

DRC INSIGHT

This book provides a complete technical guide for deploying and supporting DRC INSIGHT testing environments, including Central Office Services (COS), portal configuration, Chromebook deployment, and troubleshooting.

It is designed for IT administrators and service providers responsible for ensuring reliable, compliant, and high-performance online testing infrastructure. The content covers real-world deployment scenarios, common failure points, and validated solutions based on field experience.

Topics include COS installation on Linux, network requirements, device registration, content delivery architecture, and operational best practices for K-12 testing environments.

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IT Administrators

1-DRC INSIGHT - Central Office Services (COS) Overview

Audience: IT Administrators / MSP Engineers

Purpose: Explain what COS is, what it does, and how it fits into DRC INSIGHT testing.

Overview

DRC INSIGHT Central Office Services (COS) is a local content hosting system that allows testing devices to retrieve assessment content from a local server instead of relying entirely on internet delivery.

Key Concept:

COS is a service-based HTTP system, not a file share.

Testing devices do not browse or mount `/opt/CentralOffice`.

How COS Fits into DRC INSIGHT

DRC's training materials describe COS as the content hosting layer for testing devices. When COS is available, test content is delivered locally. If COS is unavailable, content can fall back to DRC cloud delivery. :contentReference[oaicite:1]{index=1}

Testing Devices



DRC INSIGHT Secure App



COS Service Device



Local Content Delivery



Fallback → DRC Cloud

Supported Platforms

- Testing Devices: Windows, macOS, Linux, iPadOS, ChromeOS
- COS Service Device: Windows, macOS, Linux

DRC states that testing devices can connect to any supported COS operating system type.
:contentReference[oaicite:2]{index=2}

Main COS Components

- **management** - configuration and management service
- **relay** - communicates with DRC backend services
- **proxy** - local proxy service
- **contenthosting** - serves local test content

Important Design Notes

- Use COS for local content delivery and better testing consistency
- Do not design COS as an SMB or NFS share
- Registration with DRC is required for full functionality
- Chromebooks should register to the COS Configuration using the ORG Unit ID

Next Page: Ubuntu COS Installation

2-DRC INSIGHT - Ubuntu COS Installation

Purpose: Install the COS Service Device on Ubuntu and verify the core services start correctly.

Prerequisites

- Ubuntu 22.04 or 24.04
 - Sudo/root access
 - Internet access
 - Installer package from the DRC portal
-

Step 1 - Update Ubuntu

```
sudo apt update && sudo apt upgrade -y
```

Step 2 - Install Required Dependencies

```
sudo apt install -y \  
libxcb-xinerama0 \  

```

```
libalt-getopt-complete-perl \  
libxcb-icccm4 \  
libxcb-image0 \  
libxcb-keysyms1 \  
libxcb-render-util0 \  
libxcb-xkb1 \  
libxkbcommon-x11-0
```

Critical:

If these packages are missing, COS may install incompletely, fail silently, or launch only partial services.

Step 3 - Fix /tmp Permissions

```
sudo chmod 1777 /tmp  
ls -ld /tmp
```

The COS installer writes temporary lock files to `/tmp`. Incorrect permissions can break the installer.

Step 4 - Clean a Failed Installation (If Needed)

```
sudo rm -rf /opt/CentralOffice  
sudo rm -f /tmp/coinstaller*.lock
```

Step 5 - Run the Installer

```
chmod +x silent-linux.sh  
sudo ./silent-linux.sh
```

DRC recommends using the default install locations. During installation, save the setup URL displayed by the wizard, because it can be used to resume or complete the process.

:contentReference[oaicite:3]{index=3}

Step 6 - Verify Installation Files

```
ls /opt/CentralOffice
```

Expected folders include:

- management
 - relay
 - proxy
 - contenthosting
 - setup
-

Step 7 - Verify Running Services

```
sudo /opt/CentralOffice/node \  
/opt/CentralOffice/setup/node_modules/forever/bin/forever -p /opt/CentralOffice list
```

Expected:

- management
 - relay
 - proxy
 - contenthosting
-

Step 8 - Check Active Ports

```
sudo ss -tulnp | grep node
```

DRC training shows COS uses a base port, commonly 55222, and assigns consecutive ports from there. In this deployment, the active ports observed were 55223, 55224, and 55225.

