Sunet Drive – Continuous Testing at a global scale

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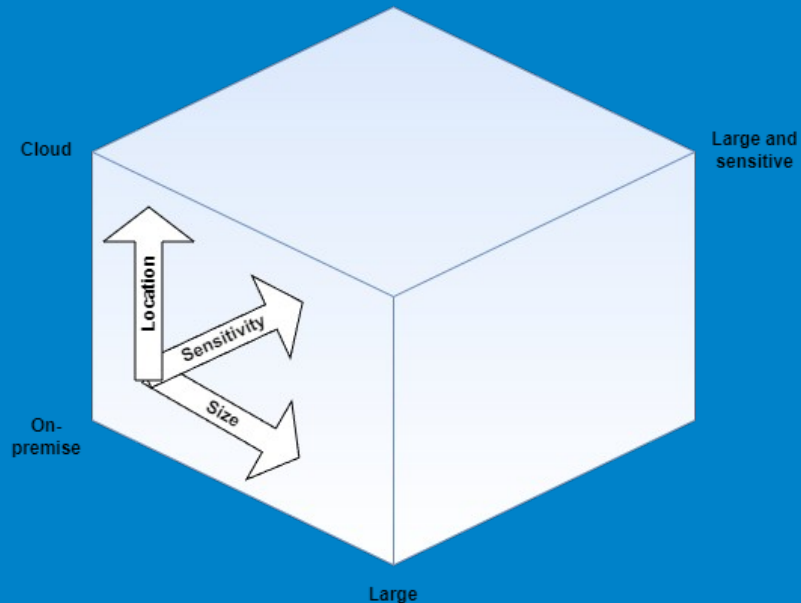
Sunet is the Swedish University Computer Network
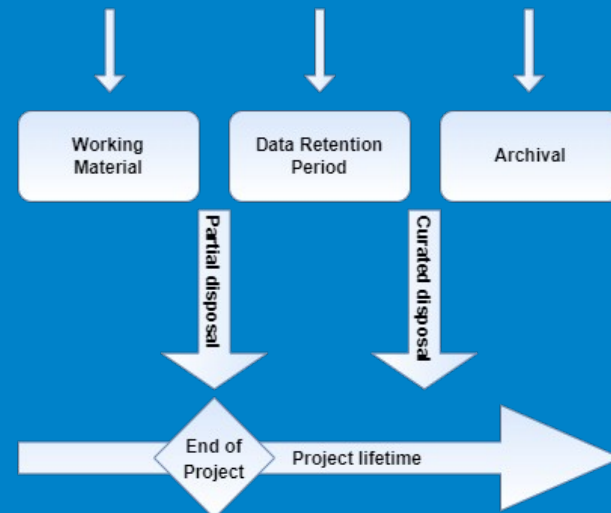
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You model your system

You face reality
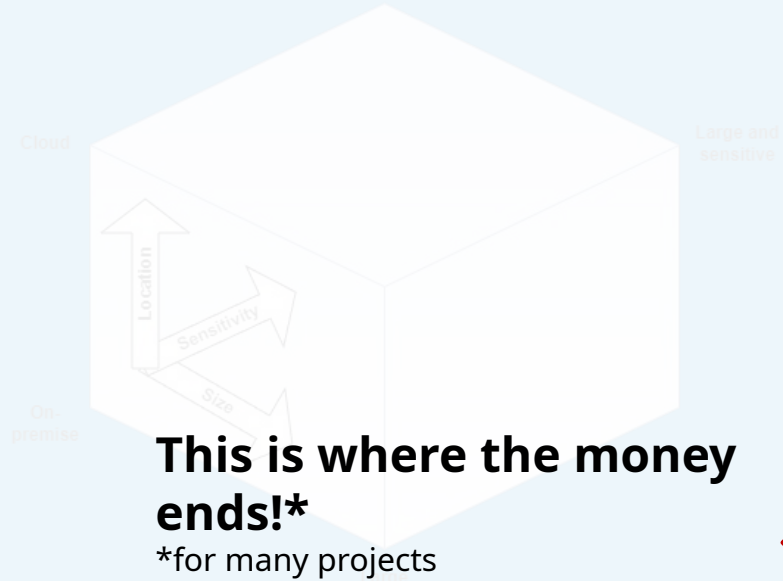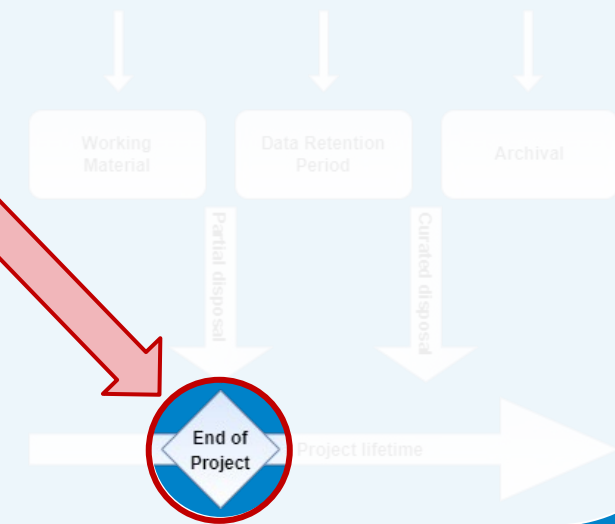
This is where the money ends!*
*for many projects

