



Matheus Monteiro
Niloufer Bustani

Liferay Cloud Tips & Tricks

Making the most of Liferay
Experience Cloud – Self Managed

 Liferay® **DEVCON**

Liferay Cloud Tips & Tricks

Making the most of Liferay
Experience Cloud - Self Managed

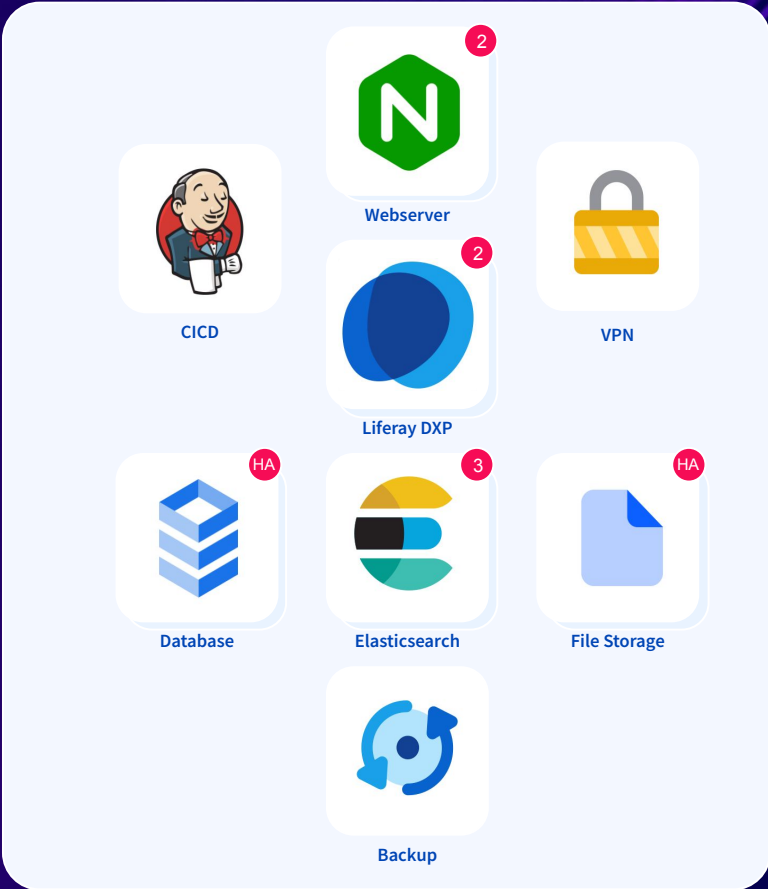
<https://dontpad.com/lxcsmtipsandtricks>

<https://tinyurl.com/lxcsmregister>

Liferay Experience Cloud Self-Managed

Liferay Experience Cloud Self-Managed (SM), is our enterprise PaaS solution that simplifies the deployment and management of your project.

Liferay will handle the Cloud Infrastructure on the forefront, and **customers will manage** upgrades, fix packs, and application maintenance.



- Overview
- Services
- Network
- Activities
- Logs
- Monitoring
- Backups
- Team
- Settings

Overview

Services

- backup**
liferaycloud/service-backup:0.0.4 Running
- database**
liferaycloud/service-database:0.0.3 Running
- liferay**
liferaycloud/service-liferay-dxp:71.0-ga1-3.0 Running
- search**
liferaycloud/service-elasticsearch:6.1.4-1.2 Running
- webservice**
liferaycloud/service-nginx:1.14.0-1.4 Running

[Go to services page](#)

Alerts

- The **liferay** service exceeded **90%** of its allocated **Memory**. 30 min ago
- The **database** service exceeded **90%** of its allocated **Memory**. 2 hours ago
- The **database** service exceeded **90%** of its allocated **CPU**. 4 hours ago

[Go to alerts page](#)

Latest deployment

30 min ago

138 master ae42dfv

[Add new form page](#)

