
Under the Hood of
SeamlessAccess
Seamless
Access.org

What is SeamlessAccess?

- SeamlessAccess is a free, open-source service that improves the IdP discovery piece of the federated authentication workflow
- Read more about it in seamlessaccess.org
- Service is funded by Geant, hosted and operated by SUNET

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Under the hood

I will talk about today

- Backend Infrastructure
- Frontend & Backend Connectivity
- Frontend Management
- Staging & Demo Environment
- Operations
- Surveillance Tools
- Status updates

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Backend Infrastructure

Backend infrastructure is spread across four sites with geographical redundancy.

SUNET's own hardware Infrastructure Located in **Stockholm, Sweden**	Cloud Infrastructure provided by Safespring Located in **Stockholm, Sweden**	AWS Cloud Infrastructure Location **Frankfurt, Germany**	AWS Cloud Infrastructure Location **North California, USA**

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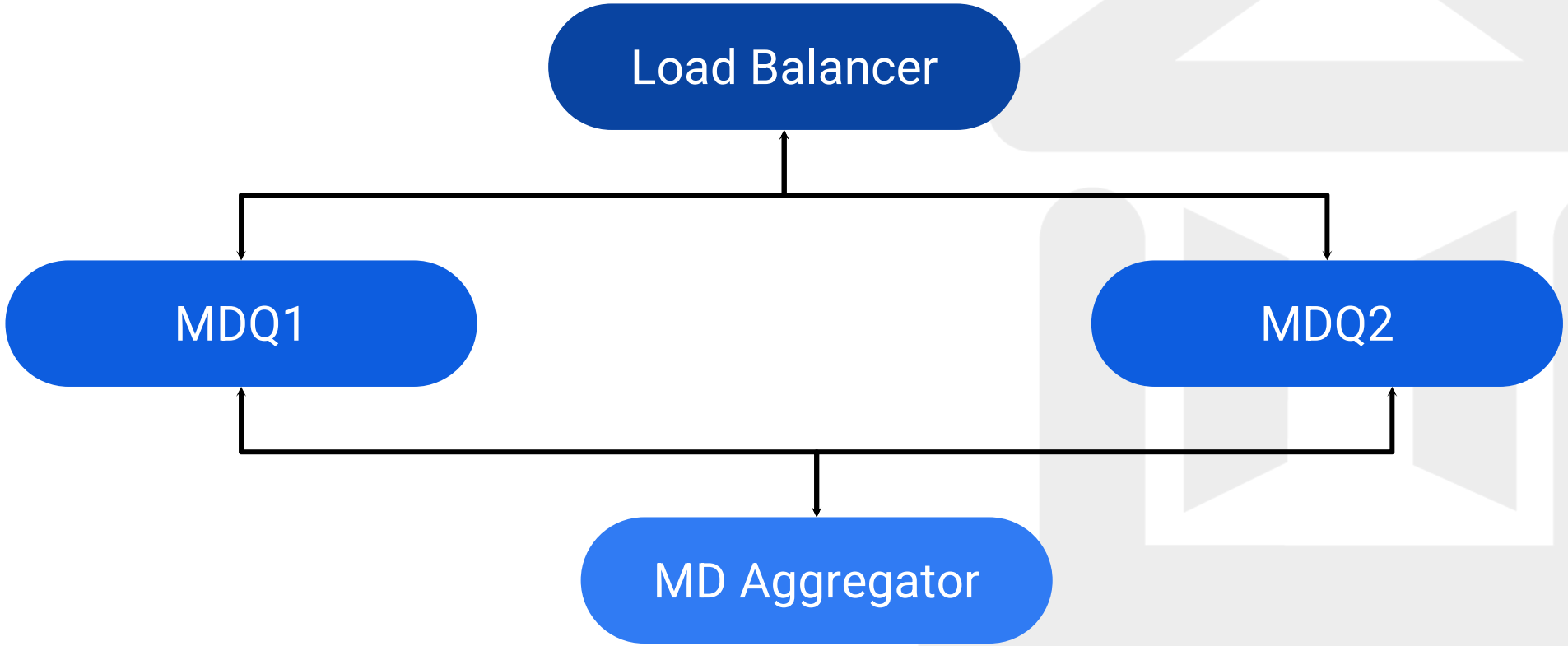
Backend Infrastructure