You build at global scale
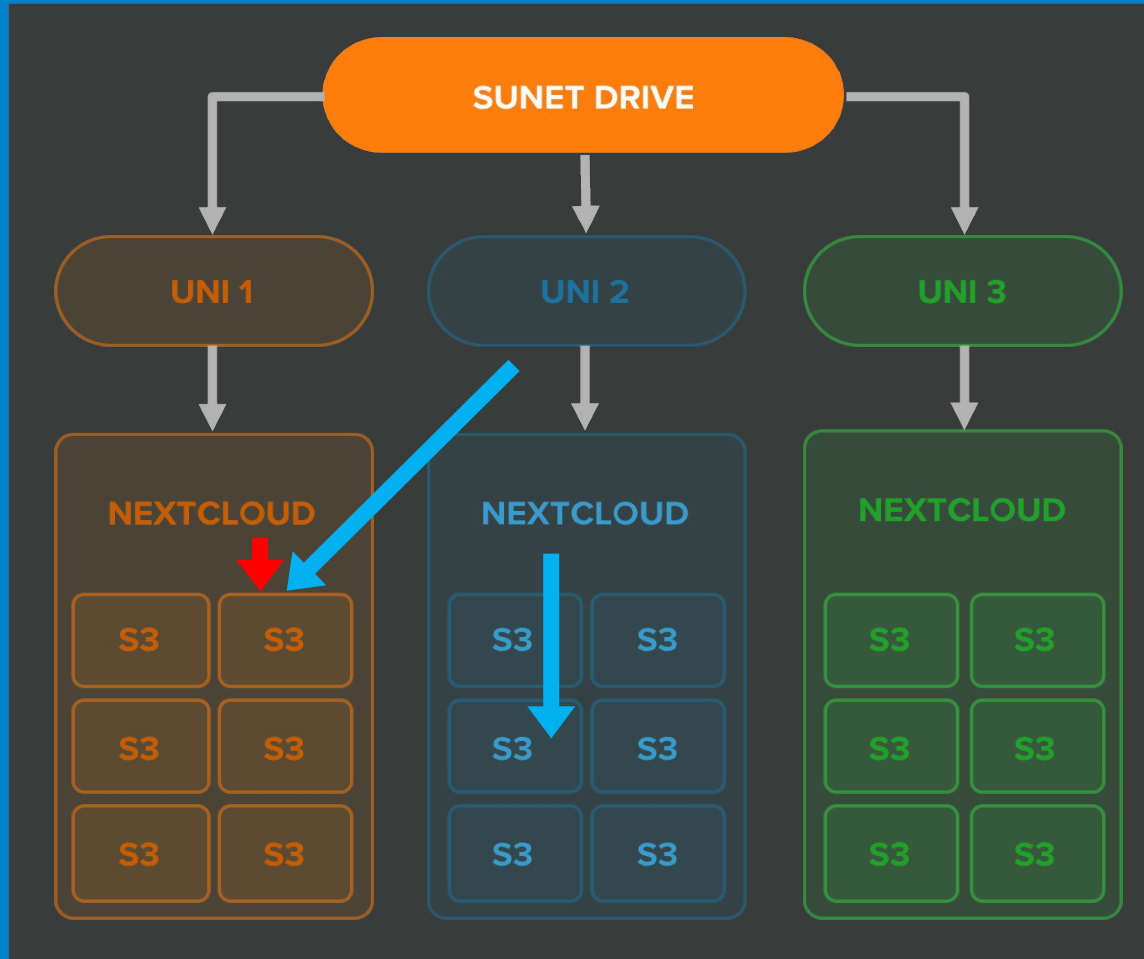
You integrate

Primary data sources

Secure Storage

UV-Vis

IVIUM

...

