

Preventative Maintenance (SERVER)

| | |
|---------------------|---------------------------------|
| Job No: | 8401L0067 |
| System Description: | ISOSS SECURITY SYSTEM |
| Station Name: | LV6 Woodlands LV / 192.169.19.1 |
| Customer: | LTA |
| Project No: | 1534 |

ATTENDED BY Sasuke

(WILLOWGLEN)

WITNESSED BY Sakura

(CUSTOMER)

START DATE/TIME 03/11/2025 07:00

COMPLETION DATE/TIME 04/11/2025 08:00

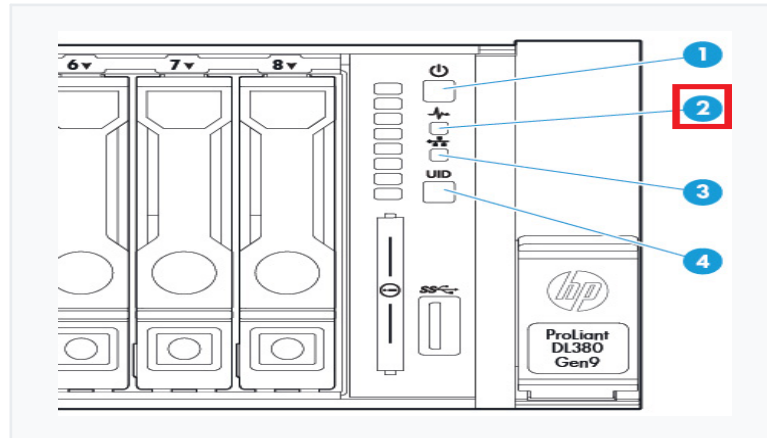
Remark

Sign Off Information for LTA SITE

Server Health Check

Check Instructions:

Check Server Front Panel LED Number 2, as shown below. Check LED 2 in solid green, which indicates the server is healthy.



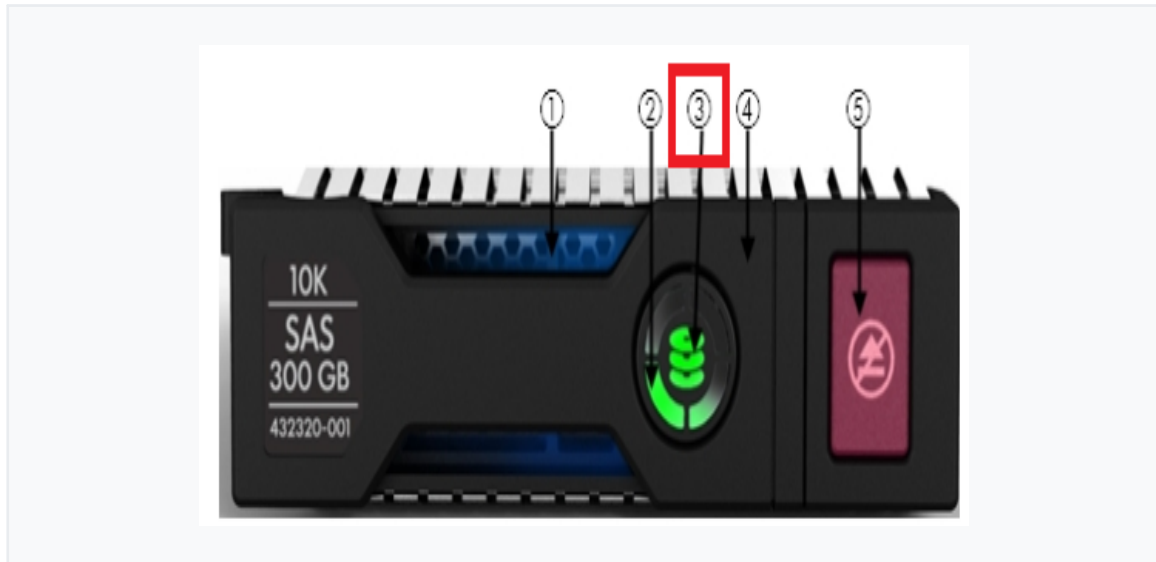
| Server Name | Result Status |
|---------------------|---------------|
| CR-ECID-IF-SVR00002 | Fail |
| CR-ECID-IF-SVR00001 | Pass |
| CR-ECID-IF-SVR00003 | Pass |

Remarks

Server Health Check for LTA site (KCDE and ECID sites)

Hard Drive Health Check

Check Hard Drive Health Status LED, LED in solid/blinking green, which indicates healthy.