:contentReference[oaicite:4]{index=4}

Step 9 - Test Local Response

```
curl -I http://127.0.0.1:55223
```

Expected Result:

HTTP 404 on the root path is acceptable. It confirms the service is alive even if the root URL is not the correct application route.

Next Page: DRC Portal Configuration

3-DRC INSIGHT - DRC Portal Configuration for COS

Purpose: Complete registration and configure Content Management and Content Hosting correctly.

Step 1 - Complete COS Registration

Open the setup URL generated during installation and complete the COS registration in the DRC portal.

Important:

If registration is not completed, relay and contenthosting may fail and devices may not be able to connect.

Step 2 - Content Management

- Enable Content Management → **ON**
- Select required testing programs
- Select required accommodations
- Click **Update Configuration**

DRC states that Content Management is used to choose the testing content and accommodations hosted by the COS Service Device. :contentReference[oaicite:5]{index=5}

Step 3 - Content Hosting

- Enable Content Hosting → **ON**
- Load Balancer → **OFF** for a single COS server
- Shared Content Location → **OFF** for a single COS server

Do Not Use Shared Content for a Single Server:

Shared content is only appropriate in multi-server designs with a real shared storage architecture.

Step 4 - Proxy Settings

- Use Proxy Host or Restricted Proxy → **OFF** unless explicitly required

For a normal single COS Service Device deployment, avoid unnecessary proxy layers unless your network design specifically requires them.

Step 5 - Add Testing Programs and Sites

Use the Locations section to add the relevant testing programs and school or district site assignments to the COS Configuration. :contentReference[oaicite:6]{index=6}

Step 6 - Save and Validate

- Click **Update Configuration**
- Wait for the configuration to turn green before testing

DRC advises verifying that the configuration is green before students start testing each day. :contentReference[oaicite:7]{index=7}

Next Page: Chromebook Deployment

4-DRC INSIGHT - Chromebook Deployment SOP

Purpose: Deploy the DRC INSIGHT app to Chromebooks and prepare them for testing with COS.

Step 1 - Install DRC INSIGHT

Deploy the DRC INSIGHT app through Google Admin Console.

DRC states that ChromeOS installations are deployed using Google Admin.

:contentReference[oaicite:8]{index=8}

Step 2 - Register Each Chromebook

1. Launch DRC INSIGHT
2. Select **Assign Device to ORG Unit**
3. Enter the COS ORG Unit ID
4. Select **Register**

DRC training identifies ORG Unit assignment as a supported method for registering testing devices to a COS Configuration. :contentReference[oaicite:9]{index=9}

Step 3 - Chromebook Settings Required by DRC

- Display Size → **100%**
- Keyboard → **US English**

DRC specifically states that ChromeOS display size should be 100%, and the keyboard should be US English so quotation marks and apostrophes display correctly.

:contentReference[oaicite:10]{index=10}

Step 4 - Same Network Requirement

Keep Chromebooks on the same network path as the COS server during testing for reliable access to local content.

Step 5 - Run Readiness Checks

Use the DRC INSIGHT readiness and system checks before testing begins. DRC states the System Readiness Check helps confirm that each testing device meets minimum requirements and is operating properly before testing. :contentReference[oaicite:11]{index=11}

Recommended Best Practices

- Disable or reduce unnecessary background apps
 - Pause automatic updates during the testing window
 - Validate registration before test day
-

Next Page: Validation and Testing

5-DRC INSIGHT - Validation and Testing

Purpose: Confirm COS is functioning properly before live testing begins.

Step 1 - Verify Services

```
sudo /opt/CentralOffice/node \  
/opt/CentralOffice/setup/node_modules/forever/bin/forever -p /opt/CentralOffice list
```

Confirm all four are running:

- management
 - relay
 - proxy
 - contenthosting
-

Step 2 - Verify Ports

```
sudo ss -tulnp | grep node
```

Step 3 - Validate Local HTTP Response

```
curl -I http://127.0.0.1:55223
curl -I http://127.0.0.1:55224
curl -I http://127.0.0.1:55225
```

An HTTP 404 response at the root path can still indicate a healthy service.

Step 4 - Validate Content Directory

```
ls -lah /opt/CentralOffice/content_fs
```

The local content directory should populate after configuration is updated and content is downloaded.

