Oracle Cloud Infrastructure
How to get started?
Abstract

The talk shows how a successful start in the Oracle Cloud can begin. What do I need credits - keyword Cloud Credit Calculation? Which payment option - pay-as-you-go or monthly-flex - is the right one? User & or Federation? How do I build the network step by step? How is VPN? Tunneling, or how it works without VPN, if the networker again have no time? How only max 2 OCPUs? Limits? Can I influence the network throughput? What does it cost? Everything should be stopped, or not?

Experience report, best practices, lessons learned from numerous cloud PoCs & meanwhile several go-lives.
Agenda

> Introduction
> The successful project
> Pleading for a PoC
> Oracle Cloud licensing & cloud credit calculation
> Login & first steps
> OCI basic setup
> Résumé
Arrow ECS Internet Security AG

VAD Value Adding Reseller

> Duplication of market access (contacts, time, interactions, ...)
> Individual partner care - onboarding & development
> Architecture Consulting - Engineered Systems, DB, MW, Cloud
> (help with) quotation, conditions, invoicing
> Joint planning and implementation of activities
> Enablement
> Call center activities & lead generation
> PoC support
> Sales of Oracle Cloud through the ArrowSphere Cloud Platform
EMEA Cloud Centers of Excellence – services
Powered by ARROW

Partner Academy
Services for:
• Training & Enablement
• Implementation Specialists boot camps
• Sales & Pre Sales Guided Learning Paths
• Test Assessment
• Badging & Certification

Innovation & Modernization
Services for:
• Implementation & Advanced Hands on enablement
• Innovation PoV / PoC
• Six Step Program to Build Services / Solutions
• Digital Hackathons
• Technical Enablement

Partner Studio
Services for:
• Cloud Accelerator GTM
• Cloud Corner activities
• Cloud Test Drives
• Cloud Transformation
• DG Events / Campaigns
• Strategy & Roadmap briefings
• Solution / Use Cases demo for customers

Powered by ARROW
Upcoming Cloud Center of Excellence Trainings

Oracle Database on OCI Workshop – 26.-27. Nov 2019

> The workshop features the basics of Oracle OCI and will provide you with a first but solid entry into Database on OCI.

> Target group for the workshop are DBAs, consultants, architects, project managers or developers. Oracle knowledge is an advantage but not essential. We will start day 1 with the basics and dig deeper on the second day.

> Registration Link
Agenda

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When is a project successful?

Who does not want to complete his project successfully?

> main goal in project management: Successfully completing a project

> sometimes that is harder than expected

> Objectives, milestones and budget must be met

> Besides these hard factors, soft factors are not to be ignored
Success factors in project management

> Clearly define and communicate project goals
> smart planning
> Open Communication
> project management
> Careful Risk management
> Management support / sponsor
> Last but not least:

Strong project closure!

Sources:
https://blog.blindwerk.de/wann-ist-ein-projekt-erfolgreich
https://project-management.com/five-factors-that-lead-to-successful-projects/
Agenda

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Why a PoC makes sense

> Does the examined service actually meet the expectations?
> Comparison of different providers
> Comparison regarding: Detailing, Quality, Version-ready, Performance, Security, Service Levels, ...
> Extend the evaluation criteria
> Fine-tune the weighting of the evaluation criteria
> Reality check - increases the chances for a successful go-live, in time & budget
> Cross-check the bill of materials for the required cloud services
> The journey is the reward - gain experiences and learnings!
Define PoC project

> Who are the acting persons, technically and business, partners, customer, sponsor
> Project title
> timeframe
> Define the business case
> commercial expectations
> Definition of success criteria and their respective weighting
> Project schedule
> architectural sketch
> Required cloud services and other resources
> Reporting
> Project end & final presentation
What to test on OCI?

