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Advancement through Innovation

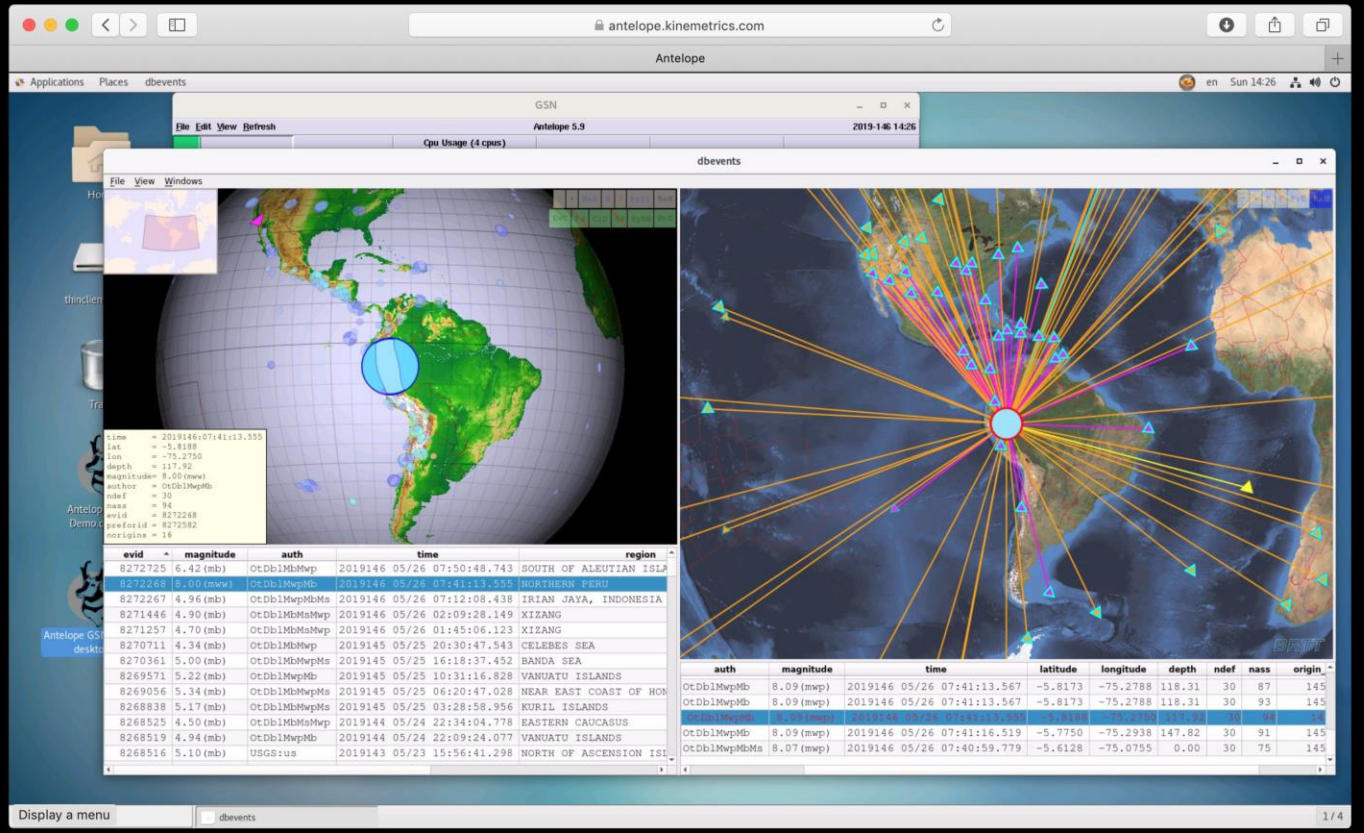
www.kinemetrics.com

First Experience with Antelope Cloud Processing

Sizing, Licensing, etc.

Stefan Radman, Kinemetrics

Antelope User Group, Taormina, Sicily, May 29, 2019



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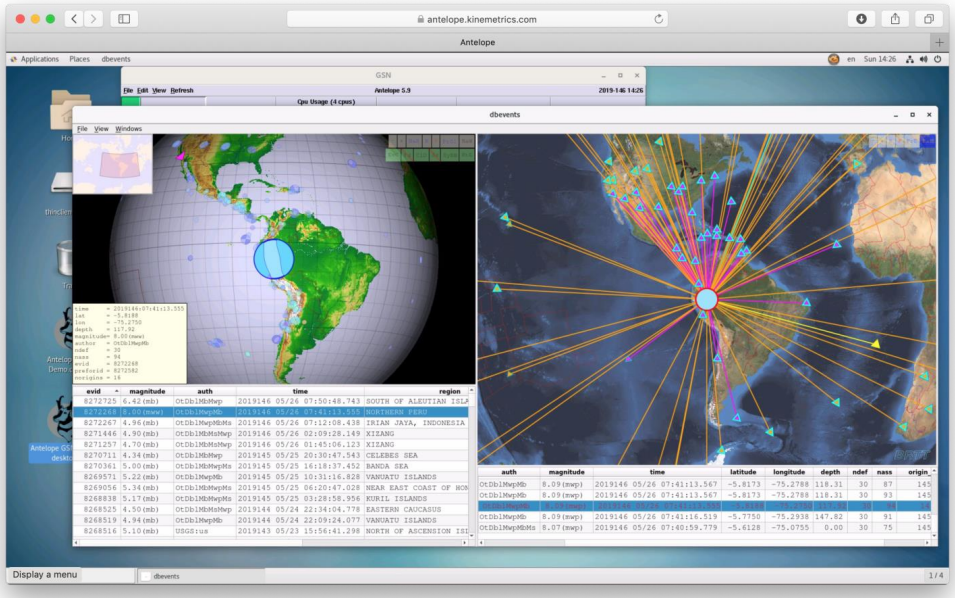
Advancement Through Innovation

Antelope Virtualization

History

- Most new Antelope instances installed by Kinemetrics are virtual nowadays.
- Trend to virtualize existing installations.
- Primarily on shared private hardware.
- VMware vSphere most popular but others emerging (Proxmox, Nutanix, Xen, etc).
- Next logical step: Antelope in the Cloud



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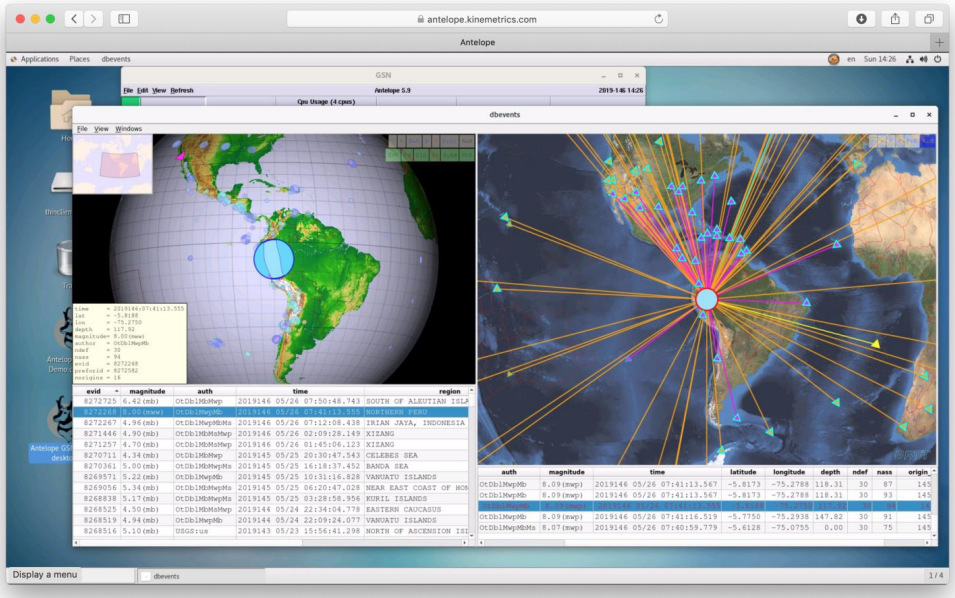
Antelope Cloud Processing