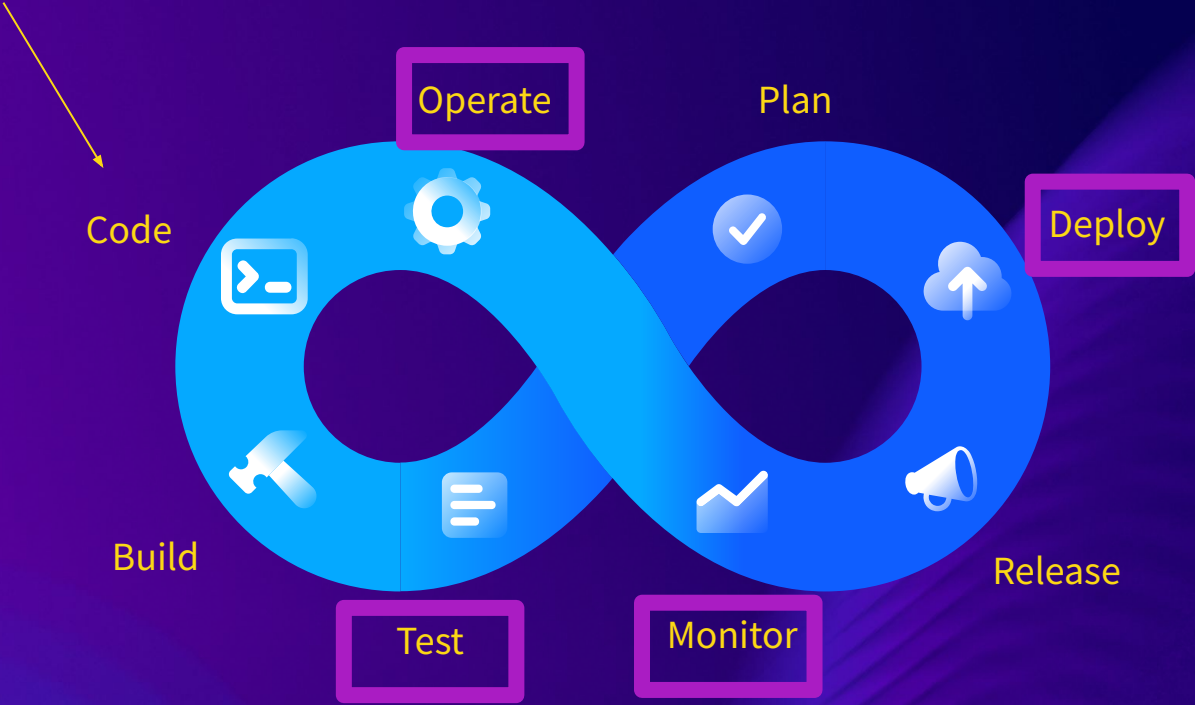
[See previous deployments](#)

Activities

- Deployments
- General**

- Auto scaling disabled for liferay a min ago
- Downscaled from 8 to 6 instances for liferay a min ago
- Scaled from 7 to 8 instances for liferay 1 hour ago
- Scaled from 6 to 7 instances for liferay 1 hour ago
- Scaled from 5 to 6 instances for liferay 2 hours ago
- Auto scaling enabled for liferay 2 hours ago
- Invite sent to 2 hours ago

Shared Activities



Service Configuration Basics

Service Configuration Basics

Configuration as Code

Github/Gitlab/BitBucket

Workspace Structure

master 2 branches 0 tags Go to file Add file Code

Your master branch isn't protected Protect this branch

Table with 3 columns: File/Folder Name, Commit Message, and Commit Date. Includes entries like 'nil0blue Throttle number of webserver connections', 'backup', 'ci', 'database', 'liferay', 'search', 'webserver', and '.gitattributes'.

Service Configuration Basics

Configuration as Code

Github/Gitlab/BitBucket

Workspace Structure


Continuous Integration

Jenkins/Infra

DXP Cloud > lctdevconworkshopcloudtips infra

Builds Deployments 99+

Menu

 **ci** liferaycloud/jenkins:2.319.3-jdk8-5.0.0 Ready

Logs Metrics Environment Variables Custom Domains

Application logs All instances Download logs Last 24 hours

```
May 24 04:32:28.359 build-1 [ci-0] INFO: Started Periodic background build discarder
> May 24 04:32:28.361 build-1 [ci-0] May 24, 2023 9:32:28 AM hudson.model.AsyncPeriodicWork lambda$doRun$1
May 24 04:32:28.361 build-1 [ci-0] INFO: Finished Periodic background build discarder. 1 ms
> May 24 05:32:28.359 build-1 [ci-0] May 24, 2023 10:32:28 AM hudson.model.AsyncPeriodicWork lambda$doRun$1
May 24 05:32:28.359 build-1 [ci-0] INFO: Started Periodic background build discarder
> May 24 05:32:28.361 build-1 [ci-0] May 24, 2023 10:32:28 AM hudson.model.AsyncPeriodicWork lambda$doRun$1
May 24 05:32:28.361 build-1 [ci-0] INFO: Finished Periodic background build discarder. 1 ms
> May 24 06:32:28.359 build-1 [ci-0] May 24, 2023 11:32:28 AM hudson.model.AsyncPeriodicWork lambda$doRun$1
May 24 06:32:28.360 build-1 [ci-0] INFO: Started Periodic background build discarder
> May 24 06:32:28.361 build-1 [ci-0] May 24, 2023 11:32:28 AM hudson.model.AsyncPeriodicWork lambda$doRun$1
May 24 06:32:28.361 build-1 [ci-0] INFO: Finished Periodic background build discarder. 1 ms
> May 24 07:32:28.359 build-1 [ci-0] May 24, 2023 12:32:28 PM hudson.model.AsyncPeriodicWork lambda$doRun$1
May 24 07:32:28.359 build-1 [ci-0] INFO: Started Periodic background build discarder
> May 24 07:32:28.361 build-1 [ci-0] May 24, 2023 12:32:28 PM hudson.model.AsyncPeriodicWork lambda$doRun$1
May 24 07:32:28.361 build-1 [ci-0] INFO: Finished Periodic background build discarder. 1 ms
> May 24 08:32:28.359 build-1 [ci-0] May 24, 2023 1:32:28 PM hudson.model.AsyncPeriodicWork lambda$doRun$1
```

lctdevconworkshopcloudtips < 5

Pipeline Changes Tests Artifacts Logout

Branch: master 1m 56s No changes
Commit: bba1e27 2 days ago Push event to branch master

Start — Compile Liferay Workspace — Create DXP Cloud Build — Deploy to Cloud — End

