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TECH TALK:

OCI Command Line Interface for Researchers

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TECH TALK HOUSEKEEPING

- Today's webinar is being recorded. We will share the link to the recording with you via email after the event. The recording will also be made available to the Oracle for Research community.

- We invite your comments and questions, both about the tech topic being discussed and about the series more generally. Questions may be submitted using the Q&A box on your screen or you may ask questions directly using your microphone. When not asking a question, please mute your microphone.

- Questions may be asked during the presentation and we will also have a Q & A time at the end of the presentation when you can ask questions directly and engage in discussion.

- At Oracle for Research, we believe that research and innovation happen best when a diverse and thoughtful community is free to engage in respectful, compassionate, and open dialog. To that end, when asking a question or providing feedback, we ask that all participants be respectful, collaborative, and constructive.

OCI Command Line Interface

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Agenda

Recap and Asks	1. Architectures and automation 2. Oracle for Research sandbox images
OCI Command Line Interface (CLI)	1. OCI-CLI Overview 2. Researcher use-cases 3. Resources and guidelines
Demo	1. Research Gateway Image – includes (OCI-CLI) 2. Github documentation 3. CLI scripts and development workflow for researchers
Researcher Presentation (CCHMC)	1. OCI-CLI implementation by a researcher 2. Pre-requisites, OCI-CLI usage on compute, BV attachments etc 2. OCFS2 Implementation 3. Benefits from a researcher perspective. Any other implementation areas
Recommendations and Q & A	Recommendations Oracle for Research GitHub collaboration

OCI Standard cluster architecture for Researchers
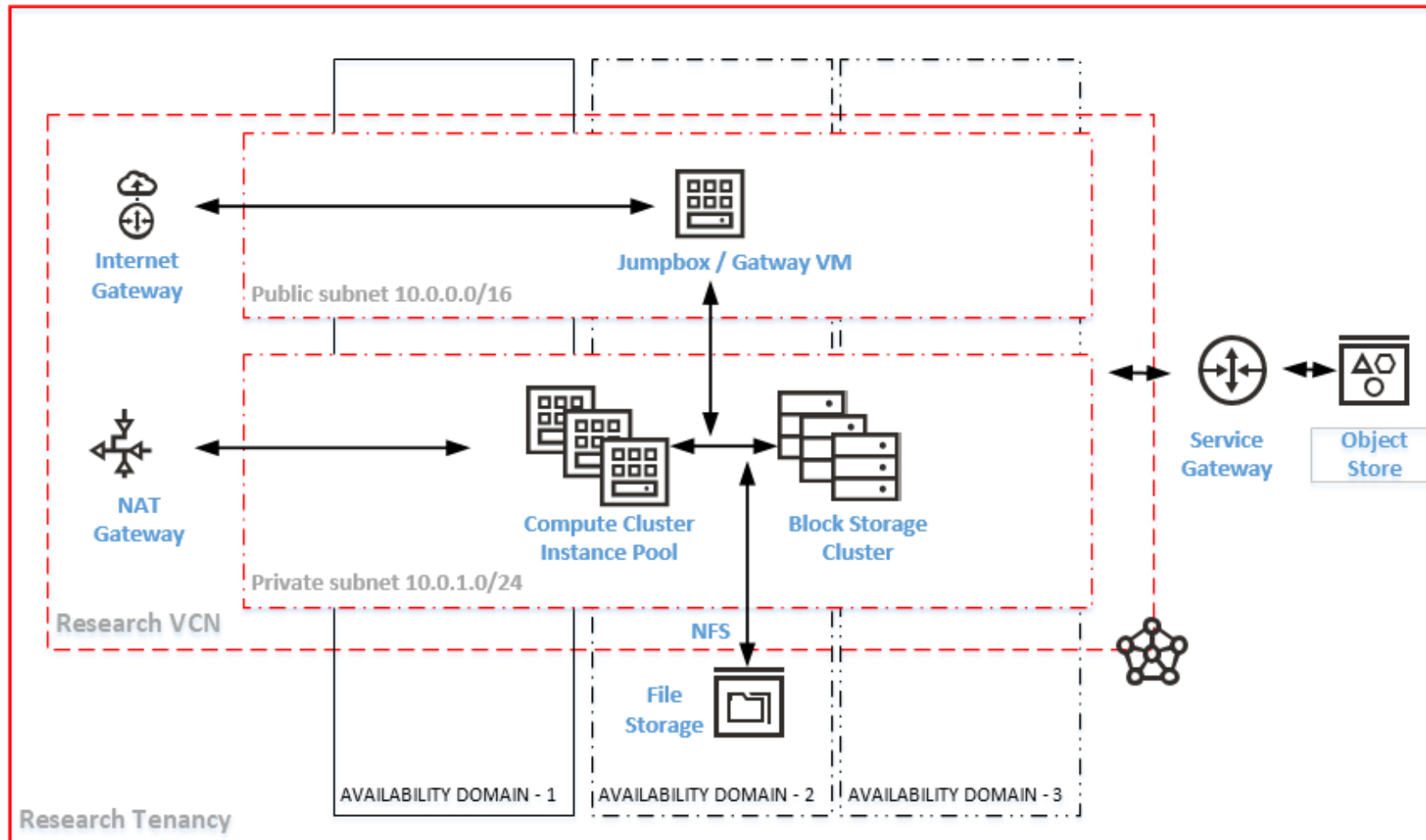
Component	Recommendation
Jumpbox VM	Use Free-Tier VM
CPU/GPU Cluster	Manual Build + Block storage
CPU/GPU Cluster	Automated Build + Block storage
HPC Cluster	Instance Pool + RDMA
NAT Gateway	Download software to pvt subnet
File storage	For cross-AD exports