Check if the LED is in solid/blinking green

| Server Name | Result Status |
|---------------------|---------------|
| CR-ECID-IF-SVR00002 | Fail |
| CR-ECID-IF-SVR00001 | Pass |
| CR-ECID-IF-SVR00003 | Pass |

Remark

Hard Drive Health Check for LTA (KCDE and ECID sites)

Disk Usage Check

Using Computer Management

- From Control Panel -> Administration Tools -> Computer Management.
- Click on the Storage -> Disk Management. Check the status for all the hard disks.
- Remove old Windows event logs to meet the target disk usage limit.

* Note: The HDSRS servers with SQL Server Database keep the historical data and daily/weekly/monthly backups. The disk space usage can be up to 90%, which is considered as normal.

CR-ECID-IF-SVR0002: - Disk Capacity:

| Disk | Status | Capacity | Free Space | Usage % | Check |
|------|---------|----------|------------|---------|-------|
| AA | Healthy | 2000 | 500 | 80 | Fail |

CR-ECID-IF-SVR0003: - Disk Capacity:

| Disk | Status | Capacity | Free Space | Usage % | Check |
|------|---------|----------|------------|---------|-------|
| BB | Healthy | 3000 | 2000 | 32 | Pass |

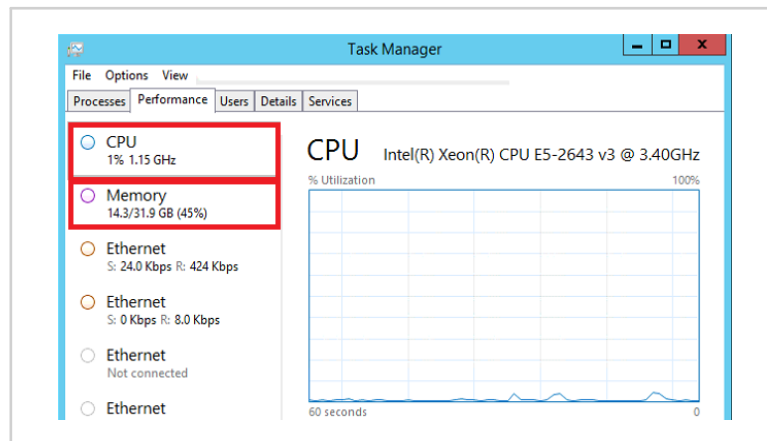
Remark

Server Disk Usage Check for LTA (KCDE and ECID site)

CPU and RAM Usage Check

Using Task Manager, go to Performance Tab

- Right click on the task bar and select Task Manager.



Memory Usage Check:

| S/N | Machine Name | Memory Size | Memory In Use (%) | Memory In Use < 90%? Historical server < 90%? |
|-----|--------------------|-------------|-------------------|--|
| 1 | CR-ECID-IF-SVR0002 | 64 | 78% | Fail |
| 2 | CR-ECID-IF-SVR0003 | 64 | 31% | Pass |

CPU Usage Check:

| S/N | Machine Name | CPU Usage (%) | CPU Usage < 50%? |
|-----|--------------------|---------------|------------------|
| 2 | CR-ECID-IF-SVR0003 | 32% | Pass |
| 1 | CR-ECID-IF-SVR0002 | 11% | Pass |

Remarks

Server CPU and RAM Usage Check for LTA (KCDE and ECID Sites)

Network Health Check

Ring Network Check.

Date Checked: 01/11/2025 00:00

Procedure:

Observe the ring and ring master LED on the network switch.

Result:

Ring and ring master LED should be green (stable).

No

If the answer is 'No', please use topology viewer (Oring software) to check if any switch in the ring has connectivity problem.

Remarks

Network Health Check for LTA (KCDE and ECID sites)

Willowlynx Process Status Check

Process Status

Login into Willowlynx and navigate to the "Server Status" page, as shown below.