PIA
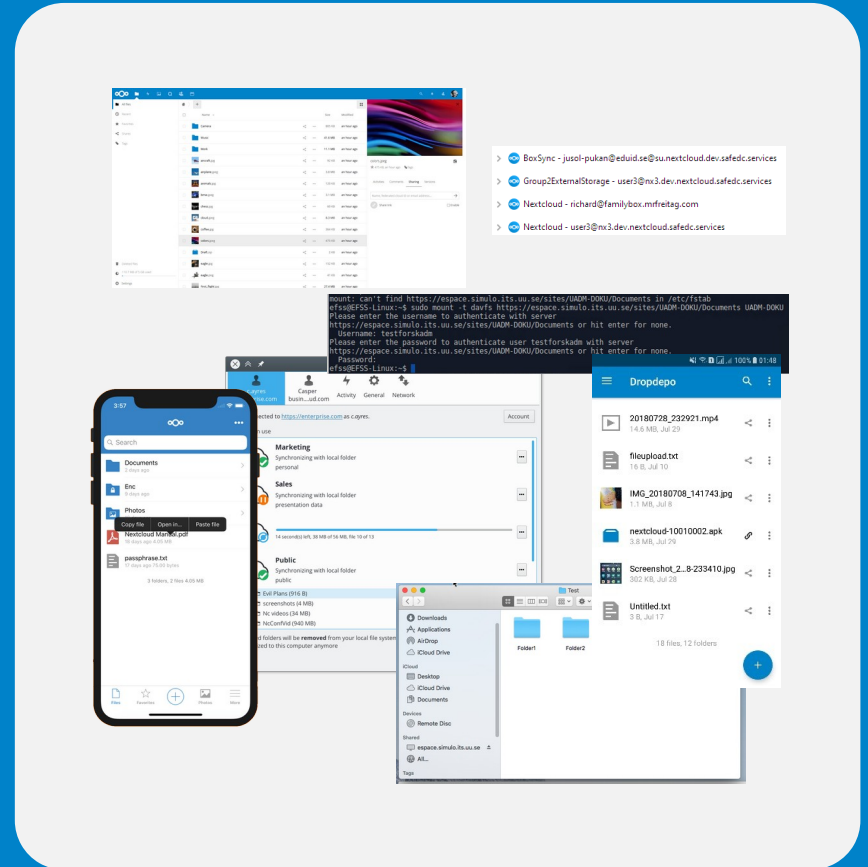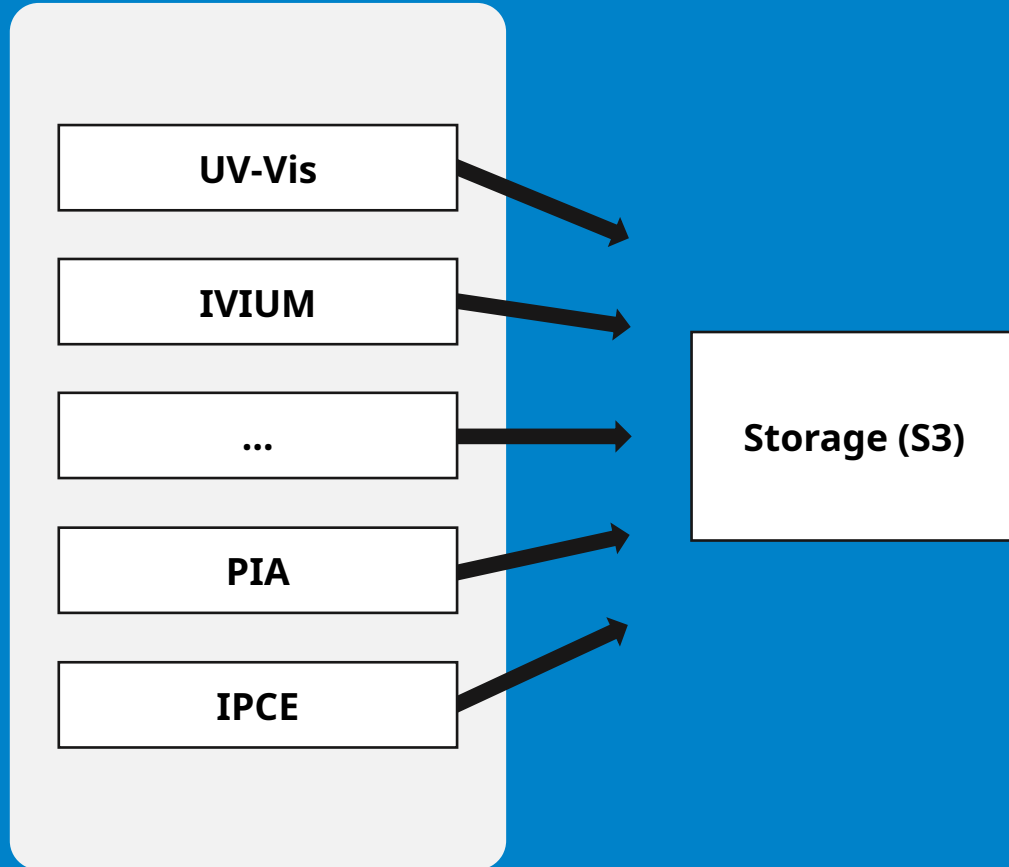
IPCE

Storage (S3)

You expand

Primary data sources

- UV-Vis
- IVIUM
- ...
- PIA
- IPCE

Secure Storage

Analyze and Publish

You ask yourself 'Does it really work all the time?'

