

Dell Boomi Molecule on the AWS Cloud

Quick Start Reference Deployment

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Visit our [GitHub repository](#) for source files and to post feedback, report bugs, or submit feature ideas for this Quick Start.

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This Quick Start was created by Amazon Web Services (AWS).

[Quick Starts](#) are automated reference deployments that use AWS CloudFormation templates to deploy key technologies on AWS, following AWS best practices.

Overview

This Quick Start reference deployment guide provides step-by-step instructions for deploying a Dell Boomi Molecule cluster on the AWS Cloud.

This Quick Start is for users who are looking for an integration platform as a service (iPaaS) that can be hosted on AWS. This Quick Start enables you to deploy a Dell Boomi Molecule cluster on AWS and administer it through the [Dell Boomi AtomSphere platform](#).

Dell Boomi on AWS

Dell Boomi service is a minimal-code, cloud-based iPaaS that enables customers to design, deploy, manage, and govern all of their data across their hybrid and software as a service (SaaS) applications by connecting and integrating external application data with AWS services such as Amazon Simple Storage Service (Amazon S3), Amazon Simple Notification Service (Amazon SNS), Amazon Relational Database Service (Amazon RDS), and Amazon Redshift using Dell Boomi's point-and-click graphical interface.

The Dell Boomi Molecule is a single-tenant, clustered runtime that runs separately from the platform, enabling multiple processes to run concurrently. The enterprise-grade version of a Boomi Atom runtime, the Boomi Molecule can be deployed across multiple servers to enhance load balancing and ensure high availability for mission-critical integration processes.

Cost and licenses

You are responsible for the cost of the AWS services used while running this Quick Start reference deployment. There is no additional cost for using the Quick Start.

The AWS CloudFormation template for this Quick Start includes configuration parameters that you can customize. Some of these settings, such as instance type, will affect the cost of deployment. For cost estimates, see the pricing pages for each AWS service you will be using. Prices are subject to change.

Tip After you deploy the Quick Start, we recommend that you enable the [AWS Cost and Usage Report](#) to track costs associated with the Quick Start. This report delivers billing metrics to an S3 bucket in your account. It provides cost estimates based on usage throughout each month, and finalizes the data at the end of the month. For more information about the report, see the [AWS documentation](#).

This Quick Start requires an account with Dell Boomi. The Dell Boomi account used to stage this Quick Start will determine the licensing model that applies. To get started, sign up for the [Free Trial](#). You will then receive a call from a Boomi Sales Engineer, who will enable access to Boomi Molecule.

Architecture

Deploying this Quick Start for a new virtual private cloud (VPC) with **default parameters** builds the following Dell Boomi environment in the AWS Cloud.