PANDAN-WEST COAST SERVER STATUS

| EC3 | PANDAN SERVERS | WEST COAST SERVERS |
|--------------|----------------|--------------------|
| Application | SCADA-1 | SCADA-2 |
| RTDB | ACTIVE | STANDBY |
| OPS | ACTIVE | STANDBY |
| POLL DEVICE | ACTIVE | STANDBY |
| CALC ENGINE | ACTIVE | STANDBY |
| RS CLIENT | ACTIVE | STANDBY |
| IEC 104 | ACTIVE | STANDBY |
| HTS | ACTIVE | ACTIVE |
| SQL Database | NORMAL | NORMAL |

RTDB - REAL TIME DATABASE

OPS - OUT SCHEDULER TIMER

POLL DEVICE - UPDATE RTDB SERVERS & NETWORK DEVICE STATUS

CALC ENGINE - RUNTIME ENGINE FOR CALCULATION LOGIC

RS CLIENT - INTERFACE BETWEEN MASTER AND SUBMASTER

IEC 60870-5-104 - INTERFACE BETWEEN SUBMASTER AND RTU

HTS - HISTORIAN

HDSRS - HISTORIAN SERVER

OVERVIEW
SERVER STATUS

Result:

All process services should be online, either ACTIVE or STANDBY.

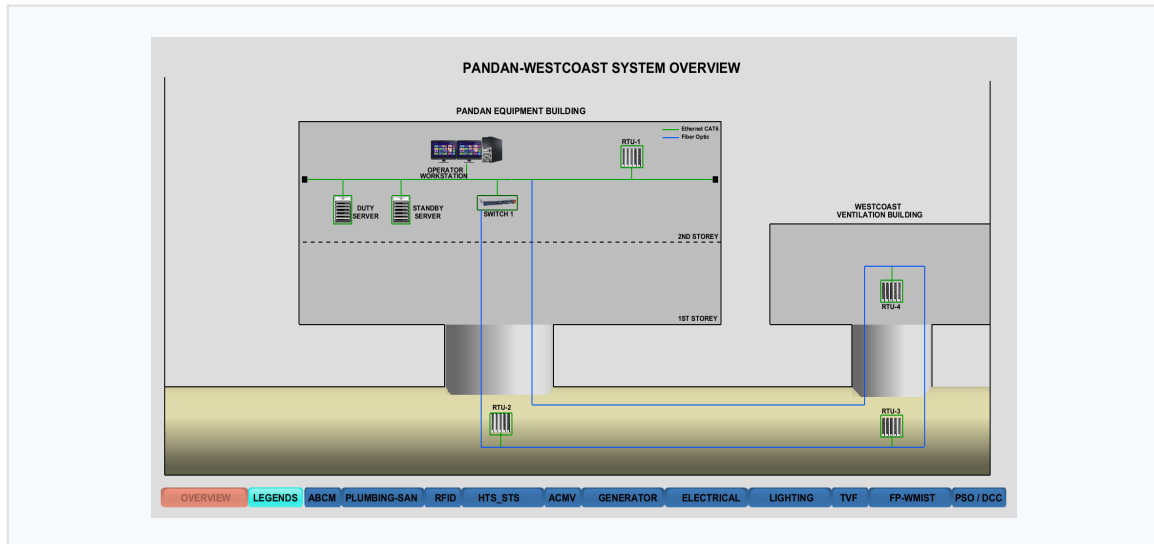
No

Remarks

Willowlynx Process Status Check for LTA (KCDE and ECID sites)

Willowlynx Network Status Check

Check the system overview page to ensure all servers, switches, and RTUs are green.



Result:

All servers, switches, and RTU are green.

