Generated	Owner
<input type="radio"/>	▼ Information Publisher Reports			
<input type="radio"/>	▼ Cisco			
<input type="radio"/>	▼ Cisco Switch			
<input checked="" type="radio"/>	Network Information	Network information		SYSMAN
<input type="radio"/>	System Health	System health information		SYSMAN
<input type="radio"/>	▼ Compliance			
<input type="radio"/>	▼ Descriptions			
<input type="radio"/>	Compliance Group Library Summary	Compliance Group Library Summary		SYSMAN
<input type="radio"/>	Compliance Standard Library Summary	Compliance Standard Library Summary		SYSMAN
<input type="radio"/>	Compliance Standard Rule Summary	Compliance Standard Rule Summary		SYSMAN
<input type="radio"/>	▼ Results			
<input type="radio"/>	Compliance Group evaluation Summary	Compliance Group evaluation Summary		SYSMAN
<input type="radio"/>	Compliance Standard Result Details	Compliance Standard Result Details		SYSMAN
<input type="radio"/>	Compliance Standard Result Summary	Compliance Standard Result Summary		SYSMAN
<input type="radio"/>	Target with Lowest AVG COMPLIANCE SCORE	Target with Lowest AVG COMPLIANCE SCORE		SYSMAN
<input type="radio"/>	▼ Deployment and Configuration			
<input type="radio"/>	▼ Alerts			
<input type="radio"/>	IP Address Activity (Detailed) Report	Detailed report of IP Addresses with a high number of successes or failures, or a large number of distinct users. Report includes per user total.		SYSMAN

Enterprise Targets Favorites History Setup

Information Publisher Reports

BI Publisher Enterprise Reports

Page Refreshed Aug 17, 2020 10:43:58 AM BRT



I NEEDED A PLAN..



FIND A WAY TO EXTRACT ALL THE
METADATA WE HAVE IN OCI...



LOAD THIS METADATA
SOMEWHERE...



QUERY THIS DATA WITH SQL SO I
CAN BUILD ANY IMAGINABLE
REPORT!

EXTRACTION



Extraction options

Oracle Cloud Infrastructure Documentation

- ▶ Oracle Cloud's Free Tier
- ▶ Oracle Cloud Infrastructure Government Cloud
- ▶ Services
- ▼ Developer Resources
 - ▼ Developer Guide
 - ▶ Setup and Prerequisites
 - ▶ Working with Cloud Shell
 - ▶ Working with the Command Line Interface (CLI)
 - ▼ SDK Guides
 - ▶ SDK for Java
 - SDK for Python
 - SDK for Ruby
 - SDK for Go
 - ▶ SDK for TypeScript and JavaScript
 - ▶ SDK for .NET
 - ▶ Other Tools and Plug-ins
 - ▶ Appendix and Reference
 - ▶ Developer Tutorials
 - ▶ Security

Software Development Kits and Command Line Interface

Oracle Cloud Infrastructure provides a number of Software Development Kits (SDKs) and a Command Line Interface (CLI) to facilitate development of custom solutions.

- Software Development Kits (SDKs) Build and deploy apps that integrate with Oracle Cloud Infrastructure services. Each SDK provides the tools you need to develop an app, including code samples and documentation to create, test, and troubleshoot. In addition, if you want to contribute to the development of the SDKs, they are all open source and available on GitHub.
 - [SDK for Java](#)
 - [SDK for Python](#)
 - [SDK for TypeScript and JavaScript](#)
 - [SDK for .NET](#)
 - [SDK for Go](#)
 - [SDK for Ruby](#)
- [Command Line Interface \(CLI\)](#) The CLI provides the same core capabilities as the Oracle Cloud Infrastructure Console and provides additional commands that can extend the Console's functionality. The CLI is convenient for developers or anyone who prefers the command line to a GUI.

My option: OCI-CLI

- Built on Python 3.5 or later
- Mac, Windows, Linux
- Calls OCI APIs via REST
- Easy to install and configure:
 - <https://github.com/oracle/oci-cli>
 - `bash -c "$(curl -L https://raw.githubusercontent.com/oracle/oci-cli/master/scripts/install/install.sh)"`

List all Instances:

```
$ oci compute instance list --all
```

Usage: oci compute instance list [OPTIONS]

Error: Missing option(s) --compartment-id.

What is required?

```
FOR I in Compartments  
> get compute instances <
```

Listing all compartments

```
$ oci iam compartment list \
--query "data[].id" \
--all \
--compartment-id-in-subtree true \
--include-root
```



```
$ oci iam compartment list --query "data[].id" --all --compartment-id-in-subtree true \  
> --include-root
```

```
$ oci iam compartment list --query "data[].id" --all --compartment-id-in-subtree true \
> --include-root
[
    "ocid1.tenancy.oc1..aaaaaaaaunn73emggesayznwlqeunvmbcmbtgzb1gd67mtjwbu2doq44igna",
    "ocid1.compartment.oc1..aaaaaaaaajsgvr66jcr5wysquqi2j42v2zuzq7jphbvgpf1nidomrk3p3ka",
    "ocid1.compartment.oc1..aaaaaaaaaf1c4pzf3syqksvmsmcpxxi5adsvquq7kaxkb14wnmbkfpw77fvtq",
    "ocid1.compartment.oc1..aaaaaaaa2adzntme6rvuim2xki1upjyhizzu12bkxwb2zhsmyxgmzdb75d4q",
    "ocid1.compartment.oc1..aaaaaaaaaysvxrbvyht4goajycwzxiulxvrqygtmed3ugzbpa1rydot6xjskq",
    "ocid1.compartment.oc1..aaaaaaaaaq3cnjp1afkn2a5baqnzvdwfguhlqaaxpipvjtijh3mgkwqxwnq",
    "ocid1.compartment.oc1..aaaaaaaaai1iplwmmszekn7hegxumarlp6hwlgdyoyrmui1nc5efruivglfqza",
    "ocid1.compartment.oc1..aaaaaaaaapijrriuaz2o6k21dvzqe6wnfifzibl7r6wovqx6i2r7ufe4cqz5a",
    "ocid1.compartment.oc1..aaaaaaaaaln6m2f2ijs7malotaw4nyaxyouv75nr67of5uqfczoygnca1rcua",
    "ocid1.compartment.oc1..aaaaaaaaajjqndsumgx4ra3xgrivawzqe7dvtcteq5cy4wfn33tp6cskeizja",
    "ocid1.compartment.oc1..aaaaaaaa6xsdglk5atkoh3hkavml76agjo2rkje5opxk4ltj6pkf5utnbtaq",
    "ocid1.compartment.oc1..aaaaaaaa7he2imxhfgzi7pu1giur5gyr57dn7bpemsq5zgw1lkpermtrnfa",
    "ocid1.compartment.oc1..aaaaaaaa713bw3debz43j3gvqukcc5qsmcg6v1bc125zy3sd4gowtvf21geq",
    "ocid1.compartment.oc1..aaaaaaaa6sgohmllry2fpvrsfdkwfh2fn54ohkviodp5tezexw5txpf2tbva",
    "ocid1.compartment.oc1..aaaaaaaaamqsj4vcuj7242qvzyzoqyvazno4juforxotzbw1ft46jbxd3n5qq",
    "ocid1.compartment.oc1..aaaaaaaaalstxgxejfj3qavy25h23qacsnbthzqt4sw7b2kgxzi5itd4pbnuq",
    "ocid1.compartment.oc1..aaaaaaaaapvojs7y7z1su2hyqddozmk2dgn2gafuz5p3jyldrmay7ppede7mq",
    "ocid1.compartment.oc1..aaaaaaaa67yod2f44foausjyadim6bvoqow6ghihfpfxeqjidhs1igusmiq",
    "ocid1.compartment.oc1..aaaaaaaaaxglc5qhiyw2ff6wjko1vfyixyfvhn4okgjal1fotvo2ildp6ie2hq",
    "ocid1.compartment.oc1..aaaaaaaaagthxui6s3xhjvvbaxwophz64t1kq1i2wpzxgdcmnvkek4foupufa",
    "ocid1.compartment.oc1..aaaaaaaaau13spexn3tmejqqs2udelg762eim67nlzxwmgmogwmeofyl4nfzq"
]
```

Now all instances over all compartments

```
$ oci iam compartment list \  
--query "data[].id" \  
--all --compartment-id-in-subtree true \  
--include-root | \  
jq -r '.[]' | \  
xargs -L 1 echo oci compute instance list --all -c
```



```
$ oci iam compartment list \  
> --query "data[].id" \  
> --all --compartment-id-in-subtree true \  
> --include-root | \  
> jq -r '.[]' | \  
> xargs -L 1 echo oci compute instance list --all -c
```

```
$ oci iam compartment list \
> --query "data[].id" \
> --all --compartment-id-in-subtree true \
> --include-root | \
> jq -r '.[]' | \
> xargs -L 1 echo oci compute instance list --all -c
oci compute instance list --all -c ocid1.tenancy.oc1..aaaaaaaaaunn73emggesayznwlqeunvmbcmb ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaajsgvr66jcr5wysquqi2j42 ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaflc4pzf3syqksvmsmcpxxi5 ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa2adzntme6rvuim2xkiiupjy ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaysvxrbvyht4goajycwzxiul ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaq3cnjpafkn2a5baqnzvdc ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaikiplwmmszekn7hegxumarl ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaapijrriuaz2o6k2ldvzae6wn ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaln6m2f2ijs7malotaw4nyax ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaajjqndsumgx4ra3xgrivawzq ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa6xsdglk5atkoh3hkavml76a ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa7he2imxhfgzi7pufgiur5gy ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa7l3bw3debz43j3gvqukcc5q ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa6sgohml1ry2fpvrsfdkwfh2 ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaamqsj4vcuj7242qvzyzoqyvaz ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaalstxgxejfj3qavy25h23qac ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaapvojs7y7zlsu2hyqddozmk2 ...
oci compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa67yod2f44foausjyadim6bv ...
(more)
```

AND THE OTHER
REGIONS?!

How is the region defined?

```
$ cat .oci/config  
[DEFAULT]  
user = ocid1.user.oc1..xxx  
fingerprint = 31:12:c4:42:5d:8b:1c:9b:c9:0a:68:43:6c:85:0c:e7  
key_file=/Users/rodrigo.jorge/.oci/oci_api_key.pem  
tenancy=ocid1.tenancy.oc1..xxx  
region=us-ashburn-1
```

```
$ oci -v
```

```
--region TEXT
```

The region to make calls against. For a list of valid region names use the command: "oci iam region list".

What is required?

FOR I in Subscribed Regions

FOR J in Compartments

> list compute instances <

Now all instances over all compartments

```
$ oci iam region-subscription list \
--all \
--query "data[].\\"region-name\\"" | \
jq -r '.[]' | \
xargs -L 1 -I {} sh -c '
  oci iam compartment list \
  --query "data[].id" \
  --all \
  --compartment-id-in-subtree true \
  --include-root | \
jq -r '.[]' | \
xargs -L 1 echo oci --region {} compute instance list --all -c'
```



```
$ oci iam region-subscription list \
> --all \
> --query "data[].\\"region-name\\"" | \
> jq -r '.[]' | \
> xargs -L 1 -I {} sh -c '
>   oci iam compartment list \
>   --query "data[].id" \
>   --all \
>   --compartment-id-in-subtree true \
>   --include-root | \
>   jq -r '.[]' | \
>   xargs -L 1 echo oci --region {} compute instance list --all -c'
|
```

```
$ oci iam region-subscription list \
> --all \
> --query "data[].\\"region-name\\"" | \
> jq -r '.[]' | \
> xargs -L 1 -I {} sh -c '
>   oci iam compartment list \
>   --query "data[].id" \
>   --all \
>   --compartment-id-in-subtree true \
>   --include-root | \
>   jq -r '.[]' | \
>   xargs -L 1 echo oci --region {} compute instance list --all -c'
oci --region us-ashburn-1 compute instance list --all -c ocid1.tenancy.oc1..aaaaaaaaunn73em
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaajsg
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaflc
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa2ad
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaysv
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaq3c
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaiki
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaapij
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaln6
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaajjq
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa6xs
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa7he
(more)
```

```
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa7l3
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa6sg
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaamqs
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaalst
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaapvo
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa67y
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaxgl
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaagth
oci --region us-ashburn-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaau13
oci --region us-phoenix-1 compute instance list --all -c ocid1.tenancy.oc1..aaaaaaaaunn73em
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaajsg
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaf1c
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa2ad
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaysv
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaq3c
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaiki
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaapij
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaaln6
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaajjq
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa6xs
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa7he
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa7l3
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaa6sg
oci --region us-phoenix-1 compute instance list --all -c ocid1.compartment.oc1..aaaaaaaaamqs
(more)
```

THIS IS FOR COMPUTES..

