# NAVIS SPARCS N4 & XPS

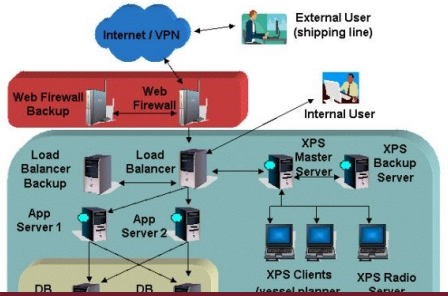
## 5-DAY TOS TRAINING

TRAINER SLIDE DECK

IT Administrator Programme
Lekki Freeport Terminal
Comprehensive 5-Day Learning Path

| 5 | 80+ | 122 | 50+ |
|---|---|---|---|
| Days | Slides/Day | Screenshots | Exercises |

## Basic Architecture




- Reliable 24x7 operations
- Redundancy and Fault Tolerance
- Distributed architecture keeps operation running

PREPARED BY

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PREPARED FOR

LEKKI FREEPORT TERMINAL

# Programme Overview & Daily Agenda

*5-Day Comprehensive TOS Training | Lekki Freeport Terminal*

## DAY 1
SPARCS N4 Basics

- Architecture & Data Flow
- Topology
- Data Model
- Navigation & Tabs
- Lists, Search & Filters
- Vessel Operations

## DAY 2
Basic Administration

- Reference Data
- Events & Services
- Holds & Permissions
- Business Rules
- Unit Admin
- Security & Flex Fields

## DAY 3
Mobile | Gate | XPS

- N4 Mobile RDT
- Yard Inspection
- Gate Configuration
- N4 Licensing
- XPS Administration

## DAY 4
Advanced Admin

- TOS Restart
- EDI Inbound/Outbound
- BAPLIE Reading
- Reporting
- Jasper Integration

## DAY 5
N4 Billing

- Billing Overview
- Tariffs & GL Codes
- Contracts
- Invoice Generation
- Payments & Credit Notes
- Sequencing

# DAY

# 1

## SPARCS N4 Basics

Architecture | Topology | Data Model | Navigation | Lists & Filters | Vessel Operations

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TODAY'S AGENDA

1. Product Overview – What is SPARCS N4?
2. N4/XPS Architecture (Basic Architecture Diagram)
3. SPARCS N4 Cluster Architecture
4. How Updates Flow: N4 → Cache → XPS (6 Steps)
5. N4 Topology: Operator → Complex → Facility → Yard
6. Unit Visit States (ADVISED / ACTIVE / DEPARTED)
7. UFV Transit States (Fine-Grain 1-7)
8. Category vs Routing – A Critical Distinction
9. Logging In to N4 – Step by Step
10. Three Modes of Operation
11. Operations Mode – Functions & Menu Areas
12. Configuration Mode – Functions
13. Administration Mode – Functions
14. Tab Management & Keyboard Shortcuts
15. The N4 Unit Inspector – All Tabs
16. N4 Help System & Community Portal
17. Using the Units List View

# DAY

# 1

## SPARCS N4 Basics

Architecture | Topology | Data Model | Navigation | Lists & Filters | Vessel Operations

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TODAY'S AGENDA CONT'D

18. Quick Search – Wildcard & Column Filtering
19. Filter Panel – Multi-Criteria Search
20. Filter Operators Reference
21. Parameterising Filters
22. Saving & Reusing Filters
23. My List Feature
24. Vessel Planning Workflow (6 Steps)
25. Creating a Vessel Service & Port Rotation
26. Creating a Vessel Class
27. Creating a Vessel
28. Vessel Record Fields Reference
29. Creating a Vessel Visit
30. Vessel Visit Phases
31. Manually Entering a Stowplan
32. Discharging Containers
33. Creating an Export Booking
34. Booking Fields Reference

# DAY

# 1

## SPARCS N4 Basics

Architecture | Topology | Data Model | Navigation | Lists & Filters | Vessel Operations

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TODAY'S AGENDA CONT'D

35. Creating a Bill of Lading
36. Day 1 Lab Exercises

Section 1.1

# Product Overview

What is NAVIS SPARCS N4?