No

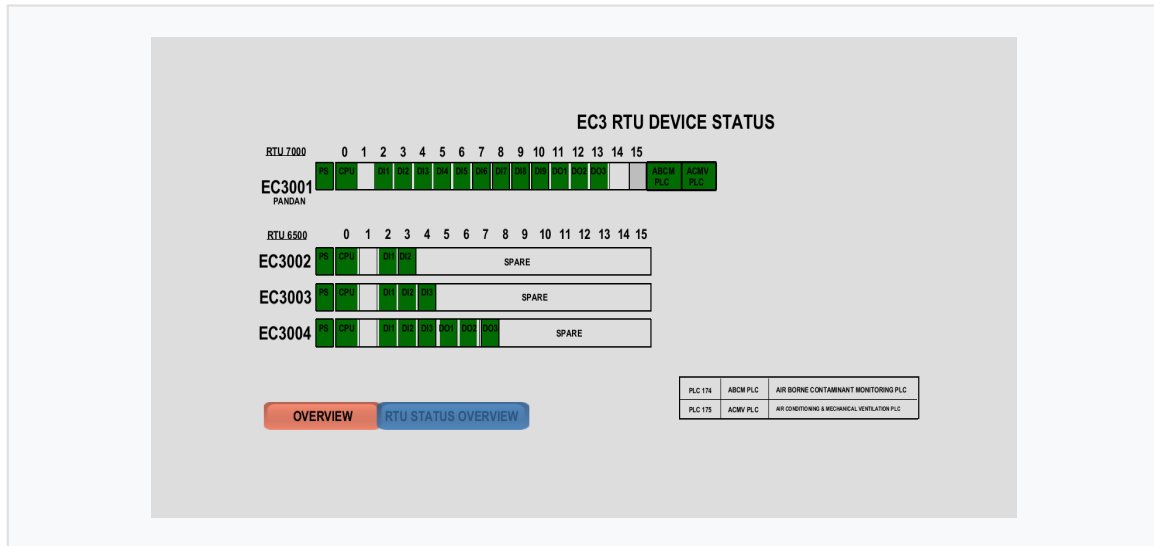
Remarks

Willowlynx Network Status Check for LTA (KCDE and ECID sites)

Willowlynx RTU Status Check

Instructions:

Check the RTU Device Status page. RTU status and PLC status shall be green.



Result:

RTU status and PLC status are green.

No

Remarks

Willowlynx RTU Status Check for LTA (KCDE and ECID sites)

Willowlynx Historical Trend Check

Instructions:

Randomly select some analog measurement points, open the trend view, and confirm the trend displays without errors.

Result:

Trends can be displayed without issues.

No

Remarks

Willowlynx Historical Trend Check for LTA (KCDE and ECID sites)

Willowlynx Historical Report Check

Click the CTHistReport icon on an HMI, open the Historical Report module, and ensure analog, digital, and alarm reports can be displayed.



Result:

All reports can be displayed without issues.

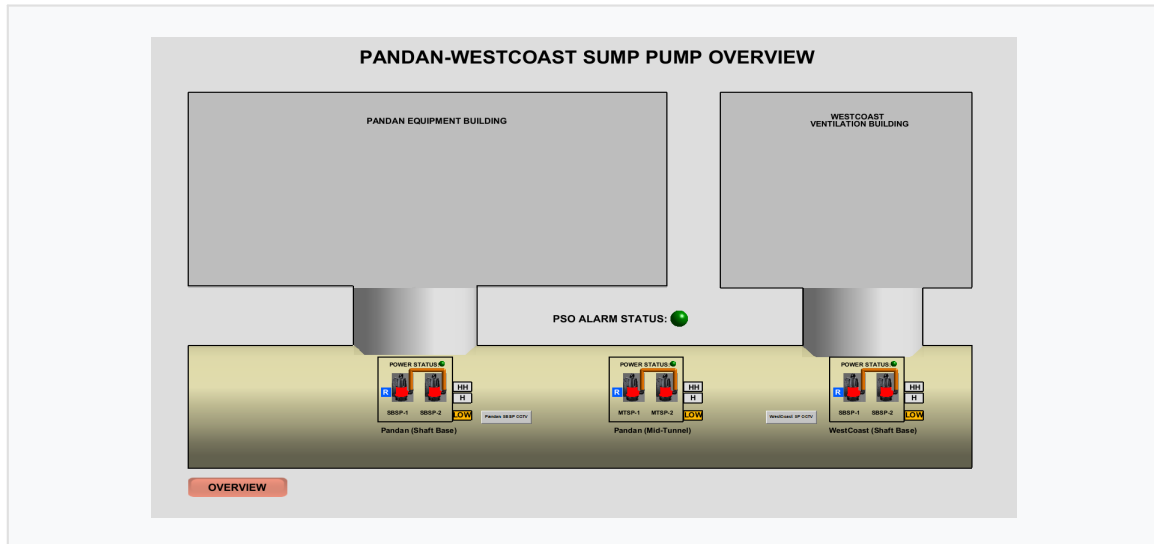
No

Remarks

Willowlynx Historical Report Check for LTA (KCDE and ECID sites)

Willowlynx Sump Pit CCTV Camera Check

Click the CCTV buttons from the PLUMB-SAN page to confirm the player window for each camera can be played.