Some suggestions & estimates

> Network & VCN Setup (½ day)
> VPN-IPsec (½ day)
> On-premises: unlock needed Ports & Apps
> DB Creation plus Dataload (1-2 days)
> Multitenant Option?
> Systems Management (EM 13.3, SQLDeveloper, Toad, DB Console… (1 day)
> App Server Setup (1-2 days)
> Connecting devices (1-2 days)
> Directory Services Federation (IDCS, Active Directory …) (? days)
> Terraform / Ansible
> OCI cli & DB cli setup & Testing (2-3 days)
> B&R Testing DB / App Server (2-3 days)
> Automation DB/VM Start/Stop (1-2 days)
> Patching OS/ Database (1-2 days)
> architecture & HA considerations (DataGuard, (Data-)Security, …)
> User Acceptance Testing (with printing, external tables, …) (4-5 days)
> Testing Autonomous (3-5 days)
> TCO analysis
Agenda

> Introduction
> The successful project
> Pleading for a PoC
> **Oracle Cloud licensing & cloud credit calculation**
> Login & first steps
> OCI basic setup
> Résumé
B88206 – Oracle PaaS and IaaS Universal Credits – one for all!
Excursion: Oracle` s 2 payment models

> Monthly (Annual) Universal Cloud Credits
  > Monthly settlement (minimum term 1 year)
  > Minimum contract value: $1000
  > PaaS services are discounted by 33%
  > additional burn rate discount

> Pay as you go (PaYGO)
  > no upfront commitment and no minimum service period
  > Oracle IaaS and PaaS services are metered hourly and charged only for the resources consumed
  > Services billed at list price with monthly invoices

**Universal Cloud Credits Discounts**

### Burn rate discount

#### Discount Schedule for PaaS and IaaS - Indirect Universal Credit Model

<table>
<thead>
<tr>
<th>Universal Credit Monthly Flex Spend</th>
<th>1 Year Term</th>
<th>2 Year Term</th>
<th>3 Year Term</th>
<th>4 Year Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000 - $4,999</td>
<td></td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>$5,000 - $9,999</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>$10,000 - $24,999</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>$25,000 - $49,999</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>$50,000 - $100,000</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>&gt; $100,000</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
<td>45%</td>
</tr>
</tbody>
</table>

**Presented to the end user**

Means each dollar of consumption buys more cloud services.
New Oracle Cloud Free Tier
Announced 16-Sep-2019 at Oracle Open World

> new Always Free services
> Includes Oracle Autonomous Database
> easy sign up

Source: https://www.oracle.com/cloud/free/#free-cloud-trial
## Choose your right payment option

<table>
<thead>
<tr>
<th></th>
<th>monthly-flex</th>
<th>pay-as-you-go</th>
<th>Arrow PoC platform (Oracle Cloud owned by Arrow)</th>
<th>Always Free/ 30-days/$300 trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min contract value</td>
<td>$1000 per month</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Min contract duration</td>
<td>12 month</td>
<td>Can be terminated at any time</td>
<td>Can be terminated at any time</td>
<td>Can be terminated at any time</td>
</tr>
<tr>
<td>payment schedule</td>
<td>Full in advance(^{(1)}) Overage after month end</td>
<td>consumption after month end</td>
<td>free or shared</td>
<td>n/a</td>
</tr>
<tr>
<td>Discount on Paas</td>
<td>30%</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>RateCard discount</td>
<td>Yes! See rate card</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>stickiness</td>
<td>Oracle is flexible to expand! Switch to pay-as-you-go if not renewed</td>
<td>can be switched to monthly-flex and vice versa</td>
<td>Expansion possible but might result in a new tenancy!</td>
<td>Expansion possible but might result in a new tenancy!</td>
</tr>
<tr>
<td>Services Available</td>
<td>All IaaS &amp; PaaS Services</td>
<td>All IaaS &amp; PaaS Services (tight limits)</td>
<td>Limited services</td>
<td>Limited services</td>
</tr>
<tr>
<td>Field of activity</td>
<td>duration &gt;1 year or monthly consumption &gt; $1000</td>
<td>PoC &amp; go-live ramp-up</td>
<td>dedicated for PoCs, only!</td>
<td>Trial / learning / developing</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Oracle & Arrow can help with financing solutions for quarterly or monthly payments
# Excursion: New DB Editions in the Oracle Cloud

