AppScale

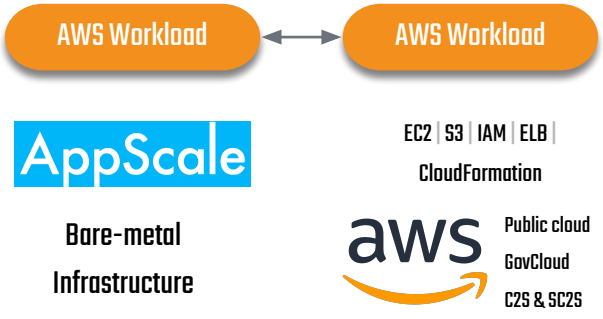
Solution Brief

ATS for GovCloud, C2S, and SC2S users

Federal government and their contractors are embracing public cloud offerings to benefit from their technological advances and to outsource "undifferentiated heavy lifting" to private operators. Amazon's government-oriented offerings – GovCloud, C2S, SC2S – are growing in use, both due to the popularity of their offerings and due to requirements. These clouds, however, present challenges to current and potential users:

- **Costs** of running in government clouds, especially intelligence community clouds, can be high for many workloads when compared to TCO of on-prem infrastructure amortized over 3-5 years;
- **Differences** between the public AWS services (or non-AWS on-premise environments) and government clouds can make development, testing, and deployment challenging;
- **Latency** between the users and the only two geographic areas (Virginia and Oregon) served by government clouds can be problematic for some workloads;
- **Classified** nature of C2S/SC2S – with clearance required to use it – slows down testing and deployment of software in that environment, particularly when the group of cleared personnel is small and difficult to grow.

AppScale ATS offering can help overcome these challenges by bringing the functionality of AWS clouds into any environment. By utilizing hardware in on-premise environments (including air-gapped datacenters) to create private AWS-like cloud regions, ATS allows non-cleared developers to create or evaluate software for the AWS ecosystem faster and at a lower cost. Essentially, ATS can save time and money for federal government users and contractors.



Case Study

One federal contractor has been using ATS as a **staging ground for C2S** for over 5 years, saving in excess of $2M and considerably accelerating delivery of software. Their deployment supports about 200 geographically dispersed users and typically runs 700-800 instances at any time. Software gets developed and tested on ATS before production deployments into C2S.

The **cost savings** – compared to using GovCloud or C2S for the entire process – result from a combination of factors:

- Initially the contractor was able to utilize the existing hardware and software investment (e.g., RHEL, VMware, and SAN storage appliances).
- As usage grew, heavy utilization of their private cloud meant that **5-year TCO** for a new server was below 60% compared to the same compute capacity on a public cloud, which prompted new hardware investments specifically for ATS.
- Furthermore, since some of the software under development would have been able to utilize public cloud resources, cost savings relative to government AWS clouds were even greater.

Examples of differences between public AWS services and GovCloud/C2S deployments include DNS addresses of service **endpoints** and root **certificates** for securing SSL communications. Majority of software in the AWS ecosystem, including popular development libraries, hardcodes public AWS endpoints and relies on public domain certificate authorities (CAs), which is problematic for software being deployed into GovCloud or C2S. ATS helps discover such problems early, saving considerable time for the contractor.

Finally, by enabling development on ATS, unclassified personnel could work on the software in an environment that is similar to C2S, minimizing problems for the cleared personnel that would ultimately vet and deploy the software on the high side. ATS allowed the contractor to maintain development velocity despite the recent delays for obtaining clearance.

