



INFN Cloud Sync & Share “aaS”

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on behalf of the INFN Cloud Team

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Introduction

Traditionally CS3 focuses on large Sync & Share infrastructures to be used by large scientific and educational communities

INFN Cloud offers fully automated, self managed Sync & Share services to small to medium communities, often for a specific purposes

This presentation will focus on how Sync & Share services are deployed on INFN Cloud

What is INFN Cloud? (See Diego Ciangottini slides)

- A production-quality set of resources and solutions providing:
 - A **core backbone**, with ancillary and special-purpose services.
 - A **multi-site, federated Cloud infrastructure**.
 - INFN Cloud can transparently federate INFN sites as well as public or private Clouds (e.g.: AWS, Google Compute Cloud, Microsoft Azure, and others)
 - A **customizable portfolio of services** accessible via web interfaces, terminal or API.
 - A **fully distributed organization for the support and management** of both infrastructure and services.
 - A set of **rules that define access resources and policies**, according to INFN, national and European laws.

This page collects all policies and procedures that have been validated by the INFN Cloud Project Management Board and that are currently in place across the INFN Cloud infrastructure.

Title	Applies To	Notes
INFN-Cloud Procedure to manage scheduled downtimes	Infrastructure/Users	v 1.0 30/02/2022
INFN-Cloud Rules of Participation	Infrastructure/Users	v 1.2 1/01/2022
INFN Cloud Security Recommendations	Infrastructure/Users	v 1.0 08/06/2021
User Community Operation Level Agreement	Users	v 1.0 13/04/2021

Welcome to the INFN Cloud Use Cases Documentation

You'll find here useful information regarding the use-cases supported on the INFN Cloud infrastructure.

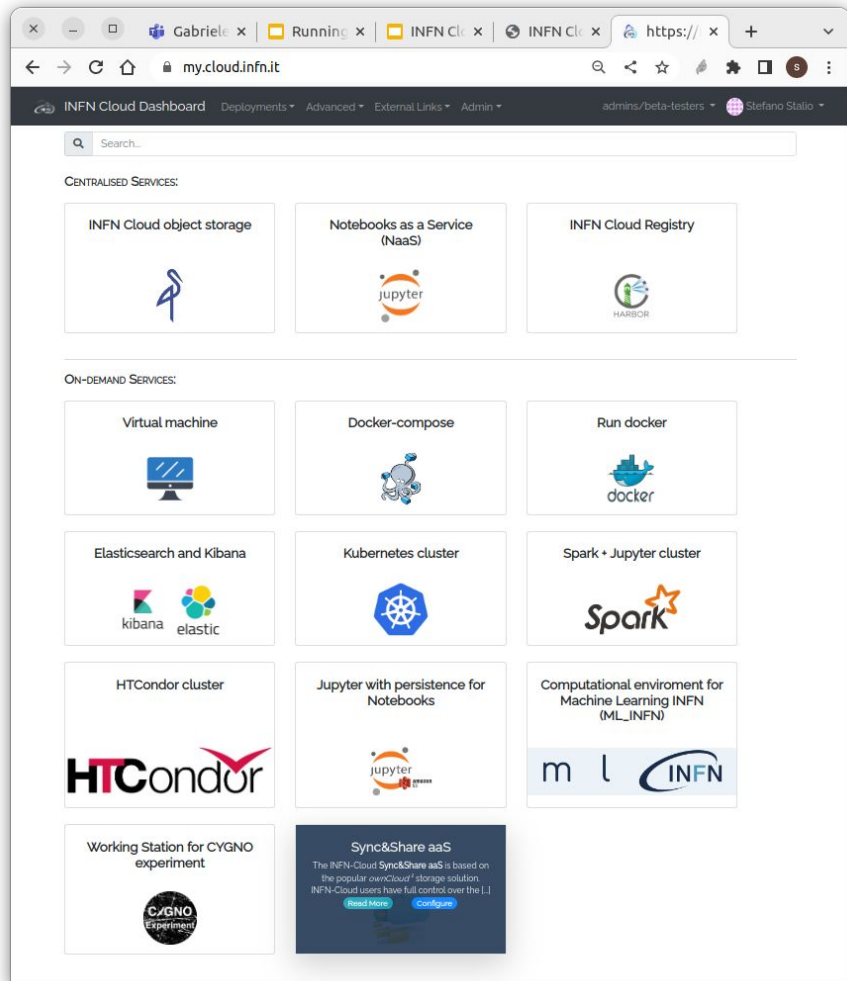
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- How To: Deploy Sync&ShareaaS
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- How To: Use the Notebooks as a Service solution
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- How To: Deploy a Kubernetes cluster
- How To: Deploy an Apache Mesos cluster
- How To: Deploy a Spark cluster + Jupyter notebook
- How To: Deploy Elasticsearch & Kibana
- How To: Deploy RStudio Server
- How To: Instantiate docker containers using custom docker-compose files
- How To: Instantiate docker containers using docker run
- How To: Access cloud storage from a scientific environment
- How To: Request the "nomination to be system administrator"
- How To: Request the "nomination to be system administrator" (italian version)