WHAT ABOUT BOOT VOLUMES?

oci bv boot-volume list -h

NAME

 bv_boot-volume_list -

DESCRIPTION

 Lists the boot volumes in the specified compartment and availability domain.

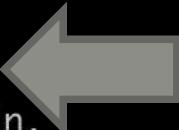
USAGE

 oci bv boot-volume list [OPTIONS]

REQUIRED PARAMETERS

--availability-domain [text]

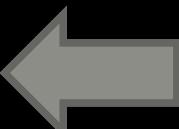
 The name of the availability domain.



 Example:

 Uocm:PHX-AD-1

--compartment-id, -c [text]



 The

<https://docs.cloud.oracle.com/Content/General/Concepts/identifiers.htm> ^{OCID}
 of the compartment.

Now all BVs over all Comparts of all ADs of all Regions

What is required?

FOR I in Subscribed Regions

FOR J in ADs

FOR K in Compartments

> list boot volumes <

THIS IS FOR BOOT VOLUMES..

*WHAT ABOUT BOOT VOLUME
BACKUP ASSIGNMENTS?*

```
$ oci bv volume-backup-policy-assignment get-volume-backup-policy-asset-assignment -h
```

NAME

bv_volume-backup-policy-assignment_get-volume-backup-policy-asset-assignment -

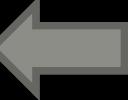
DESCRIPTION

Gets the volume backup policy assignment for the specified volume. The assetId query parameter is required, and the returned list will contain at most one item, since volume can only have one volume backup policy assigned at a time.

USAGE

```
oci bv volume-backup-policy-assignment get-volume-backup-policy-asset-assignment [OPTIONS]
```

REQUIRED PARAMETERS

--asset-id [text] 

The OCID of an asset (e.g. a volume).

Now all Backup Policies over all BVs over all Compartments of all ADs of all Regions

What is required?

FOR I in Subscribed Regions

FOR J in ADs

FOR K in Compartments

> list boot volumes <

FOR K in Boot Volumes

> get boot volume backup policy <

oci_json_export.sh

- https://github.com/dbarj/oci-scripts/blob/master/oci_json_export.sh

```
$ oci_json_export.sh
Usage: oci_json_export.sh <option>

<option> - Execution Scope.

Valid <option> values are:
- ALL           - Execute json export for ALL possible options and compress output in a zip file.
- ALL_REGIONS  - Same as ALL, but also loop over for all tenancy's subscribed regions.
- BDS-InstDetails
- BDS-Instances
- BV-BVBackups
- BV-BVKey
- Budget-Data
...
```

- 142 options and growing..


```
$ time oci_json_export.sh Comp-Instances > computes.json
```

|

```
$ time oci_json_export.sh Comp-Instances > computes.json
```

```
real 0m39.630s
user 1m7.462s
sys 0m27.768s
```



```
$ cat oci_json_export.log
20201009_093042: Temporary folder is: /var/folders/b5/8gm9gwt11cl12r5_8vc3zydc0000gn/T/tmp
20201009_093042: OCI Parallel is: 8
20201009_093057: BEGIN
20201009_093057: Starting: "oci --cli-rc-file /dev/null iam compartment li (...) ot" (17678)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) 4q" (19921)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) iq" (26281)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) va" (32641)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) aq" (6234)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) fa" (29432)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) eq" (18954)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) tq" (9385)
20201009_093109: Starting: "oci --cli-rc-file /dev/null compute instance l (...) fa" (31675)
20201009_093142: Starting: "oci --cli-rc-file /dev/null compute instance l (...) zq" (17446)
20201009_093142: Starting: "oci --cli-rc-file /dev/null compute instance l (...) ja" (23807)
20201009_093143: Starting: "oci --cli-rc-file /dev/null compute instance l (...) ua" (5576)
20201009_093143: Starting: "oci --cli-rc-file /dev/null compute instance l (...) uq" (27866)
20201009_093143: Starting: "oci --cli-rc-file /dev/null compute instance l (...) qq" (18297)
20201009_093144: Starting: "oci --cli-rc-file /dev/null compute instance l (...) ka" (31984)
20201009_093145: Starting: "oci --cli-rc-file /dev/null compute instance l (...) 5a" (67)
20201009_093145: Starting: "oci --cli-rc-file /dev/null compute instance l (...) mq" (6427)
20201009_093226: Starting: "oci --cli-rc-file /dev/null compute instance l (...) nq" (11222)
20201009_093226: Starting: "oci --cli-rc-file /dev/null compute instance l (...) zq" (17582)
(...)
20201009_093250: END
```

```
$ cat computes.json | jq
{
  "data": [
    {
      "agent-config": {
        "is-management-disabled": false,
        "is-monitoring-disabled": false
      },
      "availability-config": {
        "recovery-action": "RESTORE_INSTANCE"
      },
      "availability-domain": "CYtq:US-ASHBURN-AD-3",
      "compartment-id": "ocid1.compartment.oc1..aaaaaaaa2adzntme6rvuim2xkiiupjyhizzul2bkxwb2zhsm",
      "dedicated-vm-host-id": null,
      "defined-tags": {
        "Oracle-Tags": {
          "CreatedBy": "oracleidentitycloudservice/rodrigo.araujo.jorge@gmail.com",
          "CreatedOn": "2020-05-20T14:54:00.387Z"
        }
      },
      "display-name": "oci360comp",
      "extended-metadata": {},
      "fault-domain": "FAULT-DOMAIN-1",
      "freeform-tags": {},
      "id": "ocid1.instance.oc1.iad.anuwcljtucm3wzaczuyxibymhvnhjxrtvcjwjylmmda22l4vjis72mvznyfa",
      "image-id": "ocid1.image.oc1.iad.aaaaaaaaahjkmmew2pjrcpylaf6zddtom6xjnazwptervti35keqd4fdy",
      "(more)
```

oci_json_export.sh ALL_REGIONS

- Will loop over all 142 resource types (and growing) on all the regions.
- Create a ZIP file with one JSON file for each resource.
- Extractor is ready. Now I have 142 json files..
- How to LOAD it in a Database ?



FIND A WAY TO EXTRACT ALL THE
METADATA WE HAVE IN OCI...

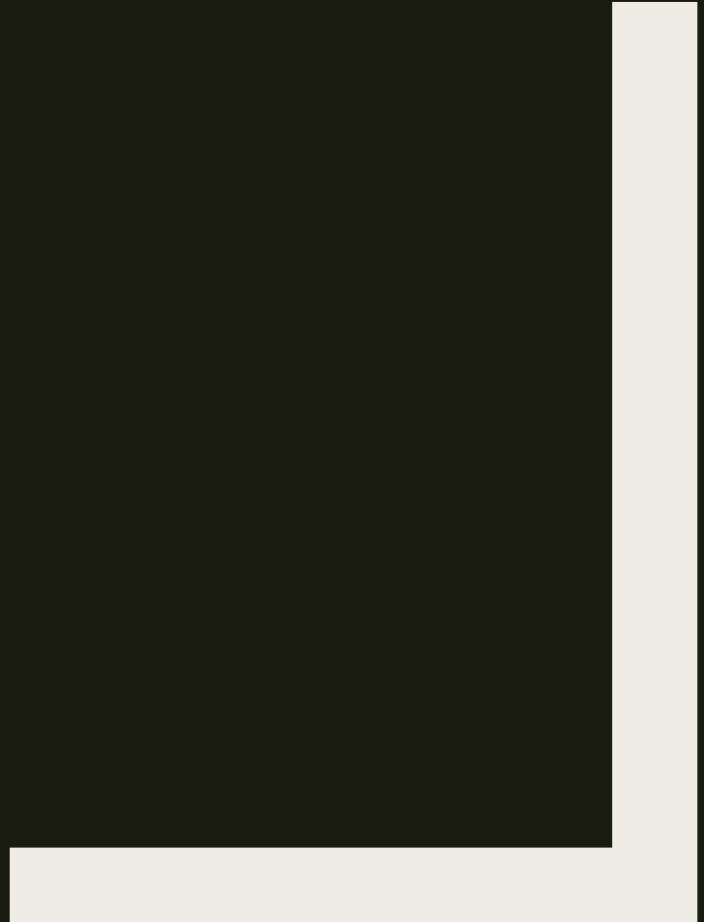


LOAD THIS METADATA
SOMEWHERE...



QUERY THIS DATA WITH SQL SO I
CAN BUILD ANY IMAGINABLE
REPORT!

LOAD



What I wanted?

```
AMAC02SJ3M7G8WN:temp rodrigo.jorge$ cat computes.json | jq .  
{  
  "data": [  
    {  
      "agent-config": {  
        "is-management-disabled": false,  
        "is-monitoring-disabled": false  
      },  
      "availability-domain": "CYtq:US-ASHBURN-AD-3",  
      "compartment-id": "ocid1.compartment.oc1..aaaaaaaa2adzntme6rvuim2xkiiupjyhizzul2bkxwb2zhsmxygmzdb75d4q",  
      "dedicated-vm-host-id": null,  
      "defined-tags": {  
        "Oracle-Tags": {  
          "CreatedBy": "oracleidentitycloudservice/rodrigo.araujo.jorge@gmail.com",  
          "CreatedOn": "2020-05-20T14:54:00.387Z"  
        }  
      },  
      "display-name": "oci360comp",  
      "extended-metadata": {},  
      "fault-domain": "FAULT-DOMAIN-1",  
      "freeform-tags": {},  
      "id": "ocid1.instance.oc1.iad.anuwcljtucm3wzacuyxibymvhnjxrtvcjwjylmmda2214vjis72mvznyfa",  
      "image-id": "ocid1.image.oc1.iad.aaaaaaaaahjkmmew2pjrcpylaf6zdddton6xjnawptervti35keqd4fdylca",  
      "ipxe-script": null,  
      "launch-mode": "PARAVIRTUALIZED",  
      "launch-options": {  
        "boot-volume-type": "PARAVIRTUALIZED",  
        "firmware": "UEFI_64",  
        "is-consistent-volume-naming-enabled": true,  
        "is-pv-encryption-in-transit-enabled": false,  
        "network-type": "PARAVIRTUALIZED",  
        "remote-data-volume-type": "PARAVIRTUALIZED"  
      },  
      "shape": "OC1-GR1",  
      "size": 1,  
      "state": "STOPPED",  
      "time-created": "2020-05-20T14:54:00.387Z",  
      "time-modified": "2020-05-20T14:54:00.387Z",  
      "volume-size": 1  
    }  
  ]  
}
```



SQL> desc OCI360_INSTANCES

Name	Null?	Type
ID		VARCHAR2(128)
SHAPE		VARCHAR2(32)
REGION		VARCHAR2(4)
IMAGE_ID		VARCHAR2(128)
METADATA\$SSH_AUTHORIZED_KEYS		VARCHAR2(512)
IPXE_SCRIPT		VARCHAR2(4)
LAUNCH_MODE		VARCHAR2(16)
SYSTEM_TAGS\$ORCL_CLOUD\$FREE_TIER_RETAINED		VARCHAR2(4)
AGENT_CONFIG\$IS_MANAGEMENT_DISABLED		VARCHAR2(8)
AGENT_CONFIG\$IS_MONITORING_DISABLED		VARCHAR2(8)
DEFINED_TAGS\$ORACLE_TAGS\$CREATEDBY		VARCHAR2(64)
DEFINED_TAGS\$ORACLE_TAGS\$CREATEDON		VARCHAR2(32)
DISPLAY_NAME		VARCHAR2(16)
FAULT_DOMAIN		VARCHAR2(16)

My options:

- I can use a JSON database and write "JSON" like queries.. (NOSQL)

OR

- I can convert those JSONs entirely into Relational Tables = DBMS_JSON

DBMS_JSON

- Only available from 12.2 onwards.
- **CREATE_VIEW_ON_PATH Procedure.**
 - *"Creates a view with relational columns, using top-level scalar values and the scalar values in the expanded sub-tree under a given path. The JSON column must have a data guide-enabled search index."*
- Getting better on latest 19c/20c release.
- Available in Autonomous Database!