Deploy to Cloud - <1s [Restart Deploy to Cloud](#)

✓	> ci/Jenkinsfile-before-cloud-deploy — Verify if file exists in workspace	<1s
✓	> Deploy to Cloud	<1s
✓	> ci/Jenkinsfile-after-all — Verify if file exists in workspace	<1s
✓	> ci/Jenkinsfile-post-always — Verify if file exists in workspace	<1s
✓	> CI_SUCCEEDED — Create CI Activity	2s
✓	> Delete workspace when build is done	<1s

Service Configuration Basics

Configuration as Code

Github/Gitlab/BitBucket

Workspace Structure

Continuous Integration

Jenkins/Infra

Build Artifacts



Builds



Status	Services	Build ID	Branch	Commit	Message	Environment	Time	Author
		7	master	bba1e27	Throttle n...	-	2 days ago	B
		6	master	6407c55	Add script...	-	5 days ago	B
		5	master	811685a	Set up a M...	-	5 days ago	B
		4	master	a2cf178	Adding Scr...	-	5 days ago	B

Service Configuration Basics

Configuration as Code

Github/Gitlab/BitBucket

Workspace Structure

Continuous Integration

Jenkins/Infra

Build Artifacts

Deployment

Environments

Promote Builds

< Builds

Deploy build to...

Selected build

The following build will be deployed to an environment

Status	Services	Details	Environment	Time	Author
		Throttle number of webserver connections	-	2 days ago	

Select environment

The selected build will be deployed to the following environment

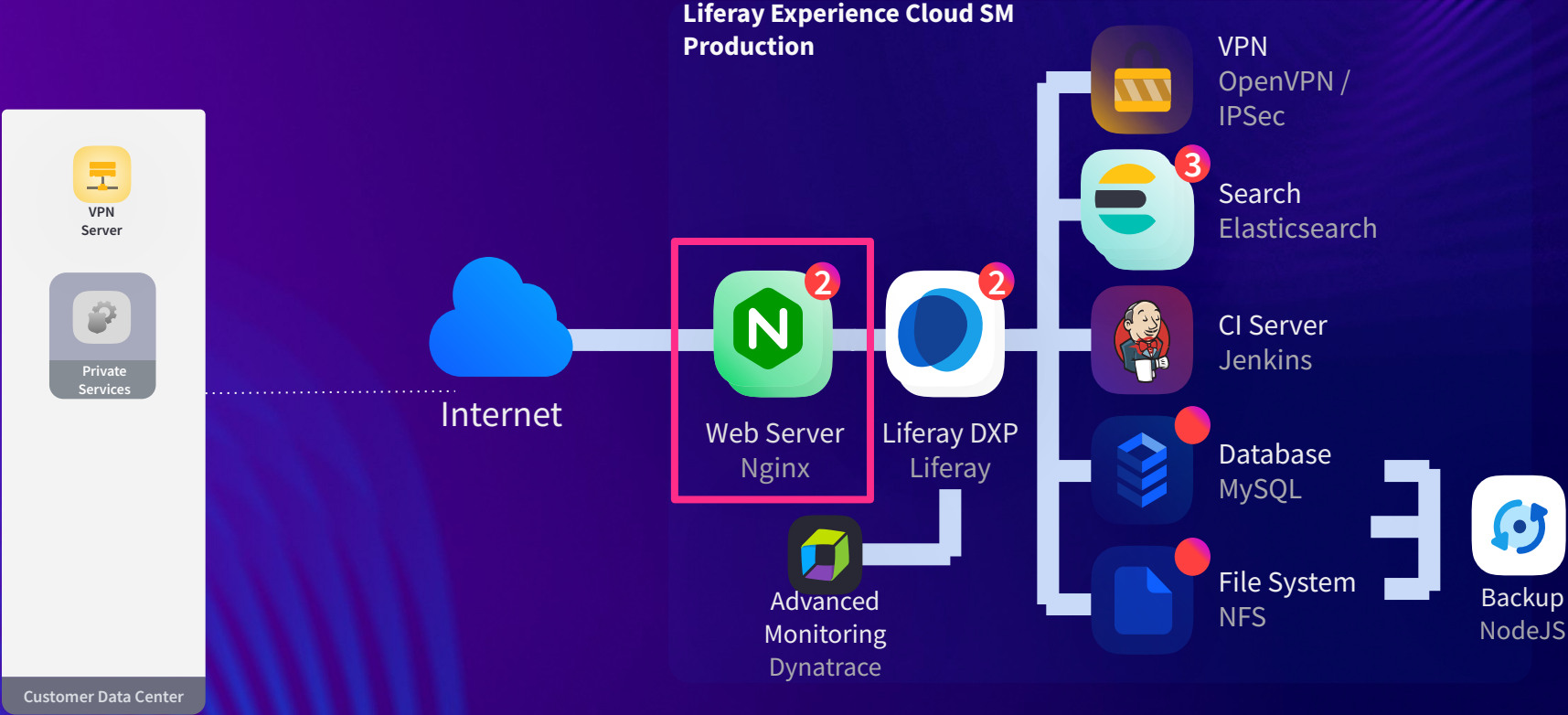
Environment

- Select environment ▼
- ✓ Select environment
 - lctdevconworkshopcloudtips-infra Current build #1
 - lctdevconworkshopcloudtips-prd Current build #7
 - lctdevconworkshopcloudtips-uat No build

