nabhaas™
Clarity beyond clouds

#OracleBootCamp

Session #1 : OCI - Linux 9 [ARM , x86_64]
Session #2 : OCI - Autonomous Data Warehouse & APEX

Chennai

Quest Building : 31B, Rukmani Rd, Extn, Kalakshetra Colony, Besant Nagar, Chennai, Tamil Nadu 600090

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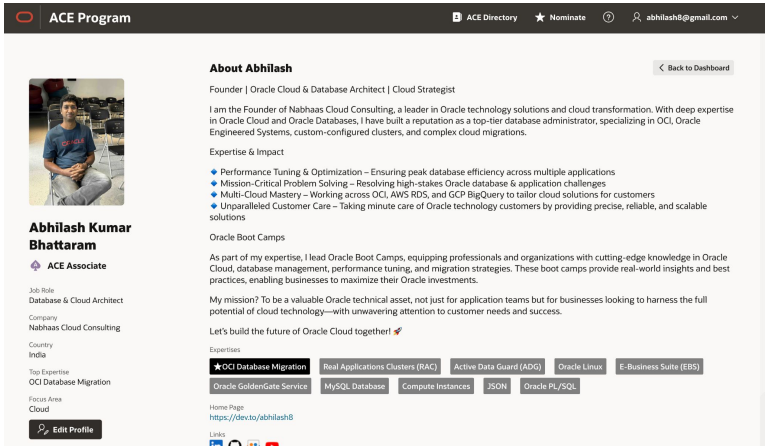
About Me

- I'm Abhilash Kumar Bhattaram - Founder Nabhaas Cloud Consulting and an Oracle ACE
- https://ace.oracle.com/ords/ace/profile/abhilashkumarbhattaram

Oracle ACE



- My Blog : https://dev.to/abhilash8
- My core area of expertise is Enterprise consulting on Cloud Databases
  - OCI - Database Families On Prem Oracle Databases / ExaCS
  - Linux
  - Exadata and Sun Super Cluster
  - Oracle Golden Gate
  - AWS RDS
  - Google BigQuery

- I'm from Chennai - India
  - I can be reached via LinkedIn : https://www.linkedin.com/in/abhilash-kumar-85b92918/

DISCLAIMER : All my views and presentations are from personal experience and do not represent any Technology Vendor

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OCI Oracle Cloud Infrastructure - Where to Begin

- A lot of this slide will be on the marker board
- OCI - Documentation

  https://docs.oracle.com/en-us/iaas/Content/home.htm

What SRE’s / DBA’s / Developers can learn from this OracleBootCamp

- The Agenda for this presentation is for Customers Engineer’s / DBA’s / Developers to understand the details of services provided by Oracle Cloud.
- There is wealth of Information available in Oracle Documentation but it is not clear when it comes to choosing the services to match the requirements.
- The challenge is to suit the OCI Cloud services to match the requirements and in most cases a bulk of time spent by projects are at this stage.

