

PROJECT

# SANDE Integration and orchestration with ORE

DATE

28 March 2023

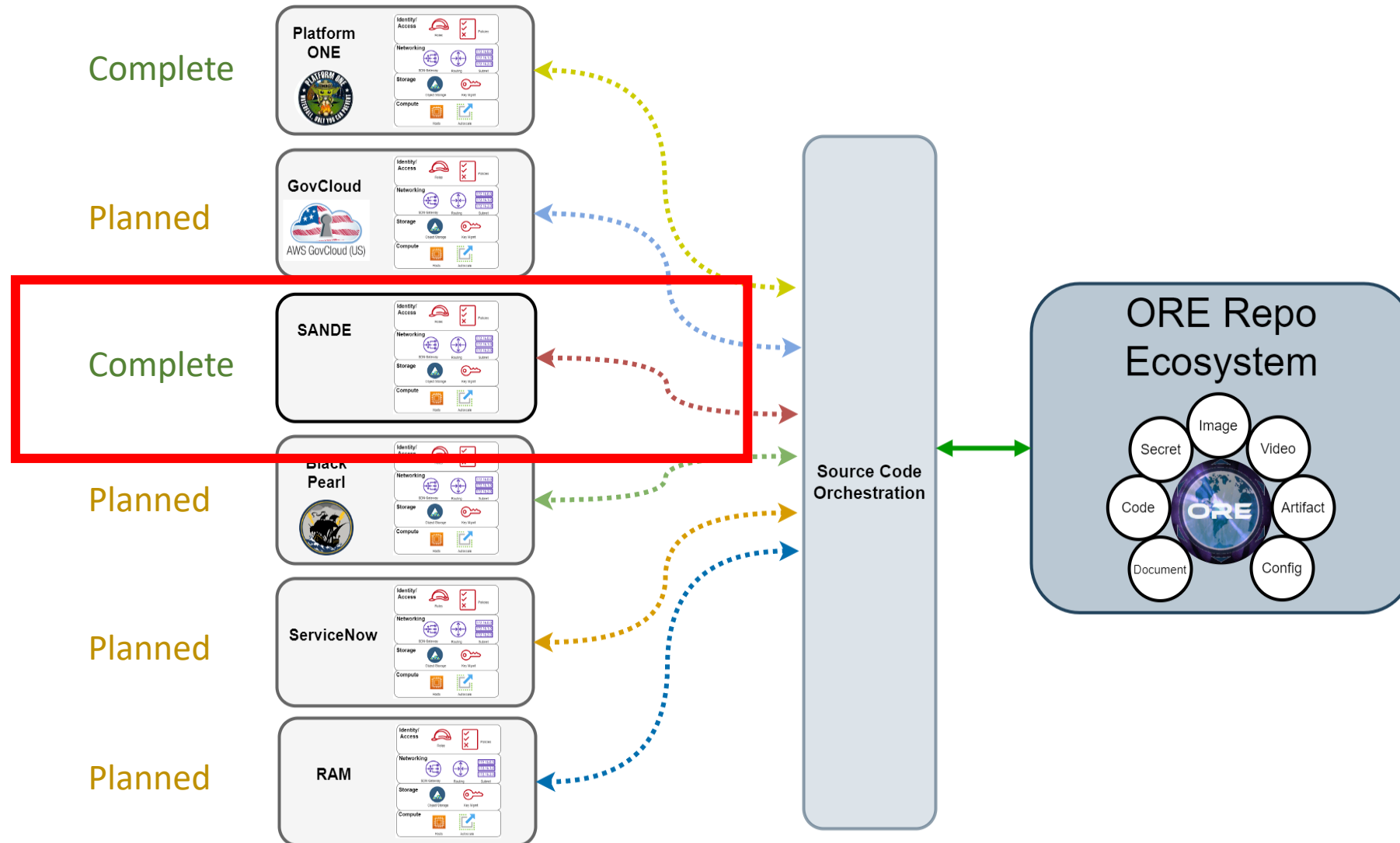
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The ORE provides flexible integration mechanisms to federate multiple repository types, including code repositories.