Move JSON file inside the Database

```
-- Create table
CREATE TABLE T_TMP_JSON (
    C_TMP_JSON CLOB,
    CONSTRAINT CK_TMP_JSON CHECK (C_TMP_JSON IS JSON)
)
COMPRESS NOMONITORING
LOB(C_TMP_JSON) STORE AS SECUREFILE (COMPRESS HIGH);

-- Load Table
DECLARE
    l_blob BLOB;
BEGIN
    dbms_lob.createtemporary(l_blob, cache => true, dur => dbms_lob.call);

    l_blob := DBMS_CLOUD.GET_OBJECT(
        credential_name => 'OCI360_CRED',
        object_uri => 'https://objectstorage.us-ashburn-1.oraclecloud.com/n/idgimbpbaoa7/b/oci360_bucket/o/computes.json');

    INSERT INTO T_TMP_JSON (C_TMP_JSON)
    SELECT to_clob(l_blob, 871, 'text/json') FROM dual; -- 871 = UTF8

    COMMIT;

    -- Free temporary LOBs.
    DBMS_LOB.FREETEMPORARY(l_blob);

END;
/
```

Generate a View on JSON Path

```
-- Just to print the code on log file for troubleshooting.
SET PAGES 0 LONG 2000000000 LINES 10000
COL VIEW_CODE FOR A1000
SELECT DBMS_METADATA.GET_DDL('VIEW','V_TMP_JSON') VIEW_CODE
FROM DUAL
WHERE EXISTS (SELECT 1
               FROM   USER_VIEWS
              WHERE  VIEW_NAME = 'V_TMP_JSON');
SET PAGES 1000 LINES 80

-- Create index
CREATE SEARCH INDEX I_TMP_JSON
ON T_TMP_JSON (C_TMP_JSON) FOR JSON
PARAMETERS ('SEARCH_ON NONE DATAGUIDE ON');

-- Create view.
DECLARE
    empty_data_guide EXCEPTION;
    PRAGMA EXCEPTION_INIT(empty_data_guide , -40591);
BEGIN
    DBMS_JSON.CREATE_VIEW_ON_PATH(
        viewname  => 'V_TMP_JSON',
        tablename => 'T_TMP_JSON',
        jcolname  => 'C_TMP_JSON',
        path      => '$.data',
        frequency => 0);
EXCEPTION
    WHEN empty_data_guide THEN
        DBMS_OUTPUT.PUT_LINE('Empty JSON. '); -- handle the error
END;
/
```

Create the Table over the View

```
-- Create table.  
CREATE TABLE OCI360_COMPUTES  
COMPRESS FOR QUERY HIGH NOMONITORING  
AS  
SELECT *  
FROM V_TMP_JSON;  
  
-- Query  
select "C_TMP_JSON$displayname" Name,  
      "C_TMP_JSON$ocpus" OCPUs,  
      "C_TMP_JSON$shape" Shape  
from OCI360_COMPUTES;
```

NAME	OCPUS	SHAPE
oci360comp	1	VM.Standard.E2.1.Micro

DBMS_JSON

DEMO


```
$ oci os object put --bucket-name oci360_bucket --file computes.json
```

|

```
$ oci os object put --bucket-name oci360_bucket --file computes.json
Uploading object [########################################] 100%
{
  "etag": "9eb47251-173f-481b-be55-3e38408b3e36",
  "last-modified": "Fri, 09 Oct 2020 14:16:12 GMT",
  "opc-content-md5": "+G2pcj2NJTfzUFk5ZrBZTw=="
}
$ |
```

SQL> |

```
SQL> CREATE TABLE T_TMP_JSON (
 2   C_TMP_JSON CLOB,
 3   CONSTRAINT CK_TMP_JSON CHECK (C_TMP_JSON IS JSON)
 4 )
 5 COMPRESS NOMONITORING
 6 LOB(C_TMP_JSON) STORE AS SECUREFILE (COMPRESS HIGH);
```

Table created.

```
SQL> |
```

```
SQL> DECLARE
  2    l_blob BLOB;
  3  BEGIN
  4    dbms_lob.createtemporary(lob_loc => l_blob, cache => true, dur => dbms_lob.call);
  5
  6    l_blob := DBMS_CLOUD.GET_OBJECT(
  7        credential_name => 'OCI360_CRED',
  8        object_uri => 'https://objectstorage.us-ashburn-1.oraclecloud.com/n/idgimbpbaoa7/
  9
 10   INSERT INTO T_TMP_JSON (C_TMP_JSON)
 11   SELECT to_clob(l_blob, 871, 'text/json') FROM dual; -- 871 = UTF8
 12
 13   COMMIT;
 14
 15   -- Free temporary LOBs.
 16   DBMS_LOB.FREETEMPORARY(l_blob);
 17
 18 END;
 19 /
```

```
SQL> DECLARE
  2    l_blob BLOB;
  3  BEGIN
  4    dbms_lob.createtemporary(lob_loc => l_blob, cache => true, dur => dbms_lob.call);
  5
  6    l_blob := DBMS_CLOUD.GET_OBJECT(
  7        credential_name => 'OCI360_CRED',
  8        object_uri => 'https://objectstorage.us-ashburn-1.oraclecloud.com/n/idgimbpbaoa7/
  9
 10   INSERT INTO T_TMP_JSON (C_TMP_JSON)
 11   SELECT to_clob(l_blob, 871, 'text/json') FROM dual; -- 871 = UTF8
 12
 13   COMMIT;
 14
 15   -- Free temporary LOBs.
 16   DBMS_LOB.FREETEMPORARY(l_blob);
 17
 18 END;
 19 /
```

PL/SQL procedure successfully completed.

SQL> |

```
SQL> select * from T_TMP_JSON;
```

```
C_TMP_JSON
```

```
-----  
{  
  "data": [  
    {  
      "agent-config": {  
        "is-management-disabled": fa
```

```
SQL> |
```

```
SQL> select * from T_TMP_JSON;
```

```
C_TMP_JSON
```

```
-----  
{  
  "data": [  
    {  
      "agent-config": {  
        "is-management-disabled": fa
```

```
SQL> SELECT COUNT(*) FROM T_TMP_JSON;
```

```
COUNT(*)
```

```
-----  
 1
```

```
SQL> |
```

```
SQL> CREATE SEARCH INDEX I_TMP_JSON  
2  ON T_TMP_JSON (C_TMP_JSON) FOR JSON  
3  PARAMETERS ('SEARCH_ON NONE DATAGUIDE ON');
```

```
SQL> CREATE SEARCH INDEX I_TMP_JSON  
2  ON T_TMP_JSON (C_TMP_JSON) FOR JSON  
3  PARAMETERS ('SEARCH_ON NONE DATAGUIDE ON');
```

Index created.

```
SQL> |
```

```
SQL> DECLARE
 2      empty_data_guide EXCEPTION;
 3      PRAGMA EXCEPTION_INIT(empty_data_guide , -40591);
 4  BEGIN
 5      DBMS_JSON.CREATE_VIEW_ON_PATH(
 6          viewname => 'V_TMP_JSON',
 7          tablename => 'T_TMP_JSON',
 8          jcolname => 'C_TMP_JSON',
 9          path =>      '$.data',
10          frequency => 0);
11  EXCEPTION
12      WHEN empty_data_guide THEN
13          DBMS_OUTPUT.PUT_LINE('Empty JSON.');
14  END;
15 /
```

PL/SQL procedure successfully completed.

```
SQL> |
```

```
SQL> SET PAGES 0
SQL> SET LONG 2000000000
SQL> SET LINES 10000
SQL> COL VIEW_CODE FOR A1000
SQL> SELECT DBMS_METADATA.GET_DDL('VIEW','V_TMP_JSON') VIEW_CODE
2 FROM DUAL
3 WHERE EXISTS (SELECT 1
4                 FROM   USER_VIEWS
5                 WHERE   VIEW_NAME = 'V_TMP_JSON');
```

```
SQL> SET PAGES 0
SQL> SET LONG 2000000000
SQL> SET LINES 10000
SQL> COL VIEW_CODE FOR A1000
SQL> SELECT DBMS_METADATA.GET_DDL('VIEW','V_TMP_JSON') VIEW_CODE
2 FROM DUAL
3 WHERE EXISTS (SELECT 1
4                 FROM   USER_VIEWS
5                 WHERE   VIEW_NAME = 'V_TMP_JSON');
```

```
CREATE OR REPLACE FORCE EDITIONABLE VIEW "DBARJ"."V_TMP_JSON" ("C_TMP_JSON$id", "C_TMP_JSON$imageid_1", "C_TMP_JSON$kmskeyid", "C_TMP_JSON$sourcetype", "C_TMP_JSON$bootvolumesizeingbs"
  SELECT JT."C_TMP_JSON$id",JT."C_TMP_JSON$shape",JT."C_TMP_JSON$region",JT."C_TMP_JSON$imag
"C_TMP_JSON$imageid_1",JT."C_TMP_JSON$kmskeyid",JT."C_TMP_JSON$sourcetype",JT."C_TMP_JSON$bo
FROM "DBARJ"."T_TMP_JSON" RT,
JSON_TABLE("C_TMP_JSON" FORMAT JSON, '$' COLUMNS
  NESTED PATH '$.data[*]' COLUMNS
  ("C_TMP_JSON$id" varchar2(128) path '$.id',
  "C_TMP_JSON$shape" varchar2(32) path '$.shape',
  "C_TMP_JSON$region" varchar2(4) path '$.region',
  "C_TMP_JSON$imageid" varchar2(128) path '$."image-id"',
  "C_TMP_JSON$ssh_authorized_keys" varchar2(512) path '$.metadata.ssh_authorized_keys',
  "C_TMP_JSON$ipxscript" varchar2(4) path '$."ipxe-script"',
  "C_TMP_JSON$launchmode" varchar2(16) path '$."launch-mode"',
  (more)
```

SQL> |

```
SQL> CREATE TABLE OCI360_COMPUTES  
2  COMPRESS FOR QUERY HIGH NOMONITORING  
3  AS  
4  SELECT *  
5  FROM V_TMP_JSON;
```

Table created.

```
SQL> |
```

```
SQL> CREATE TABLE OCI360_COMPUTES  
2  COMPRESS FOR QUERY HIGH NOMONITORING  
3  AS  
4  SELECT *  
5  FROM V_TMP_JSON;
```

Table created.

```
SQL> select "C_TMP_JSON$displayname" Name,  
2      "C_TMP_JSON$ocpus" OCPUs,  
3      "C_TMP_JSON$shape" Shape  
4  from OCI360_COMPUTES;
```

NAME	OCPUS	SHAPE
oci360comp	1	VM.Standard.E2.1.Micro

```
SQL> |
```

So now how do I load'em all?!

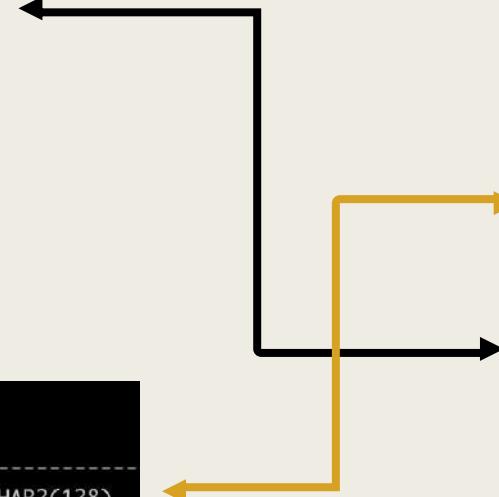
- FOR *file* in < oci_json_export.sh output ZIP >
 - Call LOAD SQL:
 - Move Json Inside the Database.
 - Generate View on Json PATH.
 - Create the final Table over the View.