Motivations

- Reliable infrastructure
- Low TCO
- Availability
- Growing market



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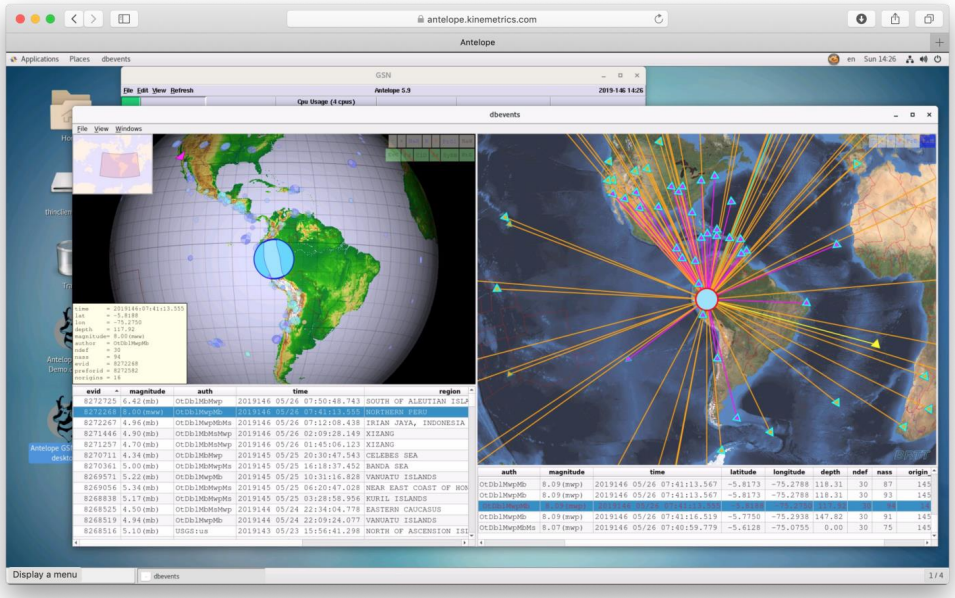
Antelope Cloud Demo

Objective

- Live demo
- Fully operational
- Real-time data processing
- Accessible from the Internet
- Low bandwidth requirement
- Secure



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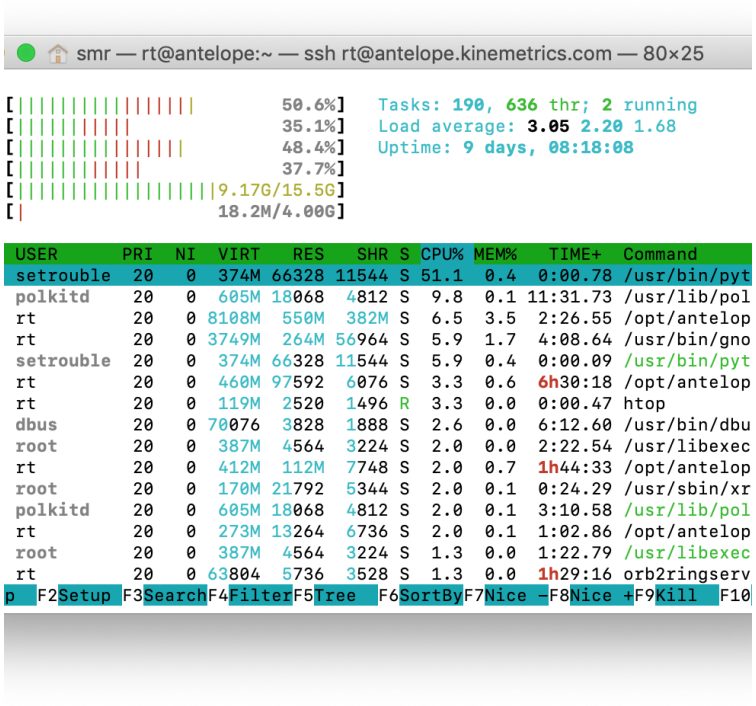
Antelope Cloud Demo

Virtual Hardware Specifications

- Amazon EC2
- Region: Oregon
- EC2 instance type: **m4.xlarge**
  - M4 = Intel Xeon E5
  - 4 vCPU, 16GB RAM
  - Balanced
- No traditional text or GUI console



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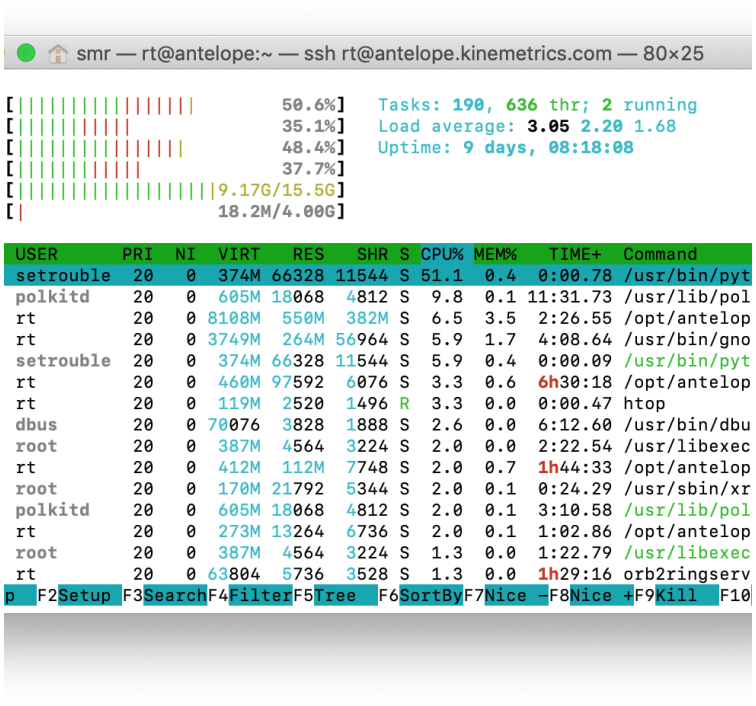
Antelope Cloud Demo

Software Specifications

- Operating system: CentOS 7 x86_64
- Installation method: AMI HVM
  - Amazon Machine Image
  - Hardware Virtual Machine
- Remote access methods:
  - SSH
  - Remote Desktop (RDP)
  - HTTP



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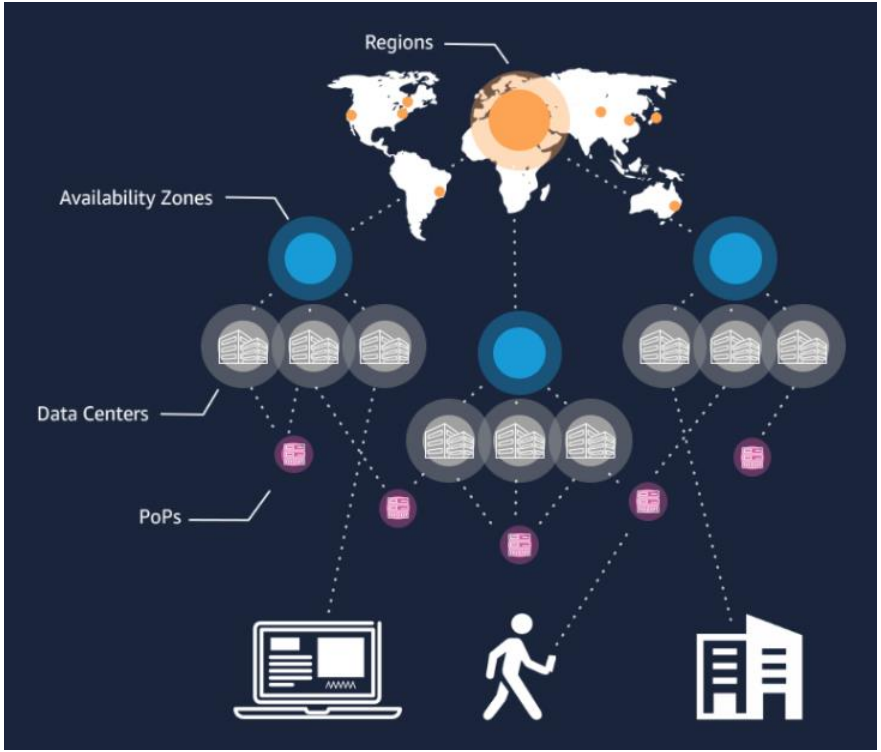
Amazon Cloud

Overview & Glossary

- AWS = Amazon Web Services
- EC2 = Elastic Cloud 2
- Instance = Virtual Machine
- AMI = Amazon Machine Image
- HVM = Hardware Virtual Machine (Xen)
- Region = Geographical region
- Availability Zones = Datacenters

