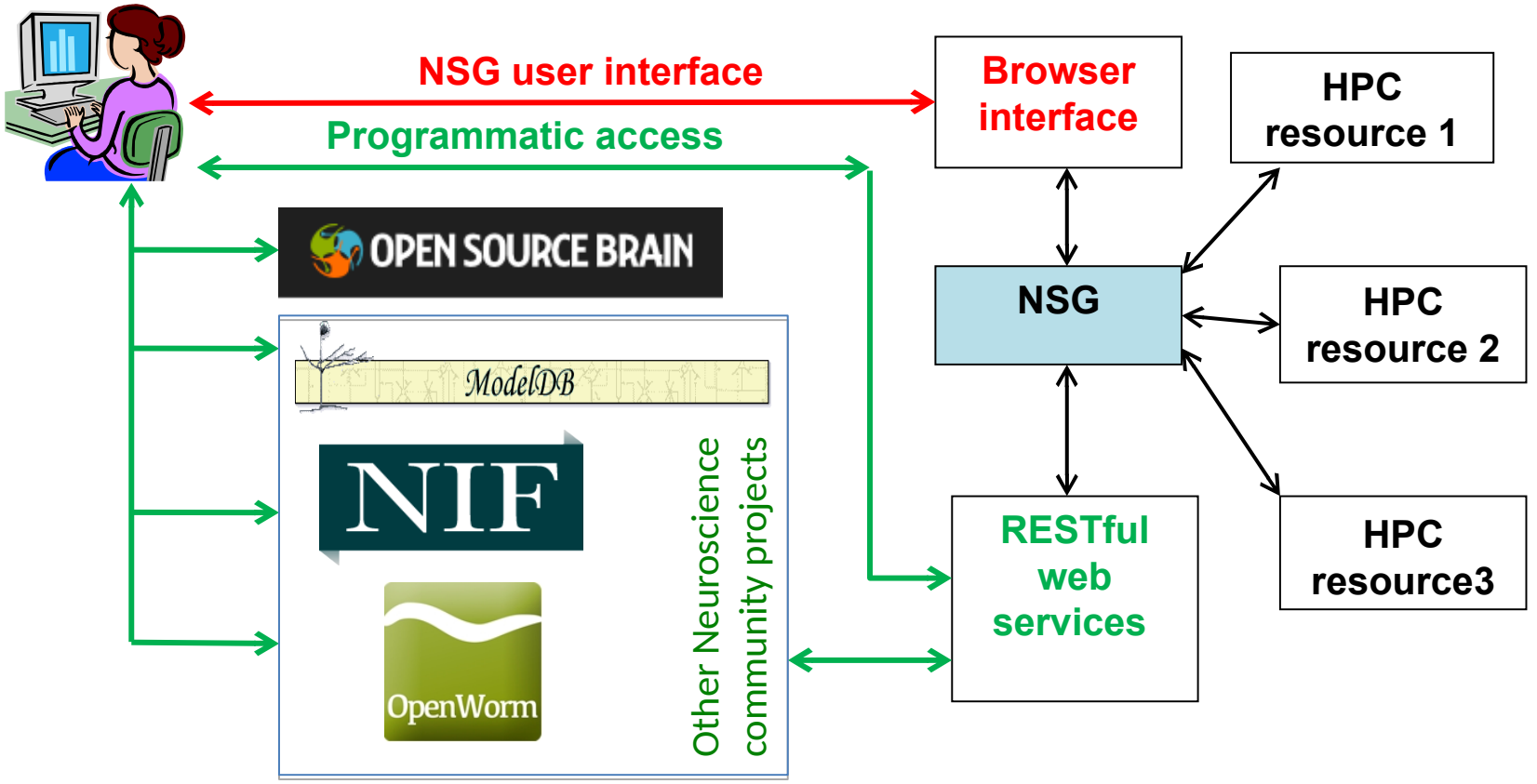
Neuroscience Gateway (NSG)

http://www.nsgportal.org

NSG facilitates access and use of High Performance Computing resources freely and openly for the neuroscience community via web-based and programmatic (RESTful API) access. Various computational neuroscience tools, libraries, pipelines and data processing software are made available on HPC resources.