This enables collaboration, transparency, and governance.



## Orchestrating Multiple Clouds and On premise Infrastructures

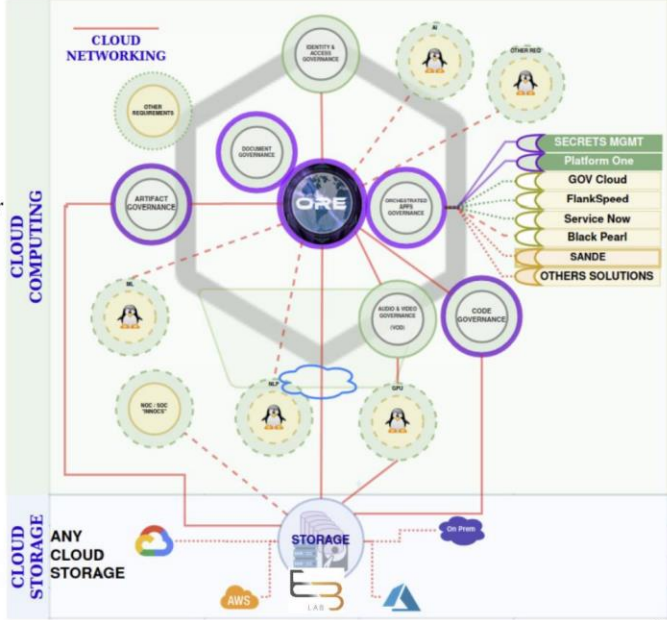
### ORE: Requirement to sync ORE with SANDE repo


**To connect the ORE to “SANDE”, the solutions provider must simply provide the following...**

1. Cloud native API consumable Zero Trust endpoint, i.e., secure TLS accessible web node to “SANDE” source code repository(ies)

*Note: NDP ORE preference is to integrate over TLS 1.3 endpoints, but if that is not possible, we do support several alternative legacy secure application data transport options.*

2. Solution service providers’ preferred solution approach to credentials management for synchronization (i.e. keys, username-password, certs, tokens, etc)





The ORE team provided the script shown on the right to the SANDE team, which allows for automatic code transfers between the two systems.