Amazon Virtualization is
based on the Xen Hypervisor but
recently moving to KVM

https://www.infrastructure.aws



Amazon Cloud

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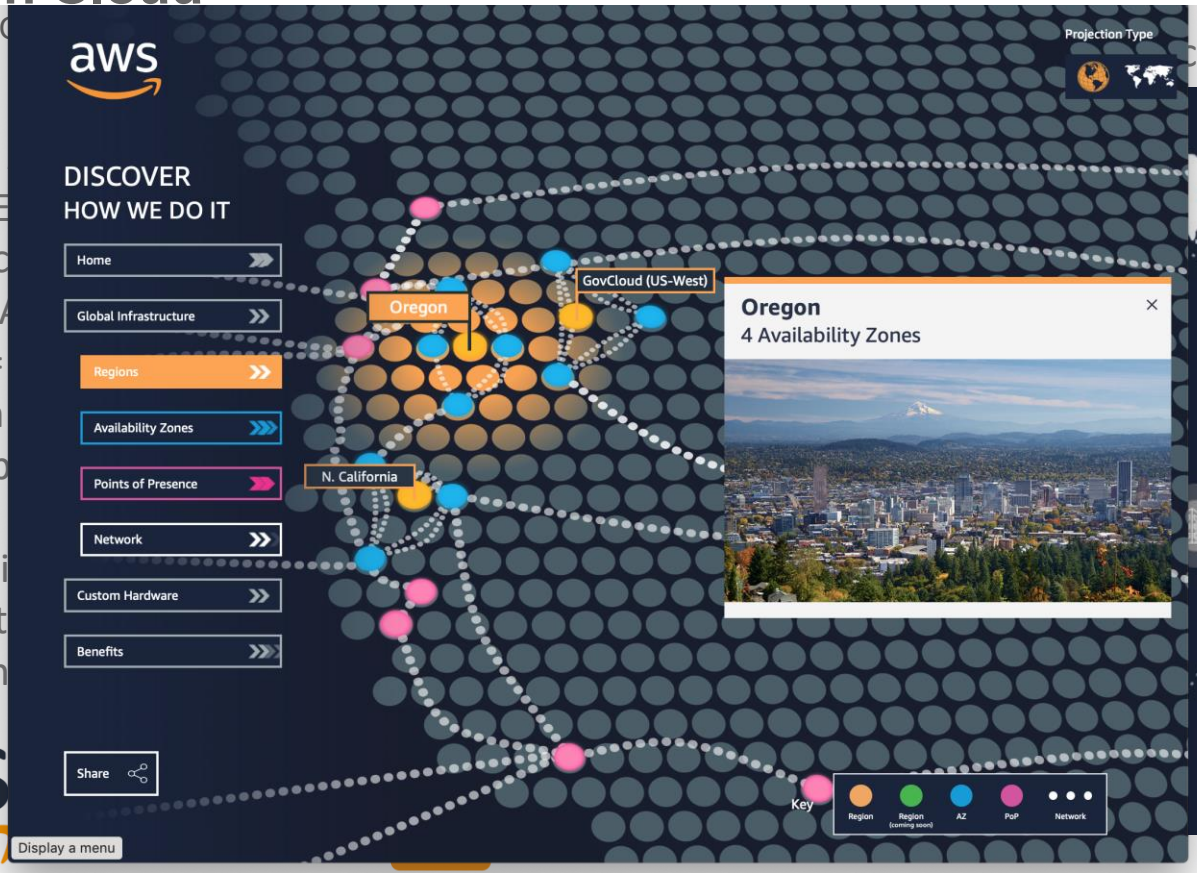

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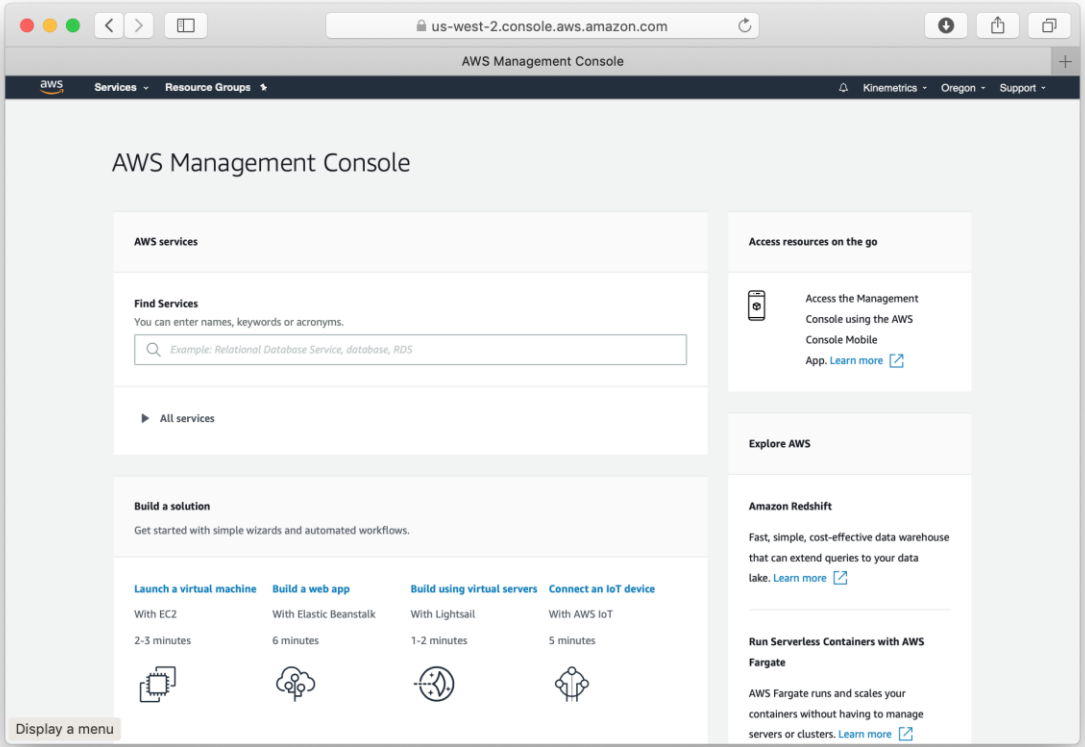
AWS Management Console

Installation and Management

- Not a system console (terminal) in the common sense
- Web based
- Solution driven
- Wizards



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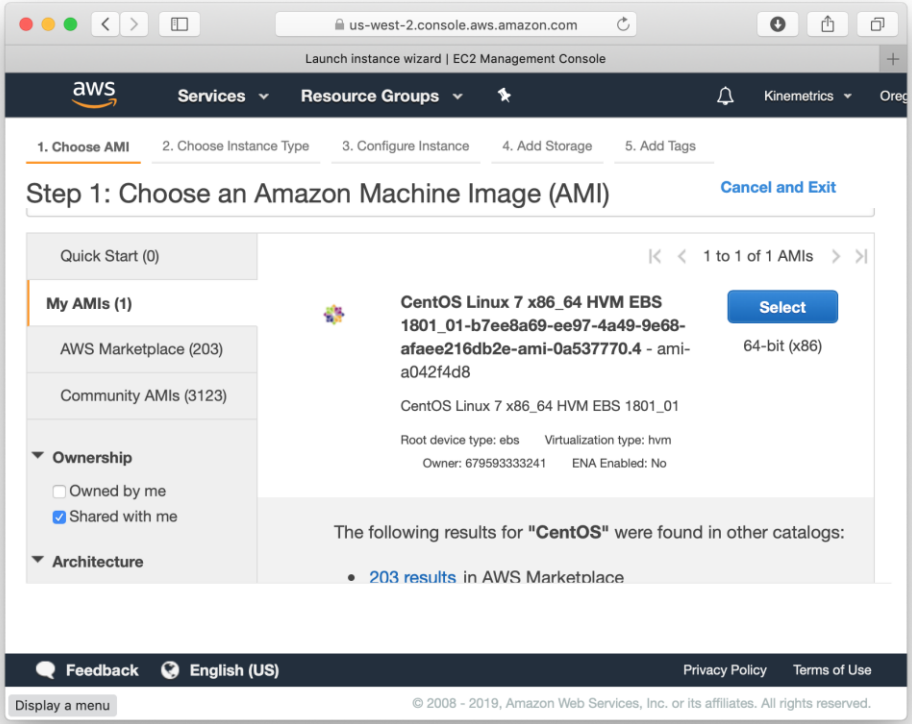
Installation
Operating System selection

- Virtual Machine Image
- Ready to start
- RHEL7 or CentOS7
- No traditional installation
- No console GUI or terminal