NSG - Portal and Programmatic Access

NSG Portal: Simple and easy to use web interface
NSG–R: Programmatic access through RESTful services

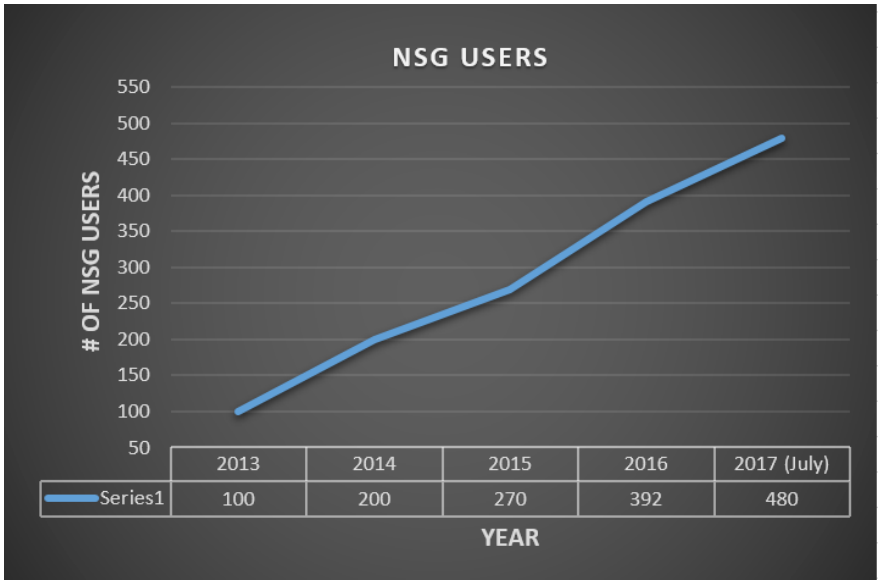


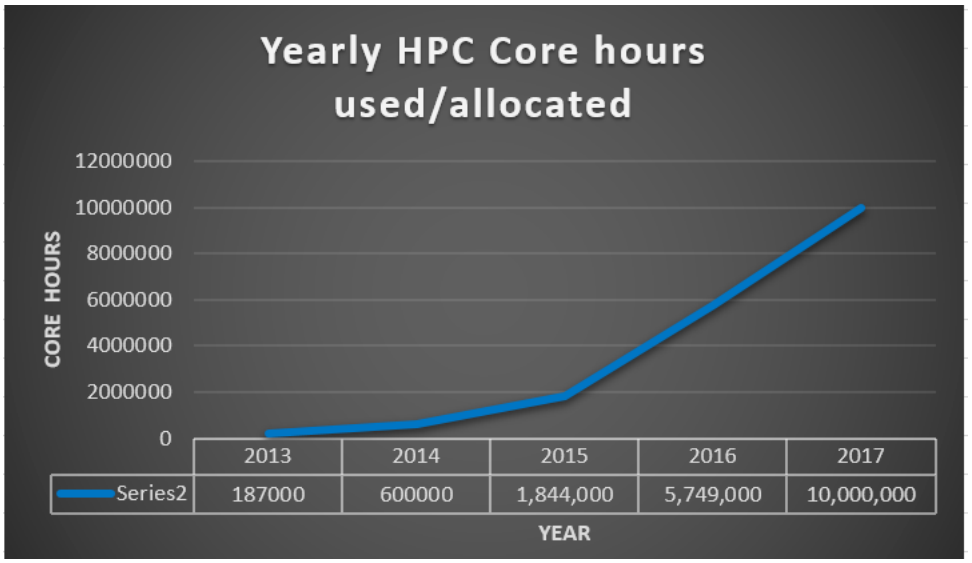
Currently available tools/software/pipelines