OCI-CLI and Research Gateway Image

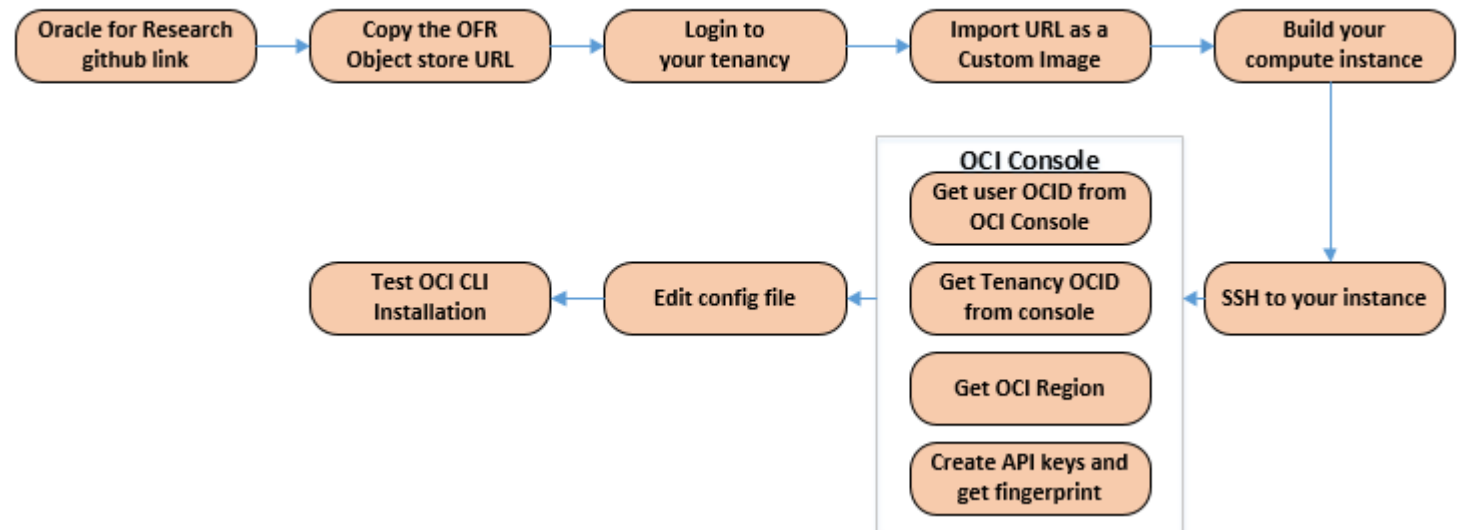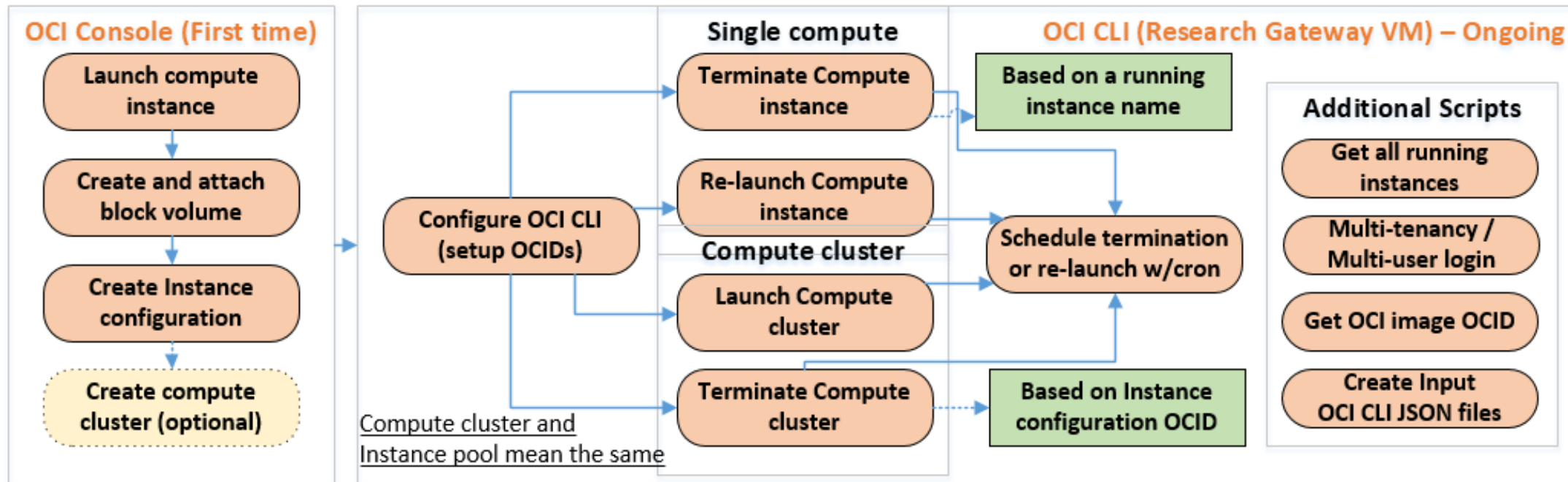| OCI-CLI	1. All functionality of OCI console + additional commands 2. Built on OCI python SDK that calls OCI REST APIs 3. OCI-CLI can run over Linux shell, Windows batch or Mac
Research Gateway	1. An Oracle Linux image with OCI-CLI installed 2. Available as a custom image from Oracle for Research (GitHub link) 3. Implement in a public subnet VM / standard architecture

Research Gateway and OCI CLI Features
1. Programmatic usage OCI Console features
2. Quick and easy install
3. Low learning curve
4. Multiple tenancy support
4. Integrates well with Linux shell commands
5. APIs released before console features
6. Command generation options
7. JSON support
8. Extensible usage and cost API
9. Notification API
10. Logging and audit API
11. Manage console resources stack and Terraform

OCI CLI AND RESEARCH GATEWAY INSTALL AND CONFIGURATION

Oracle for Research github link → Copy the OFR Object store URL → Login to your tenancy → Import URL as a Custom Image → Build your compute instance

OCI Console
- Get user OCID from OCI Console
- Get Tenancy OCID from console
- Get OCI Region
- Create API keys and get fingerprint