You write tests

```
    ! expected.yaml        test_login_selenium.py M       test_ocs.py  ×       test_collabora_selenium.py       sunetdrive.py
    test_ocs.py
67      def test_gssusers(self):
68          drv = sunetdrive.TestTarget()
69          fullnode = 'gss'
70          url = drv.get_add_user_url(fullnode)
71          self.logger.info(f'{self._testMethodName} {url}')
72          nodeuser = drv.get_ocsuser(fullnode)
73          nodepwd = drv.get_ocsuserapppassword(fullnode)
74          url = url.replace("$USERNAME$", nodeuser)
75          url = url.replace("$PASSWORD$", nodepwd)
76
77          r = requests.get(url, headers=ocsheaders)
78          try:
79              j = json.loads(r.text)
80              self.logger.info(json.dumps(j, indent=4, sort_keys=True))
81              users = j["ocs"]["data"]["users"]
82          except:
83              self.logger.info("No JSON reply received")
84              self.logger.info(r.text)
85
86      def test_nodeusers(self):
87          drv = sunetdrive.TestTarget()
88          for fullnode in drv.fullnodes:
89              with self.subTest(mynode=fullnode):
90                  url = drv.get_add_user_url(fullnode)
91                  self.logger.info(f'{self._testMethodName} {url}')
92                  nodeuser = drv.get_ocsuser(fullnode)
93                  nodepwd = drv.get_ocsuserapppassword(fullnode)
94                  url = url.replace("$USERNAME$", nodeuser)
95                  url = url.replace("$PASSWORD$", nodepwd)
96
97                  r = requests.get(url, headers=ocsheaders)
98                  try:
99                      j = json.loads(r.text)
100                     self.logger.info(json.dumps(j, indent=4, sort_keys=True))
101                     users = j["ocs"]["data"]["users"]
102                 except:
103                     self.logger.info("No JSON reply received")
104                     self.logger.info(r.text)
```

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You test systematically

- Testing on top of monitoring
  Manual – Automatic – On-Demand

- Acceptance Testing

  Capabilities

  Status and Versions

  User life-cycle

  File handling

- Selenium

  Node-login

  Local and non-MFA SSO accounts

- Collabora testing

  Docoument handling and collaboration

- Load testing

  20 VMs, 300 users per VM

  120-150 full load users

  750-1000 resyncs within 5 minutes

  6000 resyncs within 40 minutes

✓	☀	ScienceMesh Smoketest	23 hr	#26	N/A		13 min	▷
✓	☁	Sunet Drive Acceptance - Prod	48 min	#1172	1 hr 53 min	#1169	4 min 3 sec	▷
✓	🌧	Sunet Drive Acceptance - Test	51 min	#1199	1 hr 57 min	#1198	4 min 20 sec	▷
✓	⛅	Sunet Drive Selenium - Prod	44 min	#18308	2 hr 3 min	#18305	9 min 23 sec	▷
✓	☀	Sunet Drive Selenium - Test	26 min	#17947	1 hr 13 min	#17945	11 min	▷
✓	☁	Sunet Drive Selenium Collabora - Prod	28 min	#3407	1 hr 35 min	#3405	19 min	▷
✗	☁	Sunet Drive Selenium Collabora - Test	3 days 5 hr	#3182	1 hr 18 min	#3243	11 min	▷
✓	☀	Sunet Drive Selenium RDS - Test	4 hr 46 min	#1115	2 days 4 hr	#1101	43 sec	▷

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You test automatically

S	Name ↓	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time	
🖥️	Built-In Node	Linux (amd64)	In sync	37.85 GB	⊘ 0 B	37.85 GB	0ms	⚙️
🖥️	node1.testautomation.drive.sunet.dev	Linux (amd64)	In sync	76.59 GB	⊘ 0 B	76.59 GB	7ms	⚙️
🖥️	node2.testautomation.drive.sunet.dev	Linux (amd64)	In sync	76.47 GB	⊘ 0 B	76.47 GB	8ms	⚙️
🖥️	node3.testautomation.drive.sunet.dev	Linux (amd64)	In sync	75.30 GB	⊘ 0 B	75.30 GB	8ms	⚙️
🖥️	node4.testautomation.drive.sunet.dev	Linux (amd64)	In sync	83.21 GB	⊘ 0 B	83.21 GB	8ms	⚙️
🖥️	node6.testautomation.drive.sunet.dev	Linux (amd64)	In sync	84.43 GB	⊘ 0 B	84.43 GB	6ms	⚙️

All   Config   **Drive - Prod**   Drive - Test   External   Nodes - Prod   Nodes - Prod - NoMFA   Nodes - Test   Nodes - Test - NoMFA   +

S	W	Name ↓	Last Success		Last Failure		Last Duration	
✓	☀️	Sunet Drive Acceptance - Prod	18 min	#1942	1 day 7 hr	#1915	5 min 42 sec	▷
✓	☀️	Sunet Drive Selenium - Prod	1 hr 8 min	#21905	24 days	#21658	7 min 16 sec	▷
✓	⛅	Sunet Drive Selenium Collabora - Prod	2 hr 22 min	#5045	4 hr 22 min	#5044	1 hr 30 min	▷
✓	☀️	Sunet Drive Selenium TOTP - Prod	49 min	#611	5 days 4 hr	#559	5 min 57 sec	▷