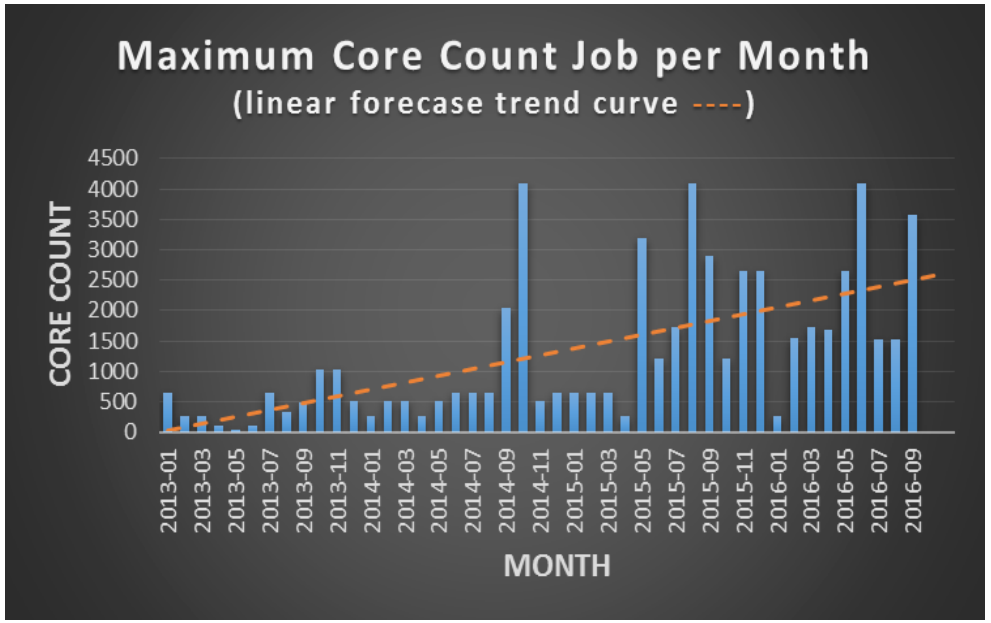
New tools are added continuously based on request from users, researchers, and developers

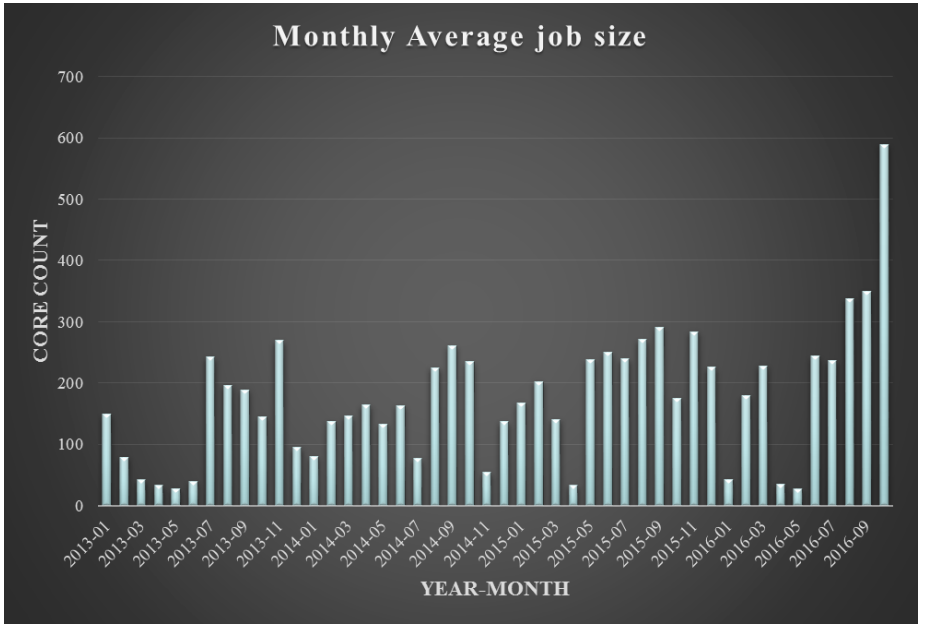
Current (July, 2017) tools, libraries, software, pipelines	
BluePyOpt, Michele Migliore et al, National Research Council, Italy	PyMoose
BRIAN	NEST
CARLsim, Jeffrey Krichmar, UC Irvine	NEURON
The Virtual Brain Personalized Medicine Pipeline, Petre Ritter, Humboldt University	Parameter Search Dieter Jaeger, Emory University
FreeSurfer	PyNN
Large Scale Neural Simulator Antonio Ulloa, Neural Bytes	Python
Matlab	R
TensorFlow	Octave
GENESIS	

NSG usage growing – since 2013









Amazon Web Services

http://aws.amazon.com

Amazon Web Services (AWS) is a cloud computing platform by Amazon which provides on demand or 24/7 access to virtual computing resources such as computing (CPU & GPU), storage, databases, etc.