Finally I have the OCI metadata model

```
SQL> desc OCI360_INSTANCES
      Name          Null?    Type
-----+-----+-----+
  ID           VARCHAR2(128)
  SHAPE        VARCHAR2(32)
  REGION       VARCHAR2(4)
  IMAGE_ID     VARCHAR2(128)
  METADATA$SSH_AUTHORIZED_KEYS VARCHAR2(512)
  iPXE_SCRIPT  VARCHAR2(4)
  LAUNCH_MODE  VARCHAR2(16)
  SYSTEM_TAGS$ORCL_CLOUD$FREE_TIER_RETAINED VARCHAR2(4)
  AGENT_CONFIG$IS_MANAGEMENT_DISABLED VARCHAR2(8)
  AGENT_CONFIG$IS_MONITORING_DISABLED VARCHAR2(8)
  DEFINED_TAGS$ORACLE_TAGS$CREATEDBY VARCHAR2(64)
  DEFINED_TAGS$ORACLE_TAGS$CREATEDON VARCHAR2(32)
  DISPLAY_NAME  VARCHAR2(16)
  FAULT_DOMAIN  VARCHAR2(16)
```

```
SQL> desc OCI360_VNICS
      Name          Null?    Type
-----+-----+-----+
  ID           VARCHAR2(128)
  NSG_IDS      VARCHAR2(4000)
  PUBLIC_IP    VARCHAR2(16)
  SUBNET_ID    VARCHAR2(128)
  IS_PRIMARY    VARCHAR2(4)
  PRIVATE_IP   VARCHAR2(16)
  MAC_ADDRESS  VARCHAR2(32)
```

```
SQL> desc OCI360_VNIC_ATTACHS
      Name          Null?    Type
-----+-----+-----+
  ID           VARCHAR2(128)
  VNIC_ID      VARCHAR2(128)
  VLAN_TAG    NUMBER
  NIC_INDEX    NUMBER
  SUBNET_ID    VARCHAR2(128)
  INSTANCE_ID  VARCHAR2(128)
  DISPLAY_NAME VARCHAR2(4)
  TIME_CREATED VARCHAR2(32)
  COMPARTMENT_ID VARCHAR2(128)
  LIFECYCLE_STATE VARCHAR2(8)
  AVAILABILITY_DOMAIN VARCHAR2(32)
```



```
SQL> select table_name
      from user_tables
     where table_name like 'OCI360_%'
   order by 1;
```

SQL> |

```
SQL> select table_name  
2      from user_tables  
3  where table_name like 'OCI360_%'  
4  order by 1;
```

```
SQL> select table_name  
2      from user_tables  
3  where table_name like 'OCI360_%'  
4  order by 1;
```

TABLE_NAME

```
-----  
OCI360_ACCOUNTDETAILS  
OCI360_ADS  
OCI360_AUDIT_EVENTS  
OCI360_AUTH_TOKEN  
OCI360_AUTONOMOUS_DB  
OCI360_AUTONOMOUS_DB_BKP  
OCI360_BACKUPS  
OCI360_BDS_INSTANCES  
OCI360_BKP_POLICY  
OCI360_BKP_POLICY_ASSIGN  
OCI360_BUCKETS  
(...)
```

118 rows selected.

SQL> |

All Instances and their primary IPs ?

```
SELECT distinct t1.id,
   t1.display_name,
   t1.shape,
   t1.region,
   t1.availability_domain,
   t1.lifecycle_state,
   t3.display_name image_name,
   t3.operating_system,
   t3.operating_system_version,
   t1.fault_domain,
   t1.time_created,
   t2.name compartment_name,
   t5.private_ip ip_address_pri_primary,
   t5.public_ip ip_address_pub_primary
FROM    OCI360_INSTANCES t1, OCI360_COMPARTMENTS t2, OCI360_IMAGES t3, OCI360_VNIC_ATTACHS
t4, OCI360_VNICS t5
WHERE   t1.image_id = t3.id (+)
AND     t1.compartment_id = t2.id (+)
AND     t1.id = t4.instance_id
AND     t4.lifecycle_state = 'ATTACHED'
AND     t4.vnic_id = t5.id
AND     t5.is_primary = 'true'
AND     t5.lifecycle_state = 'AVAILABLE';
```

Total storage usage per compute ?

```
WITH t1 AS (SELECT * FROM oci360_instances),
      t2 AS (SELECT * FROM oci360_vol_attachs),
      t3 AS (SELECT * FROM oci360_volumes),
      t4 AS (SELECT * FROM oci360_bv_attachs),
      t5 AS (SELECT * FROM oci360_bvolumes)
SELECT t1.display_name           INSTANCE_NAME,
       COUNT(*)                  TOTAL_VOLS,
       TO_NUMBER(t5.size_in_gbs) BOOTVOL_SIZE_GBS,
       SUM(nvl(t3.size_in_gbs,0)) VOL_SIZE_GBS,
       t5.size_in_gbs + SUM(nvl(t3.size_in_gbs,0)) TOTAL_SIZE_GBS,
       t1.id                      INSTANCE_ID
FROM    t1, t2, t3, t4, t5
WHERE   t1.id = t2.instance_id(+)
AND     t2.volume_id = t3.id(+)
AND     t2.lifecycle_state(+) = 'ATTACHED'
AND     t1.id = t4.instance_id
AND     t4.boot_volume_id = t5.id
GROUP  BY t1.id, t1.display_name, t5.size_in_gbs
ORDER  BY total_size_gbs DESC;
```

of used IPs per subnet ?

```
SELECT tsub.display_name,
       tvcn.DISPLAY_NAME VCN_NAME,
       tcomp.NAME COMPARTMENT_NAME,
       tsub.cidr_block,
       power(2,32-substr(tsub.cidr_block,instr(tsub.cidr_block,'/')+1))-3 TOTAL_AVAILABLE,
       count(tpip.id) TOTAL_USED,
       power(2,32-substr(tsub.cidr_block,instr(tsub.cidr_block,'/')+1))-3 - count(tpip.id)
TOTAL_FREE,
       tsub.id
FROM   (SELECT distinct id, compartment_id, vcn_id, display_name, cidr_block FROM
OCI360_SUBNETS) tsub,
       OCI360_PRIVATEIPS tpip,
       OCI360_COMPARTMENTS tcomp,
       OCI360_VCNS tvcn
WHERE  substr(tsub.id,instr(tsub.id,'.',1,3)+1,instr(tsub.id,'.',1,4)-
instr(tsub.id,'.',1,3)-1) = 'iad'
AND    tsub.compartment_id = tcomp.ID
AND    tsub.id = tpip.SUBNET_ID (+)
AND    tsub.VCN_ID = tvcn.ID
GROUP BY tsub.display_name,
         tsub.cidr_block,
         tsub.id,
         tcomp.NAME,
         tvcn.DISPLAY_NAME;
```

SQL> |

```
SQL> SELECT tsub.display_name,
2      tvcn.DISPLAY_NAME VCN_NAME,
4      tsub.cidr_block,
5      power(2,32-substr(tsub.cidr_block,instr(tsub.cidr_block,'/')+1))-3 TOTAL_AVAIL,
6      count(tpip.id) TOTAL_USED,
7      power(2,32-substr(tsub.cidr_block,instr(tsub.cidr_block,'/')+1))-3 - count(tpip.i
8  FROM   (SELECT distinct id, compartment_id, vcn_id, display_name, cidr_block FROM OCI36
9        OCI360_PRIVATEIPS tpip,
10        OCI360_COMPARTMENTS tcomp,
11        OCI360_VCNS tvcn
12 WHERE substr(tsub.id,instr(tsub.id,'.',1,3)+1,instr(tsub.id,'.',1,4)-instr(tsub.id,'.'
13 AND tsub.compartment_id = tcomp.ID
14 AND tsub.id = tpip.SUBNET_ID (+)
15 AND tsub.VCN_ID = tvcn.ID
16 GROUP BY tsub.display_name,
17          tsub.cidr_block,
18          tsub.id,
19          tcomp.NAME,
20          tvcn.DISPLAY_NAME;
```

DISPLAY_NAME	VCN_NAME	CIDR_BLOCK	TOTAL_AVAIL	TOTAL_USED	TOTAL_FREE
bastion	rwj1	10.0.3.0/24	253	1	252
database	rwj1	10.0.1.0/24	253	1	252
acolvrj_subne	acolvin_vcn	10.100.6.0/24	253	1	252
private-subne	MBACHVCN2	10.0.4.0/24	253	0	253
lb-subnet-FfL	svc-vcn	10.0.64.0/20	4093	0	4093
demo-hub-acce	demo-hub	10.100.1.0/28	13	0	13
subnet3-priva	VCN-TEST1	192.168.20.0/24	253	0	253
rk_scl_prv_ap	gw_scl_vcn	10.9.0.192/26	61	4	57
rl_scl_prv_db	gw_scl_vcn	10.9.0.128/26	61	2	59
matt_subnet2	mattvcn	10.0.1.0/24	253	2	251
web	rwj1	10.0.2.0/24	253	3	250
database	rwj2	192.168.0.0/24	253	1	252
demo-hub-rj-t	demo-hub	10.100.2.0/28	13	1	12
acolvrj_subne	acolvin_vcn	10.100.3.0/24	253	0	253
Public Subnet	sample-tst-vcn	10.0.0.0/24	253	0	253
Private Subne	jonas_vcn	10.0.1.0/24	253	0	253
matt_subnet1	mattvcn	10.0.0.0/24	253	0	253
jonas_vcn_tes	jonas_vcn	10.0.3.0/24	253	0	253
asset-subnet	aeg_assets_vcn	10.20.10.0/24	253	4	249
Private Subne	sample-tst-vcn	10.0.1.0/24	253	0	253

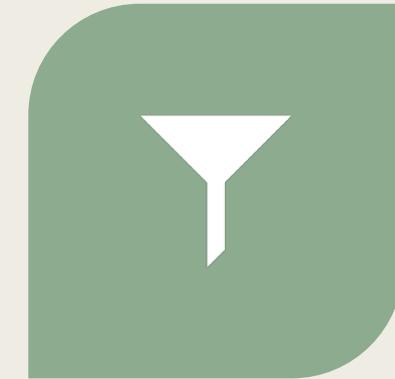
20 rows selected.



FIND A WAY TO EXTRACT ALL THE
METADATA WE HAVE IN OCI...

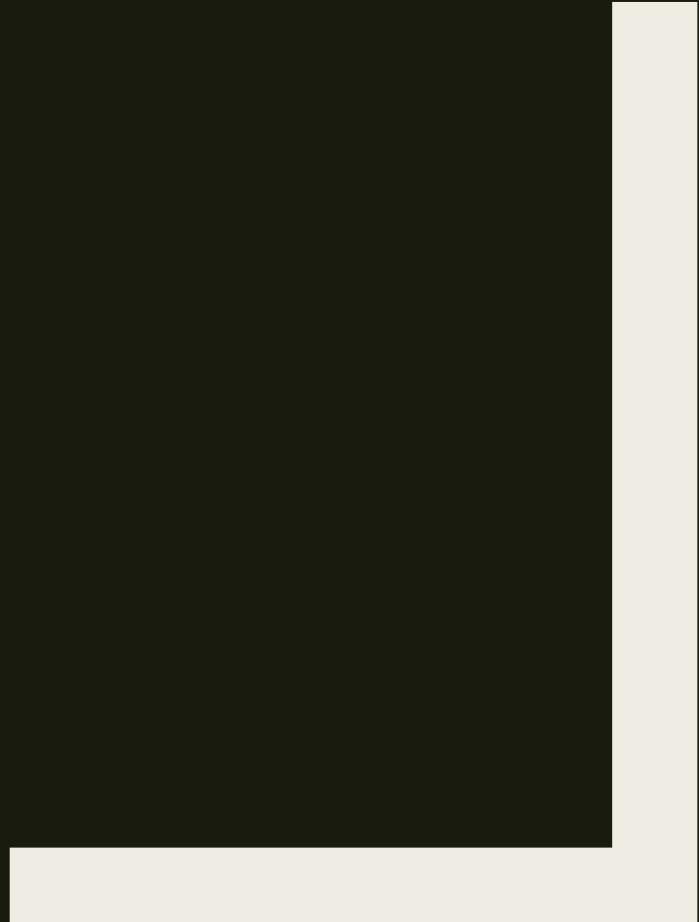


LOAD THIS METADATA
SOMEWHERE...