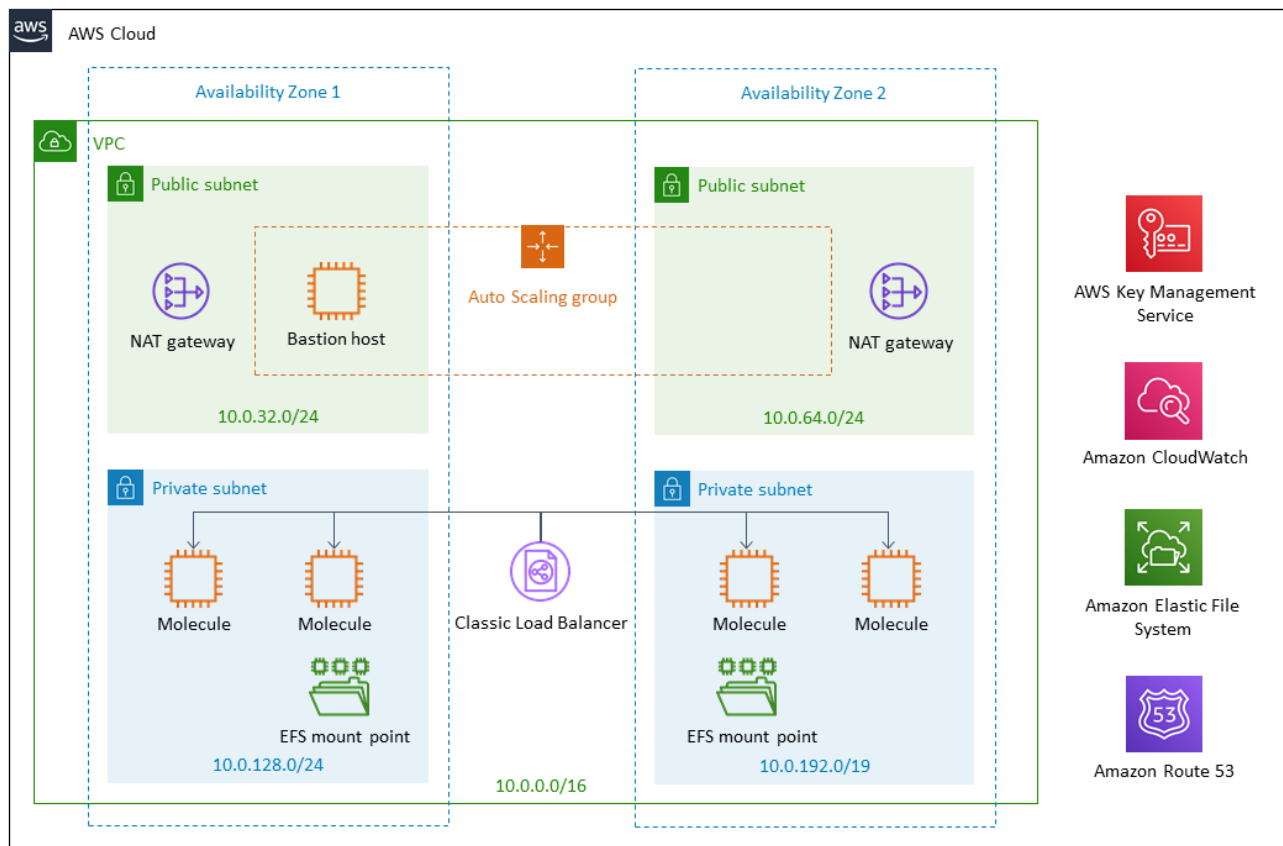


Figure 1: Quick Start architecture for Dell Boomi on AWS

The Quick Start sets up the following:

- A highly available architecture that spans two Availability Zones.*
- A VPC configured with public and private subnets according to AWS best practices, to provide you with your own virtual network on AWS.*
- A Classic Load Balancer.
- In the public subnets:
 - Managed NAT gateways to allow outbound internet access for resources in the private subnets.*
 - A Linux bastion host in an Auto Scaling group to allow inbound Secure Shell (SSH) access to Amazon Elastic Compute Cloud (Amazon EC2) instances in public and private subnets, with Amazon CloudWatch for monitoring.
- In the private subnets:
 - Four Amazon EC2 instances with the Dell Boomi Molecule software installed, two in each Availability Zone.

- Amazon Elastic File System (Amazon EFS) deployed in the Region. Two Amazon EFS mount points are created also, one in each Availability Zone.

* The template that deploys the Quick Start into an existing VPC skips the components marked by asterisks and prompts you for your existing VPC configuration.

Planning the deployment

Specialized knowledge

This Quick Start assumes familiarity with basic concepts of networking, bastion hosts, volume sizing, and compute performance. It also assumes familiarity with the Dell Boomi variables that are required when deploying a Molecule cluster. These variables include `Molecule Name`, `Local Path`, `Local Temp Path`, `Account Id`, `Account Name`, and `Account Password`. This Quick Start follows the patterns for Unattended Dell Boomi Molecule deployments found in the [Dell Boomi User Guide](#).

This deployment guide also requires a moderate level of familiarity with AWS services. If you're new to AWS, visit the [Getting Started Resource Center](#) and the [AWS Training and Certification website](#) for materials and programs that can help you develop the skills to design, deploy, and operate your infrastructure and applications on the AWS Cloud.

AWS account

If you don't already have an AWS account, create one at <https://aws.amazon.com> by following the on-screen instructions. Part of the sign-up process involves receiving a phone call and entering a PIN using the phone keypad.

Your AWS account is automatically signed up for all AWS services. You are charged only for the services you use.

