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## DevOps Shack

# Nexus Repository Manager Guide

### 1. Introduction to Nexus Repository Manager

Sonatype Nexus is a powerful repository manager that helps with artifact management, proxying remote repositories, caching, and hosting internal artifacts.

- Nexus Repository OSS – Free and open-source.
- Nexus Repository Pro – Paid version with advanced features.
- Supports: Maven, npm, PyPI, Docker, Helm, Raw, and more.

### 2. Installation & Setup

Installing Nexus on Linux

```
wget
```

```
https://download.sonatype.com/nexus/3/latest-unix.t  
ar.gz
```

```
tar -xvf latest-unix.tar.gz
```

```
mv nexus-<version> nexus
```

```
cd nexus
```

```
./bin/nexus start
```

- Default web interface: <http://localhost:8081>



- Default admin login:
  - Username: **admin**
  - Password: Found in **admin.password**  
(**/sonatype-work/nexus3/admin.password**)

### 3. Nexus Directory Structure

- **/nexus/bin** – Start/Stop scripts.
- **/nexus/etc** – Configuration files.
- **/nexus/sonatype-work** – Repository storage and logs.
- **/nexus/logs** – Application logs.

### 4. Nexus User Management

#### Create a New User

1. Login as admin.
2. Go to Security → Users.
3. Click Create User.
4. Assign necessary roles.

#### Roles & Permissions

- nx-admin – Full access.
- nx-repository-view-<repo>-read – Read access to a specific repository.
- nx-repository-view-<repo>-write – Write access.



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## 5. Repository Types

### 1. Hosted Repository

- Used for internal artifacts storage.
- Example: Internal Maven or Docker registry.

### 2. Proxy Repository

- Caches external repositories like Maven Central, Docker Hub, etc.
- Speeds up builds by reducing external fetch requests.

### 3. Group Repository

- Aggregates multiple repositories under a single URL.

## 6. Configuring a Repository

### Creating a Maven Hosted Repository

1. Go to Repositories → Create repository.
2. Select Maven (hosted).
3. Configure:
  - Version Policy: Release/Snapshot/Mixed.
  - Write Policy: Allow redeploy/Disable.
  - Storage: Blob store.
4. Save & Deploy.

## 7. Uploading Artifacts to Nexus



## Upload via UI

1. Go to Repositories → Select Repository.
2. Click Upload.
3. Select the artifact and provide metadata.

## Upload via Maven

### Setting up `settings.xml`

xml

```
<servers>
  <server>
    <id>nexus</id>
    <username>admin</username>
    <password>admin123</password>
  </server>
</servers>
```

## Deploying Artifact

```
mvn          deploy          -DrepositoryId=nexus
-Durl=http://localhost:8081/repository/maven-releas
es/
```

## 8. Proxying Remote Repositories

### Example: Proxying Maven Central

1. Go to: **Repositories** → **Create Repository**



2. Select: **Maven (proxy)**
3. Enter Remote URL:  
**`https://repo.maven.apache.org/maven2`**
4. Enable Caching: To store downloaded artifacts.
5. Save and Apply.

## 9. Configuring Nexus as a Docker Registry

### Enable Docker Repository

1. Create a new Docker Hosted Repository
  - Name: **docker-internal**
  - HTTP Port: **8082**
2. Enable HTTP Access
  - Go to **Repositories** → **docker-internal** → **HTTP**
  - Set Allow Anonymous Access (optional).

### Push Docker Image

```
docker login -u admin -p admin123  
http://localhost:8082  
docker tag myimage localhost:8082/myrepo:latest  
docker push localhost:8082/myrepo:latest
```

## 10. Cleanup Policies

- Go to **Admin** → **Cleanup Policies**



- **Create Policy:** Define conditions to remove old or unused artifacts.
- **Apply Policy** to repositories.

## 11. Backup & Restore

### Backup

```
tar -czvf nexus-backup.tar.gz /path/to/nexus
```

### Restore

```
tar -xzvf nexus-backup.tar.gz -C /path/to/nexus
```

## 12. Logs & Monitoring

### Viewing Logs

```
tail -f sonatype-work/nexus3/logs/nexus.log
```

### Health Check

- Go to System → Health Check
- Monitor repository performance and security.