QUERY THIS DATA WITH SQL SO I
CAN BUILD ANY IMAGINABLE
REPORT!

REPORT



MOAT369 !

- Mother of All Tools 369
- HTML sqlplus API created based on edb360.
- GPL v3
- Use Google Charts + D3.js
- <https://github.com/dbarj/moat369>

GitHub - dbarj/moat369: Moth

github.com/dbarj/moat369

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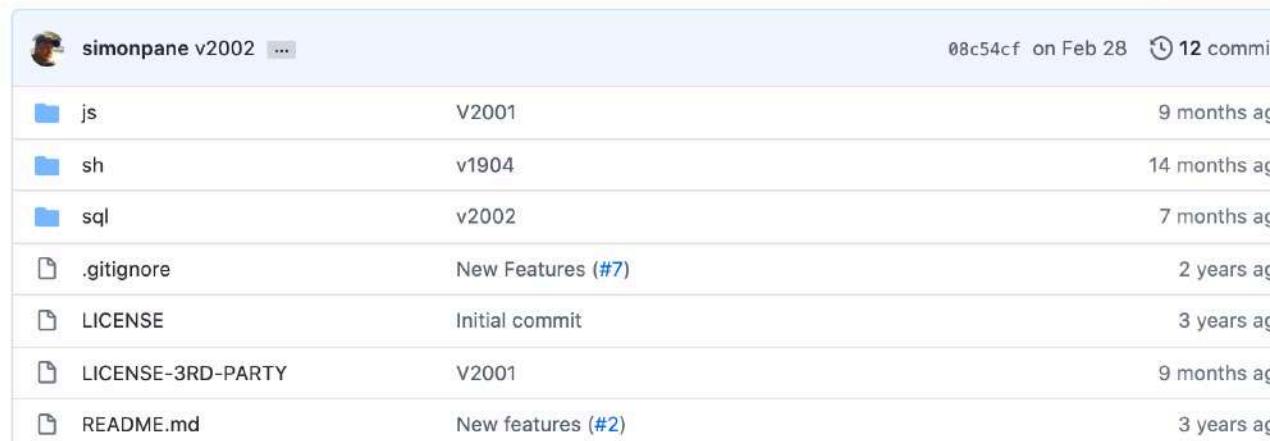
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**simonpane v2002** 08c54cf on Feb 28 12 commits

File	Commit Message	Time Ago
js	v2001	9 months ago
sh	v1904	14 months ago
sql	v2002	7 months ago
.gitignore	New Features (#7)	2 years ago
LICENSE	Initial commit	3 years ago
LICENSE-3RD-PARTY	V2001	9 months ago
README.md	New features (#2)	3 years ago

README.md

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Contributors 2

 dbarj Rodrigo Jorge

 simonpane Simon Pane



OCI360

What is OCI360 ?

- Extractor + Loader + Reporter in one single place.
- Collects OCI Metadata (no computes / volumes data).
- Develops a user friendly and comprehensive view of your tenancy.
- Provides insights about the current configuration and future growth projections.
- Provides a human readable output of your cloud state that allows quicker analysis and faster optimization or resources.

Where is the tool?

- Download:
 - <https://github.com/dbarj/oci360>
- Instructions (Wiki):
 - <https://github.com/dbarj/oci360/wiki>
- Sample Report:
 - <http://oci360.dbarj.com.br/>

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	shane-borden	Update oci360_fc_oci_extra_tables.sql	8317200 13 days ago
	js	v2002 (#2)	9 months ago
	moat369	v20.06	3 months ago
	sh	v20.06	3 months ago
	sql	Update oci360_fc_oci_extra_tables.sql	13 days ago
	.gitignore	v2001 (#1)	9 months ago
	CHANGELOG.md	v20.06	3 months ago
	LICENSE	v2001 (#1)	9 months ago
	LICENSE-3RD-PARTY	v2001 (#1)	9 months ago
	README.md	v20.06	3 months ago
	oci360.sql	v2001 (#1)	9 months ago

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Clone
HTTPS GitHub CLI
<https://github.com/dbarj/oci360.git>

Use Git or checkout with SVN using the web URL.

Open with GitHub Desktop

Download ZIP

shane-borden Update oci360_fc_oci_extra_tables.sql

- js v2002 (#2)
- moat369 v20.06
- sh v20.06
- sql Update oci360_fc_oci_extra_tables.sc v2001 (#1)
- .gitignore v2001 (#1)
- CHANGELOG.md v20.06
- LICENSE v2001 (#1)
- LICENSE-3RD-PARTY v2001 (#1)
- README.md v20.06
- oci360.sql v2001 (#1)

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<https://github.com/dbarj/oci360/archive/master.zip>



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 shane-borden Update oci360_fc_oci_extra_tables.sql			8317200 13 days ago	9 commits
 js v2002 (#2)			9 months ago	
 moat369 v20.06			3 months ago	
 sh v20.06			3 months ago	
 sql Update oci360_fc_oci_extra_tables.sql			13 days ago	
 .gitignore v2001 (#1)			9 months ago	
 CHANGELOG.md v20.06			3 months ago	
 LICENSE v2001 (#1)			9 months ago	
 LICENSE-3RD-PARTY v2001 (#1)			9 months ago	
 README.md v20.06			3 months ago	
 oci360.sql v2001 (#1)			9 months ago	

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Home

Rodrigo Jorge edited this page on Jan 17 · 16 revisions

Welcome to the OCI360 wiki!

Here I document everything there is to know for you to run OCI360 very easily!

What is OCI360?

Oracle Cloud Infrastructure 360° View is a free open-source framework and tool to generate fancy html output of your tenancy that allows for quick analysis of an existing cloud estate to better optimize the use of cloud resources. You can also adapt it to generate your own queries and create some custom reports over your OCI tenancy.

The tool installs nothing and all it needs is a database schema to generate and read your tenancy model (more info below). It takes around 30 minutes to execute.

Output ZIP file can be large (several MBs), so you may want to execute OCI360 from a system directory with at least 1 GB of free space.

OCI360 uses [moat369](#) API to generate html and graphs output. If you are familiar to edb360 and sqld360, you will notice they all have the same Look'n Feel.

For a sample full report from my tenancy, check <http://oci360.dbarj.com.br/>.

How does it work?

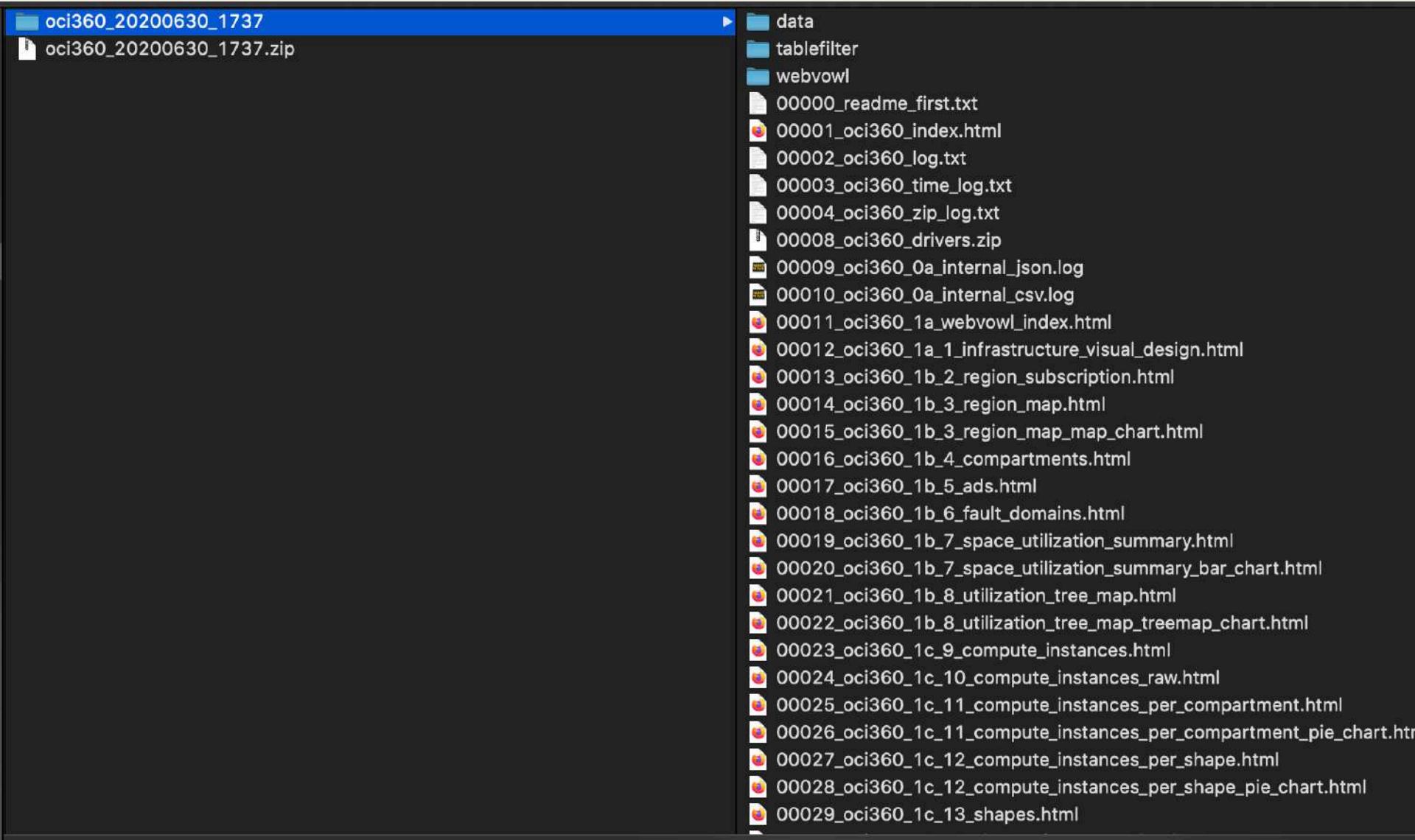
OCI360 will load and convert all the JSON information of your OCI tenancy into Oracle Database tables and views, creating a full metadata structured model. After the model is created on your database, it will query those tables and create reports about your OCI.

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Find a Page...
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Automate OCI360 18c XE
Automate OCI360 ADB
Control Variables
Database Requirements
DB User Privileges
Execution Steps
Execution Steps ADB
FAQ
Optional Audit Info
Optional Portal Account Metering Info
Optional Usage and Cost Info
Oracle Database 18c XE
Oracle Database ADB
Sample Sections



OCI360 Output is a zip file with all your tenancy info!