Technical requirements

Before you launch the Quick Start, your account must be configured as specified in the following table. Otherwise, deployment might fail.

[Resources](#)

If necessary, request service limit increases for the following resources. You might need to do this if you already have an existing deployment that uses these resources, and you think you might exceed the default limits with this deployment. For default limits, see the AWS documentation.

AWS Trusted Advisor offers a service limits check that displays your usage and limits for some aspects of some services.

Resource	This deployment uses (default configuration)
VPCs	1
Elastic IP addresses	2
Auto Scaling groups	1
Classic Load Balancers	1
t3.medium instances	1
m5.xlarge instances	4
EFS file systems	1
EFS mount targets	2
AWS Key Management Service (KMS) encryption key	1
Secure Sockets Layer (SSL) certificate	1

[Regions](#)

This deployment includes Amazon EFS, which is not available in all AWS Regions. For a current list of supported Regions, see [AWS Regions and Endpoints](#) in the AWS documentation.

[Key pair](#)

Make sure that at least one Amazon EC2 key pair exists in your AWS account in the Region where you are planning to deploy the Quick Start. Make note of the key pair name. You'll be prompted for this information during deployment. To create a key pair, follow the [instructions in the AWS documentation](#).

If you're deploying the Quick Start for testing or proof-of-concept purposes, we recommend that you create a new key pair instead of specifying a key pair that's already being used by a production instance.

[IAM permissions](#)

To deploy the Quick Start, you must log in to the AWS Management Console with IAM permissions for the resources and actions the templates will deploy. The *AdministratorAccess* managed policy within IAM provides sufficient permissions, although your organization may choose to use a custom policy with more restrictions.

[S3 buckets](#)

Unique Amazon S3 bucket names are automatically generated based on the account number and Region. If you delete a stack, the logging buckets are not deleted (to support security review). If you plan to re-deploy this Quick Start in the same Region, you must first manually delete the S3 buckets that were created during the previous deployment; otherwise, the re-deployment will fail.

Amazon EFS	Amazon EFS is an AWS managed file storage system for Linux systems. With Amazon EFS, there is no requirement to provision, patch, or manage a file storage system. Linux systems mount EFS through mount targets using standard NFSv4 mounting options.
SSL Certificate	You can supply your own SSL certificate, or provision one with AWS Certificate Manager (ACM) prior to launching this Quick Start.

Deployment options

This Quick Start provides two deployment options:

- **Deploy Dell Boomi Molecule into a new VPC (end-to-end deployment).** This option builds a new AWS environment consisting of the VPC, subnets, NAT gateways, security groups, bastion hosts, and other infrastructure components, and then deploys Dell Boomi Molecule into this new VPC.
- **Deploy Dell Boomi Molecule into an existing VPC.** This option provisions Dell Boomi in your existing AWS infrastructure.

The Quick Start provides separate templates for these options. It also lets you configure CIDR blocks, instance types, and Dell Boomi settings, as discussed later in this guide.

Deployment steps

Step 1. Sign in to your AWS account

1. Sign in to your AWS account at <https://aws.amazon.com> with an IAM user role that has the necessary permissions. For details, see [Planning the deployment](#) earlier in this guide.
2. Make sure that your AWS account is configured correctly, as discussed in the [Technical requirements](#) section.
3. Use the Region selector in the navigation bar to choose the AWS Region where you want to deploy Dell Boomi Molecule on AWS.
4. Select the key pair that you created earlier. In the navigation pane of the [Amazon EC2 console](#), choose **Key Pairs**, and then choose your key pair from the list.
5. Select the SSL certificate, as discussed in the [Technical requirements](#) section. In the navigation pane of the [Amazon ACM console](#), select the domain the certificate is associated with, and then copy the Amazon Resource Name (ARN) of the certificate.

Step 2. Launch the Quick Start

Notes The instructions in this section reflect the older version of the AWS CloudFormation console. If you're using the redesigned console, some of the user interface elements might be different.

You are responsible for the cost of the AWS services used while running this Quick Start reference deployment. There is no additional cost for using this Quick Start. For full details, see the pricing pages for each AWS service you will be using in this Quick Start. Prices are subject to change.