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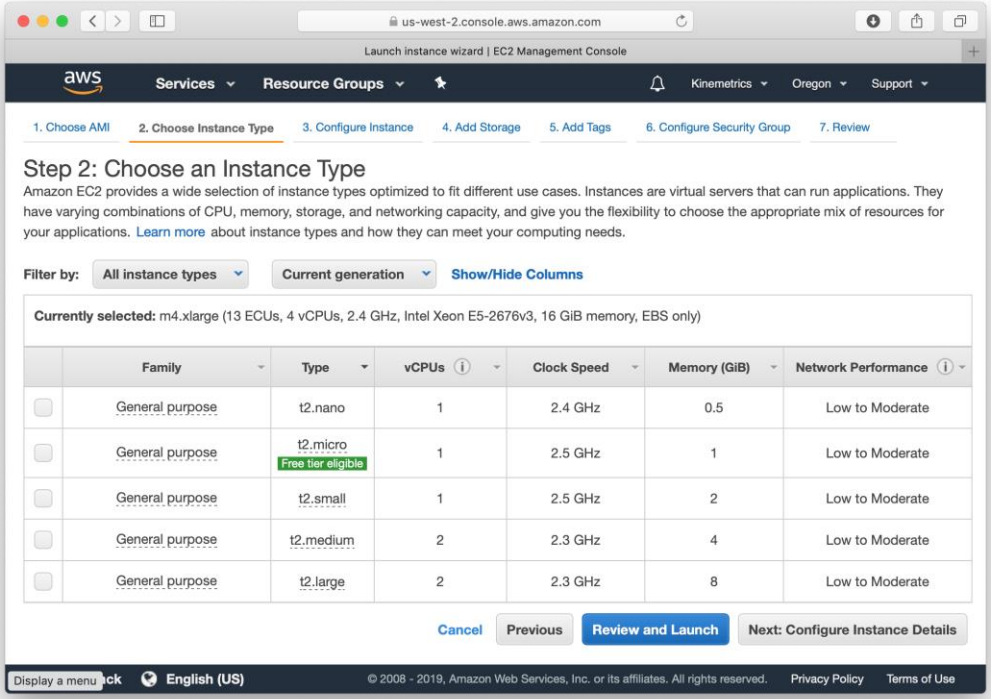
Installation
Instance Type selection

- Hundreds of instances types
- For different workloads in
- 5 Groups
  - General Purpose
  - Memory Optimized
  - Accelerated Computing
  - Storage Optimized
- Differ by
  - Processor type
  - # vCPUs
  - Memory
  - I/O bandwidth



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Installation

Instance Type selection

- M4 = Balanced performance
- Up to 64 vCPU & 256G Mem
- Similar to proven hardware used by Kinemetrics
- Reasonable pricing

General Purpose

A1 | T3 | T3a | T2 | M5 | M5a | M4

M4 instances provide a balance of compute, memory, and network resources, and it is a good choice for many applications.

Features:

- 2.3 GHz Intel Xeon® E5-2686 v4 (Broadwell) processors or 2.4 GHz Intel Xeon® E5-2676 v3 (Haswell) processors
- EBS-optimized by default at no additional cost
- Support for Enhanced Networking
- Balance of compute, memory, and network resources

Model	vCPU*	Mem (GiB)	Storage	Dedicated EBS Bandwidth (Mbps)	Network Performance
m4.large	2	8	EBS-only	450	Moderate
m4.xlarge	4	16	EBS-only	750	High
m4.2xlarge	8	32	EBS-only	1,000	High
m4.4xlarge	16	64	EBS-only	2,000	High
m4.10xlarge	40	160	EBS-only	4,000	10 Gigabit
m4.16xlarge	64	256	EBS-only	10,000	25 Gigabit

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Installation

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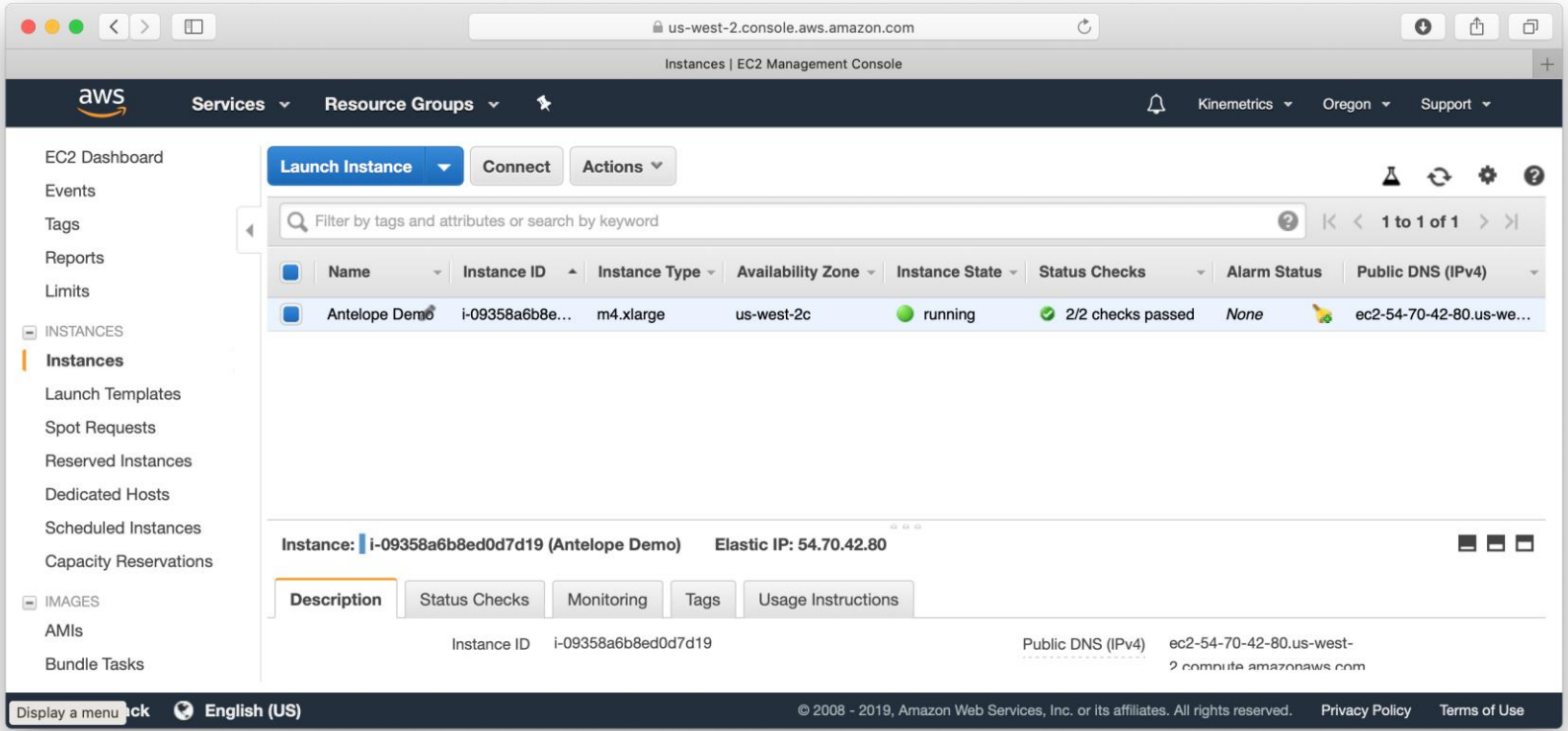
AWS Management Console