## 13. Security Hardening

- Change Default Admin Password after installation.
- Disable Anonymous Access unless required.
- Use HTTPS for secured communication.
- Restrict User Permissions based on the principle of least privilege.

## 14. Upgrading Nexus

```
systemctl stop nexus
mv nexus nexus-old
wget latest-nexus.tar.gz
tar -xvf latest-nexus.tar.gz
mv nexus-new nexus
systemctl start nexus
```

## 15. Troubleshooting

### Common Issues & Fixes

#### Nexus not starting?

```
cat sonatype-work/nexus3/logs/nexus.log
```

- Check for missing dependencies or incorrect configurations.

#### Out of Memory Errors? Edit `nexus.vmoptions`:

```
diff
```

```
-Xms2g
```

```
-Xmx4g
```

- Authentication Issues?

#### Reset Admin Password:

```
rm -rf sonatype-work/nexus3/admin.password
```



## 16. Nexus REST API

### List Repositories

```
curl -u admin:admin123 -X GET  
"http://localhost:8081/service/rest/v1/repositories  
"
```

### Create Repository

```
curl -u admin:admin123 -X POST  
"http://localhost:8081/service/rest/v1/repositories  
" -H "Content-Type: application/json" -d  
@config.json
```

## 17. Integrating Nexus with CI/CD

### Using Jenkins

1. Install Nexus Artifact Uploader Plugin
2. Configure Nexus Credentials
3. Upload Artifacts as Post Build Action

## 18. Best Practices

- Use Blob Stores for efficient storage.
- Enable Content Cleanup for unused artifacts.
- Monitor Disk Usage regularly.





- Automate Backups with cron jobs.
- Enforce Role-Based Access Control (RBAC).

## 19. Advanced Configuration and Customization

### Configuring Reverse Proxy (Nginx) for Nexus

Using Nginx as a reverse proxy allows secure access to Nexus via HTTPS.

#### 1. Install Nginx

```
sudo apt update && sudo apt install nginx -y
```

#### 2. Configure Nginx for Nexus

Create a new configuration file:

```
sudo nano /etc/nginx/sites-available/nexus
```

Add the following content:

```
nginx
server {
    listen 80;
    server_name nexus.example.com;
    location / {
        proxy_pass http://localhost:8081/;
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
```



```
        proxy_set_header    X-Forwarded-For
$proxy_add_x_forwarded_for;
        proxy_set_header X-Forwarded-Proto $scheme;
    }
}
```

### 3. Enable Configuration

```
sudo ln -s /etc/nginx/sites-available/nexus
/etc/nginx/sites-enabled/
sudo systemctl restart nginx
```

Now, Nexus will be accessible at <http://nexus.example.com>.

### Enabling HTTPS with Let's Encrypt

#### 1. Install Certbot

```
sudo apt install certbot python3-certbot-nginx -y
```

#### 2. Generate SSL Certificate

```
sudo certbot --nginx -d nexus.example.com
```

This enables HTTPS and automatically configures Nginx.

## 20. Managing Nexus Storage

Nexus stores artifacts in Blob Stores. Proper configuration ensures optimal



performance.

### Create a Custom Blob Store

1. Navigate to Administration → Blob Stores.
2. Click Create Blob Store.
3. Choose File or S3 (Pro version).
4. Set the storage path.
5. Assign the blob store to a repository.

### Automated Storage Cleanup

- Set up Cleanup Policies for removing unused artifacts.
- Enable Compact Blob Store for better storage efficiency.

## 21. Running Nexus as a Systemd Service

By default, Nexus runs as a foreground process. To run it as a background service:

### 1. Create a Service File

```
sudo nano /etc/systemd/system/nexus.service
```

Add the following:

ini

```
[Unit]
```



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**Description=Nexus Repository Manager**  
**After=network.target**

**[Service]**  
**Type=forking**  
**User=nexus**  
**Group=nexus**  
**ExecStart=/opt/nexus/bin/nexus start**  
**ExecStop=/opt/nexus/bin/nexus stop**  
**Restart=on-abort**

**[Install]**  
**WantedBy=multi-user.target**

## 2. Enable and Start Service

```
sudo systemctl daemon-reload
sudo systemctl enable nexus
sudo systemctl start nexus
```