Specifically, this enables SANDE to push code to the ORE seamlessly.

```

repo_sync
#!/bin/bash
# This script can be used to push any number of git repositories to any other git location.
# It expects authentication credentials to be available in the shell environment
#
# src_acct_user and src_acct_pass is optional. But it should be declared in the environment with the appropriate values set
# if the source repositories require authentication.
#
# dest_acct_user and dest_acct_pass are required. It should be declared in the environment with the appropriate values set
# without valid credentials the git pushes will fail

## array path to src and the respective dest repo
declare -A repo_names #do not remove this line
## below lines are examples. update or delete as appropriate. It syncs the repos from github to the repos at ore-scm
repo_names['github.com/usnistgov/OSCAL.git']='ore-scm.azure.e3labs.net/usnistgov/OSCAL.git'
#repo_names['github.com/usnistgov/800-63-3.git']='ore-scm.azure.e3labs.net/usnistgov/800-63-3.git'

## Start of the script. Do not edit below.
setup_sync_env() {
    # setup
    cat << 'EOF' > $HOME/cfpSendGitKey.sh
#!/bin/bash
echo $git_service_account_creds
EOF

    chmod +x $HOME/cfpSendGitKey.sh
}

sync_the_repo() {
    rm -rf the_repo

    export git_service_account_creds=$src_acct_pass # set git credentials for source repo
    export GIT_ASKPASS="$HOME/cfpSendGitKey.sh"

    echo "Cloning $1 repo"
    git clone https://$src_acct_user@$1 the_repo
    cd the_repo

    echo "Checkout branches"
    git branch -a | grep remotes | grep -v HEAD | grep -v master | xargs -I{} sh -c 'git branch --track ${1#remotes/origin/} {}' -- {}

    # set destination repo
    git remote add destorigin https://$dest_acct_user@$2

    export git_service_account_creds=$dest_acct_pass # set git credential for destination repo

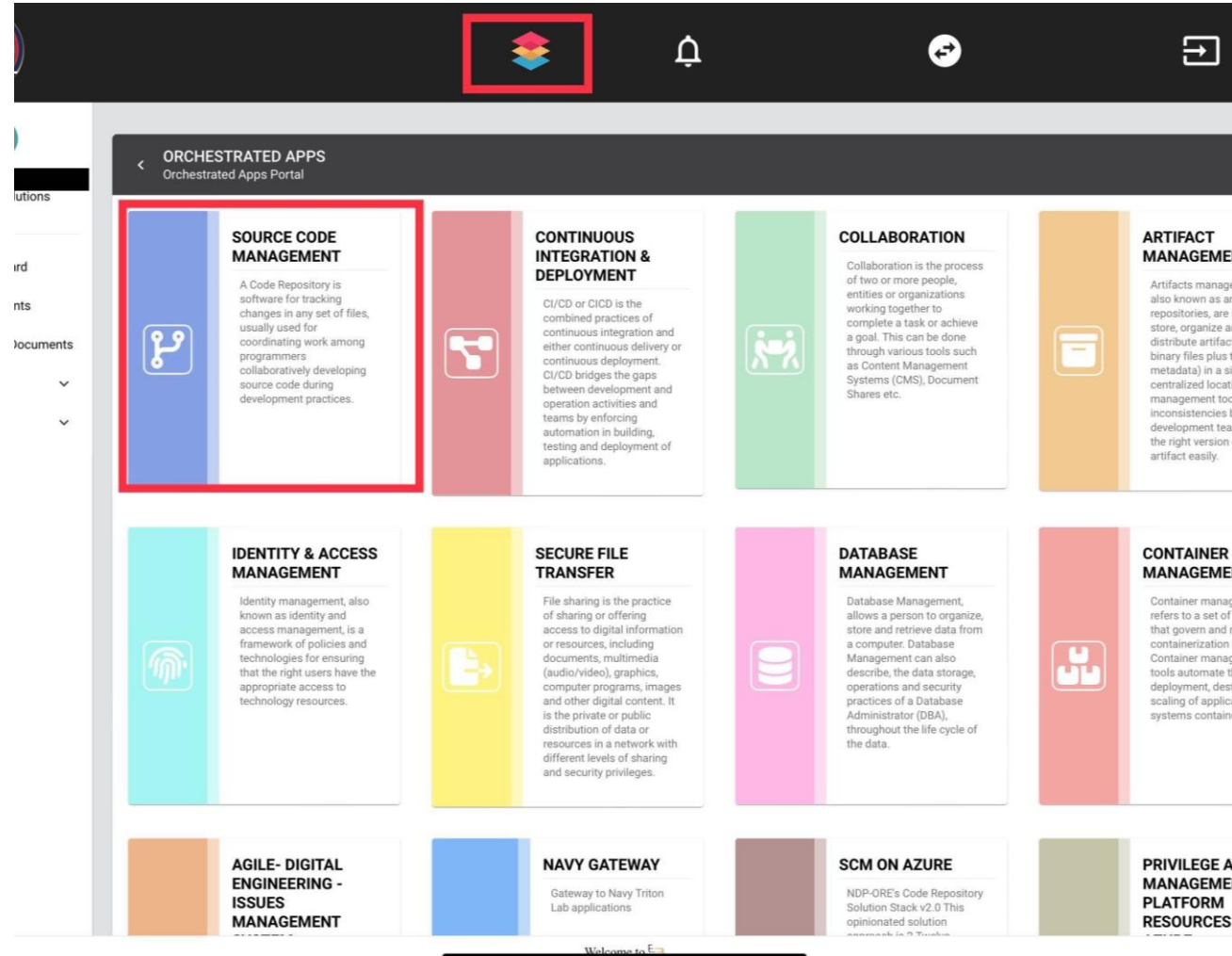
    echo "Push to dest repo"
    git push --all destorigin
    test $? -eq 0 && echo "Sync completed" || echo "ERROR - CANNOT COMPLETE MERGE"
    echo "-----"
}

setun sync env

```

Scripts 2 Twelve provided to assist the Gov Engineering SANDE team to push source code from Commercial WWT Git to the Navy's ORE.