Amazon Web Services

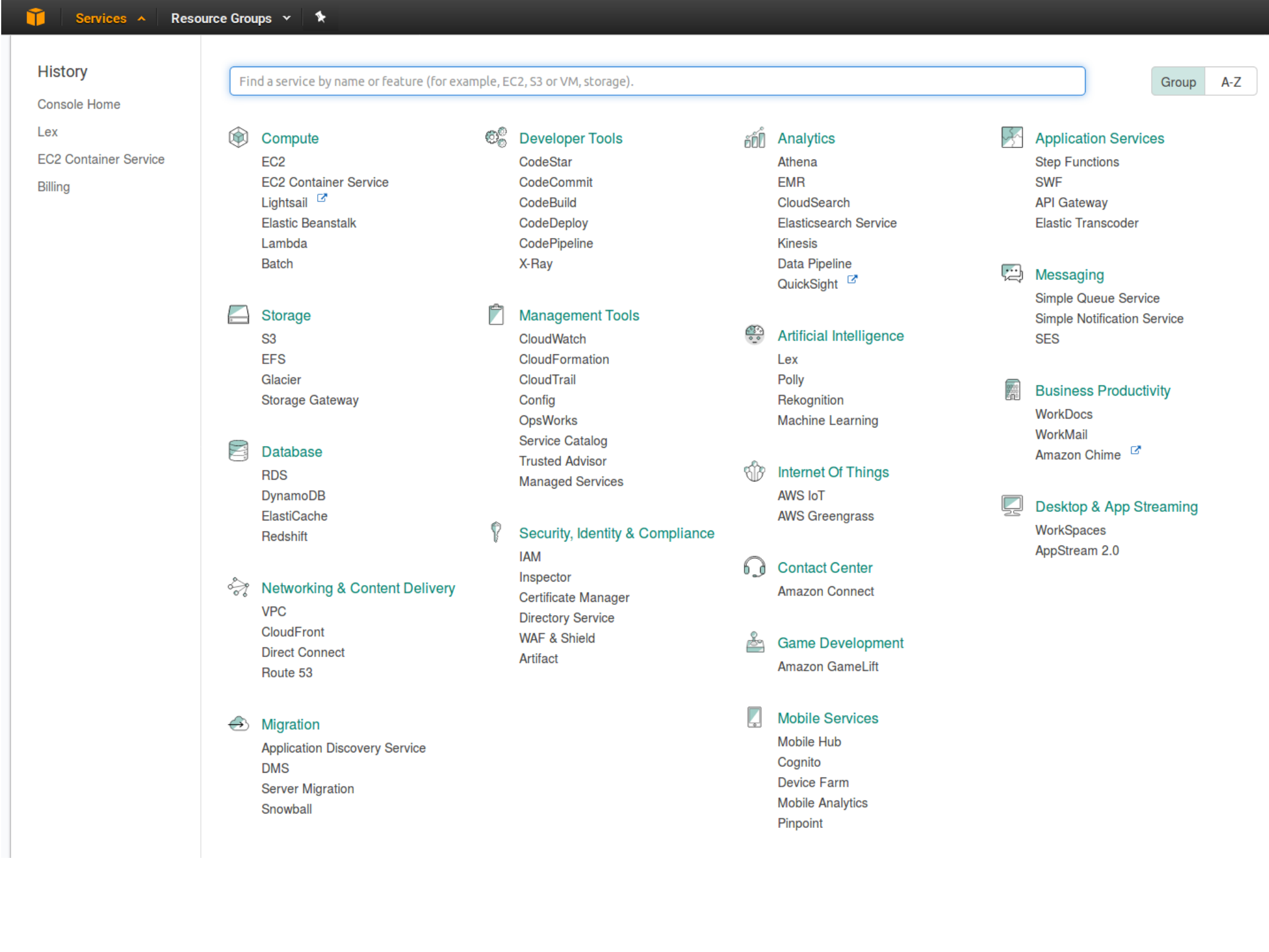
Widely used cloud computing platform

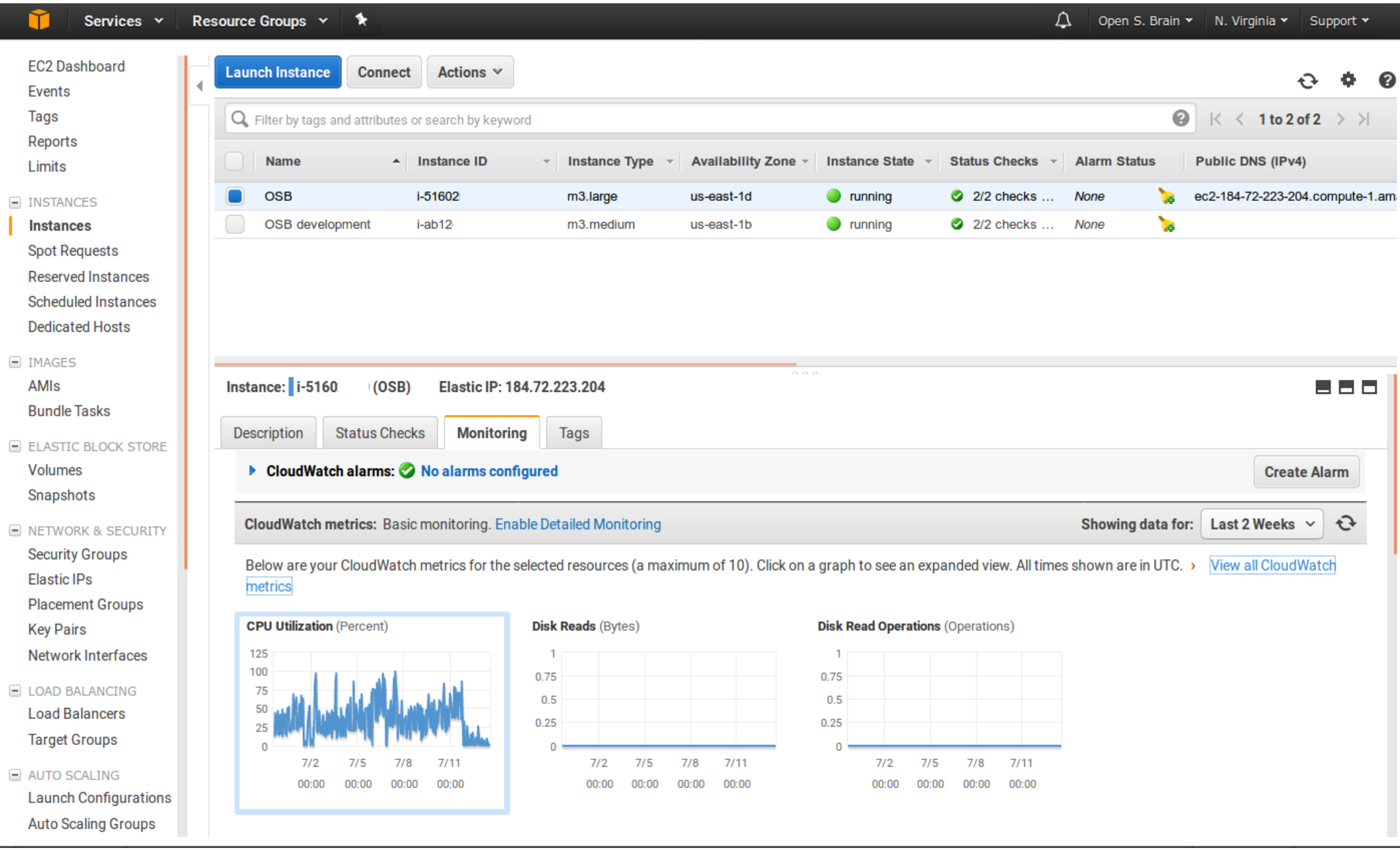
Can be used for:

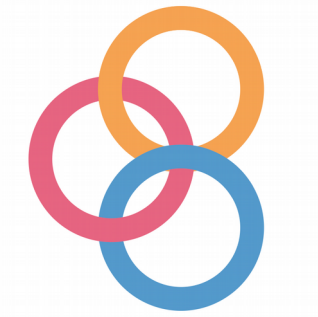
- Web hosting
- Databasing
- Compute intense tasks

Useful for short or long term managed computing (easier than maintaining your own servers)