1. Choose one of the following options to launch the AWS CloudFormation template into your AWS account. For help choosing an option, see [deployment options](#) earlier in this guide.



Important If you're deploying Dell Boomi Molecule into an existing VPC, make sure that your VPC has two private subnets in different Availability Zones for the workload instances, and that the subnets aren't shared. This Quick Start doesn't support [shared subnets](#). These subnets require [NAT gateways](#) in their route tables, to allow the instances to download packages and software without exposing them to the internet. You will also need the domain name option configured in the DHCP options as explained in the [Amazon VPC documentation](#). You will be prompted for your VPC settings when you launch the Quick Start.

Each deployment takes about 20 minutes to complete.

2. Check the Region that's displayed in the upper-right corner of the navigation bar, and change it if necessary. This is where the network infrastructure for Dell Boomi Molecule will be built. The template is launched in the US East (Ohio) Region by default.
3. On the **Select Template** page, keep the default setting for the template URL, and then choose **Next**.

- On the **Specify Details** page, change the stack name if needed. Review the parameters for the template. Provide values for the parameters that require input. For all other parameters, review the default settings and customize them as necessary.

In the following tables, parameters are listed by category and described separately for the two deployment options:

- [Parameters for deploying Dell Boomi Molecule into a new VPC](#)
- [Parameters for deploying Dell Boomi Molecule into an existing VPC](#)

When you finish reviewing and customizing the parameters, choose **Next**.

OPTION 1: PARAMETERS FOR DEPLOYING DELL BOOMI MOLECULE INTO A NEW VPC

[View template](#)

Network configuration:

Parameter label (name)	Default	Description
Availability Zones (AvailabilityZones)	<i>Requires input</i>	The list of Availability Zones to use for the subnets in the VPC. This deployment uses two Availability Zones, and the logical order of your selections is preserved.
VPC CIDR (VPCCIDR)	10.0.0.0/16	The CIDR block for the VPC.
Public subnet 1 CIDR (PublicSubnet1CIDR)	10.0.32.0/24	The CIDR block used for the public subnet located in Availability Zone 1.
Public subnet 2 CIDR (PublicSubnet2CIDR)	10.0.64.0/24	The CIDR block used for the public subnet located in Availability Zone 2.
Private subnet 1 CIDR (PrivateSubnet1CIDR)	10.0.128.0/24	The CIDR block used for the private subnet located in Availability Zone 1.
Private subnet 2 CIDR (PrivateSubnet2CIDR)	10.0.192.0/24	The CIDR block used for the private subnet located in Availability Zone 2.
Allowed external access CIDR (OCP UI) (RemoteAccessCIDR)	<i>Requires input</i>	The CIDR IP range that is permitted to access the instances. We recommend that you set this value to a trusted IP range.

Amazon EC2 configuration:

Parameter label (name)	Default	Description
SSH key name (KeyPairName)	<i>Requires input</i>	A public/private key pair, which allows you to connect securely to your instance after it launches.

Volume size for Boomi instances (MoleculeEBSVolume)	100	The size of the Amazon Elastic Block Store (Amazon EBS) volume attached to the Molecule instances. Size range is 1 GiB - 16 TiB.
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Boomi Molecule node sizing:

Parameter label (name)	Default	Description
Boomi Atom instance type (NodeInstanceType)	m5.xlarge	The Boomi host instance type.

Boomi Molecule configuration:

Parameter label (name)	Default	Description
Molecule cluster name (MoleculeClusterName)	molecule1	The name for the Boomi Molecule cluster.
Molecule local path (MoleculeLocalPath)	/opt/molecule/local/	The local path for the Molecule installation.
Molecule local temp directory (MoleculeLocalTemp)	/mnt/tmp	The local temporary path for the Molecule installation.
Boomi account ID (BoomiAccountID)	<i>Requires input</i>	The Boomi account ID that you want to associate with the new Molecule cluster.
Boomi user name (BoomiUsername)	<i>Requires input</i>	The email account associated with the Boomi account.
Boomi password (BoomiPassword)	<i>Requires input</i>	The password associated with the Boomi account.
Molecule shared directory (MoleculeSharedDir)	/mnt/molecule	A shared directory for the EFS volume that the Molecules will mount.