Navigate to the Source Code Repository through the orchestrated apps page in the ORE.



The Source Code Repository in the ORE synchronizes external repositories from various platforms to enable centralized review of multiple repositories in one location.

The screenshot shows the GitLab interface for a repository named 'repository-analytics'. A table highlights two synchronized external repositories:

Name	Last commit	Last update
platform-one/big-bang_apps_s...	platform one - twistlock repo	1 day ago
sande/playbooks	convert fileowners report to csv	1 day ago

**AWS GOV CLOUD (PLATFORM 1) & SANDE (WWT Lab)  
SYNCHRONIZATION**

ORE synchronization – The image displays all SANDE ansible playbooks synchronized into the ORE to enable a centralized view of the SANDE development occurring within a sandboxed environment at WWT Labs.

The screenshot shows the ORE SCM interface for the 'SANDE SERVICES' repository. The interface includes a sidebar with navigation options like 'Playbooks', 'Project information', 'Repository', etc. The main content area displays the repository name 'SANDE SERVICES' and a table of files and folders. A red box highlights the table content.

Name	Last commit	Last update
Cloudvision	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
EVE-NG	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
Infoblox/tasks	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
Nautobot	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
ServiceNow/tasks	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
Velocloud	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
collections/ansible_collections	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
group_vars	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
jobs	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
scripts	Automated sync on Sat Mar 18 00:01:55 U...	1 week ago
README.md	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
inventory.yml	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
readme.txt	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago
requirements.txt	Automated sync on Fri Mar 17 23:34:36 U...	1 week ago

The team leveraged a tool to run data queries on source code repositories.

This allows the team to gather insights about the source-code repositories through automated means. The ORE team is currently working on developing dashboard visualizations that can provide valuable insights and help better understand the health of source code repositories.

### Sample SQL query for authors

```
→ mergestat git:(main) x mergestat "select count(*), author_name from commits group by author_name order by count(*) desc"
+-----+-----+
| COUNT(*) | AUTHOR_NAME |
+-----+-----+
| 538      | Patrick DeVivo |
+-----+-----+
| 278      | Derrick Newberry |
+-----+-----+
| 26       | Riyaz Ali      |
+-----+-----+
```

### Sample SQL query to summarize commits and author stats

```
→ mergestat git:(readme-update) x mergestat summarize commits
Commits 847
Non-Merge Commits 662
Files Δ 377
Unique Authors 10
First Commit 2 years ago (2020-07-03)
Latest Commit 5 days ago (2022-03-02)

Author          Commits  Commit %  Files Δ  Additions  Deletions  First Commit
Patrick DeVivo  533      62.93%   336     329,060    48,502     2 years ago (2020-07-03)
Derrick Newberry 278      32.82%   114     16,726     5,124     2 years ago (2020-07-07)
Riyaz Ali       26       3.07%    92      251,453    6,928     a year ago (2021-03-26)
Malyaka-Imran  3        0.35%    12      980        17        8 months ago (2021-07-25)
vaibhavshah    2        0.24%    25      506        12        8 months ago (2021-07-26)
```



Note that the history of the SANDE source code repository has been scrubbed prior to synchronization to the ORE. It makes it impossible to know who collaborated and in what manner on the code base.

Nonetheless, the Navy will be able to see development of the SANDE source code repository evolve over time in the ORE.