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You use pipelines

	Test - NoMFA all	BTH Test - NoMFA	Extern Test - NoMFA	GIH Test - NoMFA	HB Test - NoMFA	HH Test - NoMFA	HIS Test - NoMFA	HKR Test - NoMFA	HV Test - NoMFA	KAU Test - NoMFA	KMH Test - NoMFA	LNU Test - NoMFA	LTU Test - NoMFA	MAU Test - NoMFA	MDU Test - NoMFA	SciLifeLab Test - NoMFA	SHH Test - NoMFA	SU Test - NoMFA	Sunet Test - NoMFA	SUNI Test - NoMFA	UU Test - NoMFA
Average stage times:	214ms	6min 33s	7min 12s	13min 31s	4min 31s	5min 10s	4min 41s	12min 27s	17min 8s	20min 12s	8min 54s	9min 15s	9min 33s	13min 17s	15min 30s	14min 31s	21min 55s	22min 56s	26min 14s	18min 13s	27min 6s
#40 Aug 22 00:28 No Changes	311ms	6min 34s	6min 58s	13min 34s	4min 34s	5min 16s	4min 46s	12min 13s	16min 52s	20min 12s	9min 0s	9min 21s	9min 43s	13min 27s	15min 45s	14min 49s	21min 39s	16ms	0ms (paused for 0ms)	18min 21s	0ms (paused for 0ms)
#39 Aug 21 06:28 No Changes	138ms	6min 33s	7min 24s	13min 36s	4min 34s	5min 10s	4min 40s	12min 41s	17min 24s	20min 18s	8min 56s	9min 16s	9min 37s	13min 21s	15min 33s	14min 35s	22min 14s	25min 40s	29min 32s	18min 23s	30min 17s
#38 Aug 21 00:28 No Changes	257ms	6min 31s	7min 12s	13min 36s	Success Logs	5min 13s	4min 50s	12min 23s	17min 2s	20min 3s	9min 1s	9min 22s	9min 37s	13min 23s	15min 35s	14min 34s	21min 47s	25min 21s	29min 0s	18min 19s	30min 2s
#37 Aug 20 06:28 No Changes	193ms	6min 34s	7min 18s	13min 42s	4min 32s	5min 7s	4min 39s	12min 43s	17min 26s	20min 22s	8min 53s	9min 16s	9min 28s	13min 13s	15min 29s	14min 24s	22min 15s	25min 43s	29min 21s	18min 8s	30min 24s
#36 Aug 20 00:28 No Changes	174ms	6min 28s	7min 9s	13min 21s	4min 31s	5min 5s	4min 39s	12min 20s	17min 4s	20min 1s	8min 54s	9min 12s	9min 28s	13min 15s	15min 19s	14min 23s	21min 48s	25min 7s	29min 8s	18min 5s	29min 50s
#35 Aug 19 06:28 No Changes	222ms	6min 38s	7min 18s	13min 38s	4min 30s	5min 8s	4min 41s	12min 37s	17min 17s	20min 25s	8min 52s	9min 22s	9min 32s	13min 19s	15min 39s	14min 33s	22min 3s	25min 40s	29min 10s	18min 26s	30min 21s
#34 Aug 19 00:28 No Changes	223ms	6min 26s	7min 0s	13min 22s	4min 27s	5min 6s	4min 37s	12min 9s	16min 47s	20min 0s	8min 49s	9min 13s	9min 23s	13min 12s	15min 23s	14min 21s	21min 30s	25min 13s	28min 37s	18min 7s	29min 50s
#33 Aug 18 06:28 No Changes	209ms	6min 36s	7min 23s	13min 27s	4min 27s	5min 13s	4min 39s	12min 39s	17min 16s	20min 1s	8min 51s	9min 11s	9min 37s	13min 12s	15min 27s	14min 36s	22min 3s	25min 23s	29min 20s	18min 15s	29min 59s
#32 Aug 18 00:28 No Changes	227ms	6min 31s	7min 6s	13min 26s	4min 30s	5min 11s	4min 38s	12min 19s	17min 4s	20min 9s	8min 50s	9min 9s	9min 35s	13min 13s	15min 28s	14min 30s	21min 55s	25min 22s	29min 10s	18min 9s	29min 59s
#31 Aug 17 06:28 No Changes	191ms	6min 36s	7min 12s	13min 42s	4min 28s	5min 11s	4min 36s	12min 27s	17min 10s	20min 26s	8min 52s	9min 6s	9min 35s	13min 14s	15min 21s	14min 27s	21min 55s	25min 47s	29min 6s	18min 1s	30min 22s

You test a lot – all the time

- Test and Coverage

    48 tests

    Prod & Test

    Different views and scenarios

    > 28k test points per day

    ca. 1.3k test points per customer per day

- # of tests should be higher (>100)

Type	SubTests		Prod/Test	Runs per Day	Total per Day
Acceptance		502	1004	20	20080
Selenium		45	90	20	1800
Collabora		100	200	7	1400
Selenium TOTP		22	44	20	880
49 Tests for 21 Nodes	1029		2058	2	4116
				Total	**28276**