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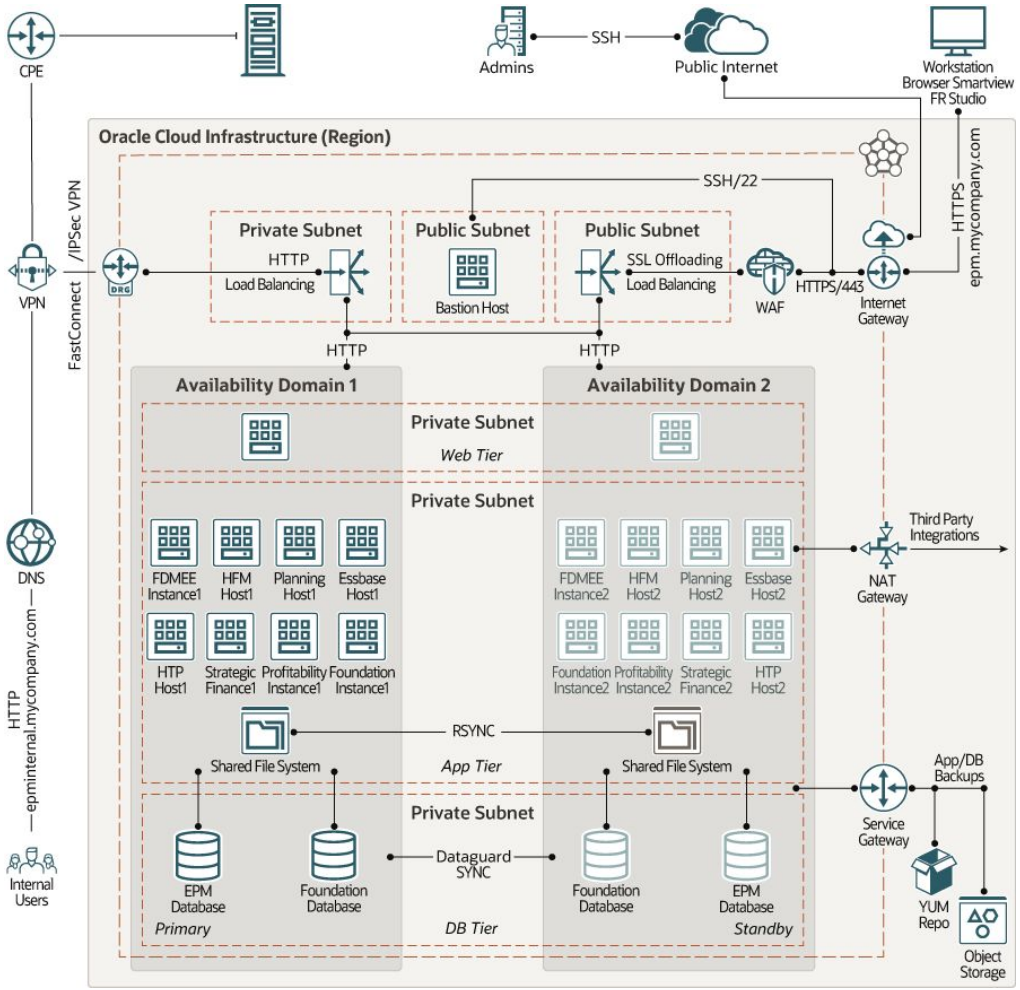
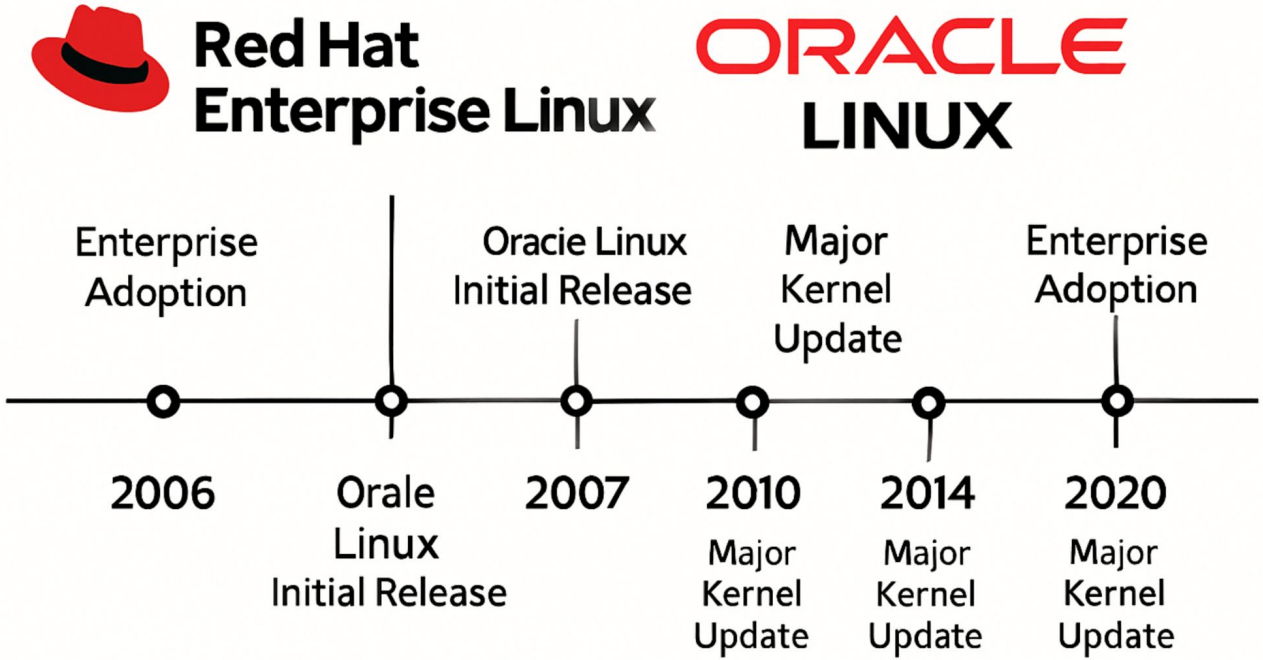
OCI - Architecture