<table>
<thead>
<tr>
<th>Oracle Database</th>
<th>SE</th>
<th>EE</th>
<th>EE High Performance</th>
<th>EE Extreme Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Edition</td>
<td>Yes</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Enterprise Edition</td>
<td>–</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enterprise Edition Options</th>
<th>SE</th>
<th>EE</th>
<th>EE High Performance</th>
<th>EE Extreme Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Application Clusters (RAC)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>In-Memory Database</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Active Data Guard</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Multitenant</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Partitioning</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Real Application Testing</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Advanced Compression</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Advanced Security</td>
<td>No*</td>
<td>No*</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Label Security</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Database Vault</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>OLAP</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Advanced Analytics</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Spatial and Graph</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DB Enterprise Management</th>
<th>SE</th>
<th>EE</th>
<th>EE High Performance</th>
<th>EE Extreme Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostics Pack</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tuning Pack</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Database Lifecycle Mgmt Pack</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Data Masking Pack</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Test Data Management Pack</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cloud Mgmt Pack for Oracle DB</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**IaaS or PaaS – what is included?**

**Example: Oracle Database as a Service (DBaaS)**

<table>
<thead>
<tr>
<th></th>
<th>IaaS</th>
<th>PaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compute, Server, Network, Storage, Operating System, Support, DataCenter Services, Electricity, Cooling, Facility-Costs, Labour, Audit-Expenses, …</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Oracle Database Software, up &amp; running Database, optimal striped Datafiles, … , Oracle Tooling for managing the Database with create, delete, Patching, Backup &amp; Recovery</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Oracle License</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Bring your own license (BYOL)</td>
<td>✔️ must !</td>
<td></td>
</tr>
</tbody>
</table>

 Either … or!
**Price comparison oracle Cost Estimator**

10 OCPUs (Oracle Compute Unit)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Pay As You Go</th>
<th>Monthly Flex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Cloud Infrastructure - Compute, VM</td>
<td>$475</td>
<td>$475</td>
</tr>
<tr>
<td>Oracle Database Cloud Service</td>
<td>$2,160</td>
<td>$1,440</td>
</tr>
<tr>
<td>Oracle Database Cloud Service</td>
<td>$12,376</td>
<td>$8,250</td>
</tr>
</tbody>
</table>

- **Just IaaS**
- **PaaS BYOL**
- **PaaS DBCS EE-HP**

} cost of PaaS Tooling

} license costs
Agenda

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> **Login & first steps**
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First registration

1. Must be email address of “Welcome” email!
2. Something like “oracle-cloud@...”
Oracle Cloud – Account Sign-In

Strong recommendation to bookmark these URLs!

> Normal Login URL: https://cloud.oracle.com/

> OCI Compute (Oracle Cloud Gen 2)
  > https://console.eu-frankfurt-1.oraclecloud.com/?tenant=arrowfr3

> Oracle Cloud Infrastructure Classic Dashboard
  https://myservices-arrowfr1.consol...cloudportal/dashboard
  (still needed for Primary Identity Management!)
1st thing to check: service limits in your Tenancy
request service limit increase for resources needed

Administration → Tenancy Detail → Service Limits
Check availability of needed partner images

Request access via service request

Your tenancy is not enabled to create a subscription for this listing. To enable this for your tenancy, contact Oracle customer support at support.oracle.com.
Even the longest journey begins with the first step ...
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OCI – Basic setup

1. Create Compartment
2. Create Users
3. Create Group & move Users to Group
4. Create Policy to grant access to resources in compartment to the group
5. Create VCN
6. Create Compute Instance
Compartments

organize and isolate your resources

> You **use compartments to organize and isolate your resources** to make it easier to manage and secure access to them

> a compartment is a collection of related resources (VCN, instances,..) that can be accessed only by groups that have been given permission (by an administrator in your organization)

> When your tenancy is provisioned, a **root compartment** is created

> You can create compartments under your root compartment to organize your cloud resources, with up to six levels deep sub compartments

> Sub compartment inherits access permissions from compartments higher up its hierarchy

> Compartments are available in all regions!

