[wct-en] 05 Operations & Administration

Operations, monitoring, backup, recovery, identity, security and troubleshooting. Edition: WCT English — OpenC5ISR (openc5isr-en.wallacecorptech.com).

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- Service Control
  - Starting, Stopping and Restarting
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Start Here

Start Here

Field	Value
Distribution	WCT English — OpenC5ISR
Product	OpenC5ISR
Release	0.15.1
Deployment	`openc5isr-en.wallacecorptech.com`
Source	`/srv/wct/releases/OpenC5ISR-v0.15.0`
Evidence	Documentation structure and release scan
Source fingerprint	`63d2b1097707e25d666401cdc6362e395968600a40a08690210cd8c0b75fbf50`
Status	Generated baseline — human review required

> **Verification boundary:** This page combines platform design guidance with static evidence from the release. It does not prove that every detected interface is enabled, reachable, secure, or operational in the deployed environment.

Purpose

This book provides a safe operational baseline for the named distribution. Replace placeholders with tested unit names, URLs, owners, thresholds and escalation paths.

Contents

Section	What it contains
Service Control	Start, stop, restart and inspect the deployed services.

Section	What it contains
Monitoring & Assurance	Health checks, logs, audit and daily operational controls.
Continuity & Recovery	Backups, recovery and structured troubleshooting.

How to maintain this book

Generated sections are replaced from release evidence on each run. Put reviewed corrections, deployment-specific facts, links and decisions in the Maintainer Notes area below the generated block. Mark pages as reviewed only after testing them against the named distribution and release.

Maintainer Notes

Add human-reviewed deployment notes, corrections, decisions, screenshots, and links here. Content outside the generated block is preserved on future runs.

Service Control

Managed documentation for Service Control.

Starting, Stopping and Restarting

Starting, Stopping and Restarting

Field	Value
Distribution	WCT English — OpenC5ISR
Product	OpenC5ISR
Release	0.15.1
Deployment	`openc5isr-en.wallacecorptech.com`
Source	`/srv/wct/releases/OpenC5ISR-v0.15.0`
Evidence	Observed service units plus operational control pattern
Source fingerprint	`63d2b1097707e25d666401cdc6362e395968600a40a08690210cd8c0b75fbf50`
Status	Generated baseline — human review required

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Observed service candidates

Unit	Status command	Log command

opencybersec-agent.service	`sudo systemctl status opencybersec-agent.service --no-pager`	`sudo journalctl -u opencybersec-agent.service -n 200 --no-pager`
openlvc-ais-bridge.service	`sudo systemctl status openlvc-ais-bridge.service --no-pager`	`sudo journalctl -u openlvc-ais-bridge.service -n 200 --no-pager`
openlvc-dis-bridge.service	`sudo systemctl status openlvc-dis-bridge.service --no-pager`	`sudo journalctl -u openlvc-dis-bridge.service -n 200 --no-pager`
openlvc-flightgear-bridge.service	`sudo systemctl status openlvc-flightgear-bridge.service --no-pager`	`sudo journalctl -u openlvc-flightgear-bridge.service -n 200 --no-pager`
openlvc-rti-gateway.service	`sudo systemctl status openlvc-rti-gateway.service --no-pager`	`sudo journalctl -u openlvc-rti-gateway.service -n 200 --no-pager`
openpnt-phc2sys@.service	`sudo systemctl status openpnt-phc2sys@.service --no-pager`	`sudo journalctl -u openpnt-phc2sys@.service -n 200 --no-pager`
openpnt-ptp4l@.service	`sudo systemctl status openpnt-ptp4l@.service --no-pager`	`sudo journalctl -u openpnt-ptp4l@.service -n 200 --no-pager`
openpnt-ts2phc@.service	`sudo systemctl status openpnt-ts2phc@.service --no-pager`	`sudo journalctl -u openpnt-ts2phc@.service -n 200 --no-pager`
openrf-agent.service	`sudo systemctl status openrf-agent.service --no-pager`	`sudo journalctl -u openrf-agent.service -n 200 --no-pager`
openc5isr-wct-en.service	`sudo systemctl status openc5isr-wct-en.service --no-pager`	`sudo journalctl -u openc5isr-wct-en.service -n 200 --no-pager`