Step 5 - Confirm DRC Portal Status

- Configuration shows green
 - Correct test content is selected
 - Content Hosting is enabled
-

Step 6 - Validate Chromebook Access

- Confirm device is registered to the correct ORG Unit
 - Confirm Chromebook settings are correct
 - Open DRC INSIGHT and verify successful registration and readiness
-

Pre-Test Validation Checklist

- [] COS registered with DRC
 - [] All COS services running
 - [] Node ports listening
 - [] Local content downloaded
 - [] Portal configuration green
 - [] Chromebooks registered to ORG Unit
 - [] Chromebook display size 100%
 - [] Chromebook keyboard US English
-

Next Page: Troubleshooting

6-DRC INSIGHT - COS

Troubleshooting

Purpose: Resolve the most common Linux COS installation, service, and Chromebook issues.

Issue 1 - Installer Fails or Stops Early

Symptoms:

- No usable COS services
- Installer exits quickly
- Lock file or temp errors

Fix:

```
sudo chmod 1777 /tmp
sudo rm -rf /opt/CentralOffice
sudo rm -f /tmp/coinstaller*.lock
sudo ./silent-linux.sh
```

Issue 2 - Only Proxy Runs

Symptoms:

- `forever list` shows only proxy
- relay and contenthosting do not stay running

Likely Cause:

- Registration not completed
- Configuration not generated correctly

Fix:

- Complete the setup URL from installation
 - Restart COS services
-

Issue 3 - Relay Heartbeat Error

Error:

```
CO API - Heartbeat returned undefined
```

Likely Cause:

- Registration incomplete
- DRC API not reachable
- Upstream filtering or SSL inspection interfering

Fix:

- Complete registration
 - Verify internet connectivity
 - Allow required DRC URLs and ports
-

Issue 4 - Services Show "active (exited)"

This can be normal. COS uses `forever` to launch Node services in the background, so the systemd wrapper may show as exited while the Node processes continue running.

Use this command as the truth source:

```
sudo /opt/CentralOffice/node \  
/opt/CentralOffice/setup/node_modules/forever/bin/forever -p /opt/CentralOffice list
```

Issue 5 - Chromebooks Cannot Connect

Check:

- ORG Unit ID entered correctly
 - Chromebook can reach COS network path
 - Display size is 100%
 - Keyboard is US English
 - Portal configuration is green
-

Issue 6 - Content Does Not Download

Check:

- Content Management enabled
 - Content Hosting enabled
 - Shared Content OFF for single server
 - Correct test programs selected
-

Useful Commands

```
# Check runtime services  
sudo /opt/CentralOffice/node \  
/opt/CentralOffice/setup/node_modules/forever/bin/forever -p /opt/CentralOffice list  
  
# Check ports
```

```
sudo ss -tulnp | grep node
```

```
# Check content directory
```

```
ls -lah /opt/CentralOffice/content_fs
```

```
# Follow content hosting logs
```

```
sudo journalctl -u centralofficecontenthosting -f
```

```
# Follow relay logs
```

```
sudo journalctl -u centralofficerelay -f
```

Support Contacts

- DRC PA Customer Service: (800) 451-7849
- DRC Status Page: <https://status.drccdirect.com/PA>

End of Troubleshooting SOP

DRC INSIGHT – Central Office Services (COS) Installation & Troubleshooting (Full)

Audience: IT Administrators / MSP Engineers

Platform: Ubuntu 22.04 / 24.04 + Chromebook environments

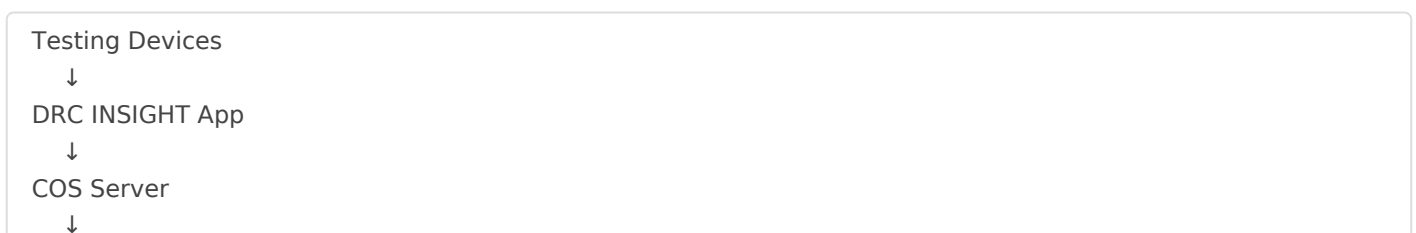
Overview

DRC INSIGHT Central Office Services (COS) is a local content hosting system that allows testing devices to retrieve assessment content from a local server instead of the internet.