Instances



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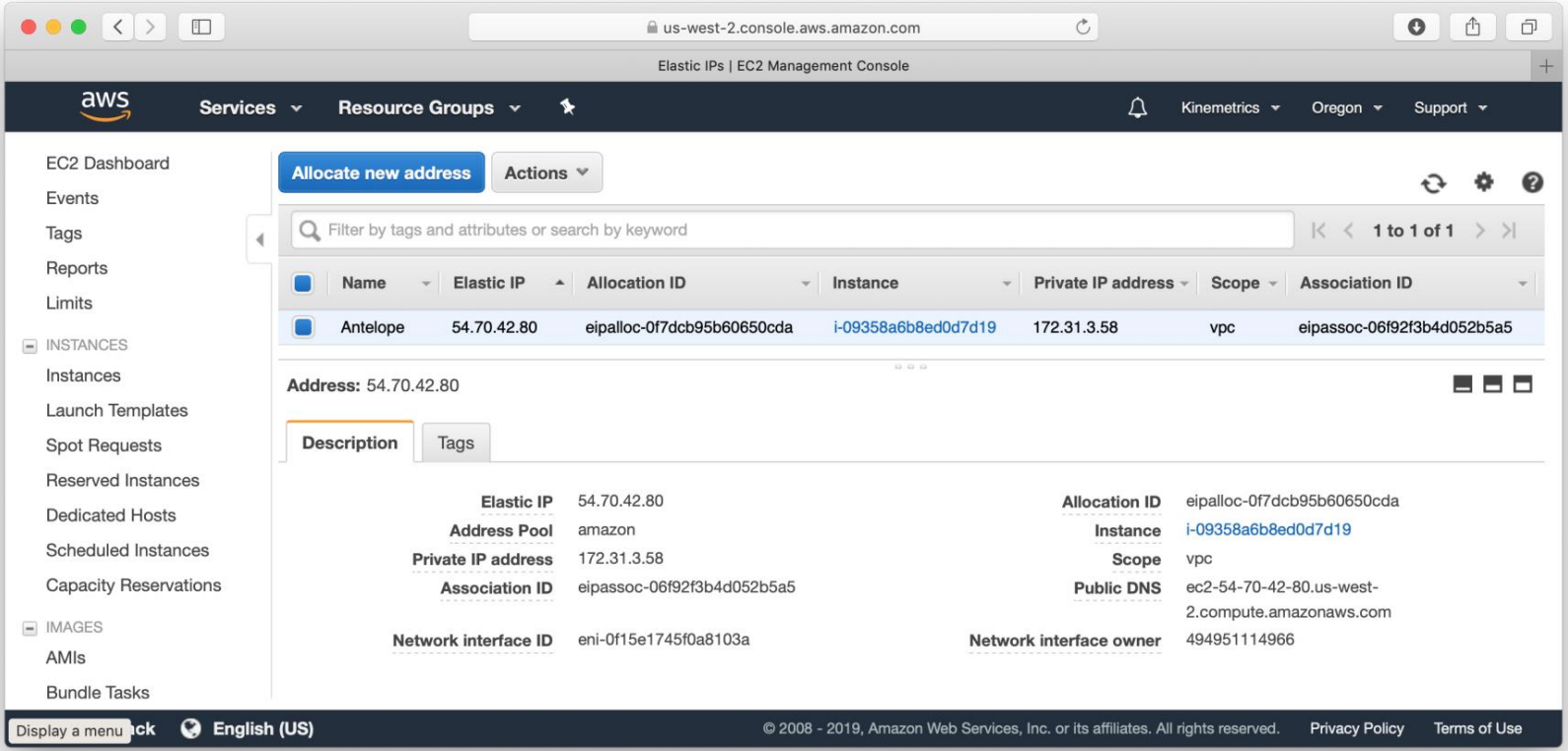
AWS Management Console

Elastic IP



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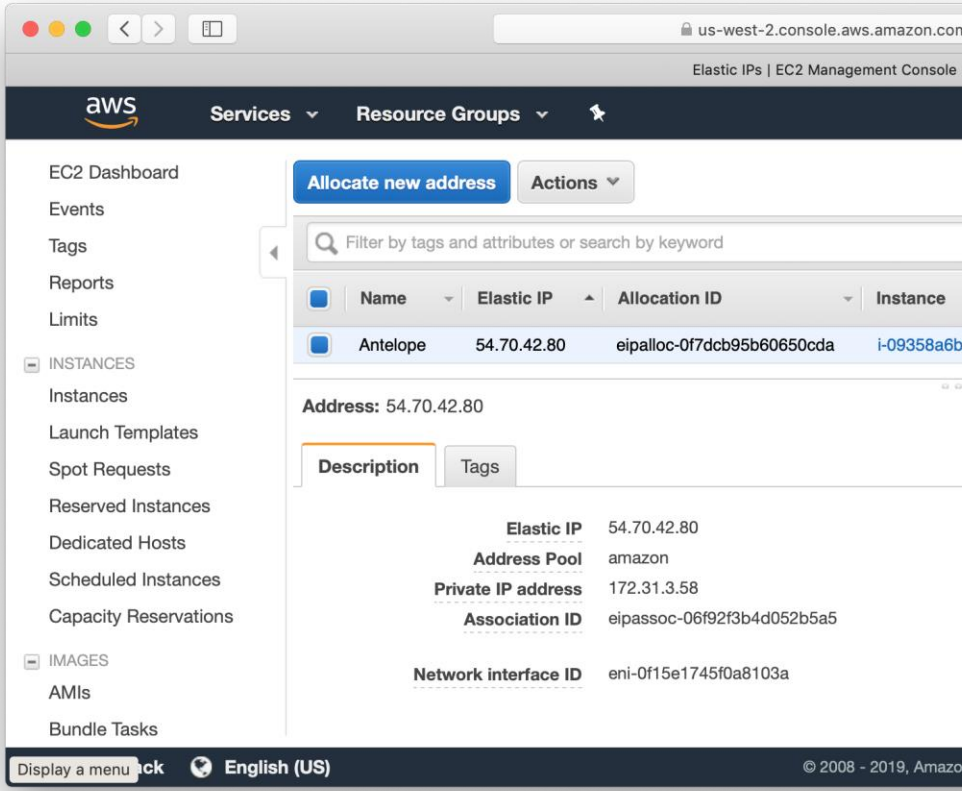
AWS Management Console

Elastic IP

- Private IP = configured on VM
- Elastic IP = Assigned Public IP
- Needed for Antelope IP license
- One Elastic IP / Instance = included
- No need for ald_proxy



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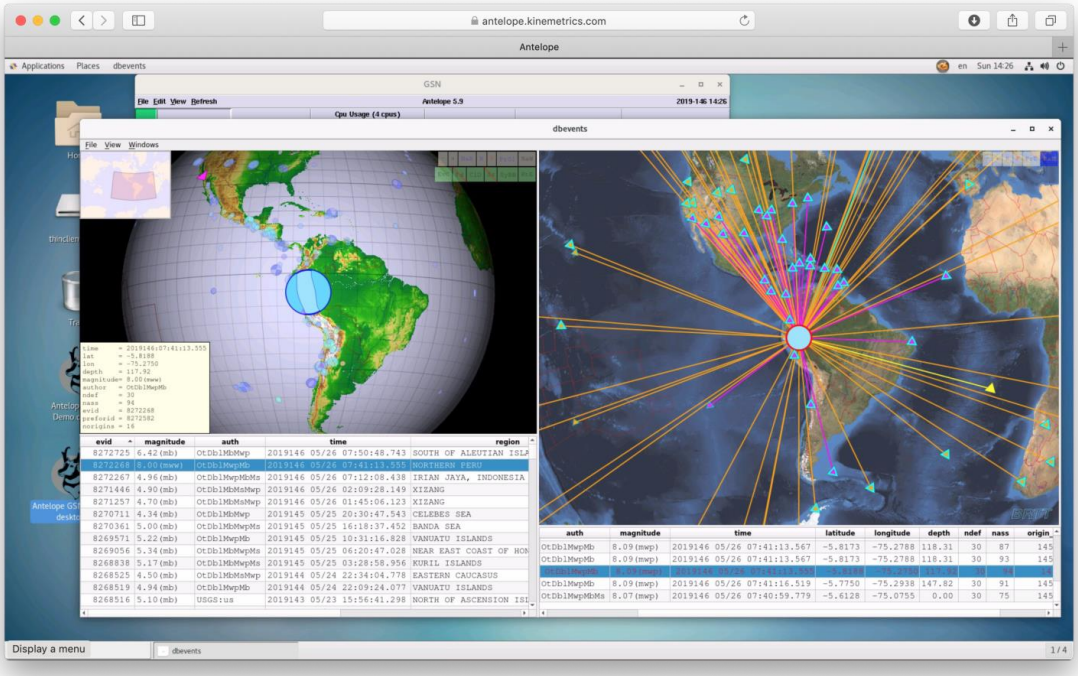
Antelope Cloud Demo

Antelope Real-time Systems

- Started June 21, 2018
- Installed Antelope 5.8
  - GSN Demo
  - ANZA Demo
- Running automatically
- Daily reports
  - rtsys
  - rtreport
- Upgraded to 5.9 last week