Maintenance Page

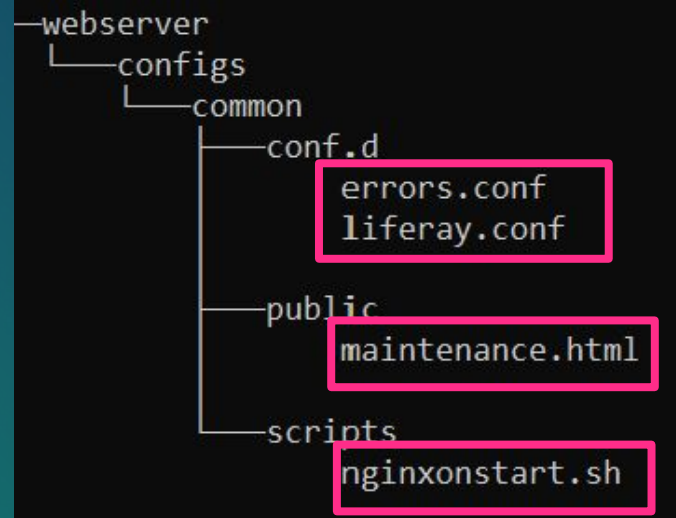
- Upgrades
- Fixpacks
- Unexpected Issues

Scenario



Webserver Configuration

- .conf files
- html
- scripts



errors.conf

```
error_page 500 502 504 /custom 50x.html;  
error_page 503 /under_maintenance.html;
```

```
location /custom_50x.html {  
    root /var/www/html;  
}
```


```
location /under_maintenance.html {  
    root /var/www/html;  
}
```

liferay.conf

```
location / {  
    if (-f /var/www/html/under_maintenance.html) {  
        return 503;  
    }  
}
```

nginxonstart.sh

```
#!/bin/bash  
if [[ -z "${MAINTENANCE_MODE}" ]]; then  
    maintenance="0"  
else  
    maintenance="${MAINTENANCE_MODE}"  
fi  
  
echo $maintenance  
if [[ $maintenance -eq "1" ]]; then  
    echo "Maintenance Mode enabled, renaming file"  
    mv /var/www/html/maintenance.html /var/www/html/under_maintenance.html  
else  
    echo "Not enabled"  
fi
```



webserver

liferaycloud/nginx:1.21.6-5.0.0 Ready

Logs Shell Metrics **Environment Variables** Custom Domains





Environment Variables


Environment variables provide an additional way to configure services. Examples include the credentials for an external database or a secret key that only a production environment should use.

Learn more
[Environment variables](#)
[webserver's environment variables list](#)

Regular variables

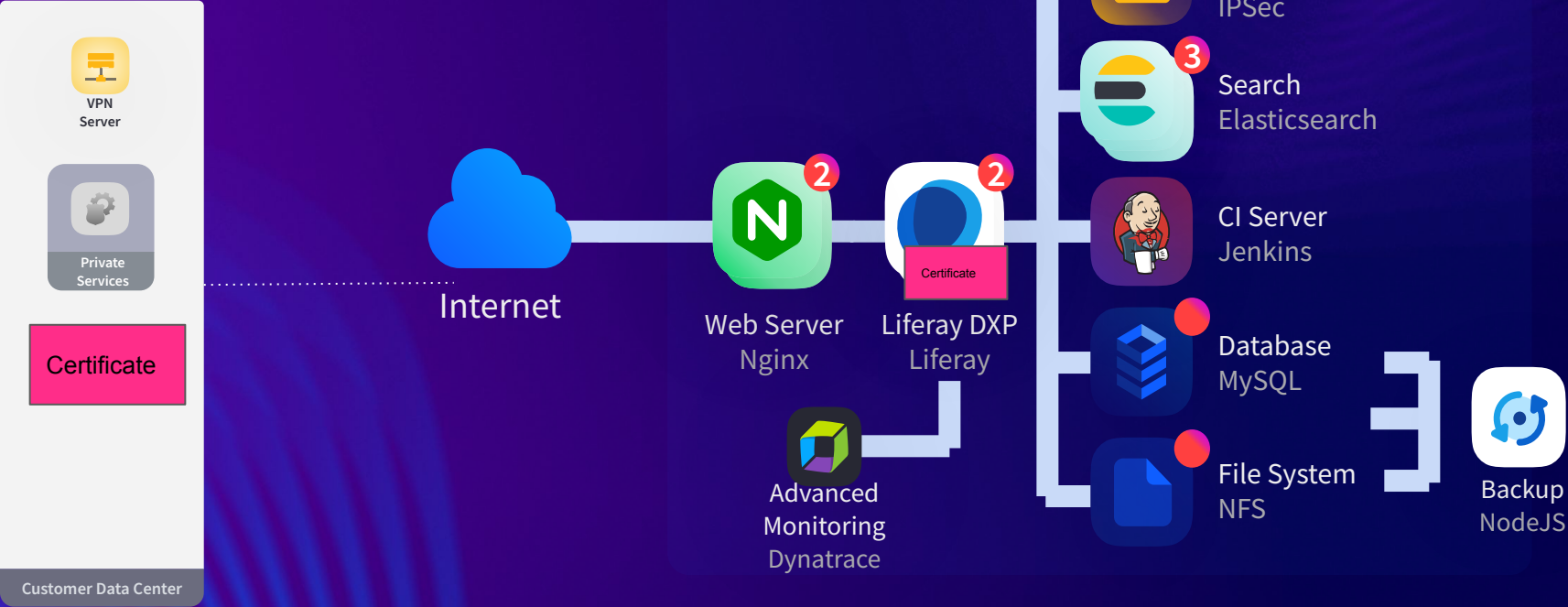
Configure regular environment variables to be used in this service

