

## Safe Offline Patching

### IACS Tip

Per UR E26 §5.3.1, all OT changes require formal authorization. Ensure your Change Request (CR) is signed by the Master or CCSO before execution.

### Pro-Tip

Only apply "Zero-Day" emergency patches at sea. Wait for a "Safe State" in port for all routine updates to avoid operational interference.

### 1. Pre-Deployment Requirements

Before any patch is introduced to a shipboard OT environment, the following conditions must be met:

- OEM Certification: Verify the specific Knowledge Base (KB) number is approved by the vendor (e.g., Kongsberg, Wärtsilä).
- System State: Vessel must be in a "Safe State" (Port, Anchor).
- Recovery Point: A full sector-level backup (Golden Image) must be verified and available for immediate rollback.

### 2. The Safe Execution Syntax

On air-gapped systems, updates must be installed via the Windows Update Standalone Installer (WUSA). To prevent "Force-Reboot" loops that can crash HMI services, use the following syntax in an Administrative Command Prompt:

Standard Command:

```
wusa.exe C:\Updates\KBXXXXXXXX.msu /quiet /norestart
```

Parameter Breakdown:

/quiet: Runs the installer in the background without user interaction.

/norestart: CRITICAL. Prevents the system from rebooting automatically. This allows the ETO to manually restart the system only when operational conditions are safe.

### 3. Post-Patch Verification (The Auditor Proof)

To satisfy an IACS UR E26/E27 audit, you must prove the patch is active without relying on the GUI. Execute these commands and save the output:

Check for Specific Patch:

```
wmic qfe get hotfixid | find "KBXXXXXXXX"
```

Verify Registry State:

```
reg query  
"HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Component Based  
Servicing\Packages" /f "KBXXXXXXXX"
```



**Pro-Tip**

*A successful install isn't a successful system. Verify live data flow (e.g., AMS NMEA sentences) immediately after your manual reboot.*

#### 4. Emergency Rollback (Uninstallation)

If the system becomes unstable (memory leaks, driver conflicts), use the following command to remove the patch immediately:

```
wusa.exe /uninstall /kb:XXXXXXX /quiet /norestart
```

#### 5. Change Management & Logging

Every patch event must be logged in the TAG-OT Master Asset Tracker.

- Log the KB Number.
- Log the Personnel who performed the update.
- Log the Function Test result (e.g., "AMS communication verified via Modbus loopback").

Phase	Verification Task	Completed
Pre-Check	Backup/Golden Image verified and stored?	<input type="checkbox"/>
Pre-Check	OEM approval for KB number confirmed?	<input type="checkbox"/>
Execution	Command run with /quiet and /norestart?	<input type="checkbox"/>
Post-Check	System rebooted manually in safe conditions?	<input type="checkbox"/>
Audit Proof	wmic / Registry query results screenshotted?	<input type="checkbox"/>
Final	Master Asset Inventory updated with patch details?	<input type="checkbox"/>

**Liability Disclaimer:**

*This specification is for technical guidance. All OT modifications are at the risk of the operator. Test all patches in a staging environment prior to production deployment.*