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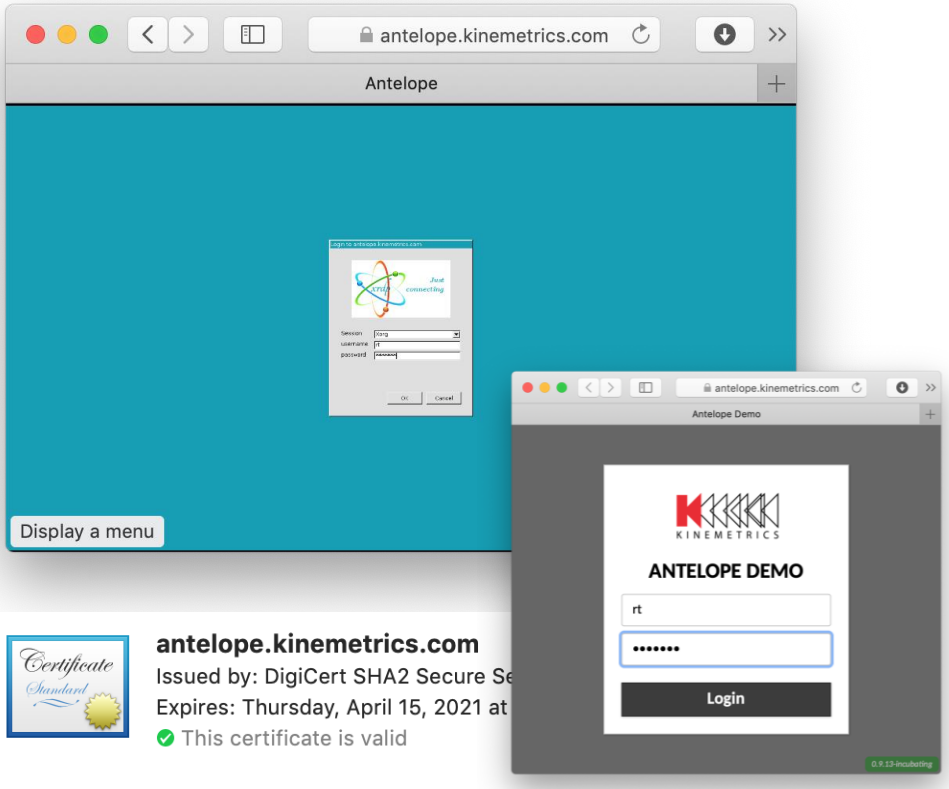
Antelope Cloud Demo

Remote Access

- Remote desktop (RDP protocol)
- Based on xrdp from EPEL7
- Clients for Windows, Mac & Linux
- HTTP frontend Guacamole
- Official Kinemetrics DNS name
- Only using HTTPS
- Official certificate from DigiCert



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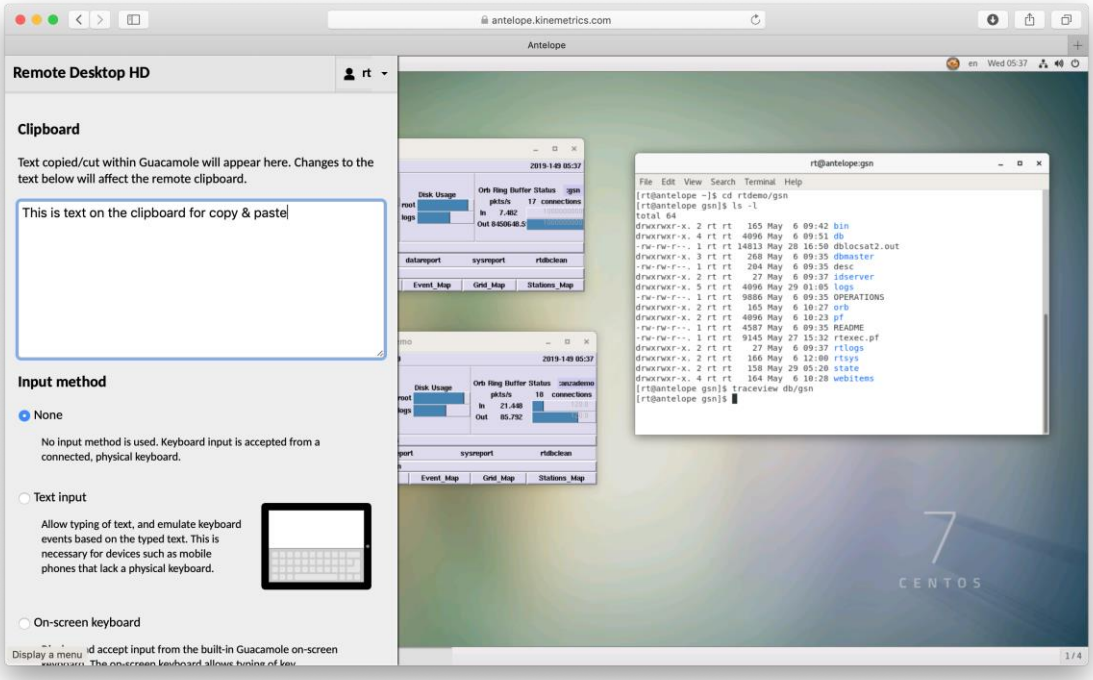
Antelope Cloud Demo

Guacamole

- Apache Guacamole
- Clientless

  remote desktop gateway
- HTML5 web application
- Support for

  VNC, RDP and SSH



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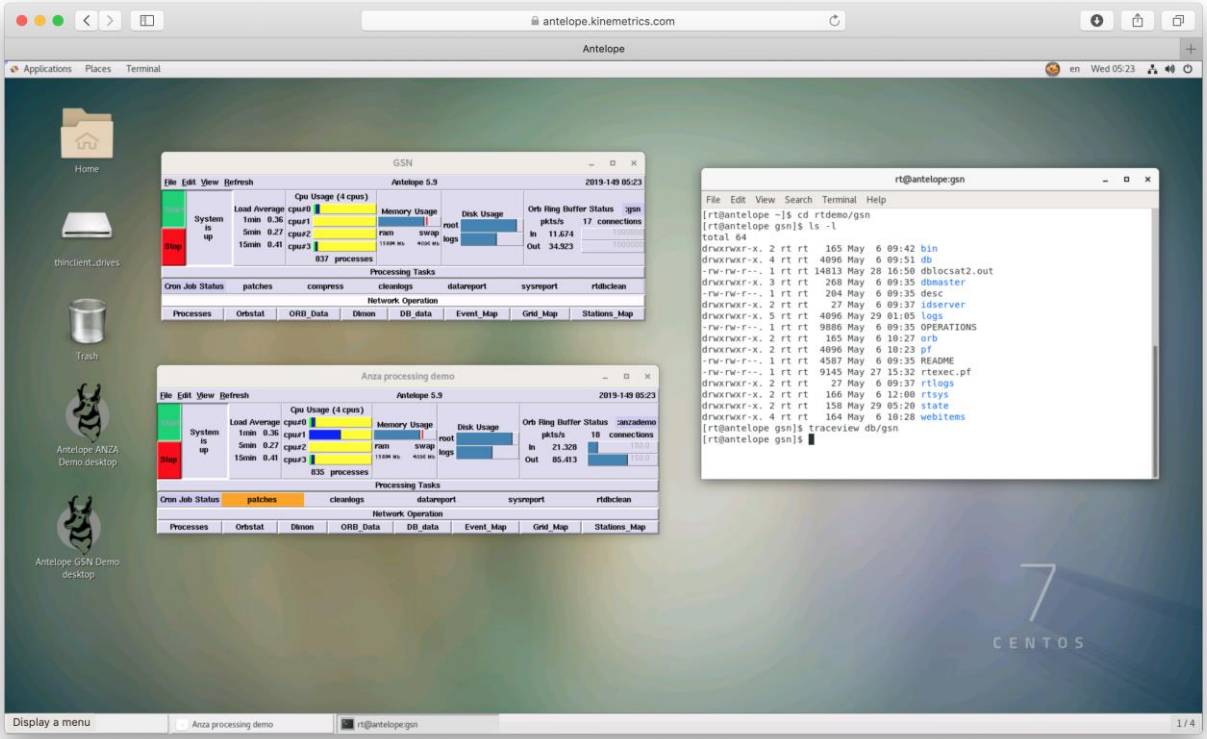
Antelope Cloud Demo