Is this Confusing ?



OCI - Linux


Red Hat Enterprise Linux
ORACLE LINUX
Enterprise Adoption
Oracie Linux Initial Release
Major Kernel Update
Enterprise Adoption
2006
Orale Linux Initial Release
2007
2010
Major Kernel Update
2014
Major Kernel Update
2020
Major Kernel Update

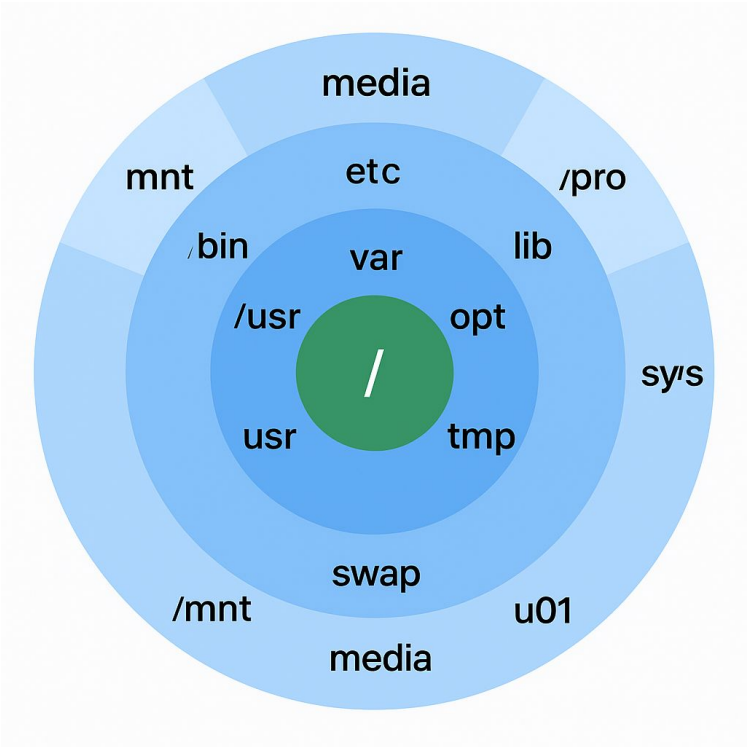
Linux - Lets have some basics

Here's the correct structure we should capture in the **circular architecture**:

- **Center (root)**: / (root filesystem)
  First ring (essential system directories):
  - /bin → essential user binaries
  - /sbin → system binaries
  - /etc → configuration
  - /lib → shared libraries
  - /boot → boot loader files