Each site has three types of virtual machines



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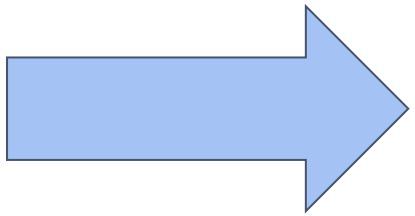
Backend Infrastructure

Metadata Aggregator

- Periodically aggregates metadata using pyFF
- Publishes the metadata in a JSON file
- It uses lighttpd to publish the file which is only accessible by the MDQ servers.



MDQ servers

- Fetches the metadata file from the Aggregator
- MDQ protocol runs in a dockerized container
- A cronjob runs to fetch fresh metadata frequently

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Backend Infrastructure

MDQ Servers

- MDQ exposes the metadata in the URL https://md.seamlessaccess.org/entities
- Web ports are only open to the load balancers

Load Balancers

- Runs a simple HAProxy web server in a docker container
- It forwards the HTTP GET requests invoked by the users from frontend to one of the MDQ servers using round robin algorithm

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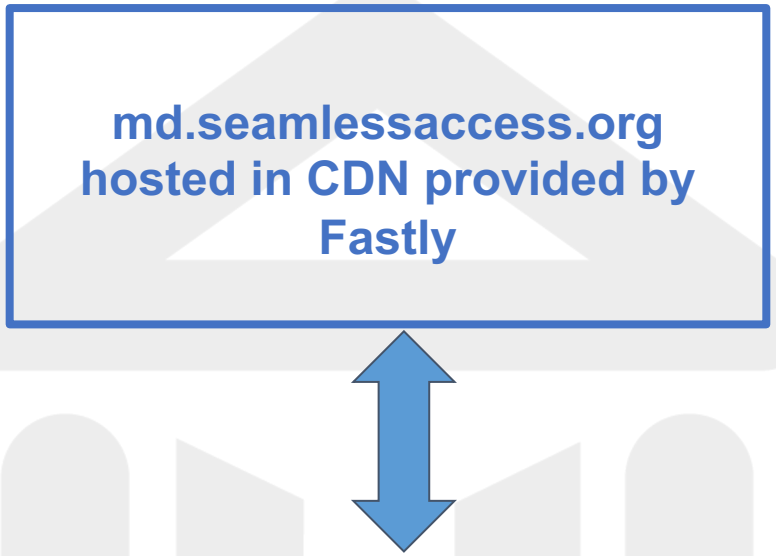
Frontend and Backend Connectivity

- The metadata requests are processed through the URL ‘https://md.seamlessaccess.org’ which is hosted by Fastly.
- The CDN also load balances between our internal HAproxy load balancers.
- Fastly offers stats on real time and historical data on hits, misses, errors etc regarding the HTTPS requests.



Load Balancer Location Stockholm, Sweden	**Load Balancer Location Stockholm, Sweden**	**Load Balancer Location Frankfurt, Germany**	**Load Balancer Location North California, USA**

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Frontend Management

- The frontend URL https://service.seamlessaccess.org is also hosted in CDN.
- The frontend content resides at the Github Pages.
- We are in the process of moving this to SUNET and AWS infrastructure, we have already done it for our Demo environment.
- The upgrade of the frontend software is managed by SUNET NOC.

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Staging and Demo Environment

- **Staging** environment is to test the software internally before release on **Demo** and subsequently on **Production**.
- Demo environment is used for testing of the service for potential customers.
- Both environments are miniature models of production without site and resource redundancy and load balancers.
- Each environment just includes one MDQ server and one metadata aggregator.