Keys	Values
<input type="text" value="MAINTENANCE_MODE"/>	<input type="text" value="1"/>  
<input type="text" value="Enter key"/>	<input type="text" value="Enter value"/>  

[Save Changes](#) Important: saving changes will impact this service 

Scripts – Liferay DXP Service

Liferay Experience Cloud SM Production



Scripts

- Powerful way of extending Liferay DXP behaviours
- Be careful!

```
liferay
├── LCP.json
├── configs
│   └── dev
│       ├── deploy
│       ├── osgi
│       ├── patching
│       └── scripts
│           └── remove-log-files.sh
```

Hands-on - Importing a Certificate

1. Put your certificate (.pem or .cert) inside liferay/certificates
2. Create your script file (.sh) with the following command (make sure to give it execution permissions):

```
#!/bin/bash

keytool -import -alias ALIAS -keystore /opt/jdk/jre/lib/security/cacerts -file
/mnt/liferay/certificates/YOUR_CERT_FILE -storepass changeit -noprompt
```

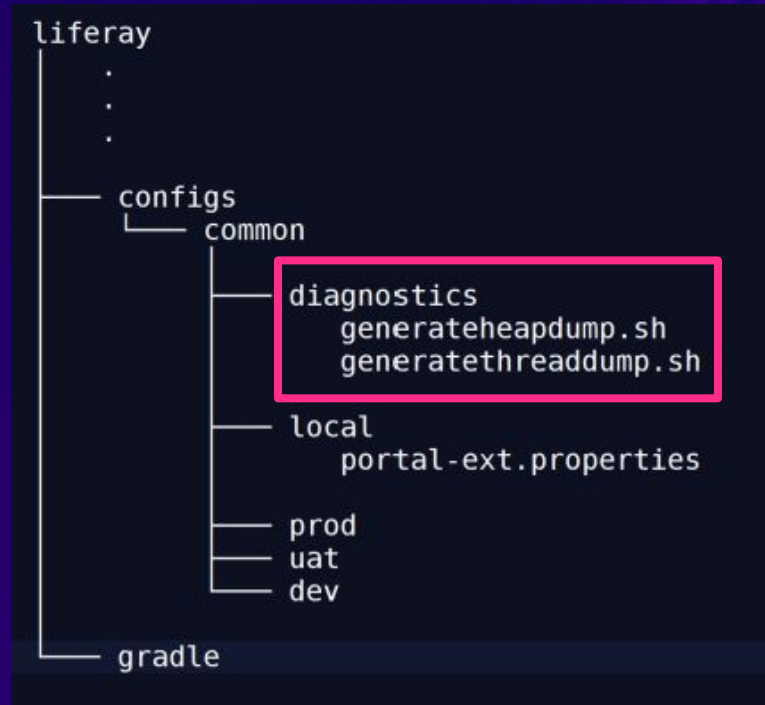
3. Put the script file inside the scripts folder.
4. Deploy it. You should see in the logs:

```
[liferay-5d59984f96-smz62] Running /lcp-tmp/script/import.sh
[liferay-5d59984f96-smz62] Certificate was added to keystore
```

Thread dumps and Heap Dumps

Scripts

- Not-on-startup scripts!
- <https://learn.liferay.com/web/guest/w/liferay-cloud/troubleshooting/creating-thread-and-heap-dumps>



generatethreaddump.sh

```
#!/bin/bash

TARGET_THREAD_DUMP_FOLDER=${TARGET_THREAD_DUMP_FOLDER:-/opt/liferay/data/thread_dumps}

mkdir -p "${TARGET_THREAD_DUMP_FOLDER}"

take_thread_dump() {
    mkdir -p "${TARGET_THREAD_DUMP_FOLDER}/${1}"

    local pid=$(jps | grep -v Jps | awk '{print $1}')

    echo "[Liferay Cloud] jstack ${pid} > ${TARGET_THREAD_DUMP_FOLDER}/${1}/threaddump${2}.txt"
    jstack ${pid} > ${TARGET_THREAD_DUMP_FOLDER}/${1}/threaddump${2}.txt
}

take_thread_group() {
    local time=$(date +%H%M%S')

    echo "[Liferay Cloud] Taking thread dumps with timestamp ${time}"

    for num in 1 2 3 4 5 6
    do
        take_thread_dump $time $num
        sleep 10
    done
}

main() {
    for num in 1 2 3 4
    do
        take_thread_group
        sleep 60
    done

    echo "[Liferay Cloud] Thread dumps generated"
}

echo "[Liferay Cloud] Take thread dumps"
```