> moving a resource to another compartment is not possible for all kind of resources

> Compartments **can be deleted after creation or renamed**
TENANCY: <your Tenancy Name>

COMPARTMENT: Swiss

On premises
Subnet 172.../24

Datacenter (on-premises)
Network Provider
Firewall

OVM 172...
OCI – Basic setup Steps

1. Create Compartment
2. Create Users
3. Create Group & move Users to Group
4. Create Policy to grant access to resources in compartment to the group
5. Create VCN
6. Create Compute Instance
Identity Federation

> Oracle Cloud Infrastructure tenancies created December 18, 2017 or later are automatically federated with Oracle Identity Cloud Service.

> If your tenancy was created before December 18, 2017, and you want to set up a federation with Oracle Identity Cloud Service, see Federating with Oracle Identity Cloud Service

> Supported Identity Providers:
  > Oracle Identity Cloud Service
  > Federating with Microsoft Active Directory
  > Federating with Microsoft Azure Active Directory
  > Oracle Cloud Infrastructure Okta Configuration for Federation and Provisioning
  > Federating with SAML 2.0 Identity Providers
Users

> Users can be separately created in OCI Compute
> Can be managed by Administrators group, only!
> You can create a policy that empowers to create new users and credentials, but not control which groups those users are in
> the user is assigned a unique ID: Oracle Cloud ID (OCID)
> The password needs to be assigned separately
> Resources: API Keys, Auth. Tokens, SMTP Credentials, Amazon S3 Compatibility API Keys, Groups
Identity Federation

Create IDCS User

> Users and groups should be created and managed in Oracle Identity Cloud Service (IDCS)
OCI – Basic setup Steps

1. Create Compartment
2. Create Users
3. Create Group & move Users to Group
4. Create Policy to grant access to resources in compartments to the group
5. Create VCN
6. Create Compute & DB Instances
Groups

> Can be managed with Oracle Identity Cloud Service
> Members of the Administrators group, can manage groups, only!
> Static and dynamic groups
> Oracle will also assign the group a unique ID called an Oracle Cloud ID (OCID)
Identity Federation

Create IDCS Group
Identity Federation
Create Group mapping
OCI – Basic setup Steps

1. Create Compartment
2. Create Users
3. Create Group & move Users to Group
4. Create Policy to grant access to resources in compartment to the group
5. Create VCN
6. Create Compute Instance
Policy

> Policies are comprised of one or more statements which specify what groups can access what resources and what level of access users in that group have.

> Policy statements are written in plain English.

> ‘allow group <group_name> to <verb> <resource-type> in tenancy’

> ‘allow group <group_name> to <verb> <resource-type> in compartment <compartment_name>’

> ‘allow group <group_name> to <verb> <resource-type> in tenancy where (request|target) (=|!=) <string>’
Policy Syntax

Allow `<subject>` to `<verb>` `<resource-type>` in `<location>` where `<conditions>`

<table>
<thead>
<tr>
<th>Verb</th>
<th>Type of access</th>
</tr>
</thead>
<tbody>
<tr>
<td>inspect</td>
<td>Ability to list resources</td>
</tr>
<tr>
<td>read</td>
<td>Includes inspect + ability to get user-specified metadata/actual resource</td>
</tr>
<tr>
<td>use</td>
<td>Includes read + ability to work with existing resources (the actions vary by resource type)*</td>
</tr>
<tr>
<td>manage</td>
<td>Includes all permissions for the resource</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aggregate resource-type</th>
<th>Individual resource type</th>
</tr>
</thead>
<tbody>
<tr>
<td>all-resources</td>
<td>db-systems, db-nodes, db-homes, databases</td>
</tr>
<tr>
<td>database-family</td>
<td>instances, instance-images, volume-attachments, console-histories</td>
</tr>
<tr>
<td>instance-family</td>
<td>vcn, subnet, route-tables, security-lists, dhcp-options, and many more resources (link)</td>
</tr>
<tr>
<td>object-family</td>
<td>buckets, objects</td>
</tr>
<tr>
<td>virtual-network-family</td>
<td>Volumes, volume-attachments, volume-backups</td>
</tr>
</tbody>
</table>