Safe control sequence

```
# Inspect before changing anything
systemctl status <unit>.service --no-pager
journalctl -u <unit>.service -n 100 --no-pager

# Start/stop/restart only the intended unit
sudo systemctl start <unit>.service
sudo systemctl stop <unit>.service
sudo systemctl restart <unit>.service

# Confirm process, port and local response
systemctl status <unit>.service --no-pager
ss -lntup
curl -fsS http://127.0.0.1:<port>/<health-path>
```

Control rules

- Inspect current state and recent logs before restart; a restart can erase evidence or amplify a dependency failure.
- Restart the smallest affected scope instead of all platform services.
- Record who initiated the change, why, exact commands, result and rollback decision.
- Verify local service first, then reverse proxy, then end-to-end workflow.

Maintainer Notes

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Monitoring & Assurance

Managed documentation for Monitoring & Assurance.

Health Checks

Health Checks

Field	Value
Distribution	WCT English — OpenC5ISR
Product	OpenC5ISR
Release	0.15.1
Deployment	`openc5isr-en.wallacecorptech.com`
Source	`/srv/wct/releases/OpenC5ISR-v0.15.0`
Evidence	Route scan and operational health model
Source fingerprint	`63d2b1097707e25d666401cdc6362e395968600a40a08690210cd8c0b75fbf50`
Status	Generated baseline — human review required

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Candidate health endpoints

No route name strongly associated with health/readiness was detected.

Layered health model

Layer	Check	Good result
Process	`systemctl is-active` / container state	Active without restart loop.

Layer	Check	Good result
Socket	`ss -lntup`	Expected address/port owned by expected process.
Local HTTP/API	`curl` loopback endpoint	Expected status/body within threshold.
Proxy/TLS	`curl` public hostname	Valid certificate, correct routing and headers.
Dependency	Database/bus/files/knowledge checks	Authenticated dependency response and acceptable latency.
Workflow	Primary user transaction	End-to-end result is visible, correlated and retained.

Health endpoint requirements

A liveness endpoint should prove the process can respond; readiness should prove required dependencies and configuration are usable. Do not expose secrets, stack traces or sensitive topology in public health output.

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Logs and Audit

Logs and Audit

Field	Value
Distribution	WCT English — OpenC5ISR
Product	OpenC5ISR
Release	0.15.1
Deployment	`openc5isr-en.wallacecorptech.com`
Source	`/srv/wct/releases/OpenC5ISR-v0.15.0`
Evidence	Operational logging standard
Source fingerprint	`63d2b1097707e25d666401cdc6362e395968600a40a08690210cd8c0b75fbf50`
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Log sources

Source	Typical command/location	Use
systemd/journald	`journalctl -u <unit> --since ...`	Process lifecycle, stdout/stderr and service errors.
Nginx	`/var/log/nginx/access.log`, `/var/log/nginx/error.log`	Routing, status, latency, upstream and TLS symptoms.
Application	Structured logs or configured log directory	Domain events, validation, dependency calls and workflow state.

Source	Typical command/location	Use
Audit	Protected append/central audit store	Actor, action, target, policy decision, result and correlation.
Sensor/edge	Device/agent logs and telemetry	Connection, clock, calibration, sample loss and product generation.

Required structured fields

- UTC timestamp plus source clock/host.
- Severity, service/component, release version and instance.
- Request/event/task/track/case correlation identifier.
- Authenticated actor or service identity when applicable.
- Outcome/error code and safe diagnostic context.

Do not log

- Passwords, API token secrets, private keys, complete authorization headers or session cookies.
- Sensitive content unless the approved audit/evidence policy explicitly requires and protects it.
- Unbounded raw sensor/media streams in ordinary application logs.

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Operational Checklist

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Release	0.15.1
Deployment	`openc5isr-en.wallacecorptech.com`
Source	`/srv/wct/releases/OpenC5ISR-v0.15.0`
Evidence	Operational standard
Source fingerprint	`63d2b1097707e25d666401cdc6362e395968600a40a08690210cd8c0b75fbf50`
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Daily/shift-start checks

- ☐ System time synchronized and no large clock offset alerts.
- ☐ Required services active without restart loops.
- ☐ Disk, memory, CPU and network within operating limits.
- ☐ Public hostnames and local health endpoints respond correctly.
- ☐ OpenBus/data/knowledge/files dependencies reachable.
- ☐ Representative sensor/track/task workflow completes.
- ☐ Backups completed and no unresolved critical security/audit alerts.