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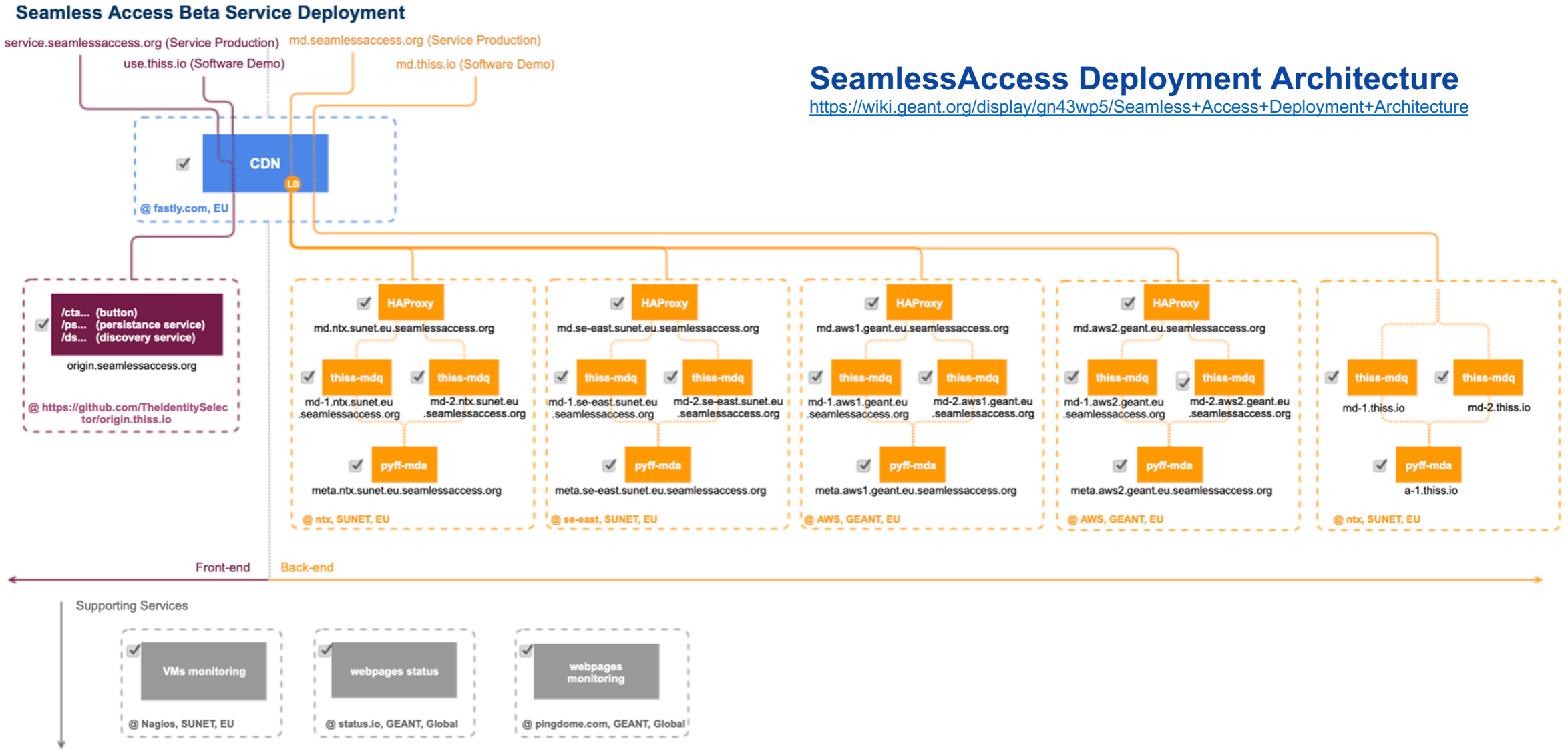
SeamlessAccess Deployment Architecture