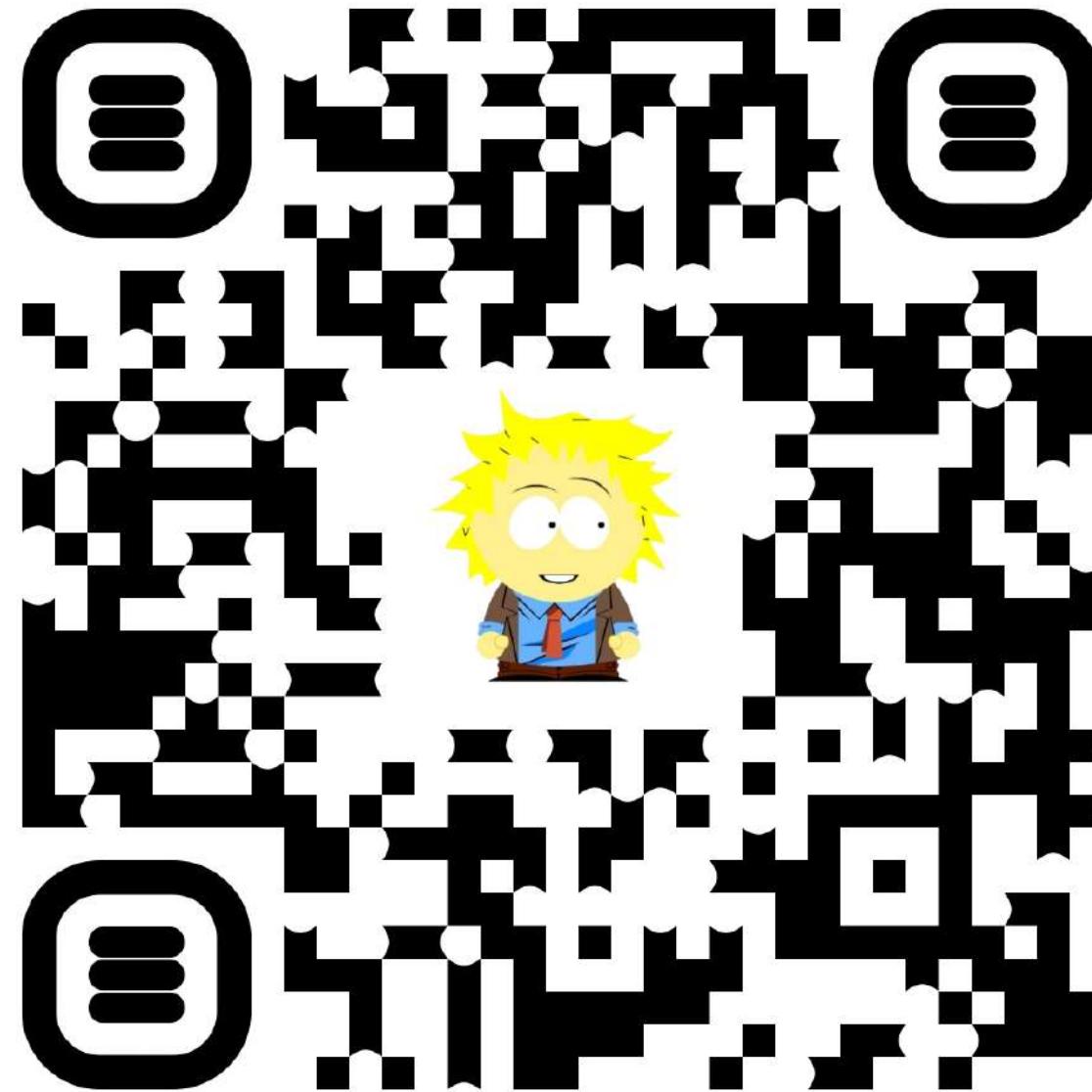


OCI360 Output

oci360 v1903: Enkitec 360-degree Full View on Oracle Cloud Infrastructure.

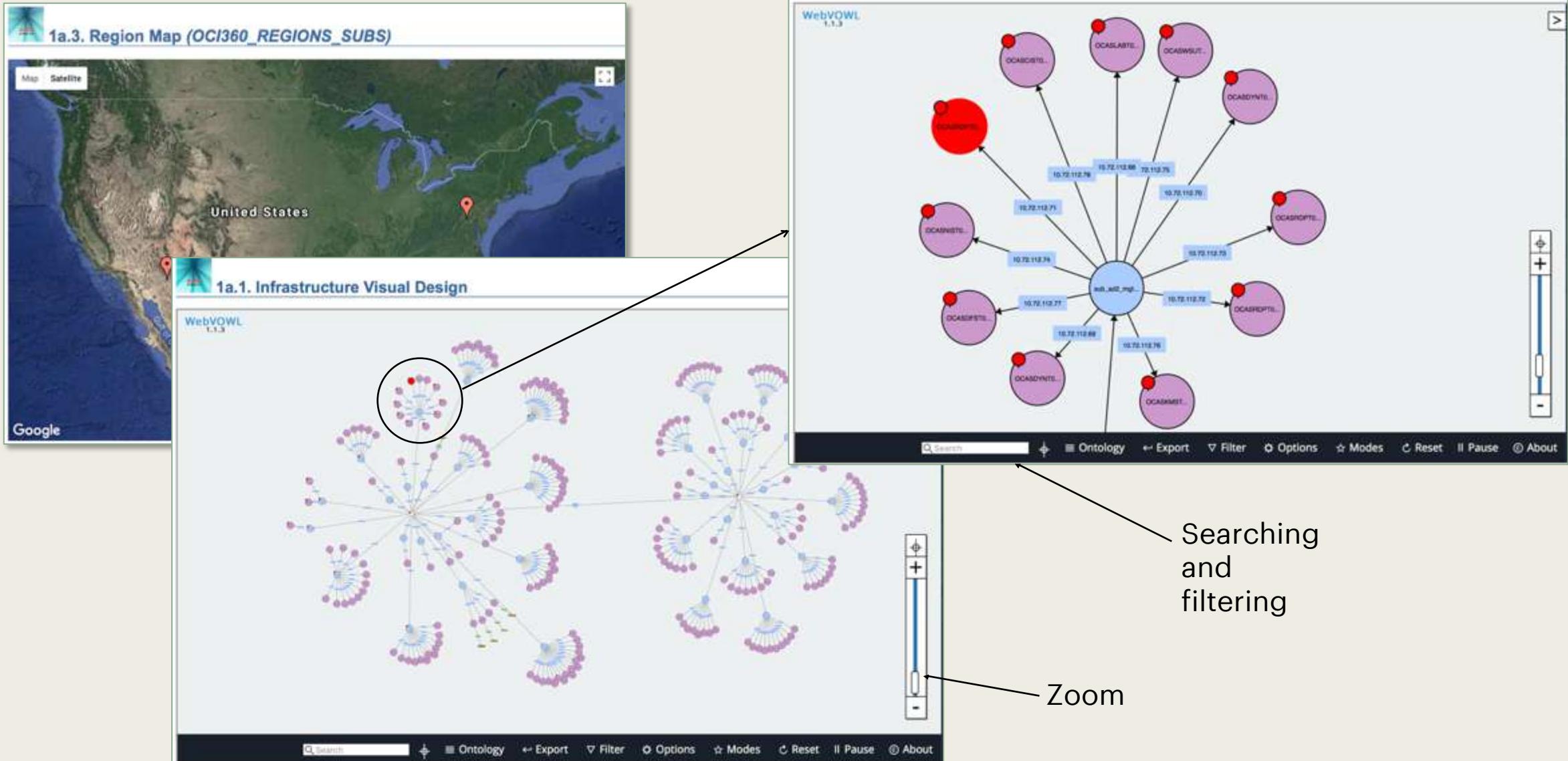
This report covers the time interval between 2019-01-11 and 2019-02-12. Days:31. Timestamp:2019-02-11/11:27:16.

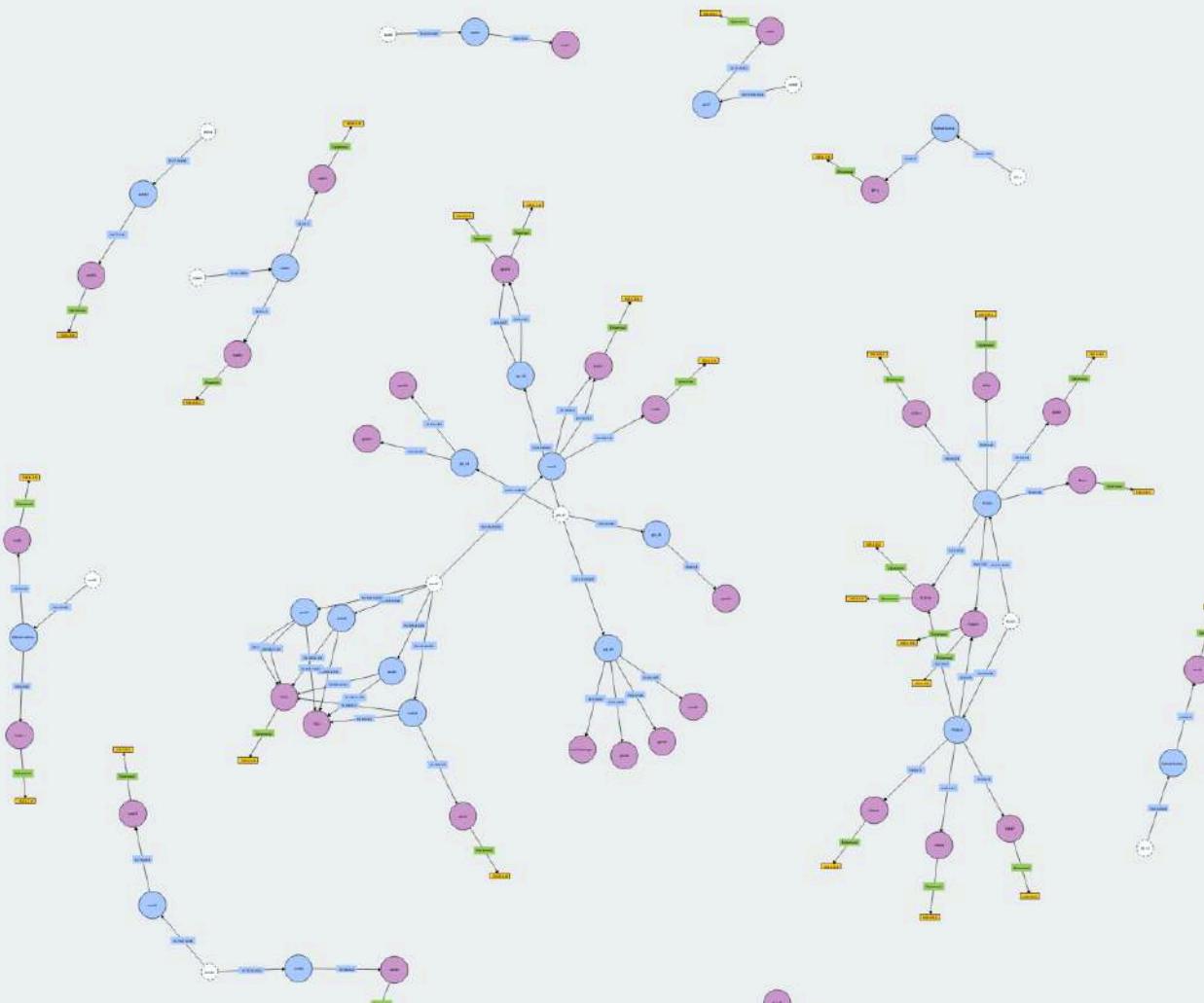
1/8	2/8	3/8	4/8	5/8
 <p>1a. OCI Infrastructure</p> <ul style="list-style-type: none"> 1. Infrastructure Visual Design html (1) <p>1b. Tenancy Information</p> <ul style="list-style-type: none"> 2. Region Subscription html (5) 3. Region Map html map (4) 4. Compartments html (18) 5. ADs html (13) 6. Fault Domains html (702) 7. Space Utilization Summary html bar (5) 8. Utilization Tree Map html treemap (226) <p>1c. Compute Instances</p> <ul style="list-style-type: none"> 9. Compute Instances html (36) 10. Compute Instances - Raw html (36) 11. Compute Instances per Compartment html pie (6) 12. Compute Instances per Shape html pie (7) 13. Shapes html (28) 14. Shapes per Compartment html (504) 15. Console Connections html (13) 16. Console History html (-1) 17. Instance Costs estimations html (36) <p>1d. Compute Management</p> <ul style="list-style-type: none"> 18. Instance Configurations html (-1) 19. Instance Configuration Deferred Fields html (-1) 20. Instance Configuration Details html (-1) 21. 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Policies html (54) 207. Protocols html (54) 208. Shapes html (54) 209. Work Requests html (-1) <p>4b. DNS Zones</p> <ul style="list-style-type: none"> 210. Zones html (10) <p>4c. Email Delivery</p> <ul style="list-style-type: none"> 211. Approved senders html (-1) 212. Email suppression html (-1) <p>5a. Identity and Access Management</p> <ul style="list-style-type: none"> 213. Users html (9) 214. Groups html (35) 215. Dynamic Groups html (2) 216. Policies html (14) 217. Policy Statements html (58) 218. Users Auth Tokens html (1) 219. Users SMTP Credentials html (-1) 220. Users Secret Keys html (3) 221. All Regions html (5) 222. Tags html (14) 223. Tag Namespaces html (5) 224. Work Requests html (-1) <p>5b. Audit</p> <ul style="list-style-type: none"> 225. Audit Events html (-1) 226. Request Events per User html (-1) <p>5c. Key Management Service</p> <ul style="list-style-type: none"> 227. Vaults html (-1) 228. Keys html (-1) 229. Key Versions html (-1) 230. Boot-Volume Keys html (-1) 231. Volume Keys html (-1) <p>5d. Cloud Billing</p> <ul style="list-style-type: none"> 232. Service Entitlements html (54) 233. Service Resources html (604) 234. Resources Unit Prices html pie (6) 235. Cost division per Service html pie (5) 236. Cost division per Resource html pie (15) 237. Cost per Hour html line (1434) 238. Cost per Day html line (59) 239. Used Quota html line (1296) 240. Last Computed Usage Costs html (2000) 241. Last Computed Usage Costs Tagged html (2000) 242. Last Computed Usage html (2000) 243. Usage Tags html (88) 244. Account Details html (-1) 245. Account Balance html (12) 246. Account Purchase html (12) 247. Account Running Balance html (12) 248. Check Quota html (755) 249. Promotions html (-1) 250. Cloud Limits html (-1) 251. Raw Computed Usage Costs Tagged csv (16961) 				