INFN is offering to its users a comprehensive and integrated set of Cloud services through its dedicated **INFN Cloud infrastructure**.

The **INFN Cloud portfolio**, available via an **easy-to-use web interface** but also exploitable via command-line interfaces, is defined upon clear user requirements. It is based on **composable, scalable, open-source** solutions and can be easily extended either by the INFN Cloud support team or directly by end users.

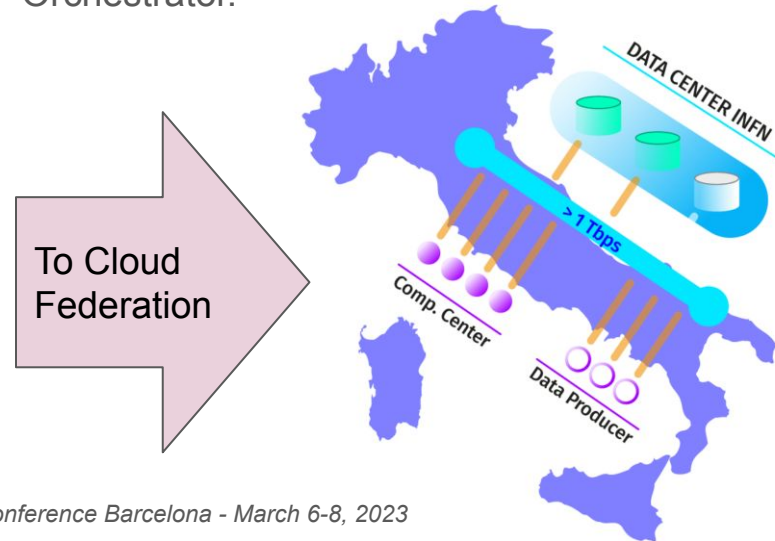
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The **INFN Cloud Dashboard** is backed by a cloud service orchestrator

The **Orchestrator** is in charge of distributing **Paas** level services among the available IaaS infrastructures

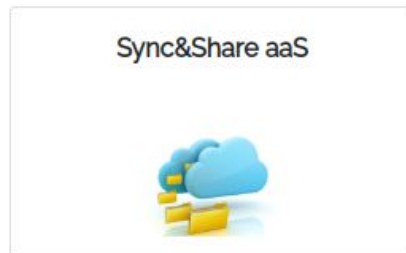
The **INFN Cloud IaaS infrastructures** are configured to accept service requests from the Orchestrator.





Sync and Share “aaS”

- Among the services offered by the INFN Cloud Dashboard, mostly devoted to scientific computing, Sync & Share is among the ones that capture the interest of many communities
- User communities often want a dedicated Sync & Share instance to be managed internally, sometimes for limited periods
- **Ease of use and full automation** encourages the request for dedicated, self-managed Sync & Share services



Sync and Share “aaS”

- Takes less than 5 minutes to configure.
 - No technical expertise required
 - Documentation available
 - Takes 10 minutes to deploy
 - Feature rich
 - Built via docker-compose inside a single VM with external S3 backend
 - **Immediately ready for use**
-
- Fit for small communities needing a dedicated Sync & Share service for a specific purpose
 - **Not fit for hundreds of users and tens of TBs**

Sync&Share aaS

Description: The INFN-Cloud Sync&Share aaS is based on the popular ownCloud¹ storage solution. INFN-Cloud users have full control over the configuration parameters of their Cloud Storage instance, as well as on third party access to the stored data.