Virtual Desktop

- GNOME Desktop
- Custom Icons



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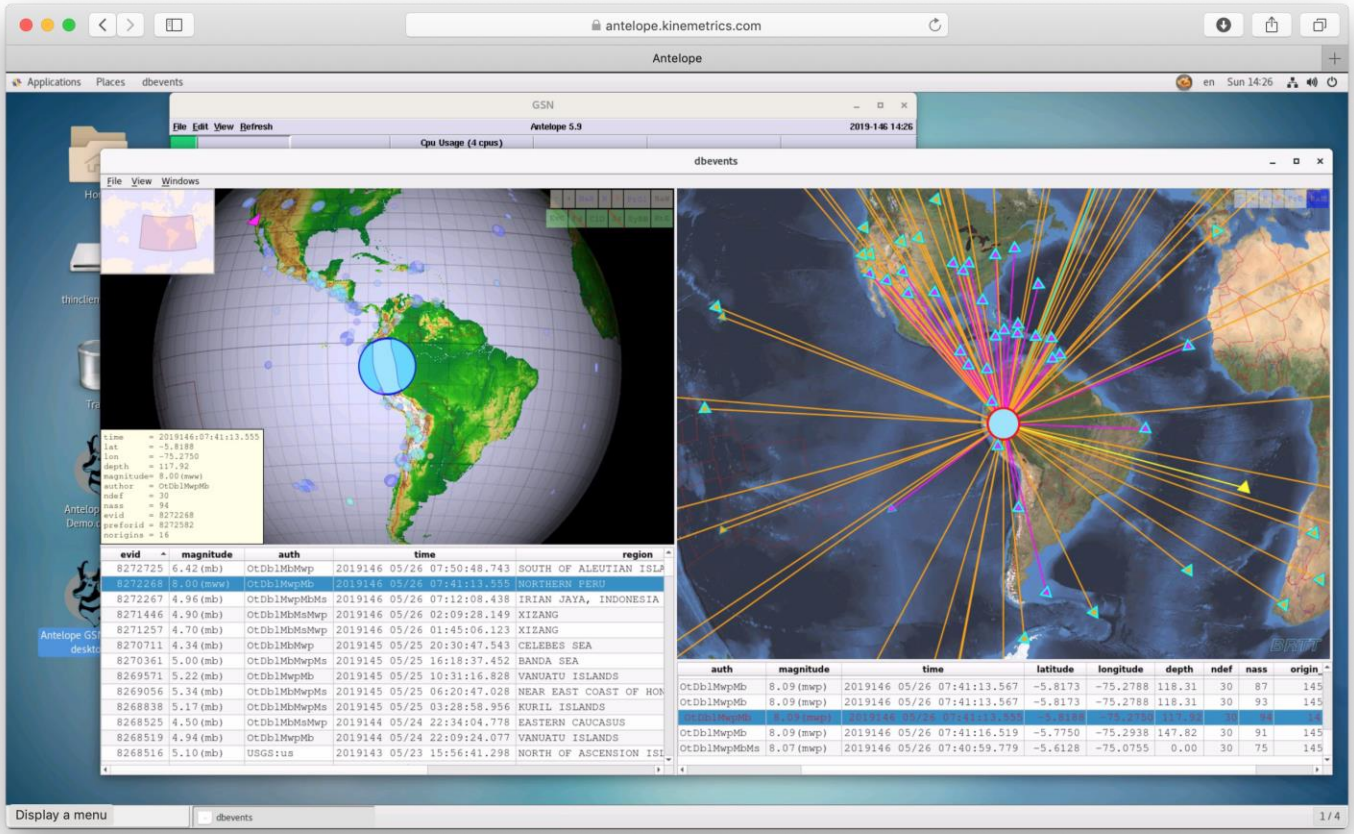
Antelope Cloud Demo

Automatic processing



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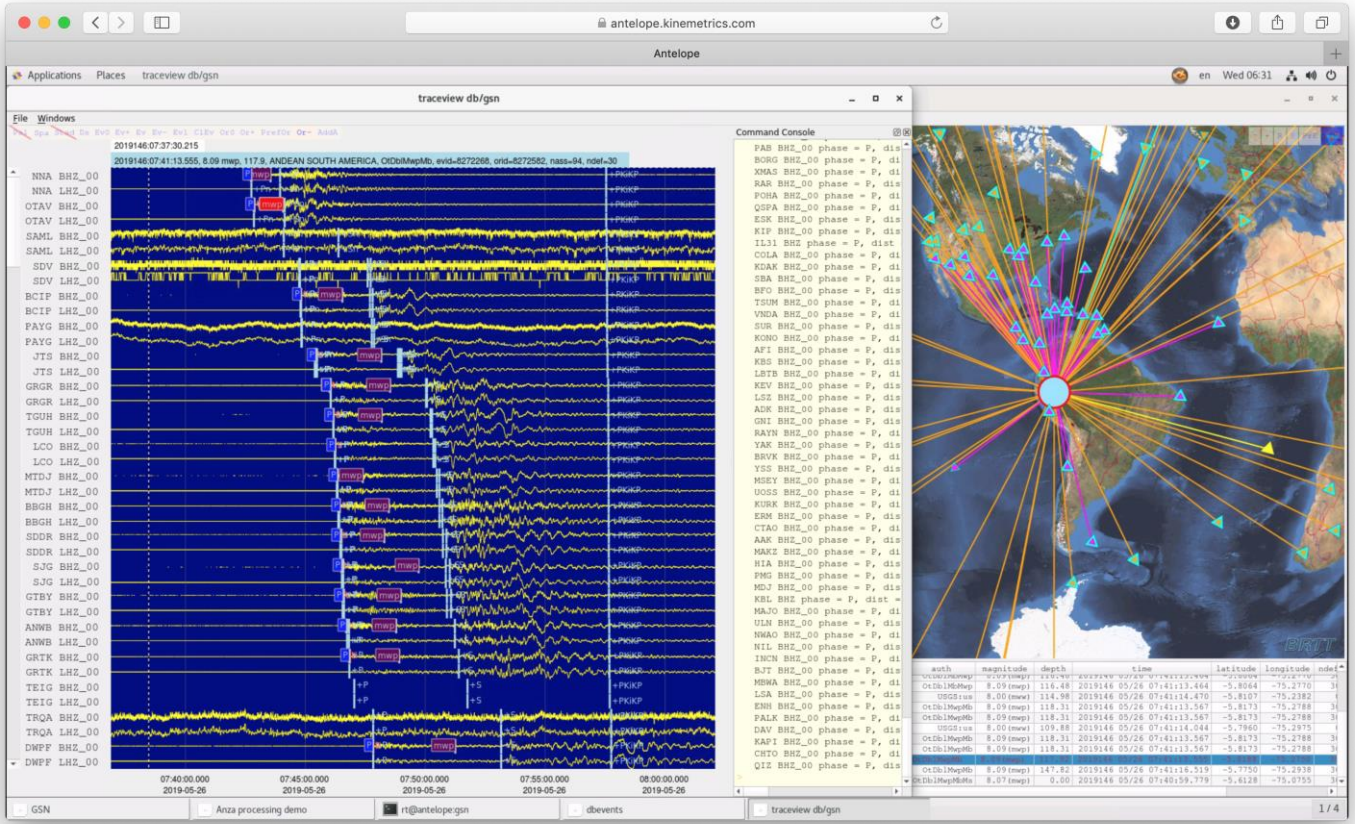
Antelope Cloud Demo

Automatic processing



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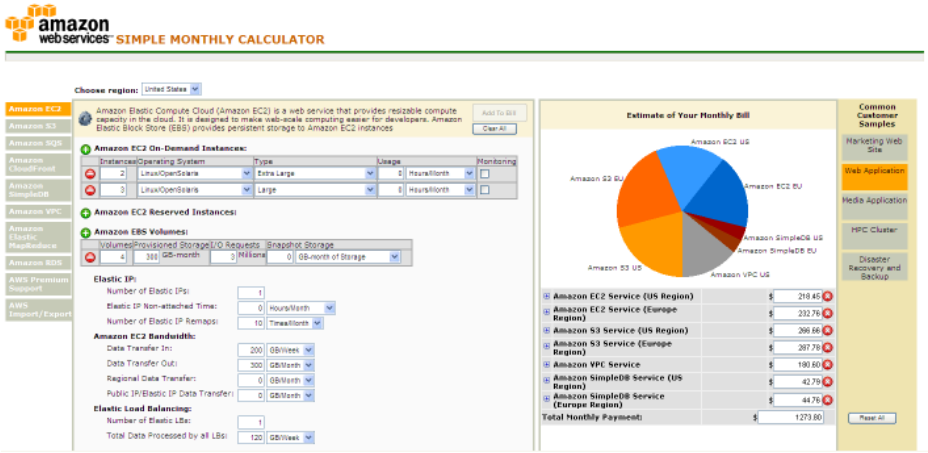
Cost control
Planning

- Simple Monthly Calculator
- Estimate for operational cost
- On-demand pricing
- Reserved instances