generateheapdump.sh

```
#!/bin/bash

TARGET_HEAP_DUMP_FOLDER=${TARGET_HEAP_DUMP_FOLDER: /opt/liferay/data/heap_dumps}

mkdir -p "${TARGET_HEAP_DUMP_FOLDER}"

take_heap_dump() {
    mkdir -p "${TARGET_HEAP_DUMP_FOLDER}/${1}"

    echo "[Liferay Cloud] Taking heap dump with timestamp ${1}"

    local pid=$(jps | grep -v Jps | awk '{print $1}')

    echo "[Liferay Cloud] jmap -dump:format=b,file=heapdump.txt ${pid}"

    jmap -dump:format=b,file=heapdump.txt ${pid}

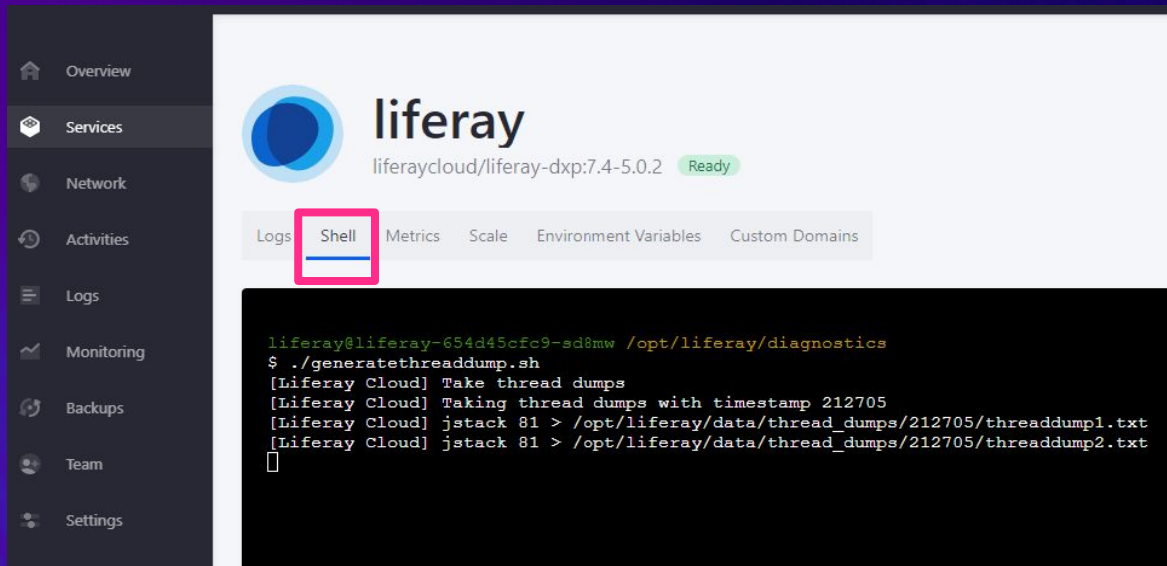
    mv heapdump.txt ${TARGET_HEAP_DUMP_FOLDER}/${1}/heapdump.txt
}

main() {
    local time=$(date +%H%M%S')

    take_heap_dump $time

    echo "[Liferay Cloud] Heap dump generated"
}

main
```

The screenshot displays the Liferay Cloud management console. On the left is a dark sidebar with navigation items: Overview, Services, Network, Activities, Logs, Monitoring, Backups, Team, and Settings. The main content area shows the 'liferay' service details, including the version 'liferaycloud/liferay-dxp:7.4-5.0.2' and a 'Ready' status. Below this is a horizontal menu with tabs for Logs, Shell, Metrics, Scale, Environment Variables, and Custom Domains. The 'Shell' tab is highlighted with a red square. The terminal window below shows the following command sequence and output:

```
liferay@liferay-654d45cfc9-sd8mw /opt/liferay/diagnostics
$ ./generatethreaddump.sh
[Liferay Cloud] Take thread dumps
[Liferay Cloud] Taking thread dumps with timestamp 212705
[Liferay Cloud] jstack 81 > /opt/liferay/data/thread_dumps/212705/threaddump1.txt
[Liferay Cloud] jstack 81 > /opt/liferay/data/thread_dumps/212705/threaddump2.txt
█
```

```
>ngrok.exe tcp 9999
```

```
ngrok
Announcing ngrok-go: The ngrok agent as a Go library: https://ngrok.com/go

Session Status      online
Account             niloufer94@gmail.com (Plan: Free)
Version             3.3.0
Region              United States (us)
Latency              -
Web Interface        http://127.0.0.1:4040
Forwarding           tcp://2.tcp.ngrok.io:17226 > localhost:9999

Connections
  ttl    opn    rt1    rt5    p50    p90
   0     0     0.00  0.00  0.00  0.00
```

```
>ncat -l 9999 > encrypted.tar.gz.enc
```



liferay

liferaycloud/liferay-dxp:7.4-5.0.2 Ready

Logs

Shell

Metrics

Scale

Environment Variables

Custom Domains

```
liferay@liferay-7b9f667c66-4g9sl /opt/liferay/data
$ tar cz thread_dumps/ | openssl enc -aes-256-cbc -e > encrypted.tar.gz.enc
enter AES-256-CBC encryption password:
Verifying - enter AES-256-CBC encryption password:
*** WARNING : deprecated key derivation used.
Using -iter or -pbkdf2 would be better.

liferay@liferay-7b9f667c66-4g9sl /opt/liferay/data
$ cat encrypted.tar.gz.enc > /dev/tcp/7.tcp.eu.ngrok.io/12628

liferay@liferay-7b9f667c66-4g9sl /opt/liferay/data
$ md5sum encrypted.tar.gz.enc
b857de4cac7e3c6102966d4de26d052d  encrypted.tar.gz.enc
```