Example: OSB is hosted on AWS (live and development servers)


Services
Resource Groups
History
Console Home
Lex
EC2 Container Service
Billing
Find a service by name or feature (for example, EC2, S3 or VM, storage).
Group
A-Z
Compute
EC2
EC2 Container Service
Lightsail
Elastic Beanstalk
Lambda
Batch
Storage
S3
EFS
Glacier
Storage Gateway
Database
RDS
DynamoDB
ElastiCache
Redshift
Networking & Content Delivery
VPC
CloudFront
Direct Connect
Route 53
Migration
Application Discovery Service
DMS
Server Migration
Snowball
Developer Tools
CodeStar
CodeCommit
CodeBuild
CodeDeploy
CodePipeline
X-Ray
Management Tools
CloudWatch
CloudFormation
CloudTrail
Config
OpsWorks
Service Catalog
Trusted Advisor
Managed Services
Security, Identity & Compliance
IAM
Inspector
Certificate Manager
Directory Service
WAF & Shield
Artifact
Analytics
Athena
EMR
CloudSearch
Elasticsearch Service
Kinesis
Data Pipeline
QuickSight
Artificial Intelligence
Lex
Polly
Rekognition
Machine Learning
Internet Of Things
AWS IoT
AWS Greengrass
Contact Center
Amazon Connect
Game Development
Amazon GameLift
Mobile Services
Mobile Hub
Cognito
Device Farm
Mobile Analytics
Pinpoint
Application Services
Step Functions
SWF
API Gateway
Elastic Transcoder
Messaging
Simple Queue Service
Simple Notification Service
SES
Business Productivity
WorkDocs
WorkMail
Amazon Chime
Desktop & App Streaming
WorkSpaces
AppStream 2.0


Services
Resource Groups
Open S. Brain
N. Virginia
Support
EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
Instances
Spot Requests
Reserved Instances
Scheduled Instances
Dedicated Hosts
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
LOAD BALANCING
Load Balancers
Target Groups
AUTO SCALING
Launch Configurations
Auto Scaling Groups
Launch Instance
Connect
Actions
Filter by tags and attributes or search by keyword
1 to 2 of 2
Name
Instance ID
Instance Type
Availability Zone
Instance State
Status Checks
Alarm Status
Public DNS (IPv4)
OSB
i-51602
m3.large
us-east-1d
running
2/2 checks ...
None
ec2-184-72-223-204.compute-1.am
OSB development
i-ab12
m3.medium
us-east-1b
running
2/2 checks ...
None
Instance: i-5160 (OSB)
Elastic IP: 184.72.223.204
Description
Status Checks
Monitoring
Tags
CloudWatch alarms: No alarms configured
Create Alarm
CloudWatch metrics: Basic monitoring. Enable Detailed Monitoring
Showing data for: Last 2 Weeks
Below are your CloudWatch metrics for the selected resources (a maximum of 10). Click on a graph to see an expanded view. All times shown are in UTC. › View all CloudWatch metrics
CPU Utilization (Percent)
125
100
75
50
25
0
7/2 00:00
7/5 00:00
7/8 00:00
7/11 00:00
Disk Reads (Bytes)
1
0.75
0.5
0.25
0
7/2 00:00
7/5 00:00
7/8 00:00
7/11 00:00
Disk Read Operations (Operations)
1
0.75
0.5
0.25
0
7/2 00:00
7/5 00:00
7/8 00:00
7/11 00:00