* In general, this verb does not include the ability to create or delete that type of resource

The IAM Service has no family resource-type, only individual ones; Audit and Load Balancer have individual resources (load-balancer, audit-events)

Source: Oracle
Policy & compartments to grant access

An Example

Policy: Allow *group DOAG* to manage all-resources in compartment Swiss

Documentation: Common Policy Examples: https://docs.us-phoenix-1.oraclecloud.com/Content/Identity/Concepts/commonpolicies.htm?Highlight=policy
OCI – Basic setup Steps

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6. Create Compute Instance
Virtual Cloud Networks (VCN)

> A VCN is a virtual version of a traditional network
> A private network that you set up in the Oracle data centers, with firewall rules and specific types of communication gateways that you can choose to use
> A VCN covers a single, contiguous IPv4 CIDR block of your choice
> A VCN resides within a single region but can cross multiple Availability Domains
> Switching, routing, subnets, firewalls, load balancers, etc
> A compartment can have multiple VCNs

> Creating a VCN:
  > Create the VCN
  > Add Security Lists
  > Add an Internet Gateway
  > Add route tables
  > Add subnets
Network & Security Setup

> Early involvement of networkers
> Create the network architecture of the scheduled VCN\(^1\)
> Create the VPN connection - from your own DC\(^2\) to the Oracle Cloud
> If this is not possible, alternatively connect via jump-hosts and port tunneling
> restrict open ports to the Internet & within your VCN

> Tips Oracle Documentation:
  > Securing Networking: VCN, Load Balancers, and DNS
  > https://docs.cloud.oracle.com/iaas/Content/Security/Reference/networking_security.htm

\(^1\) Virtual Cloud Network / \(^2\) Data Center
TENANCY: <your Tenancy Name>

COMPARTMENT: Swiss

DOAG_VCN – 10.3.0.0/16

On-premises Subnet
172...../24

Datacenter (on-premises)

Network Provider

Firewall

OVM
172.....
Default security list

> **Stateful ingress:**
  > Allow TCP traffic on destination port 22 (SSH) from source 0.0.0.0/0 and any source port
  > Allow ICMP traffic type 3 code 4 from source 0.0.0.0/0. This rule enables your instances to receive Path MTU Discovery fragmentation messages
  > Allow ICMP traffic type 3 (all codes) from source = your VCN’s CIDR. This rule makes it easy for your instances to receive connectivity error messages from other instances within the VCN

> **Stateful egress:**
  > Allow all traffic
Enable Ping

> Also the default security list does not allow ping requests

> To allow ping
  > Add a stateful ingress rule to specifically allow ICMP traffic type 8 from the source network you plan to ping from
  > To allow ping access from the internet, use 0.0.0.0/0 for the source

Source: https://docs.cloud.oracle.com/iaas/Content/Network/Concepts/securityrules.htm?Highlight=ping%20icmp#ping
Subnets

Subnets can be either AD-specific or regional

- Subnets can be designated as either
  - **Private** (instances contain private IP addresses assigned to vNICs)
  - **Public** (contain both private and public IP addresses assigned to vNICs)

> When creating a subnet, the first 2 IP addresses and the last one are reserved by the OCI Networking Service
> a “public subnet” has a route to the Internet
> a “private subnet” does not.
OCI – Basic setup Steps

1. Create Compartment
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Create SSH Keys

> If you already have an SSH-2 RSA key pair, you can use your existing pair and skip this step

> Windows Users: Download and install Git Bash or MobAXterm

> At the prompt, enter `ssh-keygen` and provide a name (and passphrase) when prompted

(Alternatively `ssh-keygen -t rsa -N "<passphrase>" -b 2048 -C "<key_name>" -f <path/root_name>)