You keep the developers busy

Meine Tickets

#	TITEL
waiting for customer	
9650186	Text editing app seems to forget to unlock .md files after editing
9647897	External storage and federated shares are counted towards the quota ...
offen	
9650550	Importing data into a folder mapped to an external S3-bucket does no...
9645923	Web UI does not list all users that are provisioned on a node
geschlossen	
9650509	Improved 'Update needed' page if the read-only configuration is active
9650401	Please send announcements to a unique list of e-mails
9650313	Desktop client shows swapped timestamps for conflicted files residin...
9650286	OCS and/or OpenAPI for files_external (and question about v28 OpenA...
9650180	occ allows creation of personal buckets with same name as mount poi...
9650003	Logging/Auditing of collaborative tags and impact of deactivating the ...
9648275	Why do some app-configurations write (installed) when running occ a...
9647596	Inconsistent behavior when using personal external storage
9647595	Global Scale: Problem with users mapped from eptid due to lack of ful...
9647267	Problem with support portal
9647187	Unable to create new local (admin) accounts on GSS Master
9646664	[University of Stockholm] Nextcloud Collabora Online Subscription
9645834	Missing shares (potential data) after upgrade from v25 to v26
9645164	First WebDAV call after login fails
9644953	1213 Deadlock found when trying to get lock;
9639963	Status of virtual files for Mac
9639906	Unusual and extremely concerning increase in object/size of primary ...
9637483	User search function in global scale setup is extremely inconsistent
9637482	Sync-client crash with our Nextcloud instance, but not with other inst...
9636812	Question about webauthn known issue
9636375	Admin privileges in Nextcloud v23 for app-settings
9634855	Exceptions and error handling of occ tool
9633982	Duplicate mounts and files showing from wrong users

9632817	Unable to load Collabora if a new document is created with a name ou...
9632301	Problem with QWebEngineView Rendering on Windows (client 3.5.1)
9632279	Nextcloud OS X client login flow not working with our instance
9631901	Layouting issue with relogin screen of sync client
9631823	Unable to create system report for admin user without storage
9631608	Making mobile apps available on the app store for M1 macs
9631607	Broken documents on Nextcloud portal site
9631565	When does Nextcloud remove shares?
9629694	Unable to connect sync clients on Windows/Linux/Mac
9629591	Unable to leave a share from unavailable node
9628626	Weird behavior when renaming folders in external storage
9628220	Help with restoration of shares after data storage migration
9628098	Keys and secrets of S3 buckets in system reports
9627945	Migration of primary bucket to new server/url
9627935	Unable to share via e-mail if a local node user exists
9627540	Problem with lookup-database
9625887	Set custom logout redirect URL for single instance in global scale setup
9625883	Help using custom email template app
9625576	Database schema verification
9625504	Issue with lookup server - solution inside :-)
9625334	Configuration settings in config file vs. database
9625181	Adding buckets via occ vs. web UI
9625134	Sync-ping-pong when using S3 external storage
9624916	Deadlockexception for certain users
9624897	iOS app resets if login requires an app-switch
9624827	Sync-client does not work with SAML/SSO if it uses MFA via U2F
9624821	Sync errors when using external S3 storage
9624819	Certificate error when adding external S3 storage without path style
9623946	Global Scale with Nextcloud >19
9622626	Nextcloud upgrade stuck on "Checking for update of app"
9622610	User files created on global site selector instead of node
9621324	Help with restoring/reconfiguring external storages
9619212	Assessment of S3 related error messages "BadRequest"

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A Better
ScienceMesh
for everyone!