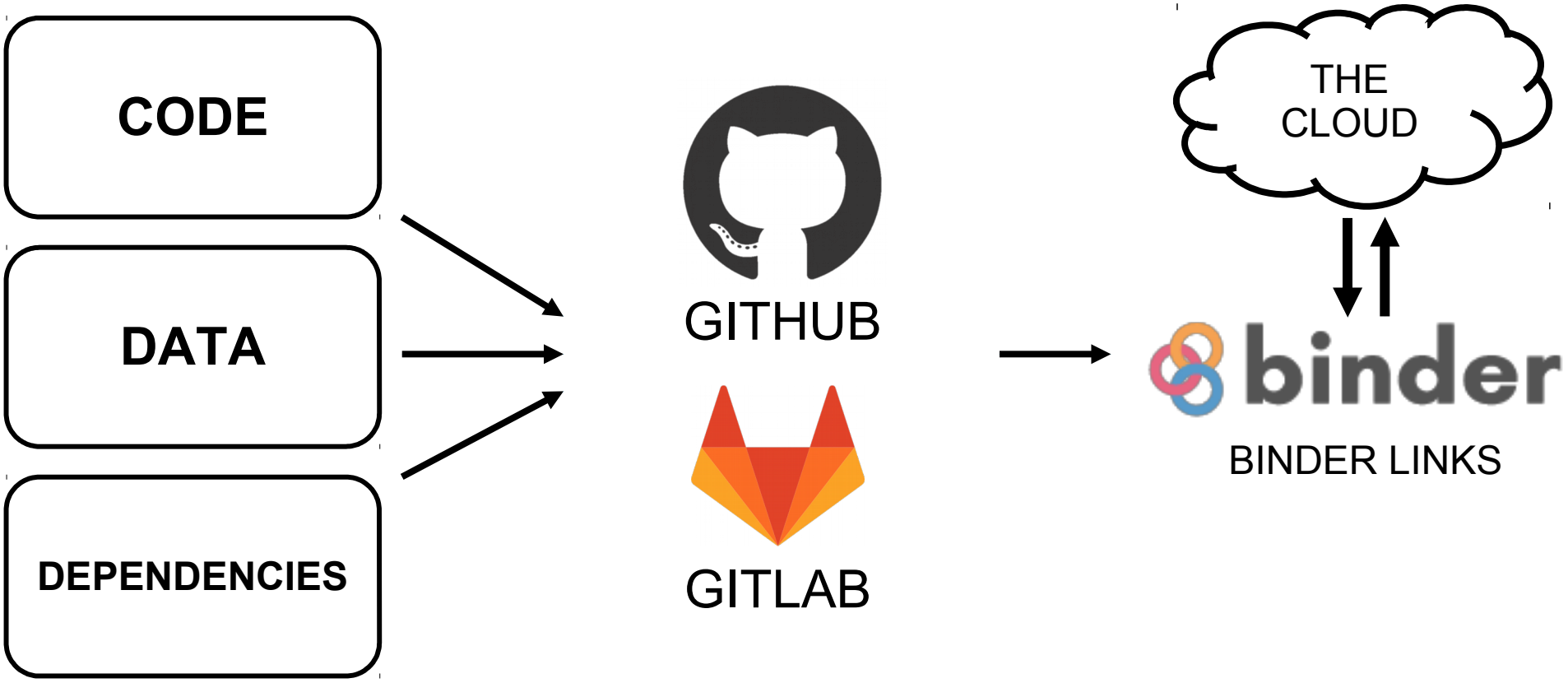


Binder

https://mybinder.org

Quickly create sharable, reproducible, interactive code repositories.

- Put code (e.g. Jupyter Notebooks) in a web repository (e.g., GitHub)
- Use Binder to create a sharable link that lets others open those notebooks in an executable environment.
- Your code becomes immediately reproducible by anyone, anywhere.



- Reproduce figures
- Create interactive documents
- Share code with collaborators
- Highlight an analysis

Running live, in the cloud, for free

Binder is…

- Available as a public service / tech demo at mybinder.org, but is deployable anywhere
- Supports Python, R, Julia natively
- Support for many other languages / workflows via “configuration files”
- Allows interfaces such as JupyterLab and Rstudio

Example Binder repositories:

- JupyterLab running Python
  mybinder.org/v2/gh/jupyterlab/jupyterlab-demo/master?urlpath=lab/tree/demo
- Reproducible publications
  mybinder.org/v2/gh/choldgraf/paper-encoding_decoding_electrophysiology/f2d32d5?filepath=index.ipynb
- Rstudio and Shiny
  mybinder.org/v2/gh/binder-examples/r/master?urlpath=rstudio
- Open and interactive textbooks
  mybinder.org/v2/gh/AllenDowney/ThinkDSP/master

See docs.mybinder.org for more information

Useful links

Use Binder

mybinder.org

Deploy your own BinderHub

binderhub.readthedocs.io/en/latest/

Get in touch

gitter.im/jupyterhub/binder

Get involved

github.com/jupyterhub/binder (user information)
github.com/jupyterhub/binderhub (binderhub server)