> By default these are stored in ~/.ssh/

> Change the access permissions:

  chmod 0700 ~/.ssh
  chmod 0600 ~/.ssh/id_rsa
  chmod 0644 ~/.ssh/id_rsa.pub

> Doku: Creating a key pair on the command line or using Putty on Windows:

  https://docs.us-phoenix-1.oraclecloud.com/Content/GSG/ Tasks/creatingkeys.htm
Tool: git for windows

https://gitforwindows.org
Tool: MobaXterm

https://mobaxterm.mobatek.net

Enhanced terminal for Windows with X11 server, tabbed SSH client, network tools and much more
Virtual Machine shapes

A shape is a combination of OCPU, Memory, NVME SSDs, Bandwidth & VNICs

<table>
<thead>
<tr>
<th>Shape Name</th>
<th>OCPU</th>
<th>Memory (GB)</th>
<th>Local Disk (TB)</th>
<th>Network Bandwidth</th>
<th>Max. Total VNICs</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM.Standard.1.1</td>
<td>1</td>
<td>16</td>
<td>Block Storage only</td>
<td>1 Gbps</td>
<td>0</td>
</tr>
<tr>
<td>VM.Standard.2</td>
<td>2</td>
<td>30</td>
<td>Block Storage only</td>
<td>2 Gbps</td>
<td>2</td>
</tr>
<tr>
<td>VM.Standard.4</td>
<td>4</td>
<td>60</td>
<td>Block Storage only</td>
<td>4.1 Gbps</td>
<td>4</td>
</tr>
<tr>
<td>VM.Standard.6.1</td>
<td>8</td>
<td>120</td>
<td>Block Storage only</td>
<td>8.2 Gbps</td>
<td>8</td>
</tr>
<tr>
<td>VM.Standard.16</td>
<td>16</td>
<td>240</td>
<td>Block Storage only</td>
<td>16.4 Gbps</td>
<td>16</td>
</tr>
<tr>
<td>VM.Standard.24</td>
<td>24</td>
<td>320</td>
<td>Block Storage only</td>
<td>24.6 Gbps</td>
<td>24</td>
</tr>
<tr>
<td>VM.Standard.2.1</td>
<td>1</td>
<td>8</td>
<td>Block storage only</td>
<td>700 Mbps</td>
<td>2</td>
</tr>
<tr>
<td>VM.Standard.2.2</td>
<td>2</td>
<td>16</td>
<td>Block storage only</td>
<td>1.4 Gbps</td>
<td>2</td>
</tr>
<tr>
<td>VM.Standard.2.4</td>
<td>4</td>
<td>32</td>
<td>Block storage only</td>
<td>2.8 Gbps</td>
<td>4</td>
</tr>
<tr>
<td>VM.Standard.8</td>
<td>8</td>
<td>64</td>
<td>Block storage only</td>
<td>9.6 Gbps</td>
<td>4</td>
</tr>
<tr>
<td>VM.Dedicated.8.1</td>
<td>8</td>
<td>120</td>
<td>6.4 TB NVMe SSD</td>
<td>8.2 Gbps</td>
<td>8</td>
</tr>
<tr>
<td>VM.Dedicated.16</td>
<td>16</td>
<td>240</td>
<td>12.8 TB NVMe SSD</td>
<td>16.4 Gbps</td>
<td>16</td>
</tr>
<tr>
<td>VM.Dedicated.24</td>
<td>24</td>
<td>320</td>
<td>25.6 TB NVMe SSD</td>
<td>24.6 Gbps</td>
<td>24</td>
</tr>
<tr>
<td>VM.Standard.B1.1</td>
<td>1</td>
<td>12</td>
<td>Block storage only</td>
<td>600 Mbps</td>
<td>2</td>
</tr>
<tr>
<td>VM.Standard.B1.2</td>
<td>2</td>
<td>24</td>
<td>Block storage only</td>
<td>1.2 Gbps</td>
<td>2</td>
</tr>
<tr>
<td>VM.Standard.B1.4</td>
<td>4</td>
<td>48</td>
<td>Block storage only</td>
<td>2.4 Gbps</td>
<td>4</td>
</tr>
<tr>
<td>VM.Standard.B1.8</td>
<td>8</td>
<td>96</td>
<td>Block storage only</td>
<td>4.8 Gbps</td>
<td>8</td>
</tr>
<tr>
<td>VM.Standard.B1.16</td>
<td>16</td>
<td>192</td>
<td>Block storage only</td>
<td>9.6 Gbps</td>
<td>16</td>
</tr>
</tbody>
</table>