Sample output for OCI360 Network topology

Example: Network topology



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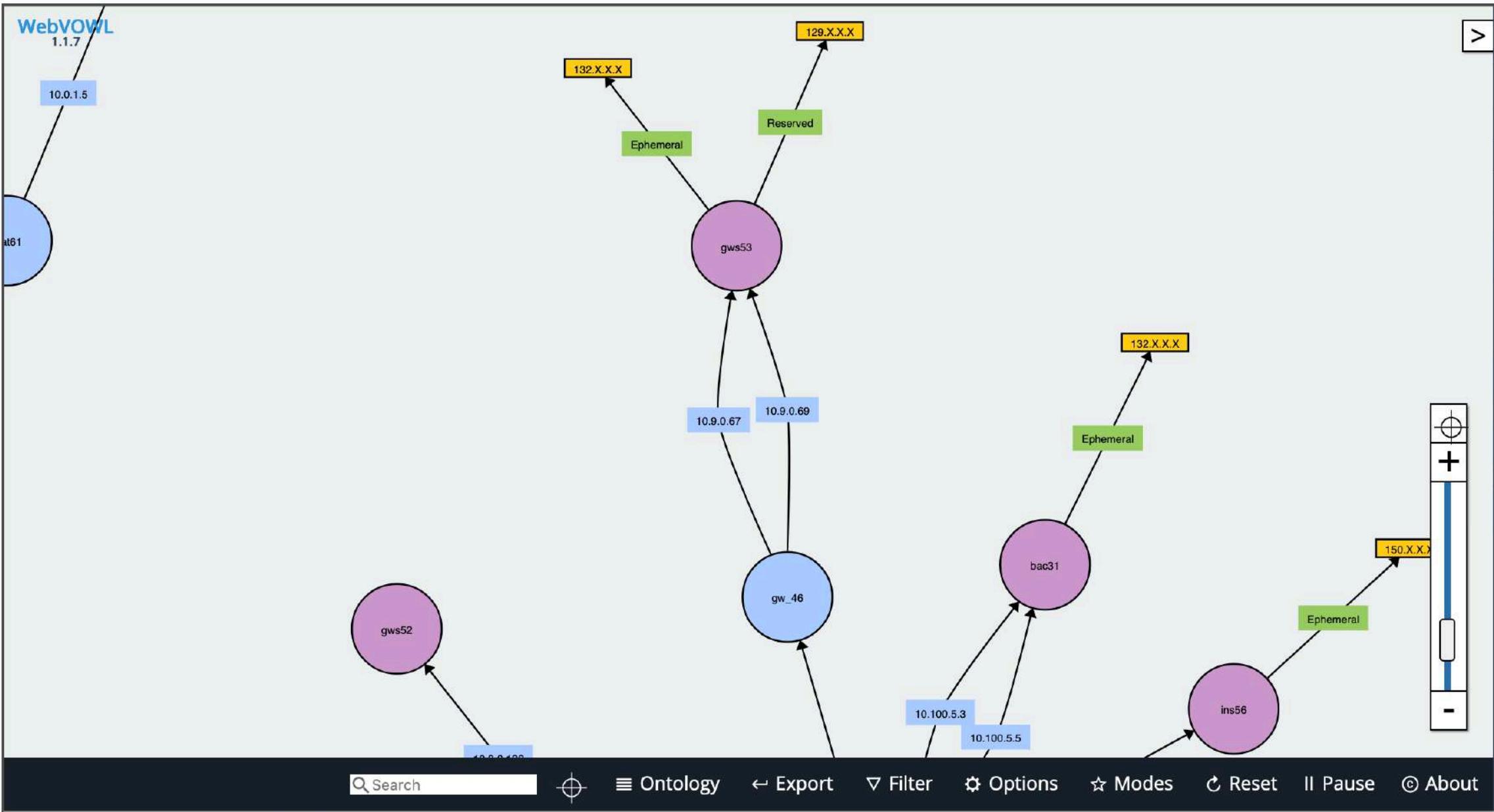
⚙ Options

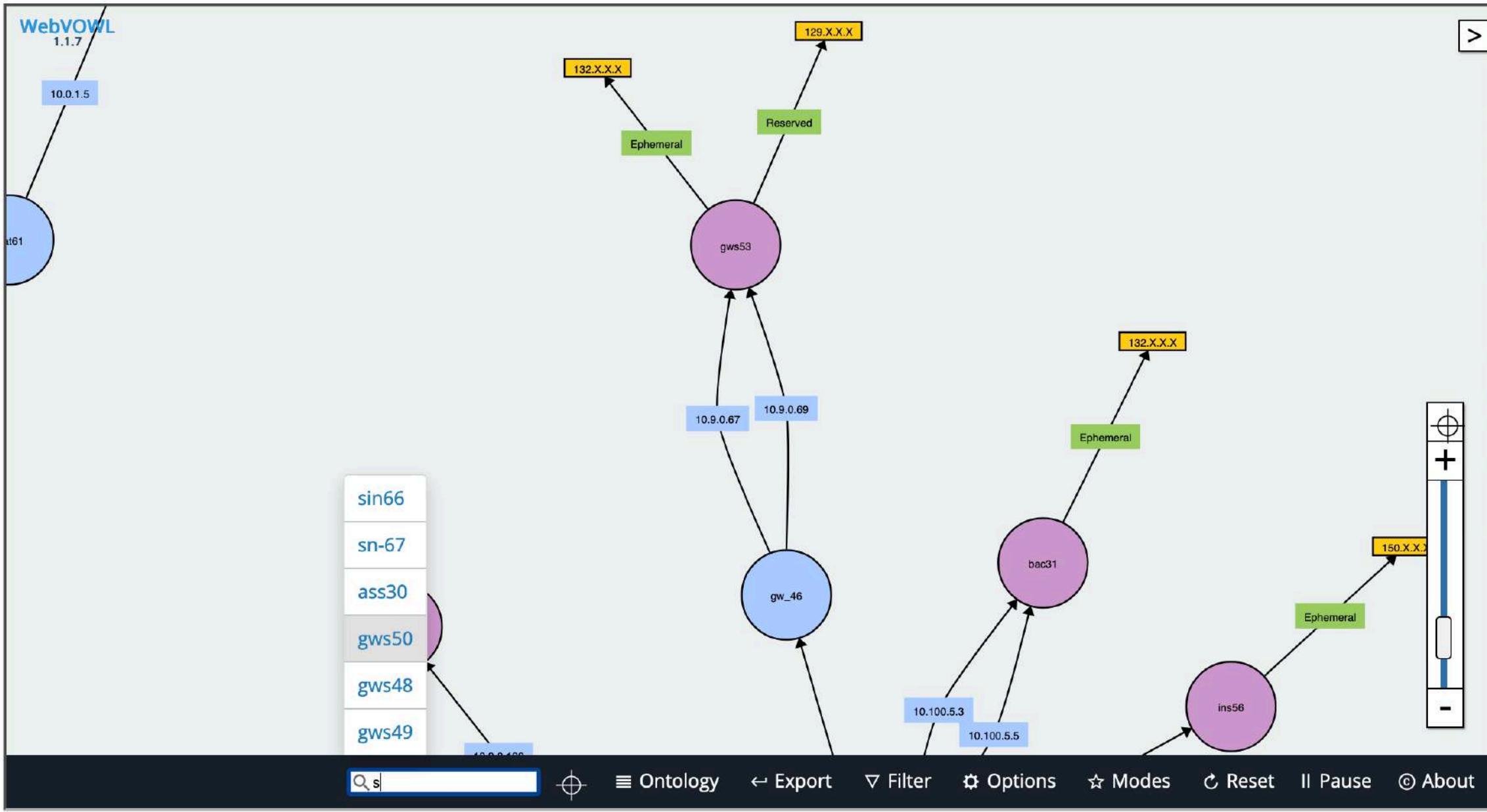
☆ Modes

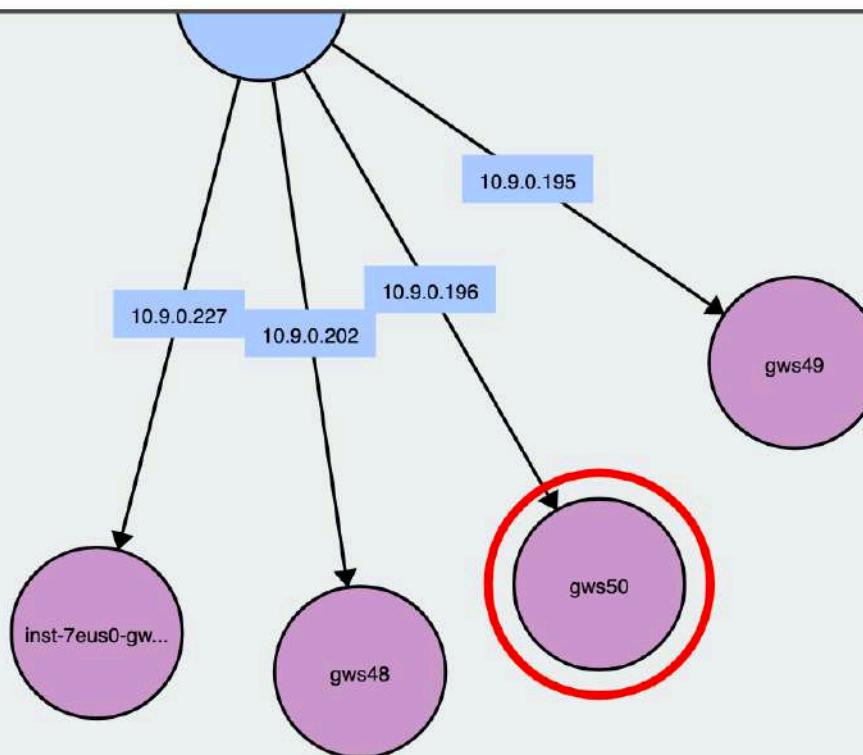
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Other examples

1a.6. Utilization Tree Map (OCI360_INSTANCES)

This tree map visualization shows the utilization of three environments: RPB-C4, RPB_Pvt_Win-113, and RPB_Dev_Linux-110. The root node RPB-C4 contains two main branches: RPB_Pvt_Win-113 and RPB_Dev_Linux-110. RPB_Pvt_Win-113 further branches into PeopleSoft_Cloud_Connect_Dev-18 and PeopleSoft_Cloud_Connect_Pvt-17.