Amazon EFS configuration:

Parameter label (name)	Default	Description
EFS encryption (EFSEncryption)	True	EFS volumes can be encrypted.
EFS performance mode (EFSPerformanceMode)	generalPurpose	The performance mode for the EFS volume. Choose generalPurpose or maxIO .
EFS throughput mode (EFSThroughputMode)	provisioned	The throughput mode for the EFS volume. Choose provisioned or bursting .
EFS provisioned throughput (EFSProvisionedThroughput)	10	The provisioned throughput value for the EFS volume.

DNS and SSL configuration:

Provide values for either `MoleculeFQDN` and `HostedZoneID` or, if using SSL, provide a value for `SSLCertificateArn`.

Parameter label (name)	Default	Description
Molecule FQDN (MoleculeFQDN)	<i>Requires input</i>	The fully qualified domain name (FQDN) for the Boomi Molecule cluster. Use with <code>HostedZoneID</code> if you are not using SSL.
Route 53 hosted zone ID (HostedZoneID)	<i>Requires input</i>	Route 53 Hosted Zone ID of the domain name. Used in conjunction with a <code>MoleculeFQDN</code> .
SSL certificate ARN (SSLCertificateArn)	<i>Requires input</i>	The ARN of the SSL certificate to use for the load balancer. Use <code>SSLCertificateArn</code> if you are not using <code>MoleculeFQDN</code> and <code>HostedZoneID</code> .

AWS Quick Start configuration:

Note We recommend that you keep the default settings for the following two parameters, unless you are customizing the Quick Start templates for your own deployment projects. Changing the settings of these parameters will automatically update code references to point to a new Quick Start location. For additional details, see the [AWS Quick Start Contributor's Guide](#).

Parameter label (name)	Default	Description
Quick Start S3 key prefix (QSS3KeyPrefix)	quickstart-boomi-molecule/	S3 key prefix for the Quick Start assets. Quick Start key prefix can include numbers, lowercase letters, uppercase letters, hyphens (-), and forward slash (/).
Quick Start S3 bucket name (QSS3BucketName)	aws-quickstart	S3 bucket name for the Quick Start assets. This string can include numbers, lowercase letters, uppercase letters, and hyphens (-). It cannot start or end with a hyphen (-).

OPTION 2: PARAMETERS FOR DEPLOYING DELL BOOMI MOLECULE INTO AN EXISTING VPC

[View template](#)

Network configuration:

Parameter label (name)	Default	Description
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VPC ID (VPCID)	<i>Requires input</i>	The ID of your existing VPC.
Public subnet 1 ID (PublicSubnet1ID)	<i>Requires input</i>	The ID of the public subnet in Availability Zone 1 in your existing VPC.
Public subnet 2 ID (PublicSubnet2ID)	<i>Requires input</i>	The ID of the public subnet in Availability Zone 2 in your existing VPC.
Private subnet 1 ID (PrivateSubnet1ID)	<i>Requires input</i>	The ID of the private subnet in Availability Zone 1 in your existing VPC.
Private subnet 2 ID (PrivateSubnet2ID)	<i>Requires input</i>	The ID of the private subnet in Availability Zone 2 in your existing VPC.
Bastion security group ID (BastionSecurityGroupID)	<i>Requires input</i>	The ID of the bastion security group in your existing VPC (e.g., sg-1a2b3c4d).

Amazon EC2 configuration:

Parameter label (name)	Default	Description
SSH key name (KeyPairName)	<i>Requires input</i>	Key name for access to EC2 instances
Volume size for Boomi instances (MoleculeEBSVolume)	100	The size of the Amazon EBS volume attached to the Molecule instances. Size range is 1 GiB - 16 TiB.

Boomi Molecule node sizing:

Parameter label (name)	Default	Description
Molecule node instance type (NodeInstanceType)	m5.xlarge	The Boomi host instance type.

Boomi Molecule configuration:

Parameter label (name)	Default	Description
Molecule cluster name (MoleculeClusterName)	molecule1	The name for the Boomi Molecule cluster.
Molecule local path (MoleculeLocalPath)	/opt/molecule/local/	The local path for the Molecule installation.
Molecule local temp directory (MoleculeLocalTemp)	/mnt/tmp	The local temporary path for the Molecule installation.