Processor details: [https://www.oracle.com/cloud/compute/virtual-machines.html](https://www.oracle.com/cloud/compute/virtual-machines.html)
Connect to the Bastion instance

Connect via SSH to bastion

> Open Git Bash (Windows) or Terminal (*nix, MacOS)
> Login via SSH with the id_rsa private key previously created and user opc (oracle public cloud)
  
  ```
  $ ssh -i .ssh/id_rsa opc@<bastion_public_IP>
  
  where .ssh/ represents the path and id_rsa your key name
  
  $ sudo su -
  
  to become the root user
  
  > Alternatively, to forward X over SSH to run graphics applications remotely issue:
  
  ```
  $ ssh -X -i .ssh/id_rsa opc@<bastion_public_IP>
  
  > You need to have a running X application on your OS, i.e.:
  
  > Xming for Windows [https://sourceforge.net/projects/xming/](https://sourceforge.net/projects/xming/)
  > Xquarz for MAC OS: [https://www.xquartz.org/](https://www.xquartz.org/)
ssh-key usage

Master the first small hurdles ...

> SSH Key - Putty uses a different format
  > You need to convert key with Putty KeyGen Tool
> OCI user names: opc, root & oracle
> Instance names
  > Avoid special characters ("_", "-", ".", ...)!
Graphical surface with X11

> Download a tool for the graphical interface:

> Log in to the Oracle Linux instance:
  > ssh -X -v -i <Pfad zu Public Key> opc@<IP-Adresse>
  > sudo su – // sudo su – oracle

> Install the necessary packages on the Linux instance:
  > yum install xauth
  > yum install xclock

> Edit the file vi /etc/ssh/sshd_config
  > X11Forwarding yes
  > X11UseLocalhost no

> Restart of sshd service
  > /bin/systemctl restart sshd.service

> Logout and reconnect:
  > ssh -X -v -i <Pfad zu Public Key> opc@<IP-Adresse>
  > xclock

Learning 1:
reinstall the client, if a MacOS / Windows update was available in the meantime
Symptom:
Xquarz does not start automatically

Learning 2:
edit the right file:
/etc/ssh/sshd_config
Create private subnet for Webserver

> Create security list
  > Name: ws-sl
  > Ingress: 10.3.9.0/24 | TCP | source port: all | destination port: 22

> Create route table
  > Name: ws-rt
  > Destination: 0.0.0.0/0 | Target Type: NAT Gateway | Target: DOAG_NG
  > Destination: 172.22.1.0/24 | Target Type: Dynamic Routing Gateways | Target: Swiss-DRG

> Create private subnet
  > Name: ws-sn
  > CIDR: 10.3.1.0/24
  > Route Table: ws-rt
  > Subnet Access: private
  > Security List: ws-sl
Create Webserver

> Name: webserver01
> Image: Oracle Linux 7.7
> AD: AD1
> Shape: VM.Standard.E2.1
> VCN-Compartment: Swiss
> VCN: DOAG-VCN
> Subnet: ws-sn
> ssh-key: 
> Private IP address: 10.3.1.3
Connect to webserver01 in a private subnet

How are you going to SSH to it?

> You are going to use an instance in a public subnet as a bastion or jump host!

```
$ ssh -t -o ProxyCommand='ssh -i .ssh/id_rsa opc@bastion_public_IP -W %h:%p %r' -i .ssh/id_rsa opc@10.3.1.3
```
Create an Apache on webserver01

> Become root
  sudo su –

> Install Apache webserver:
  yum install httpd

> Enable & Start the Apache webserver:
  systemctl enable httpd
  systemctl start httpd

> Note the standard Apache port: 80
How to connect to Apache on port 80?