https://wiki.geant.org/display/gn43wp5/Seamless+Access+Deployment+Architecture



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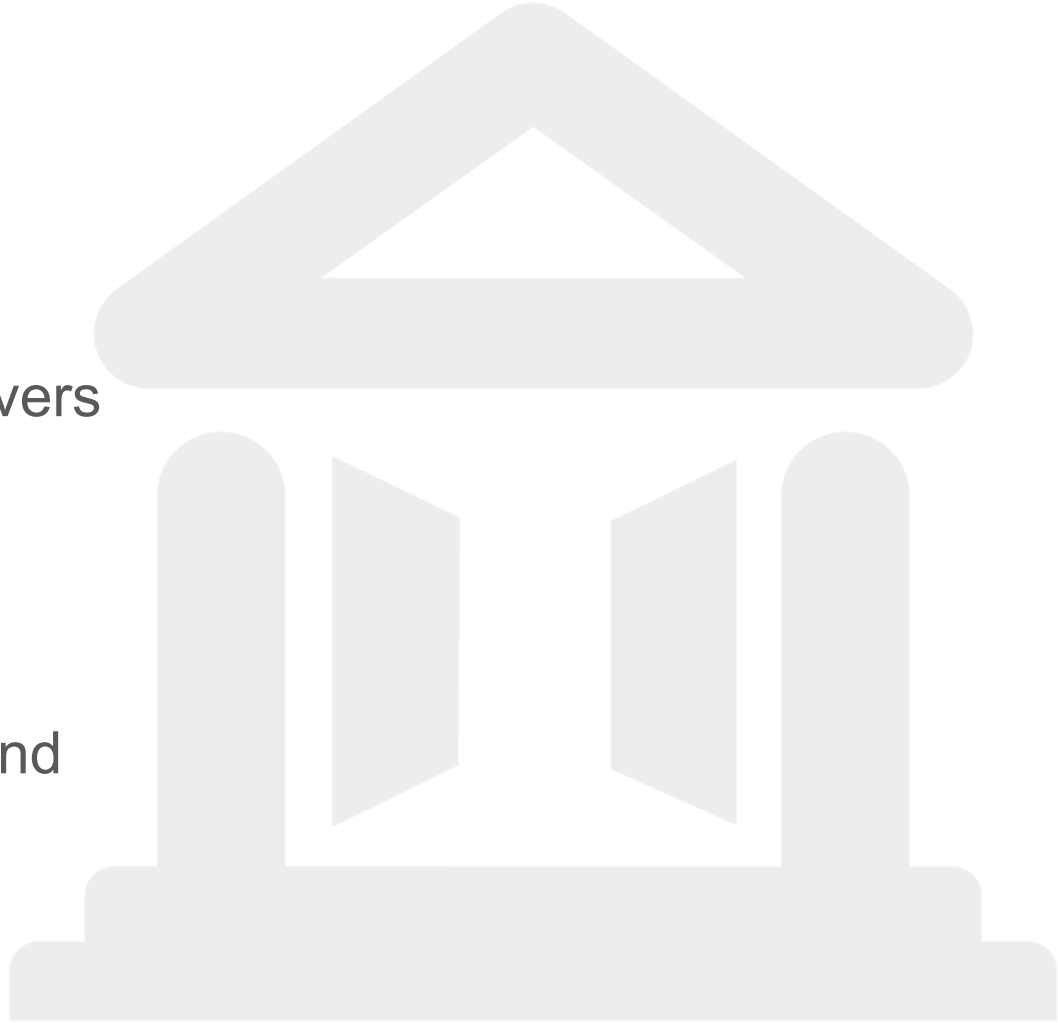
Operations

SUNET NOC's primary Responsibilities

- Management
  - Backend servers
  - Automation of components running in the servers
  - Production, Demo and Staging environments
  - Fastly configuration
- Surveillance platform
- Incident and change management
  - Software upgrade in both backend and frontend



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Surveillance Tools

Nagios Core

- Internal
- Validity of internal SSL cert checks for backend servers
- Check the file age of aggregated metadata
- Health checks for all the virtual machines

NagiosXI

- Internal
- Frontend version check for SeamlessAccess
- Checks the date when the metadata is last fetched.
- Checks metadata service is running
- Checks the service is up and running

Pingdom

- Externally published
- Availability of metadata and service URLS for production and Demo & the SA website
- Monitored from four regions - North America, Europe, Latin America and Asia Pacific