Key Concept:

COS is a service-based HTTP system, NOT a file share.
Devices do NOT access `/opt/CentralOffice` directly.

Architecture



Local Content (/opt/CentralOffice/content_fs)



Fallback → DRC Cloud

Installation (Ubuntu)

1. Update System

```
sudo apt update && sudo apt upgrade -y
```

2. Install Required Dependencies

```
sudo apt install -y \  
libxcb-xinerama0 \  
libalt-getopt-complete-perl \  
libxcb-icccm4 \  
libxcb-image0 \  
libxcb-keysyms1 \  
libxcb-render-util0 \  
libxcb-xkb1 \  
libxkbcommon-x11-0
```

Critical: Missing dependencies will cause silent installer failures or services crashing.

3. Fix /tmp Permissions

```
sudo chmod 1777 /tmp  
ls -ld /tmp
```

4. Clean Previous Install

```
sudo rm -rf /opt/CentralOffice  
sudo rm -f /tmp/coinstaller*.lock
```

5. Run Installer

```
chmod +x silent-linux.sh
sudo ./silent-linux.sh
```

Registration (REQUIRED)

Important: You MUST open the setup URL generated during installation.

This step registers COS with DRC and enables services.

If skipped:

- Relay fails
- Contenthosting fails
- Devices cannot connect

Validate Services

Check Running Services

```
sudo /opt/CentralOffice/node \
/opt/CentralOffice/setup/node_modules/forever/bin/forever -p /opt/CentralOffice list
```

Expected:

- management
- relay
- proxy
- contenthosting

Check Ports

```
sudo ss -tulnp | grep node
```

Typical Ports:

- 55223 - Content Hosting
- 55224 - Relay
- 55225 - Proxy

Test Service

```
curl -I http://127.0.0.1:55223
```

HTTP 404 is normal and confirms the service is running.

DRC Portal Configuration

Content Management

- Enable Content Management → ON
- Select tests (PSSA, Keystone, CDT)
- Click Update Configuration

Content Hosting

- Enable Content Hosting → ON
- Load Balancer → OFF
- Shared Content Location → OFF

Shared content should only be used in multi-server environments.

Proxy

- Use Proxy → OFF
-

Chromebook Configuration

Install App

- Deploy DRC INSIGHT via Google Admin Console

Register Device

Launch App → Assign Device to ORG Unit → Enter ORG ID

Required Settings

- Display Scale = 100%
- Keyboard = US English
- Same network as COS

Network Requirements

Allowlist

```
*.drccdirect.com
```

Ports

- 80 (HTTP)
- 443 (HTTPS)

Internal COS Ports

```
sudo ufw allow 55223/tcp  
sudo ufw allow 55224/tcp  
sudo ufw allow 55225/tcp
```

Content Validation

```
ls -lah /opt/CentralOffice/content_fs
```

```
sudo journalctl -u centralofficecontenthosting -f
```

Troubleshooting

Installer Fails

```
sudo chmod 1777 /tmp  
sudo rm -rf /opt/CentralOffice  
sudo ./silent-linux.sh
```

Only Proxy Running

Cause: COS not registered

Heartbeat Error

```
CO API - Heartbeat returned undefined
```

Fix:

- Complete setup URL
- Verify internet access
- Allow DRC domains

Chromebooks Cannot Connect

- Verify ORG ID
- Check network
- Confirm ports open

Validation Checklist

- [] COS services running
 - [] Ports listening
 - [] Content downloading
 - [] Portal configured correctly
 - [] Chromebooks registered
-

Key Takeaways

- COS is NOT a file server
 - Uses HTTP endpoints
 - Registration is required
 - Content hosting must be enabled
-

End of SOP