Bonus

Scripts – Backup Services

- Sanitize PII
- Analytics Cloud Reference
- Mail Server Reference

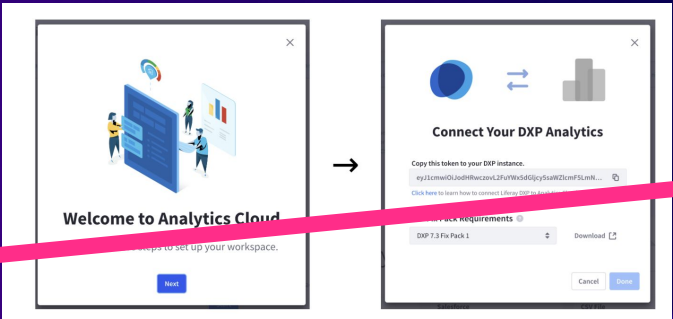
Scenario



Liferay DXP PRD



Analytics



Liferay DXP UAT

PRD

A grid of icons representing the PRD environment components: CICD (Cartoon man), Webserver (N logo), VPN (Yellow padlock), Database (Blue cube), Elasticsearch (Elastic logo), File Storage (Blue document), and Backup (Blue circular arrows).



Backup Restore

UAT

A grid of icons representing the UAT environment components, identical to the PRD environment: CICD (Cartoon man), Webserver (N logo), VPN (Yellow padlock), Database (Blue cube), Elasticsearch (Elastic logo), File Storage (Blue document), and Backup (Blue circular arrows).

Scripts on Backup service

- Scripts are useful to sanitize data when restoring from PRD to low level environments
- SQL format is used

```
— backup/
  └─ configs/
     ├── common
     ├── dev
     ├── uat
     └─ prd/
        └─ scripts/
           └─ remove_ac_connection.sql
```


SQL Script to delete AC connection for low level environments

```
DELETE FROM lportal.PortalPreferenceValue where key_ like '%liferayAnalytics%';  
DELETE FROM lportal.Configuration_ where configurationId like  
'com.liferay.analytics.settings.configuration.AnalyticsConfiguration%';
```

Improving Liferay DXP Startup Process

- Sometimes, Liferay DXP application needs to be restarted
- Autoscaling feature starts up new instances


Scenario

1. Build Size


- a. Artifacts can be heavy
- b. Liferay DXP Startup time can be affected

Use client extensions!

(or an artifact repository).



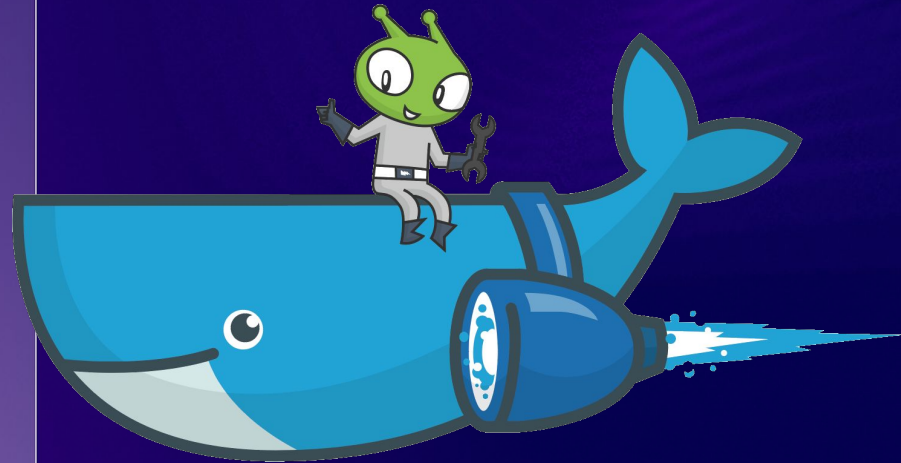
One more artifact, please.



One minute, sir.

2. Probes

- a. Choose paths that do not redirect



3. Liferay Properties

- a. Some properties can affect the startup as well. Database upgrade, search reindex.

```
index.on.startup=false
```

```
upgrade.database.auto.run=false
```



Throttling

- Application Limits
- DoS attacks

Scenario

Scripts

- Make a copy of Default nginx.conf



nginx.conf

```
server_names_hash_bucket_size 64;
client_max_body_size 0;

upstream upstream_server {
    keepalive 7000;
    server 127.0.0.1:81;
}

limit_conn_zone $binary_remote_addr zone=limitconnbyaddr:20m;
limit_conn_status 429;

server {
    listen 80 default_server;
    large_client_header_buffers 4 32k;

    limit_conn limitconnbyaddr 1;

    if ($http_x_forwarded_proto = "http") {
        return 301 https://$host$request_uri;
    }

    fastcgi_read_timeout 60s;
    uwsgi_read_timeout 60s;
    uwsgi_send_timeout 60s;
    proxy_connect_timeout 60s;
    proxy_read_timeout 60s;
    proxy_send_timeout 60s;
    proxy_max_temp_file_size 1024m;
}
```