Another reality check (for testing)
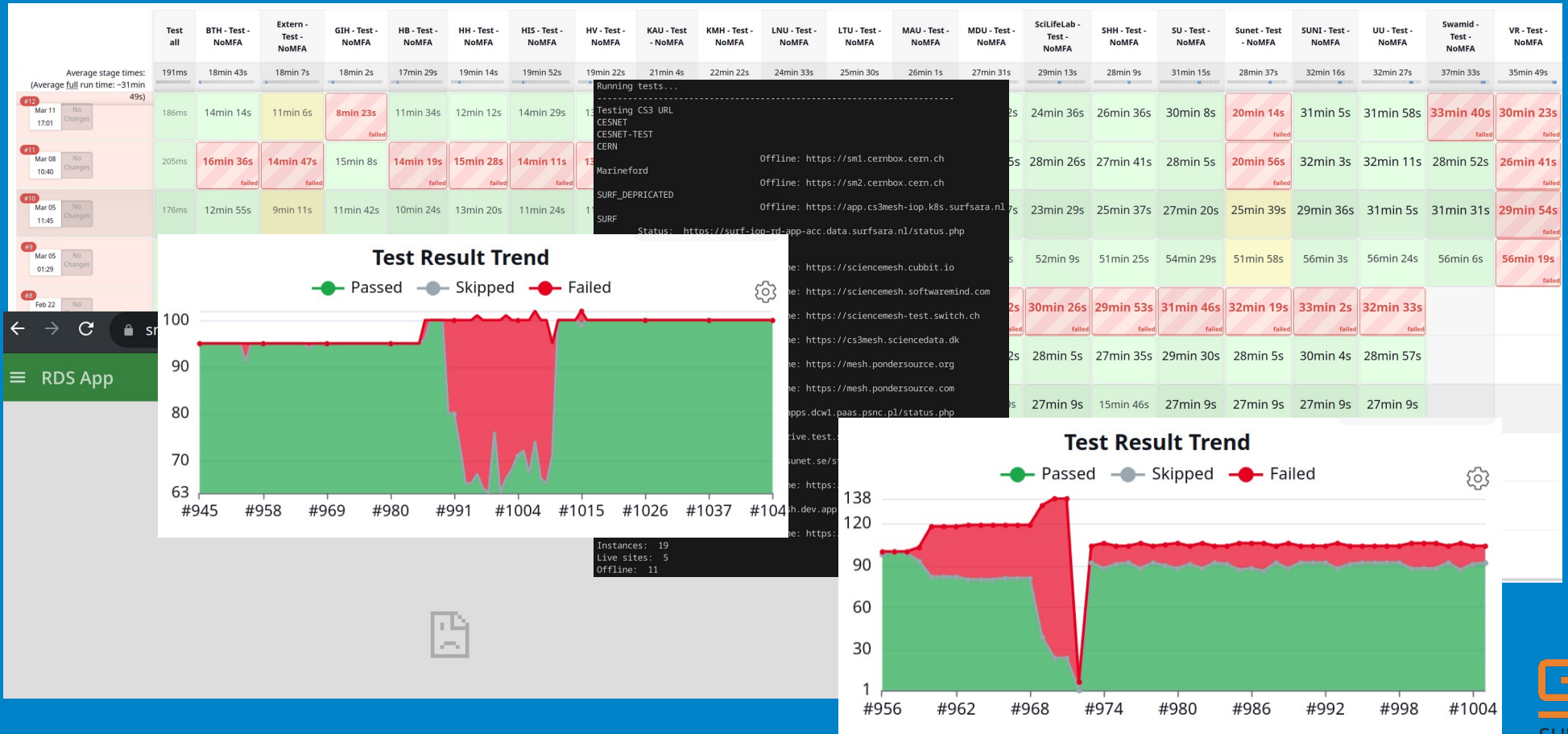
What we (don't) test (automatically)

What we test

- Core functionality for users

- WebDAV

- Select APIs (OCS)

- Change/Move/Delete

- Login/Logout

- User lifecycle

- File handling in S3 buckets

What we don't test

- We do not test Nextcloud (we test Sunet Drive)

- We do not test all OS (Linux only)

- We do not test sync-clients (automatically)

- We do not test all browsers (Chrome and Firefox only)

- We do not test apps (except files)

What we will test (more)

- Sync clients (pyautogui)

- Internal federation

- External federation (ScienceMesh, OCM)

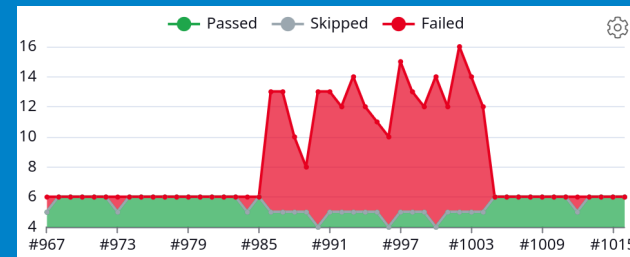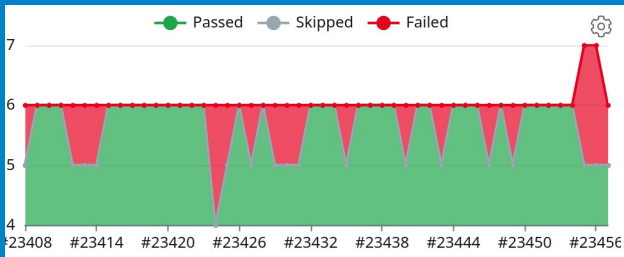- Important apps (Jupyter, RDS)
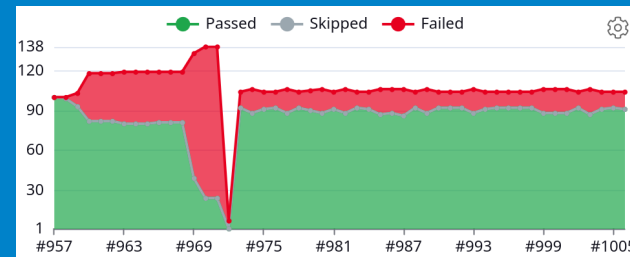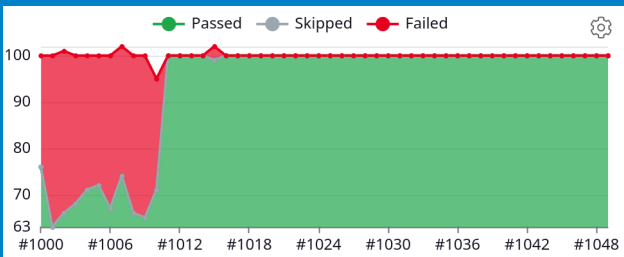
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Typical Test Result Patterns
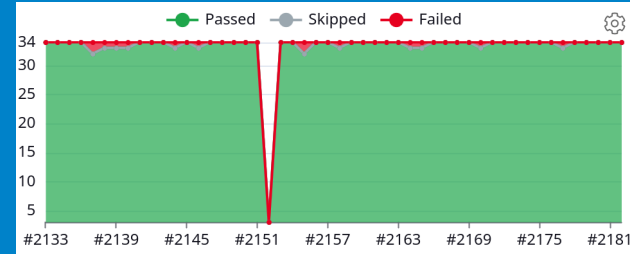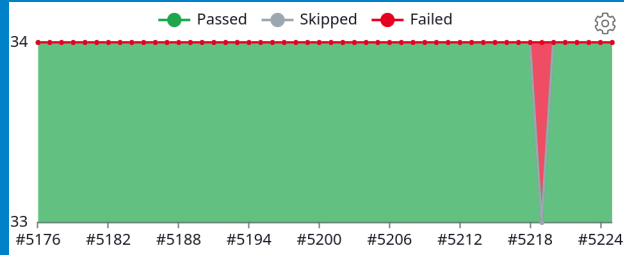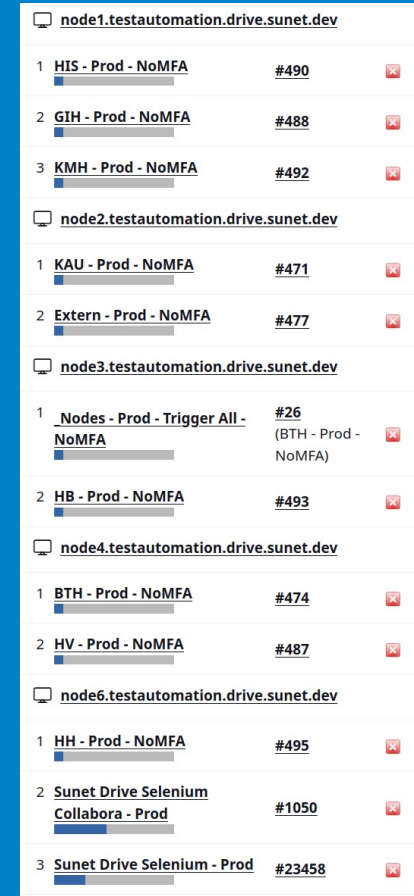
Test Infrastructure