Boomi account ID (BoomiAccountID)	<i>Requires input</i>	The Dell Boomi account ID that you want to associate with the new Molecule cluster.
Boomi user name (BoomiUsername)	<i>Requires input</i>	The email account associated with the Dell Boomi account.
Boomi password (BoomiPassword)	<i>Requires input</i>	The password associated with the Dell Boomi account.
Molecule shared directory (MoleculeSharedDir)	/mnt/molecule	A shared directory for Molecules.

Amazon EFS configuration:

Parameter label (name)	Default	Description
EFS encryption (EFSEncryption)	True	EFS volumes can be encrypted.
EFS performance mode (EFSPerformanceMode)	generalPurpose	The performance mode for your EFS volume. Choose generalPurpose or maxIO .
EFS throughput mode (EFSThroughputMode)	provisioned	The throughput mode for your EFS volume. Choose provisioned or bursting .
EFS provisioned throughput (EFSProvisionedThroughput)	10	The provisioned throughput value for your EFS volume.

SSL configuration:

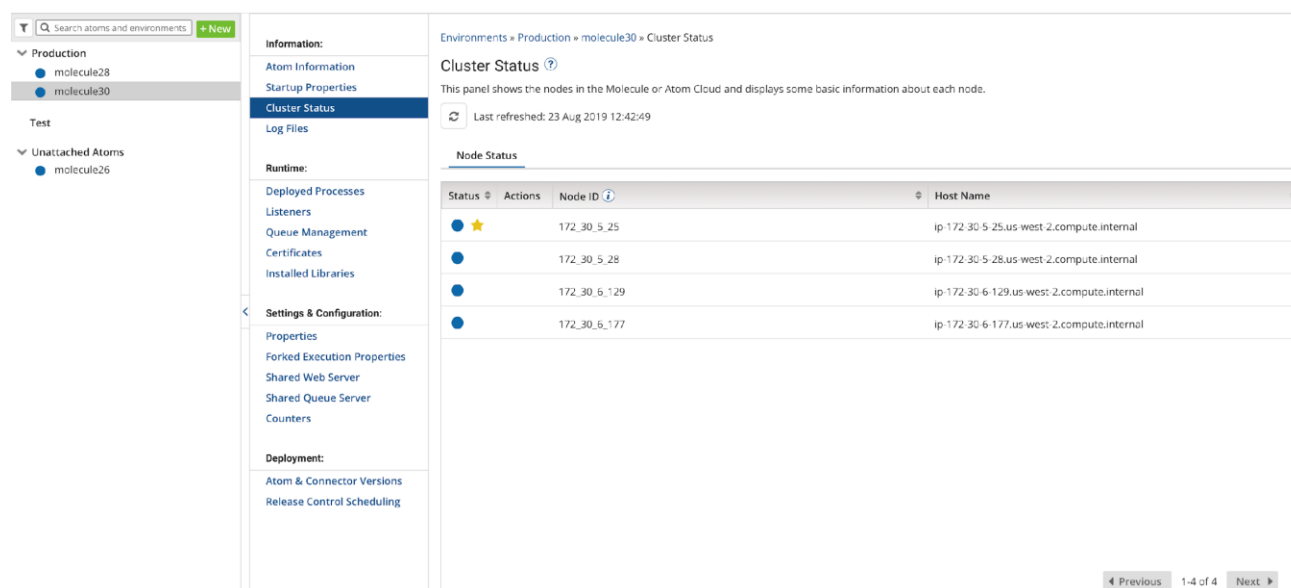
Parameter label (name)	Default	Description
SSL certificate ARN (SSLCertificateArn)	—	The SSL Certificate ID used with the load balancer.

- On the **Options** page, you can [specify tags](#) (key-value pairs) for resources in your stack and [set advanced options](#). When you're done, choose **Next**.
- On the **Review** page, review and confirm the template settings. Under **Capabilities**, select the two check boxes to acknowledge that the template will create IAM resources and that it might require the capability to auto-expand macros.
- Choose **Create** to deploy the stack.
- Monitor the status of the stack. When the status is **CREATE_COMPLETE**, the Dell Boomi Molecule is ready.