- **Second ring (user & variable data):**
  - /usr → user applications & libraries
  - /var → variable data (logs, spool, cache)
  - /tmp → temporary files
  - /opt → optional software
  - /home → user home directories

- **Outer ring (mount & special):**
  - /mnt → temporary mount point
  - /media → removable media
  - /proc → process information (virtual FS)
  - /sys → system info (virtual FS)
  - /u01 → (Oracle-specific, often used for DB binaries)
  - swap (not a directory but should be shown as part of disk layout)



OCI - Oracle Linux 8 and 9 Differences

Oracle Linux 8 vs Oracle Linux 9 – Comparison Table

Feature / Area	Oracle Linux 8	Oracle Linux 9
Base Platform	Based on RHEL 8.x	Based on RHEL 9.x
Kernel	UEK R6/R7 (4.18/5.4+), RHCK	UEK R7+ (5.15+), RHCK opton
Support Lifecycle	Premier: Jul 2029, Extender	Premier: Jun 2032, Extended Jun
Security Defaults	SELinux permissive initially	SELinux enforcing by default, stricter
Crypto Libraries	OpenSSL 1.1	OpenSSL 3.0, stronger crypto policies, SHA-1
System Hardening	nftables default firewl optional	IMA (Integrity Measurement Architecture), improved kemel lockdown, FIPS-140-3
Compilers / Toolchains	GCC 8 (streams for GCC 9/10), Python 3.6 default	GCC 11 Python 3.9 PHP 8.0 Python 3.9 LLVM 12 Go 1.17
Virtualization	Podman 2/3, Buildah,	Podman 4.x, Docker Compose v2 support
Storage & FS	XFS (default), Stratis introduced NFS 4.2, VDO support	XFS (metadata checksumming), matured Stratis improved NFS/SMB integration
System Management	Cockpit (basic version), Ansible system roles (limited)	Cockpit with storage, containers, performance management, expanded Ansible system roles

OCI - Oracle Linux 9 … What is deprecated ?

Oracle Linux 9 – Removed Features vs Alternatives

Removed / Deprecated in OL9	Alternative / Replacement
Python 2	Use Python 3.9 (default)
32-bit x86 (i686) user-space	64-bit only (x86_64, ARM64, etc.)
Docker (classic engine)	Podman, Buildah, Skopeo
OpenSSL 1.1	OpenSSL 3.0 (modern crypto, FIPS-140-3 ready)
SHA-1, TLS 1.0/1.1	SHA-2+, TLS 1.2/1.3
NIS (ypbind)	SSSD / LDAP / Kerberos
r-commands (rsh, rlogin, rexec)	SSH
SysV init scripts (initscripts, rc.local)	systemd services & units
net-tools (ifconfig, netstat, etc.)	iproute2 (ip, ss)
OpenLDAP server	389 Directory Server

OCI - Oracle Linux 8 and 9 Differences ...contd.

👉 **Quick takeaway**:

- **OL8 = stability & certifications for current workloads (19c/21c, EBS, WebLogic)**
- **OL9 = modernization, security, and long lifecycle for future (23ai/23c, OCI-native apps)**

OCI - Linux 7 .. security updates stopped

👉 **Support is stopped as of Dec 2024**

https://blogs.oracle.com/linux/post/extend-your-os-upgrade-timeline-oracle-linux-7s-extended-support-with-expanded-coverage

https://www.oracle.com/a/ocom/docs/elsp-lifetime-069338.pdf

Per Oracle Documentation

As December 2024 approaches and marks the conclusion of Oracle Linux 7's decade-plus Premier Support period, your organization may find itself at a crossroads regarding the upgrade of its operating system (OS). For some customers, there are substantial business considerations that may demand more time to upgrade the OS, such as legacy applications that can require a migration plan, extensive updates, or replacement.