How are you going to SSH to it with port forwarding?

> You are going to use an instance in a public subnet as a bastion or jump host!

```
$ ssh -L 1048:localhost:80 -t -o ProxyCommand='ssh -i .ssh/id_rsa opc@bastion_public_IP -W %h:%p %r' -i .ssh/id_rsa opc@10.3.1.3
```
Open Apache webpage in a browser

http://localhost:1048

This page is used to test the proper operation of the Apache HTTP server after it has been installed. If you can read this page it means that the Apache HTTP server installed at this site is working properly.

If you are a member of the general public:

The fact that you are seeing this page indicates that the website you just visited is either experiencing problems or is undergoing routine maintenance.

If you would like to let the administrators of this website know that you've seen this page instead of the page you expected, you should send them e-mail. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.

For example, if you experienced problems while visiting www.example.com, you should send e-mail to "webmaster@example.com".

If you are the website administrator:

You may now add content to the directory /var/www/html/. Note that until you do so, people visiting your website will see this page and not your content. To prevent this page from ever being used, follow the instructions in the file /etc/httpd/conf.d/welcome.conf.

You are free to use the images below on Apache Linux powered HTTP servers. Thanks for using Apache!
Tunneling with putty or MobaXterm on windows

> https://www.skyverge.com/blog/how-to-set-up-an-ssh-tunnel-with-putty/

> https://docs.cloud.oracle.com/iaas/Content/Resources/Assets/whitepapers/bastion-hosts.pdf

> https://ubccr.freshdesk.com/support/solutions/articles/13000059375-creating-a-ssh-tunnel-using-mobaXterm-on-windows
Cloud Automation

https://www.terraform.io/

Tip: https://github.com/terraform-providers/terraform-provider-oci
Resources

> Oracle Cloud Infrastructure Foundation Trainings

> Oracle Cloud Documentation
https://docs.cloud.oracle.com/

> Seartc for Oracle Cloud HOL
https://oracle.github.io/learning-library/oci-library/

> Oracle Graphics for Topologies and Diagrams
https://docs.cloud.oracle.com/iaas/Content/General/Reference/graphicsfordiagrams.htm
Oracle IaaS and PaaS Security and Compliance

> Oracle Cloud Infrastructure Security

> Oracle Cloud Services Contracts
  https://www.oracle.com/corporate/contracts/cloud-services/index.html

> Oracle Cloud Infrastructure Service Level Agreement

> Oracle PaaS and IaaS Public Cloud Services - Pillar Document

> Oracle Services Privacy Policy
  https://www.oracle.com/legal/privacy/services-privacy-policy.html#1-4
Agenda

> Introduction
> The successful project
> Pleading for a PoC
> Oracle Cloud licensing & cloud credit calculation
> Login & first steps
> OCI basic setup
> Résumé
One more thing…
What happens in your Cloud Environment?

How to best track your “cloud credit consumption”?

Tip: Notify the daily remaining quantity in an Excel sheet!

Notify events!
Résumé

> If you have not tried yet: test the Oracle Cloud Services
> Define your individual cloud use case
> Success can be planned: the time for a good PoC project plan pays off
> Regular communication increases the chances of success
> Benefit from agility: create, test, reconfigure, delete, recreate …
> Evaluate a Pay-as-you-Go payment model for PoC or go-live & ramp-up
> Arrow would be happy if we could help to turn your cloud projects into success
Links & Contacts

> Arrow in DE: https://www.arrowecs.de/
> Arrow in AT: http://www.arrowecs.at/
> Arrow in CH: http://www.arrowecs.ch/
> Swiss Oracle Cloud Community auf Xing: https://www.xing.com/communities/groups/swiss-oracle-cloud-community-fc2c-1102515
> Swiss Oracle Cloud Community auf meetup: https://www.meetup.com/Swiss-Oracle-Cloud-Community

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Five Years Out is the tangible future where what’s possible meets what’s practical.
The Ultimate Technology Enabler

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Lighting
Data Center
Power Management
Internet of Things
Transportation
Sustainability
Cloud
Mobility
Security