Result:

All CCTV cameras can be played without issues.

No

Remarks

Willowlynx Sump Pit CCTV Camera Check for LTA (KCDE and ECID sites)

Monthly Database Creation Check

Willowlynx's historical database uses monthly partitions. Confirm MSSQL has the next six months created.

Monthly Database Creation

| S/N | Server Name | Monthly DB are Created |
|-----|---------------------|------------------------|
| 3 | CR-ECID-IF-SVR00005 | Yes |

Remarks

Monthly Database Creation for LTA (KCDE && ECID sites)

Database Backup Check

Check D:\MSSQLSERVER-BACKUP\Monthly and ensure the database backups exist in this directory.

MSSQL Database Backup Check

| S/N | Item | Monthly DB Backup are created |
|-----|--------------------|-------------------------------|
| 1 | CR-KCDE-IF-SVR0002 | No |
| 2 | CR-KCDE-IF-SVR0005 | Yes |

SCADA Database Backup Check

| S/N | Item | SCADA DB Backup are created |
|-----|--------------------|-----------------------------|
| 1 | CR-KCDE-IF-SVR0004 | No |
| 2 | CR-KCDE-IF-SVR0006 | Yes |

Latest Backup File Name: sql_ecid_kcde_AMS_31102025.sql

Remarks

Database Backup for LTA site (KCDE and ECID sites)

SCADA & Historical Time Sync Check

Instructions:

Verify the SCADA server, historical server, and HMIs are time synchronised by running w32tm /query /status. The difference shall be within five minutes.

| S/N | Machine Name | Time Sync Result |
|-----|--------------------|------------------|
| 2 | CR-ECID-IF-SVR0002 | Pass |
| 3 | CR-ECID-IF-SVR0003 | Pass |
| 1 | CR-ECID-IF-SVR0001 | Fail |

Remarks

SCADA & Historical Time Sync for LTA Site (KCDE and ECID)

Hotfixes / Service Packs

Review and apply the latest hotfixes or service packs on all applicable servers.

| S/N | Machine Name | Latest Hotfixes Applied | Done |
|-----|-------------------|-------------------------|------|
| 1 | CR-ECID-IF-SVR001 | ABC123456 | Pass |
| 2 | CR-ECID-IF-SVR002 | DEF123456 | Fail |
| 3 | CR-ECID-IF-SVR003 | GHI123456 | Pass |

Remarks

Hotfixes / Service Packs for LTA (KCDE and ECID site)

Auto failover of SCADA server

Auto failover of SCADA server testing procedures:

Note: Make sure both SCADA servers are online after completing the test.

| Failover from SCA-SR1 to SCA-SR2 | |
|--|-----|
| Procedure: 1. Perform a system shutdown on SCA-SR1. 2. Check the System Server status page. | |
| Expected Result: SCA-SR2 becomes master and RTUs continue reporting data to SCADA. | Yes |

| Failover from SCA-SR2 to SCA-SR1 | |
|--|-----|
| Procedure: 1. Start SCA-SR1 and wait five minutes for it to boot. 2. Perform a system shutdown on SCA-SR2. 3. Check the System Server status page. | |
| Expected Result: SCA-SR1 becomes master and RTUs continue reporting data to SCADA. | Yes |

Remarks

Auto Failover of SCADA Server for LTA (KCDE && ECID sites)

ASA Firewall Maintenance

To check ASA firewall health and backup the running configuration:

1. Connect to the ASDM application from the SCADA server.
2. Access the ASA firewall CLI and input the commands below.

| S/N | Command Input | Expected Result | Result Status |
|-----|------------------|-------------------------|---------------|
| 1 | show cpu usage | CPU Usage <80% | Pass |
| 2 | show environment | Overall hardware health | Pass |

3. Check the firewall overview to ensure everything is running properly.
4. Backup the configuration to the D drive of SCADA SVR1.

Remarks

ASA Firewall Maintenance for LTA site (KCDE and ECID sites)

Software Patch Summary

| S/N | Server Name | Previous Patch | Current Patch |
|-----|---------------------|----------------|---------------|
| 5 | CR-ECID-IF-SVR11113 | CC12345 | DD12345 |
| 6 | CR-ECID-IF-SVR11114 | AA13579 | BB13579 |

Remarks

Software Patch Summary for LTA Site (KCDE && ECID)