OCI Linux 7 to 8 - “ leapp upgrade “

https://docs.oracle.com/en/learn/ol-linux-leapp/index.html#preparing-for-the-upgrade-from-oracle-linux-7-to-oracle-linux-8

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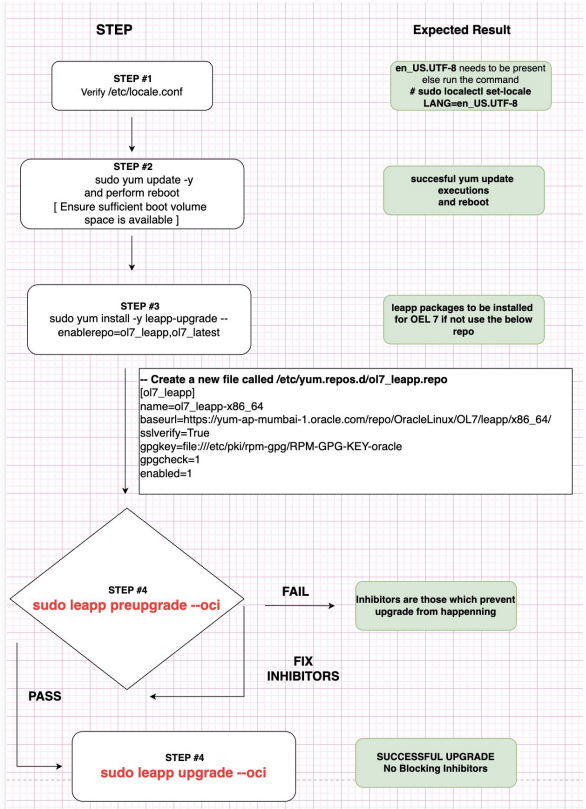
OCI - Linux 7 to 8 “ leapp upgrade ”



Failed and Successful Inhibitors in prechecks

```
Debug output written to /var/log/leapp/leapp-preupgrade.log

============================================================
                    REPORT OVERVIEW
============================================================

Upgrade has been inhibited due to the following problems:
    1. Possible problems with remote login using root account
    2. Missing required answers in the answer file

HIGH and MEDIUM severity reports:
    1. Difference in Python versions and support in OL 8
    2. Detected customized configuration for dynamic linker.
    3. Default Boot Kernel

Reports summary:
    Errors:                     0
    Inhibitors:                 2
    HIGH severity reports:      2
    MEDIUM severity reports:    1
    LOW severity reports:       5
    INFO severity reports:      2

Before continuing consult the full report:
    A report has been generated at /var/log/leapp/leapp-report.json
    A report has been generated at /var/log/leapp/leapp-report.txt

============================================================
                END OF REPORT OVERVIEW
============================================================

Answerfile has been generated at /var/log/leapp/answerfile
```

```
Debug output written to /var/log/leapp/leapp-preupgrade.log

============================================================
                    REPORT OVERVIEW
============================================================

HIGH and MEDIUM severity reports:
    1. Detected customized configuration for dynamic linker.
    2. Difference in Python versions and support in OL 8
    3. Module pam_pkcs11 will be removed from PAM configuration
    4. Default Boot Kernel

Reports summary:
    Errors:                     0
    Inhibitors:                 0
    HIGH severity reports:      2
    MEDIUM severity reports:    2
    LOW severity reports:       5
    INFO severity reports:      2

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============================================================
                END OF REPORT OVERVIEW
============================================================

Answerfile has been generated at /var/log/leapp/answerfile
```

OCI - Linux 7 Inhibitor - clear answer files

Some regular inhibitors are as below

```
# leapp answer --section os_management_hub_agent_check.confirm=True

# leapp answer --section osmh_post_check.confirm=True

# leapp answer --section instant_client_install.confirm=True

# leapp answer --section remove_pam_pkcs11_module_check.confirm=True
```

Hands On… Learning

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OCI - ADW & APEX

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Hands On… Learning

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Questions ?

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About OracleBootCamp

- Located in Chennai , Besant Nagar , only agenda is to learn and share

- More Speakers are welcome