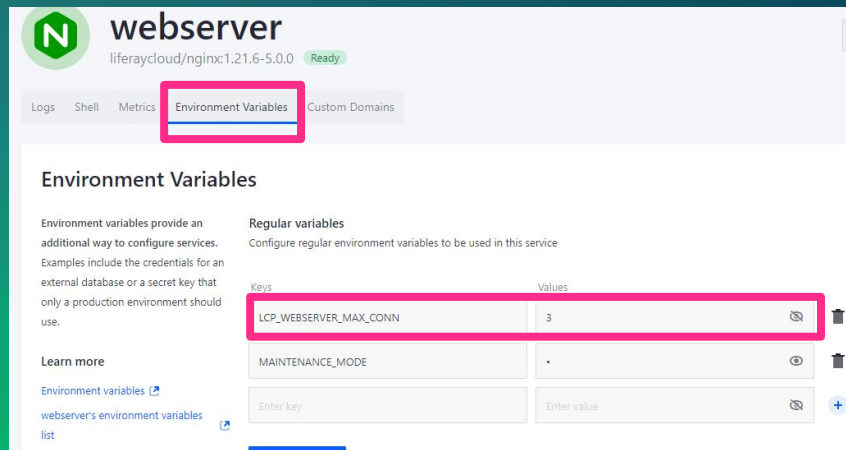
nginx.conf

```
echo "max conn $LCP_WEBSERVER_MAX_CONN"

ls -la nginx.conf

sed -i 's@LCP_WEBSERVER_MAX_CONN@"$LCP_WEBSERVER_MAX_CONN"@' nginx.conf

cat nginx.conf
```



webserver
liferaycloud/nginx:1.21.6-5.0.0 Ready





Logs Shell Metrics **Environment Variables** Custom Domains



Environment Variables

Environment variables provide an additional way to configure services. Examples include the credentials for an external database or a secret key that only a production environment should use.

Learn more
[Environment variables](#)
[webserver's environment variables list](#)

Regular variables
Configure regular environment variables to be used in this service

Keys	Values	
LCP_WEBSERVER_MAX_CONN	3	 
MAINTENANCE_MODE	.	 

Enter key Enter value  

<https://tinyurl.com/devcon2023LXCSM>

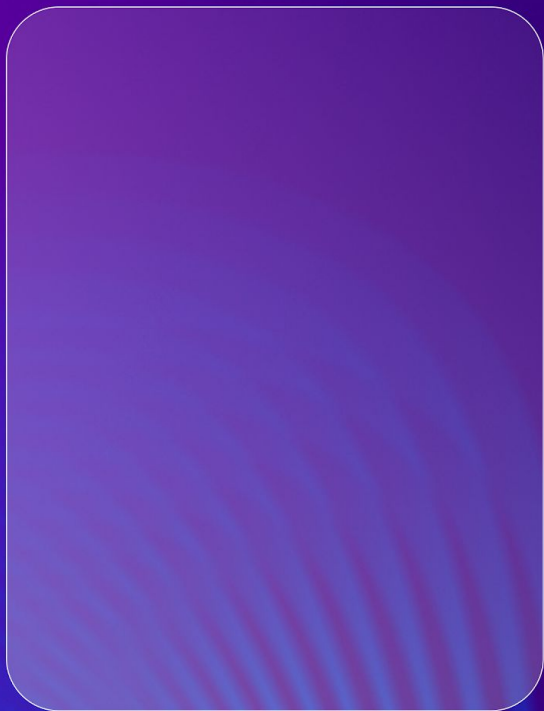
 Liferay® **DEVCON**

THANK YOU!



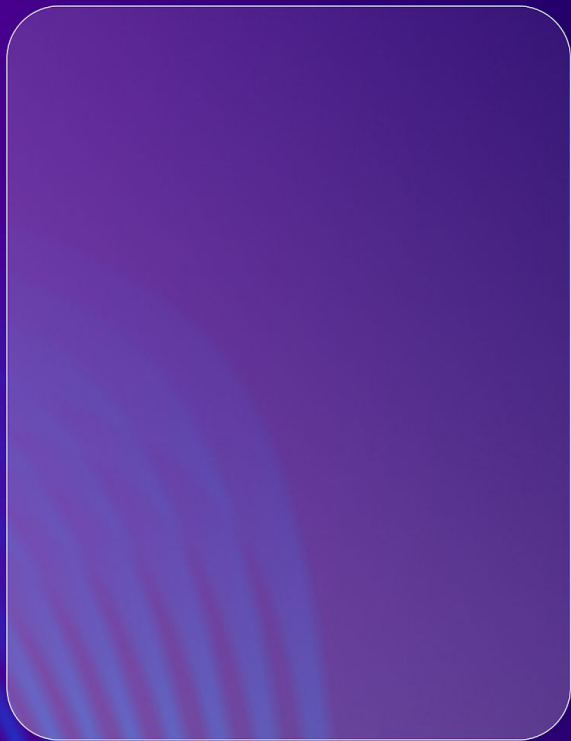
How was this session?

Please share your rating in
the event app. Thank you!



SPEAKER NAME | @twitterhandle

#HashtagPlaceholder







How was this session?

Please share your rating in
the event app. Thank you!