- Use the URLs displayed in the **Outputs** tab for the stack to view the resources that were created.

Step 3. Test the Deployment

To view the Molecule in the Dell Boomi AtomSphere platform, log in to your Dell Boomi [account](#), navigate to the **Manage** drop-down menu, and choose **Atom Management**. The newly created Amazon EC2 instance Molecule cluster will be displayed.



The screenshot shows the Dell Boomi Dashboard interface. On the left, there is a sidebar with a search bar and navigation menus for 'Production' (molecule28, molecule30), 'Test', and 'Unattached Atoms' (molecule26). The main content area is titled 'Cluster Status' for 'molecule30' in the 'Production' environment. It includes a 'Node Status' table with the following data:

Status	Actions	Node ID	Host Name
● ★		172_30_5_25	ip-172-30-5-25.us-west-2.compute.internal
●		172_30_5_28	ip-172-30-5-28.us-west-2.compute.internal
●		172_30_6_129	ip-172-30-6-129.us-west-2.compute.internal
●		172_30_6_177	ip-172-30-6-177.us-west-2.compute.internal

Figure 2: Dell Boomi Dashboard with an unattached AWS-managed Molecule cluster

You can then attach the Molecules to any environment you have staged and deploy workloads to that Molecule cluster.

Security

This Quick Start deploys a bastion host and a Dell Boomi Molecule cluster into an AWS VPC. The bastion host is the only means of accessing the Dell Boomi Molecule cluster at a command-line level. The Dell Boomi Molecule cluster is deployed into private subnets and cannot be reached through the internet. The Boomi Molecule cluster communicates through a NAT Gateway for updates and patches, and it communicates through the public-facing Classic Load Balancer to communicate with the Dell Boomi AtomSphere platform.

Performance monitoring

Monitoring the CPU, network, and Amazon Elastic Block Store (Amazon EBS) performance of your AWS Dell Boomi Molecule cluster is done through CloudWatch metrics.

CPU and network performance are measured in utilization, network in and out, network packets in and out, and system status checks.

Amazon EBS volume performance is measured in read and write throughput, average read and write size, read and write bandwidth, read and write latency, and volume idle time.

Amazon EFS reports metrics to CloudWatch and can be monitored there. Metrics include client connections, data read and data write bytes, and IO percent limits.

Troubleshooting

Q. I encountered a `CREATE_FAILED` error when I launched the Quick Start.

A. If AWS CloudFormation fails to create the stack, we recommend that you relaunch the template with **Rollback on failure** set to **No**. (This setting is under **Advanced** in the AWS CloudFormation console, **Options** page.) With this setting, the stack's state will be retained and the instance will be left running, so you can troubleshoot the issue (check `/var/log/cloud-init-output.log`).

Important When you set **Rollback on failure** to **No**, you will continue to incur AWS charges for this stack. Please make sure to delete the stack when you finish troubleshooting.

For additional information, see [Troubleshooting AWS CloudFormation](#) on the AWS website.

Q. I encountered a size limitation error when I deployed the AWS CloudFormation templates.

A. We recommend that you launch the Quick Start templates from the links in this guide or from another S3 bucket. If you deploy the templates from a local copy on your computer or from a non-S3 location, you might encounter template size limitations when you create the stack. For more information about AWS CloudFormation limits, see the [AWS documentation](#).

Send us feedback

To post feedback, submit feature ideas, or report bugs, use the **Issues** section of the [GitHub repository](#) for this Quick Start. If you'd like to submit code, please review the [Quick Start Contributor's Guide](#).

Additional resources

AWS resources

- [Getting Started Resource Center](#)
- [AWS General Reference](#)
- [AWS Glossary](#)

AWS services

- [AWS CloudFormation](#)
- [Amazon EBS](#)
- [Amazon EC2](#)
- [IAM](#)
- [Amazon VPC](#)
- [Amazon EFS](#)
- [Amazon CloudWatch](#)
- [Elastic Load Balancing](#)
- [AWS KMS](#)

Dell Boomi documentation

- [Dell Boomi User's Guide](#)

Other Quick Start reference deployments

- [AWS Quick Start home page](#)

Document revisions

Date	Change	In sections
October 2019	Initial publication	—

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