Check status:

```
sudo systemctl status nexus
```

## 22. Integrating Nexus with Kubernetes

### Deploying Nexus in Kubernetes

## 1. Create a Persistent Volume

yaml

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: nexus-pvc
spec:
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 50Gi
```

## 2. Deploy Nexus Pod

yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nexus
spec:
  replicas: 1
  selector:
    matchLabels:
```



```
    app: nexus
template:
  metadata:
    labels:
      app: nexus
  spec:
    containers:
      - name: nexus
        image: sonatype/nexus3:latest
        ports:
          - containerPort: 8081
        volumeMounts:
          - name: nexus-storage
            mountPath: /nexus-data
    volumes:
      - name: nexus-storage
        persistentVolumeClaim:
          claimName: nexus-pvc
```

### 3. Expose as a Service

yaml

```
apiVersion: v1
kind: Service
```



```
metadata:
  name: nexus-service
spec:
  selector:
    app: nexus
  ports:
    - protocol: TCP
      port: 8081
      targetPort: 8081
  type: LoadBalancer
```

Apply the configurations:

```
kubectl apply -f nexus-deployment.yaml
```

## 23. Configuring Nexus for High Availability (HA)

High Availability (HA) ensures that Nexus remains available even in case of failures.

### 1. Use External Database (Pro Version)

- Configure PostgreSQL as an external database.
- Edit **nexus.properties** to use an external database.

### 2. Set Up Load Balancer

Use HAProxy or Nginx to distribute load among multiple Nexus instances.



## 24. Automating Nexus with Ansible

### Installing Nexus using Ansible

Create an Ansible playbook:

yaml

```
- name: Install Nexus
  hosts: nexus_servers
  become: yes
  tasks:
    - name: Download Nexus
      get_url:
        url:
https://download.sonatype.com/nexus/3/latest-unix.t
ar.gz
        dest: /opt/nexus.tar.gz

    - name: Extract Nexus
      unarchive:
        src: /opt/nexus.tar.gz
        dest: /opt/
        remote_src: yes

    - name: Start Nexus
      command: "/opt/nexus/bin/nexus start"
```





Run the playbook:

```
ansible-playbook nexus-install.yml -i inventory
```

## 25. Performance Tuning

### Optimizing JVM Memory

Edit `nexus.vmoptions`:

diff

```
-Xms4g
```

```
-Xmx8g
```

### Increase Thread Pool Size

Edit `nexus.properties`:

ini

```
nexus.jetty.threads=200
```

Restart Nexus:

```
systemctl restart nexus
```

## 26. Monitoring Nexus with Prometheus & Grafana

### 1. Enable Metrics Endpoint

In Nexus Pro, navigate to Administration → System → Metrics and enable Prometheus metrics.

## 2. Scrape Metrics with Prometheus

yaml

```
scrape_configs:
  - job_name: 'nexus'
    static_configs:
      - targets: ['nexus.example.com:8081']
```

## 3. Visualize in Grafana

- Import a Nexus Dashboard in Grafana.
- Connect to Prometheus as a data source.

## 27. Migrating from Nexus 2 to Nexus 3

### Steps to Migrate

#### Backup Nexus 2 Data

```
tar -czvf nexus2-backup.tar.gz /opt/nexus2
```

1. Install Nexus 3 on a new server.
2. Use Nexus Migration Tool (Pro feature).

Manually Transfer Artifacts if using the OSS version:

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```
rsync -av /opt/nexus2/storage/  
/opt/nexus3/sonatype-work/
```

### 3. Reconfigure Repositories & Permissions.

## 28. Nexus Best Security Practices

- Use RBAC (Role-Based Access Control).
- Enforce HTTPS.
- Enable IP Whitelisting.
- Regularly update Nexus and plugins.
- Set password expiration policies.

## 29. Troubleshooting & Common Errors

Issue: Login Fails After Reset

Solution: Reset admin password:

```
rm -rf sonatype-work/nexus3/admin.password
```

Issue: Nexus Crashes on Large Artifact Uploads

Solution: Increase heap size:

```
export INSTALL4J_ADD_VM_PARAMS="-Xms4g -Xmx8g"
```

Issue: Slow Response Time

Solution: Enable Blob Store Compression.

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### 30. Final Tips

- Use CI/CD pipelines to automate artifact deployment.
- Enable geo-replication for multi-region teams.
- Monitor storage usage and apply cleanup policies.
- Integrate Sonatype Lifecycle for security scanning.