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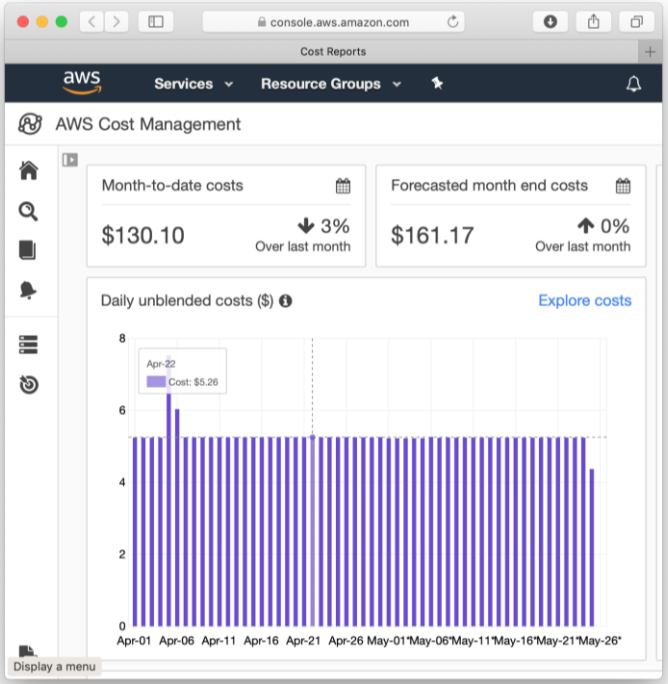
Cost control

Operational costs

- AWS Cost Explorer
- Current cost
- Monthly/Daily cost
- History
- Trend/Forecast



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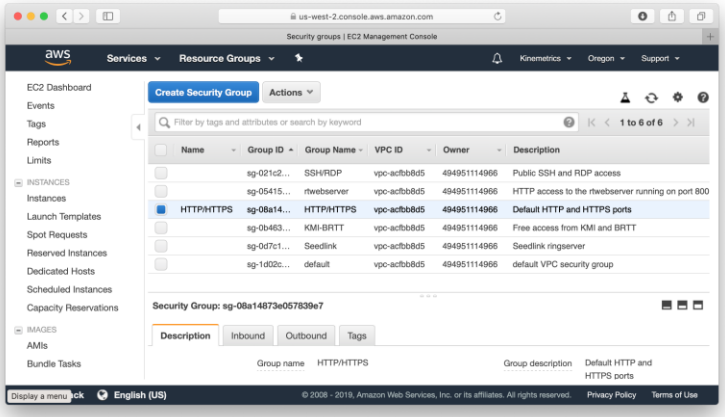
Antelope Cloud Processing

Security

- AWS security measures
- EC2 Security Groups
- Linux firewalld
- SELinux (Security Enhanced Linux)
- Secure SSL configuration
- Software updates!
- Open Source Tripwire®
- Monitoring (Zabbix)
- SSH Public Key Authentication

SELinux

Open Source Tripwire®



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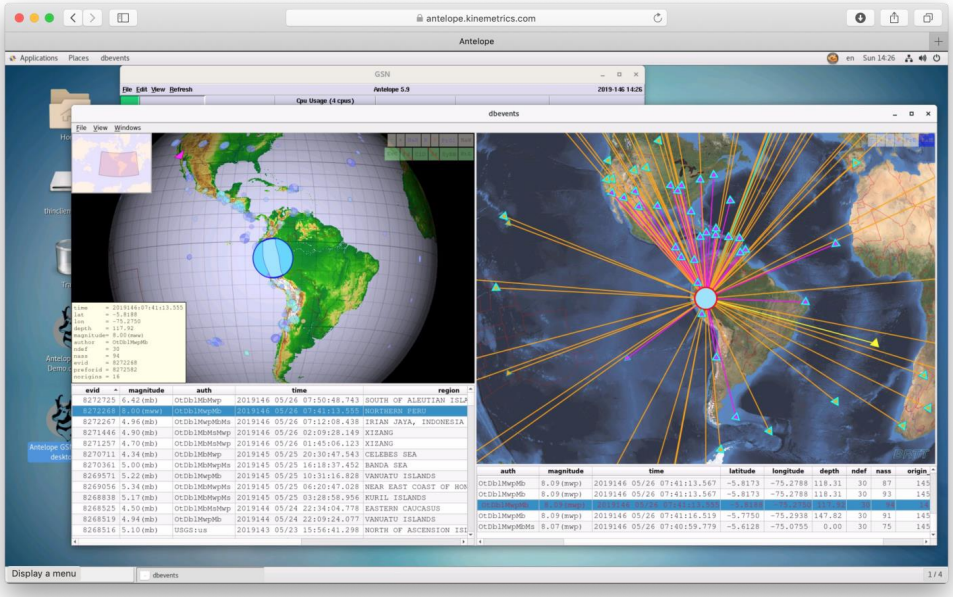
Antelope Cloud Processing

Challenges

- Credit Card required
- Cost control
- Network bandwidth
- Resource hungry GUI
- Traditional storage model
- Remote access integration
- Security




```
smr:~ smr$ ssh root@antelope.kinemetrics.com
Last failed login: Sun May 26 12:22:58 UTC 2019 from 218.92.0.209 on ssh:notty
There were 91256 failed login attempts since the last successful login.
Last login: Mon May 20 11:31:36 2019 from 213-225-1-165.nat.highway.a1.net
[root@antelope ~]#
```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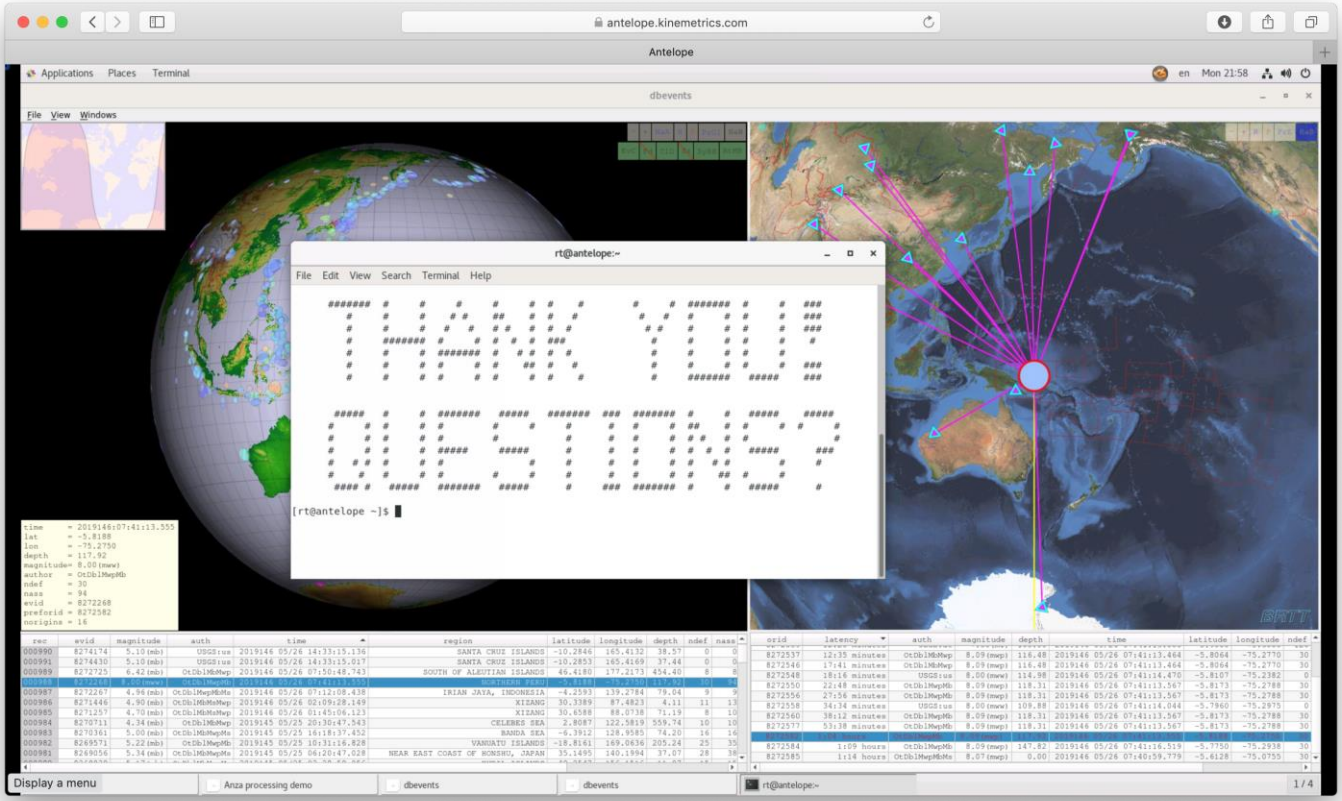
Antelope Cloud Processing

Questions



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Antelope Cloud Demo

Links and References

- Antelope Cloud Demo https://antelope.kinemetrics.com
- Amazone Web Services (AWS) https://aws.amazon.com
- xrdp http://www.xrdp.org
- Apache Guacamole http://guacamole.apache.org
- Zabbix https://www.zabbix.com
- Open Source Tripwire https://github.com/Tripwire/tripwire-open-source

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