Build your compute instance → SSH to your instance → (OCI Console) → Edit config file → Test OCI CLI Installation

OCI-CLI Workflows

TYPICAL OCI CLI WORKFLOW FOR RESEARCHERS

OCI Console (First time)

- Launch compute instance
- Create and attach block volume
- Create Instance configuration
- Create compute cluster (optional)

Configure OCI CLI (setup OCIDs)

Compute cluster and Instance pool mean the same

Single compute

- Terminate Compute instance
- Re-launch Compute instance

Compute cluster

- Launch Compute cluster
- Terminate Compute cluster

OCI CLI (Research Gateway VM) – Ongoing

- Based on a running instance name
- Schedule termination or re-launch w/cron
- Based on Instance configuration OCID

Additional Scripts

- Get all running instances
- Multi-tenancy / Multi-user login
- Get OCI image OCID
- Create Input OCI CLI JSON files

TYPICAL OCI CLI SCRIPT DEVELOPMENT WORKFLOW FOR RESEARCHERS

Create full Input JSON → Trim input json → Input / Get OCID → Develop launch / terminate scripts
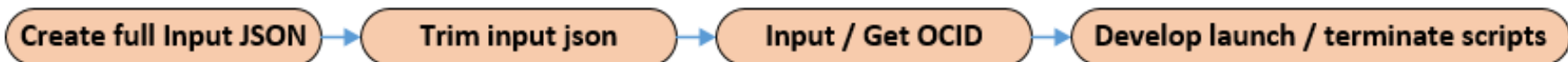
Why this is important?

1. Automatic termination saves researcher credits. (GPU/BM clusters are expensive)
2. Enables Oracle to better utilize GPU / CPU resources & support more researchers
3. Reduce service limit request processing time and saves researchers wait time

OCI CLI vs OCI Console usage

OCI Command line interface / API	OCI Console
Recommended for – Repeatable tasks	**Recommended for – One-time setup tasks**
1. Starting and terminating an instance	1. User setup and federated identity management
2. Attaching / detaching block volumes / file systems	2. Importing Marketplace / Custom images
3. Copying, deleting and exporting data	3. Importing Oracle for Research images
4. Integration with Linux shell / cron & scheduling	4. Quick data transfer from on-premise to object store
5. Benchmark data collection and storage	5. Block volume / FSS creation and administration
6. Monitoring CPU / RAM / Storage utilization	6. Resource quota and usage analysis
7. Integration with HPC Cluster provisioning	7. Auto-scaling based setup
8. Cloud advisor and cost report customization	8. Standard architecture and networking setup
9. Object storage data pulls and replication	9. Resource stack and Terraform setup
10. Docker/Singularity and container integration	10. Data science & data flow PaaS services
11. API based Cloud bursting integration	11. Autonomous and PaaS databases

OCI-CLI links

GitHub and documentation

1. OCI- CLI Documentation & OCI Documentation
2. Quickest way to install / configure OCI-CLI
3. OCI-CLI scripts collections and examples
   - OCI reporting tool and extensions
   - Usage and cost reporting
   - Auto-scaling
   - Universal credit balance & usage consumption
   - Using Telemetry service with Grafana
   - Nightly stop script
   - Audit script with OCI CLI Audit logs
   - Autonomous databases, DB systems with OCI-CLI
4. Oracle for Research OCI-CLI page
5. Oracle OCI-CLI github page

OCI-CLI blogs

1. Introduction to CLI, API and OCI Data integration
2. Easy provisioning with OCI-CLI
3. Using OCI-CLI with Kubernetes cron-jobs
4. Quickly run OCI-CLI with Docker container
4. OCI-CLI with a federation from a Docker container
5. Deploying a microservice to Oracle cloud with Github actions
6. New packages for OCI-CLI/GlusterFS , Terraform
8. Automated CLI scripts to scale autonomous databases
9. Using CLI with Restricted object store buckets

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Questions, Answers & Discussion

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Questions? Comments? Feedback?

Contact us!

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Next Tech Talk: December 4, 2020, 10:30AM EDT