2d.47. Total Boot-Volume Backups Forecast (OCI360_BV_BACKUPS)

A line chart titled "Total Boot-Volume Backups Forecast" showing the number of backups from 2019 to 2024. The chart includes three data series: Total Backups (blue line), Incr Backups (red line), and Full Backups (yellow line). The total backups show a steady increase over time, starting around 25 in 2019 and reaching approximately 65 by 2024. The chart also includes a stacked area representing the breakdown of full and incremental backups.

Total Boot-Volume Backups Forecast

Legend: Total Backups, Incr Backups, Full Backups

of Backups

2019 2020 2021 2022 2023 2024

12.2.0.1.0 cores:2 threads:2

Ba.174. Database System Shapes (OCI360_DB_SYSTEM_SHAPES)

A table titled "Ba.174. Database System Shapes (OCI360_DB_SYSTEM_SHAPES)" showing 456 rows of data. The columns include: #, NAME, SHAPE, COMPARTMENT_ID, MAXIMUM_NODE_COUNT, MINIMUM_CORE_COUNT, MINIMUM_NODE_COUNT, AVAILABILITY_DOMAIN, and AVAILABLE_CORE_COUNT. The data shows various VM Standard shapes (Standard1.1, Standard1.2, Standard2.1, Standard2.2, Standard2.4, Standard2.6) across different compartments and availability domains.

#	NAME	SHAPE	COMPARTMENT_ID	MAXIMUM_NODE_COUNT	MINIMUM_CORE_COUNT	MINIMUM_NODE_COUNT	AVAILABILITY_DOMAIN	AVAILABLE_CORE_COUNT
1	VM.Standard1.1	VM.Standard1.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
2	VM.Standard2.1	VM.Standard2.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
3	VM.Standard1.1	VM.Standard1.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
4	VM.Standard2.1	VM.Standard2.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
5	VM.Standard1.1	VM.Standard1.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
6	VM.Standard2.1	VM.Standard2.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
7	VM.Standard1.1	VM.Standard1.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
8	VM.Standard2.1	VM.Standard2.1	ocid1.compartment.oc1..XXX	1	1	1	TBK.PHX-AD-1	1
9	VM.Standard1.2	VM.Standard1.2	ocid1.compartment.oc1..XXX	2	2	2	TBK.PHX-AD-1	2
10	VM.Standard2.2	VM.Standard2.2	ocid1.compartment.oc1..XXX	2	2	2	TBK.PHX-AD-1	2
11	VM.Standard1.2	VM.Standard1.2	ocid1.compartment.oc1..XXX	2	2	2	TBK.PHX-AD-1	2
12	VM.Standard2.2	VM.Standard2.2	ocid1.compartment.oc1..XXX	2	2	2	TBK.PHX-AD-1	2
13	VM.Standard1.2	VM.Standard1.2	ocid1.compartment.oc1..XXX	2	2	2	TBK.PHX-AD-1	2
14	VM.Standard2.2	VM.Standard2.2	ocid1.compartment.oc1..XXX	2	2	2	TBK.PHX-AD-1	2
15	VM.Standard2.2	VM.Standard2.2	ocid1.compartment.oc1..XXX	2	2	2	TBK.PHX-AD-1	2
16								

1b.9. Compute Instances per Shape (OCI360_INSTANCES)

A pie chart titled "Compute Instances per Shape" showing the distribution of compute instances across four shapes: VM.Standard2.1 (31%), VM.Standard2.4 (38%), VM.Standard2.2 (25%), and VM.Standard2.6 (6%).

Shape	Percentage
VM.Standard2.1	31%
VM.Standard2.4	38%
VM.Standard2.2	25%
VM.Standard2.6	6%

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Online Mode

- EXTRACTOR + CONVERTER + REPORTER are automated in a webserver (at the customer).
- Near REALTIME view of account Tenancy.
- Possibility to check past OCI snapshots for auditing.

Server specs to run OCI360

2 CPUs

8 GiB RAM

Linux 7

Oracle XE 18c
Free ADB

50 GiB

FAQ

- How long it takes to run?
- Can I create my own SQLs on it?
- Can I run only a set of the whole output?

About

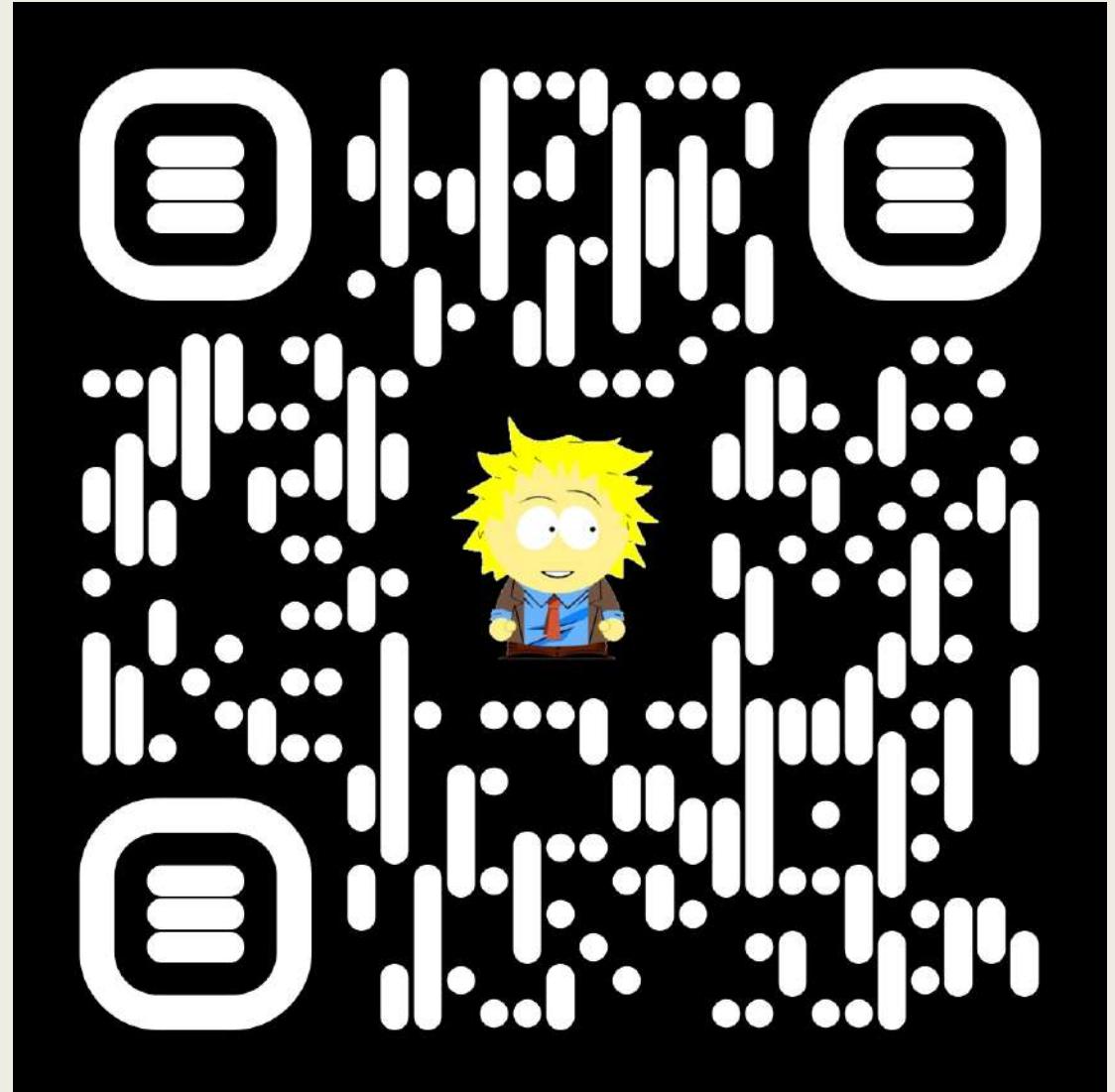


@rodrigojorgedb



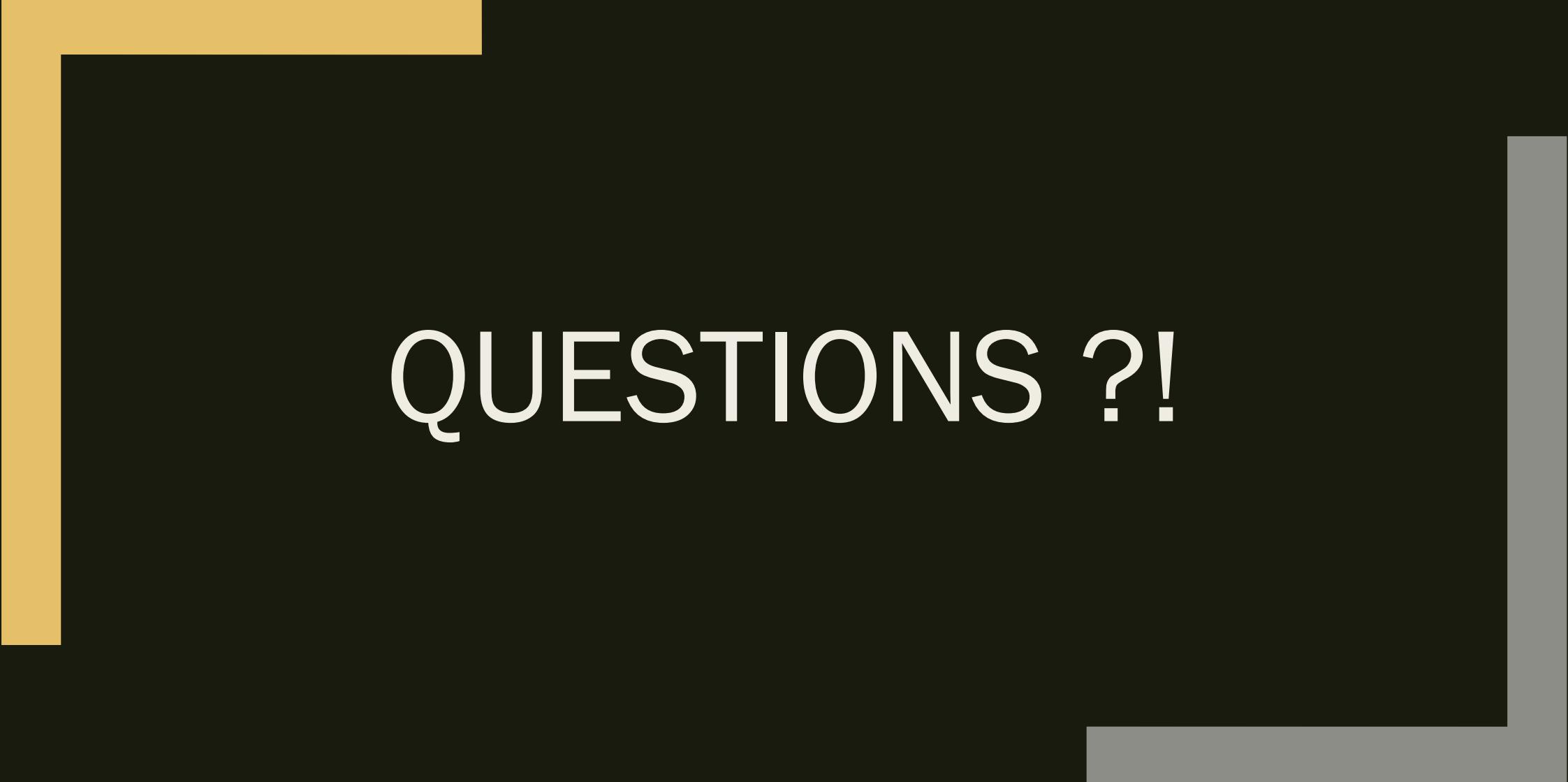
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QUESTIONS ?!



THANK
YOU!