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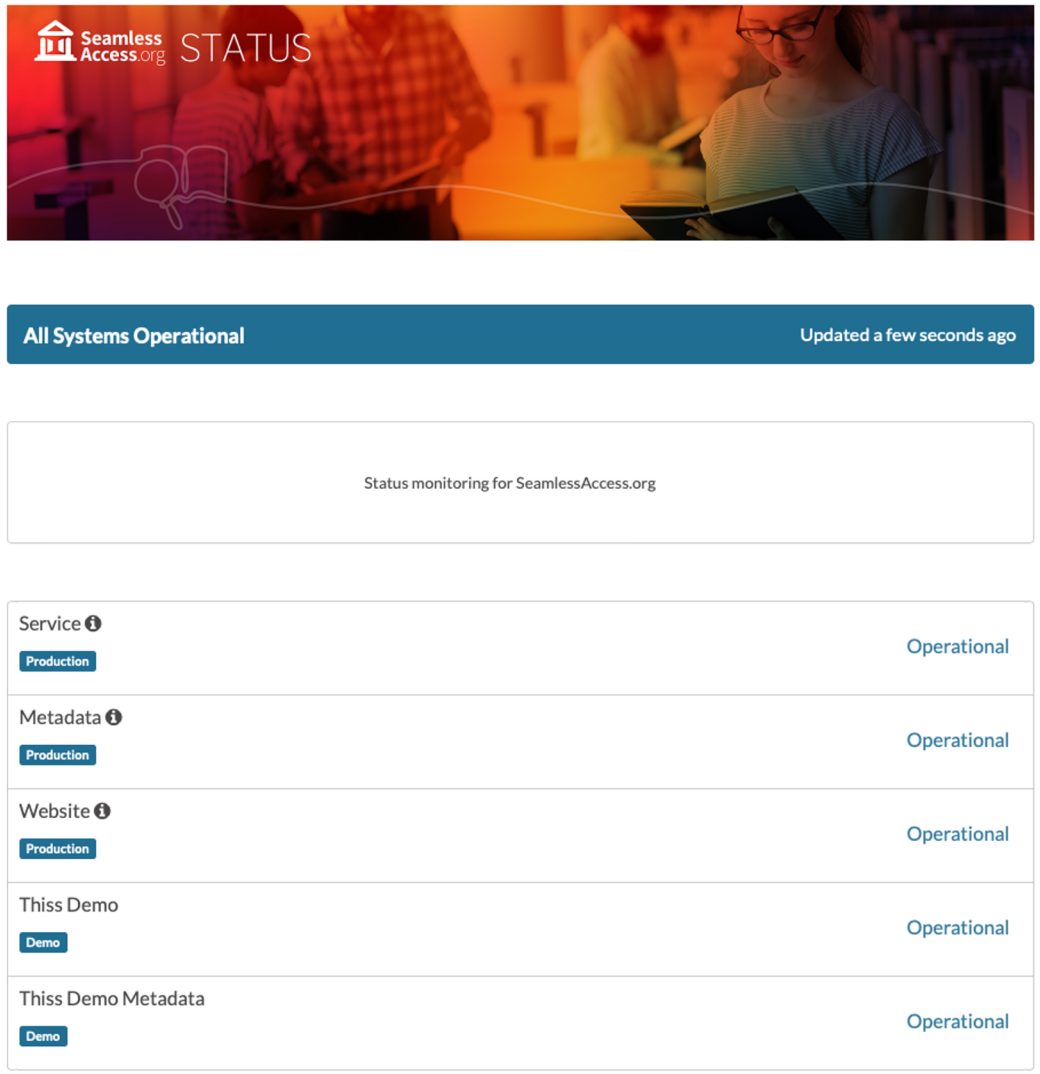
Status Updates

Status.io

- Results of pingdom checks are sent to status.io. It publishes the results on https://status.seamlessaccess.org
- Shows response time for the services
- Incidents and maintenances are announced here.
- Subscribers to the status page will receive notification for incident and maintenance updates.



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Thank you!

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