The INFN-Cloud Sync&Share aaS also gives you exciting extra features:

- super-easy self-provisioning via the INFN Cloud Dashboard
- S3 based Object Storage backend where data is replicated over two data centers 800km apart
- programmatic access to user data via APIs, including remote mount and folder sync
- embedded, automated DB and configuration backup
- embedded, pre-configured monitoring system with alert notifications

For more information, please visit the [user guide](#)

¹ ownCloud is an open-source file sync, share and content collaboration software that lets teams work on data easily from anywhere on any device. More info at <https://owncloud.com/>

Deployment description

description

Configuration [Advanced](#)

docker_storage_size

20

Size of the volume to be mounted in /var/lib/docker

contact_email

Insert your Email for receiving notifications:

owncloud_admin_username

admin

Username for ownCloud admin access

owncloud_admin_password

Password for ownCloud admin user

monitoring_admin_username

admin

Username for the admin user of the monitoring service

monitoring_admin_password

Password for the admin user of the monitoring service

backup_passphrase

Password for backup

iam_url

https://iamcloud.infn.it

IAM url

iam_authorized_group

IAM group authorized to access the service

flavor

--Select--

Number of vCPUs and memory size of the Virtual Machine

Features /1

- Support for ownCloud and NextCloud
- OIDC or local login
- Integrated monitoring and alerting

Nagios®

General

Home
Documentation

Current Status

Tactical Overview
Map (Legacy)
Hosts
Services
Host Groups
Summary
Grid
Service Groups
Summary
Grid

Problems
Services (Unhandled)
Hosts (Unhandled)
Network Outages

Quick Search:

Reports

Availability
Trends (Legacy)
Alerts
History
Summary
Histogram (Legacy)
Notifications
Event Log

System

Comments
Downtime
Dronec Info

Current Network Status
Last Updated: Sun Feb 26 22:09:27 CET 2023
Updated every 90 seconds
Nagios® Core™ 4.4.7 - www.nagios.org
Logged in as admin

Host Status Totals			
Up	Down	Unreachable	Pending
0	0	0	7
All Problems All Types			
0		7	

Service Status Totals				
Ok	Warning	Unknown	Critical	Pending
16	0	0	0	0
All Problems All Types				
0		16		

Service Status Details For All Hosts

Host	Service	Status	Last Check	Duration	Attempt	Status Information
backup	Check test backup	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	OK - Last backup was successful
	Ping	OK	02-26-2023 22:04:21	0d 1h 40m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.09 ms
db	MySQL DB	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	Uptime: 6610 Threads: 4 Questions: 108019 Slow queries: 0 Opens: 180 Open tables
	Ping	OK	02-26-2023 22:04:21	0d 1h 40m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.11 ms
dbbackup	Check DB backup	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	OK - 208 files found
	Ping	OK	02-26-2023 22:04:21	0d 1h 40m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.11 ms
nagios	Current Load	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	OK - load average: 1.17, 1.14, 1.19
	Ping	OK	02-26-2023 22:04:21	0d 1h 40m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.08 ms
	Root Partition	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	DISK OK - free space: / 22934 MB (86.22% inode=91%):
owncloud	Owncloud application	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	HTTP OK: HTTP/1.1 302 Found - 1046 bytes in 0.087 second response time
	Ping	OK	02-26-2023 22:04:21	0d 1h 40m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.09 ms
	S3 bucket usage	OK	02-26-2023 21:03:38	0d 1h 45m 11s+	1/4	S3 OK - 3758879a-b608-11ed-b605-0242ac110002-data: 0 objects, 0m
proxy	Application frontend	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	SSL OK - data.212.189.205.212.myip.cloud.infn.it - certificate expires in 89 days
	Ping	OK	02-26-2023 22:04:21	0d 1h 40m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.08 ms
redis	Ping	OK	02-26-2023 22:04:21	0d 1h 40m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.11 ms
	Redis Service	OK	02-26-2023 22:09:21	0d 1h 40m 11s	1/4	TCP OK - 0.001 second response time on redis port 6379