- Jenkins CI

- 5 worker nodes

- 2 data centers

- 2-3 executors per node

- X virtual framebuffer with XFCE

- Scheduled jobs

- Can be scaled out if necessary

🖥 node1.testautomation.drive.sunet.dev

1	HIS - Prod - NoMFA	#490	❌
2	GIH - Prod - NoMFA	#488	❌
3	KMH - Prod - NoMFA	#492	❌

🖥 node2.testautomation.drive.sunet.dev

1	KAU - Prod - NoMFA	#471	❌
2	Extern - Prod - NoMFA	#477	❌

🖥 node3.testautomation.drive.sunet.dev

1	_Nodes - Prod - Trigger All - NoMFA	#26 (BTH - Prod - NoMFA)	❌
2	HB - Prod - NoMFA	#493	❌

🖥 node4.testautomation.drive.sunet.dev

1	BTH - Prod - NoMFA	#474	❌
2	HV - Prod - NoMFA	#487	❌

🖥 node6.testautomation.drive.sunet.dev

1	HH - Prod - NoMFA	#495	❌
2	Sunet Drive Selenium Collabora - Prod	#1050	❌
3	Sunet Drive Selenium - Prod	#23458	❌

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Tips and Tricks

- Multithreading massively improves acceptance test execution time

- Selenium tests are hard to parallelize

- Failed tests do not mean your system is broken, but they are an indicator

- You fix your tests more often than your system

- Automated testing is extremely beneficial during updates

- Major updates can require a lot of test refactoring

⚠	☁	_Nodes - Prod - Trigger All - NoMFA
✓	☀	BTH - Prod - NoMFA
✓	☀	Extern - Prod - NoMFA
✓	☀	GIH - Prod - NoMFA
✓	☀	HB - Prod - NoMFA
✓	☀	HH - Prod - NoMFA
✓	☀	HIS - Prod - NoMFA
✓	☀	HV - Prod - NoMFA
✓	☀	KAU - Prod - NoMFA
✓	☀	KMH - Prod - NoMFA
✓	☀	LNU - Prod - NoMFA
✓	☀	LTU - Prod - NoMFA
✓	☀	MAU - Prod - NoMFA
✓	☀	MDU - Prod - NoMFA
✓	☀	SciLifeLab - Prod - NoMFA
✓	☀	SHH - Prod - NoMFA
⚠	☀	SU - Prod - NoMFA
✓	☀	Sunet - Prod - NoMFA
✓	☀	SUNI - Prod - NoMFA
✓	☀	Swamid - Prod - NoMFA
✓	☀	UU - Prod - NoMFA
✓	☀	VR - Prod - NoMFA

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Thank you!

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https://github.com/SUNET/drive-tests