After any change

- [ ] Configuration syntax validated.
- [ ] Only intended service/process changed.
- [ ] Local, proxy and end-to-end tests passed.
- [ ] Logs reviewed for new warnings/errors.
- [ ] Version/change record and rollback state updated.

Handover record

Record active release, known degradations, temporary workarounds, open incidents, pending changes, sensor availability, external dependency state and the next required action. Operational continuity should not depend on oral memory.

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Continuity & Recovery

Managed documentation for Continuity & Recovery.

Backup and Recovery

Backup and Recovery

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Product	OpenC5ISR
Release	0.15.1
Deployment	`openc5isr-en.wallacecorptech.com`
Source	`/srv/wct/releases/OpenC5ISR-v0.15.0`
Evidence	Continuity standard
Source fingerprint	`63d2b1097707e25d666401cdc6362e395968600a40a08690210cd8c0b75fbf50`
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Backup scope

Asset	Backup requirement	Restore verification
Release artifacts	Retain exact immutable packages/checksums; normally do not back up regenerated dependencies.	Checksum and extraction test.
Configuration	Versioned protected copy excluding or separately encrypting secrets.	Syntax test and controlled comparison.

Asset	Backup requirement	Restore verification
Databases	Consistent database-native dump/snapshot with schema/version metadata.	Restore into isolated environment and run integrity/query checks.
Files/evidence	Content plus metadata, ownership, access policy, checksums and provenance.	Sample restore, checksum and access-control test.
Knowledge/ontology	Graph data, ontology versions, shapes, indexes and configuration.	SPARQL/constraint tests against restored graph.
Audit/history	Protected retention according to policy; preserve ordering and integrity evidence.	Query selected events and verify integrity chain.

Recovery order

1. Infrastructure, DNS/TLS and time.
2. Protected configuration and secrets.
3. Databases, knowledge and artifact stores.
4. OpenBus/shared backends.
5. Edition-specific applications and reverse proxy.
6. Sensors/edge agents and external integrations.
7. End-to-end acceptance tests and user access.

Recovery objective

Define and test RPO/RTO by data class. A backup that has never been restored is an optimistic file collection, not a recovery capability.

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Troubleshooting

Troubleshooting

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Distribution	WCT English — OpenC5ISR
Product	OpenC5ISR
Release	0.15.1
Deployment	`openc5isr-en.wallacecorptech.com`
Source	`/srv/wct/releases/OpenC5ISR-v0.15.0`
Evidence	Operational diagnostic standard
Source fingerprint	`63d2b1097707e25d666401cdc6362e395968600a40a08690210cd8c0b75fbf50`
Status	Generated baseline — human review required

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Diagnostic sequence

1. State the exact user-visible symptom, start time, scope and last known good state.
2. Check DNS/routing/time before assuming an application defect.
3. Check process/container state and recent logs.
4. Test the backend locally on its bound address/port.
5. Test proxy/TLS path and WebSocket upgrade separately.
6. Test dependencies: database, OpenBus, OpenKnowledge, OpenFiles and external services.
7. Reproduce one primary workflow with correlation identifiers and capture evidence.
8. Apply the smallest reversible change, then retest all layers.

Symptom matrix

Symptom	Likely layer	First checks
Connection refused	Process/socket	`systemctl status`, `ss -lntup`, local curl
Empty response/reset	App/upstream crash or protocol mismatch	Application logs, internal HTTP response, proxy protocol.
502/504	Reverse proxy/upstream	`nginx -t`, error log, `proxy_pass`, backend latency
Page loads but live data fails	WebSocket/CORS/auth	Browser network console, upgrade headers, token/role, route base.
Wrong distribution/branding	Nginx/service instance	Hostname routing, service unit, current release symlink, environment.
Tracks/tasks/products missing	Dependency/data flow	Producer logs, OpenBus/API, authorization, semantic type, time window.
Intermittent correlation error	Time/PNT/data quality	Clock offset, source timestamps, coordinate frame and calibration.

Evidence rule

Before changing configuration, preserve the relevant logs, status output, request/response, release version and timestamps. Troubleshooting without evidence tends to become configuration roulette—with worse odds and fewer free drinks.

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