Results 1 - 16 of 16 Matching Services



Username or email

Password

Login

Alternative Logins

INFN Cloud IAM



Log in to Nextcloud

Account name or email

Password

→ Log In

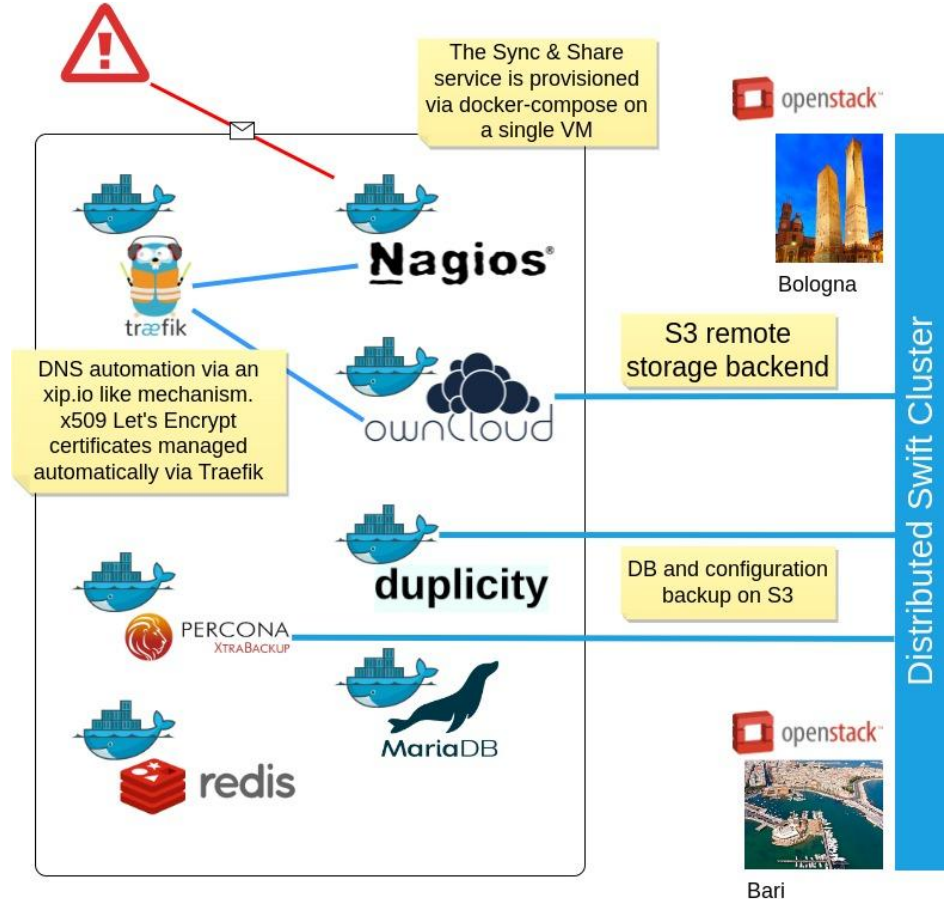
Forgot password?

Log in with a device

🔗 Log in with IAM

Features /2

- Remote S3 backend for data and backup
- Data distributed and replicated over two data centers in different italian cities
- Periodic DB and configuration backup
- Outgoing mail server configured



Features /3

- x509 certificate automation via Let's Encrypt / Traefik
- xip.io/nip.io-like DNS
 - no need to interact with a DNS DB



https://data.90.147.174.100.myip.cloud.infn.it	Points to Sync & Share
https://status.90.147.174.100.myip.cloud.infn.it	Points to monitoring

Security



- Encrypted connections
- Periodic network security scans
- Authenticated scans (= from inside the VM) if requested by user
- Strict security groups
- Fail2ban on ssh (to be tested on https)
- Centralized logs
- User support for updates and solution of vulnerabilities





Conclusion and Contacts

- Alternative approach with many independent Sync and Share instances has interesting aspects
- Limited scaling and resilience can be issues, but communities know in advance and can opt for similar services that already exist inside INFN or ask for help building a resilient architecture on INFN Cloud.
- Solution proves to be robust
- Users seem to like full automation and features

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