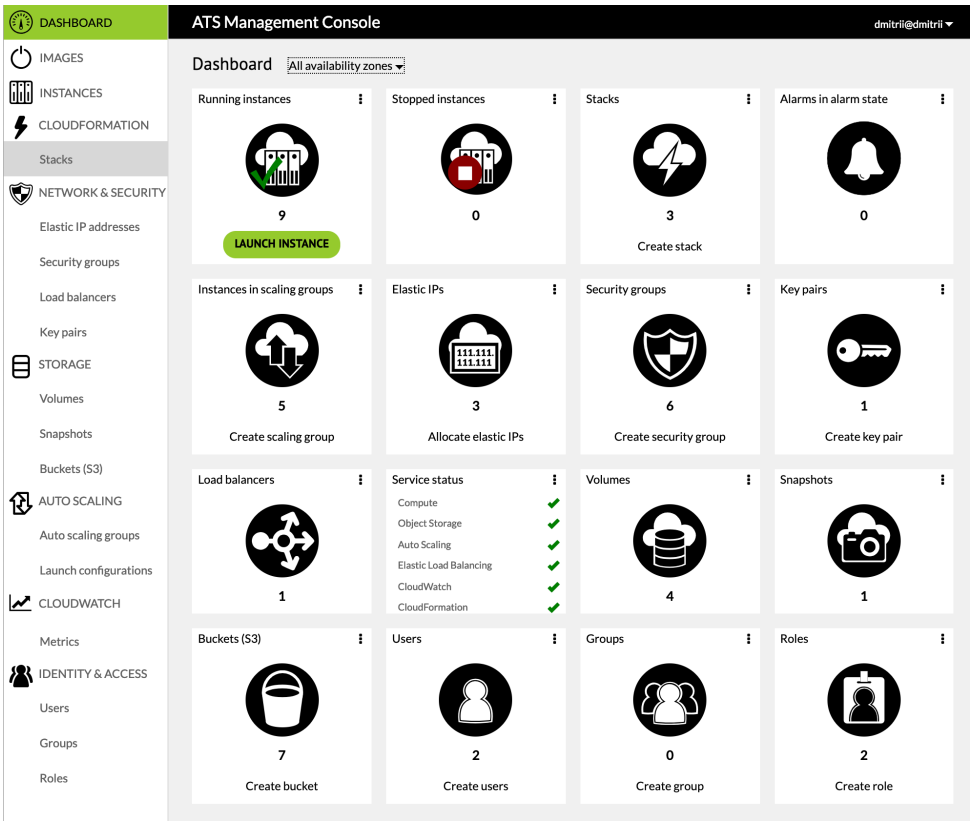
AppScale ATS implements AWS-compatible clouds over bare-metal infrastructure. Those familiar with AWS can view it as another region, with one or more availability zones. Collections of virtual machines, their network topology, and storage can be managed using AWS command-line tools, a Web console, or programmatically through the AWS-compatible API. AWS-style load balancing, auto-scaling, storage volume management, and user identity management, with a rich set of access controls, are included.

ATS is fully compatible with AWS APIs, providing endpoints for **EC2**, **EBS**, **S3**, **IAM**, **ELB**, **CloudWatch**, **CloudFormation**, and other services. The large variety of tools for managing EC2 workloads and software stacks designed to run on top of EC2 can be used on ATS with little or no modification. This enables easy migration to or from AWS, as well as hybrid deployments, without the need for extra abstraction layers.

ATS was designed to be easy to install, operate, and keep updated. It runs on standard CentOS or RedHat installations, relying on KVM for virtualization. The vast majority of bare-metal configurations, from a handful of servers to many racks, can run ATS. Built using open source software and fully open source itself, ATS will not lock you into an expensive proprietary solution. ATS is enterprise proven with deployments of over 200,000 cores.

Benefits

- **Security and compliance**: leverage advantages of fully dedicated, potentially air-gapped environments that don't require security clearance to use (folks in the clearance pipeline can be put to use).
- **Time to service**: fast-to-install platform offering AWS-like self-service model on private resources, reducing time to deployment and time between feature updates.
- **Easy migration**: applications or workloads currently on AWS EC2 can be migrated to the Appscale ATS platform with little effort; workloads headed to GovCloud and C2S can be efficiently vetted on ATS, saving problems down the line.
- **Cost effective**: launch your AWS on-premises service quickly with an introductory licensing and pricing package that is price competitive with 3-year reserve price on public AWS clouds.
- **Ease of operation**: designed specifically to run small-to-medium clouds with minimal supervision (rather than replicate the scale and operational woes of large clouds).



Features

Virtual machine management

Scalable software-defined object and block storage

Software-defined networking

Built-in load balancer

Instance auto-scaling

Identity and access management

LDAP / Active Directory integration

Security Token Service

Web console ATS and AWS

Federation of multiple ATS clouds