The screenshot shows the GitLab interface for a repository. The commit history table is as follows:

Name	Last commit	Last update
..		
README.txt	rename to display as readme	4 days ago
[REDACTED]	[REDACTED]	1 day ago

The 'SANDE REPO ANALYTICS' section contains the following data:

Commits	3
Non-Merge Commits	3
Files Δ	457
Unique Authors	2
First Commit	9 days ago (2023-03-15)
Latest Commit	7 days ago (2023-03-18)

Author	Commits	Commit %	Files Δ	Additions	Deletions	First Commit	La
ORE Git Sync Account	2	66.67%	457	42,549	1	7 days ago (2023-03-17)	7
Mehran Azari	1	33.33%	1	2	0	9 days ago (2023-03-15)	9

As a point of reference, when the automation is run against a repository from PlatformOne that has been fully synchronized with all history intact, more information can be gathered about the health and maturity of the code base.

Note the number of active authors, duration, number of commits and branches. This shows a more collaborative, active team and development workflow.

The visibility and maturity of these synchronized analytics provides trust and confidence in the processes and decisions for secure, quality tested, production ready code.

**Repository Analytics**

**AWS Platform One- Analytics**

Commits	242
Non-Merge Commits	162
Files Δ	154
Unique Authors	51
First Commit	3 years ago (2020-06-03)
Latest Commit	a month ago (2023-02-10)

Author	Commits	Commit %	Files Δ	Additions	Deletions	First Commit
Micah Nagel	57	23.55%	68	2,532	945	3 years ago (2021-01-22)
Kavitha Thulasiraman	30	12.40%	9	147	105	2 years ago (2021-08-02)
Ryan Garcia	30	12.40%	64	2,730	489	3 years ago (2021-02-11)
Kavitha Thulasiraman	11	4.55%	6	90	43	2 years ago (2021-08-05)
garcia.ryan	9	3.72%	17	163	27	3 years ago (2021-02-11)
runyontr	9	3.72%	21	253	281	3 years ago (2020-12-14)
riley.odonnell	8	3.31%	4	26	7	2 years ago (2021-04-27)
Patrick Kelly	7	2.89%	6	37	11	a year ago (2022-03-23)
Josh Wolf	6	2.48%	10	52	84	3 years ago (2020-11-03)
Thomas Burton	5	2.07%	14	887	213	3 years ago (2020-06-09)
thomas.burton	4	1.65%	15	861	147	3 years ago (2020-06-09)
Brian Miller	3	1.24%	9	308	0	3 years ago (2020-06-23)
Jordan Olachea	3	1.24%	14	226	13	a year ago (2022-03-22)
Josh Wolf	3	1.24%	1	15	1	3 years ago (2020-06-08)
Micah Nagel	3	1.24%	20	512	11	4 months ago (2022-12-09)
Tunde Oladipupo	3	1.24%	16	127	46	2 years ago (2021-10-18)
bigbang bot	3	1.24%	12	103	48	2 years ago (2021-11-01)
deverica	3	1.24%	1	69	3	3 years ago (2020-07-14)
evan.rush	3	1.24%	10	39	27	a year ago (2022-01-20)
joshwolf	3	1.24%	20	147	21	2 years ago (2021-05-12)
Branden Cobb	2	0.83%	6	30	36	2 years ago (2021-08-26)
Brett Charrier	2	0.83%	9	31	18	7 months ago (2022-09-23)
Brett Charrier	2	0.83%	10	155	91	10 months ago (2022-06-10)
Joshua Carnes	2	0.83%	9	94	9	2 years ago (2021-05-25)
Kavitha Thulasiraman	2	0.83%	9	121	11	3 years ago (2020-07-06)
Thomas Runyon	2	0.83%	4	11	7	3 years ago (2020-12-15)
Zachariah Dzieleinski	2	0.83%	5	15	15	3 years ago (2021-01-25)
michaelmcleroy	2	0.83%	53	4,508	212	10 months ago (2022-06-06)
Brendon Lloyd	1	0.41%	4	13	1	2 years ago (2021-07-23)