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# 1.1 – What is NAVIS SPARCS N4?

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*Product identity, platform and technical overview*

| | |
|---|---|
| **Full Name** | NAVIS SPARCS N4 (formerly SPARCS – Synchronous Planning and Real-time Control System) |
| **Vendor** | Navis LLC (Cargotec) – now owned by Kaleris. Industry-leading TOS provider. |
| **Platform** | Java-based Rich Internet Application (RIA) – Java Swing technology |
| **Technology** | Pure Java – runs on any J2EE Application Server |
| **Client Access** | Only requires JRE on client workstation – NO heavy installation needed |
| **Network Traffic** | 10× LESS traffic than HTML applications – optimised for terminal networks |
| **OS Support** | Windows, Apple, Linux, Unix – any client OS with Java Runtime Environment |
| **Primary Users** | Yard Planners, Vessel/Rail Planners, Execution Managers, Gate Clerks, IT Administrators |
| **Core Capability** | Real-time graphical viewing and planning for ALL container movements at a terminal |



Key principle: N4 is the MASTER database. XPS reads from N4 via the Cache. Everything defined ONCE in N4 flows to XPS automatically.

# 1.1 – N4/XPS Architecture – Basic Architecture

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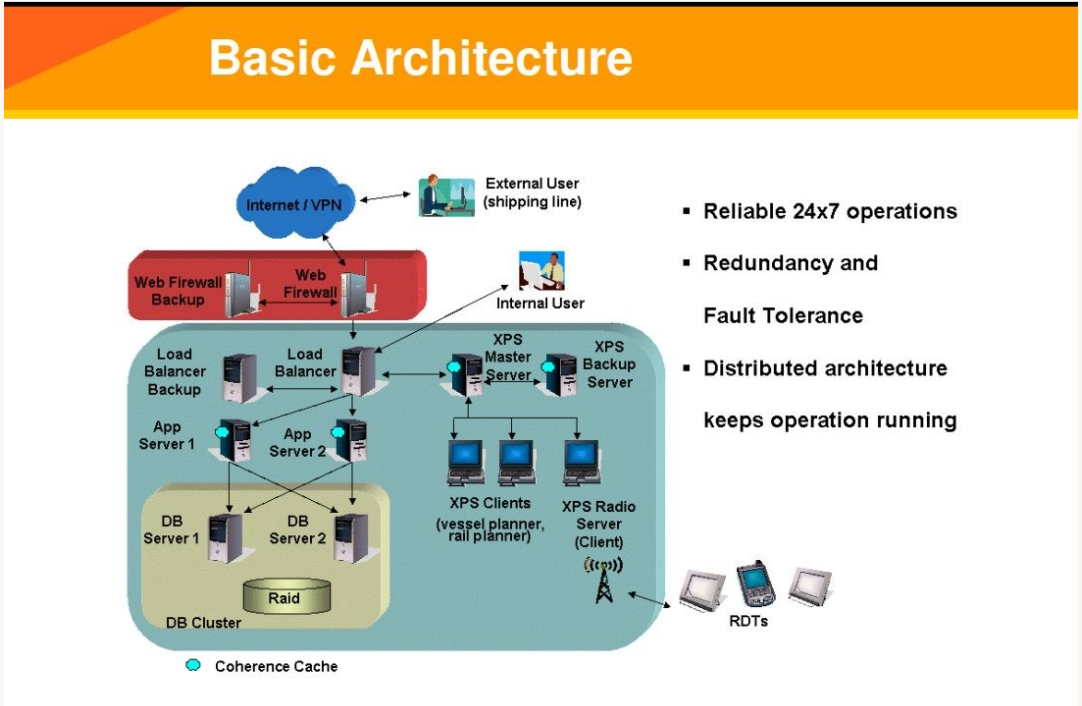
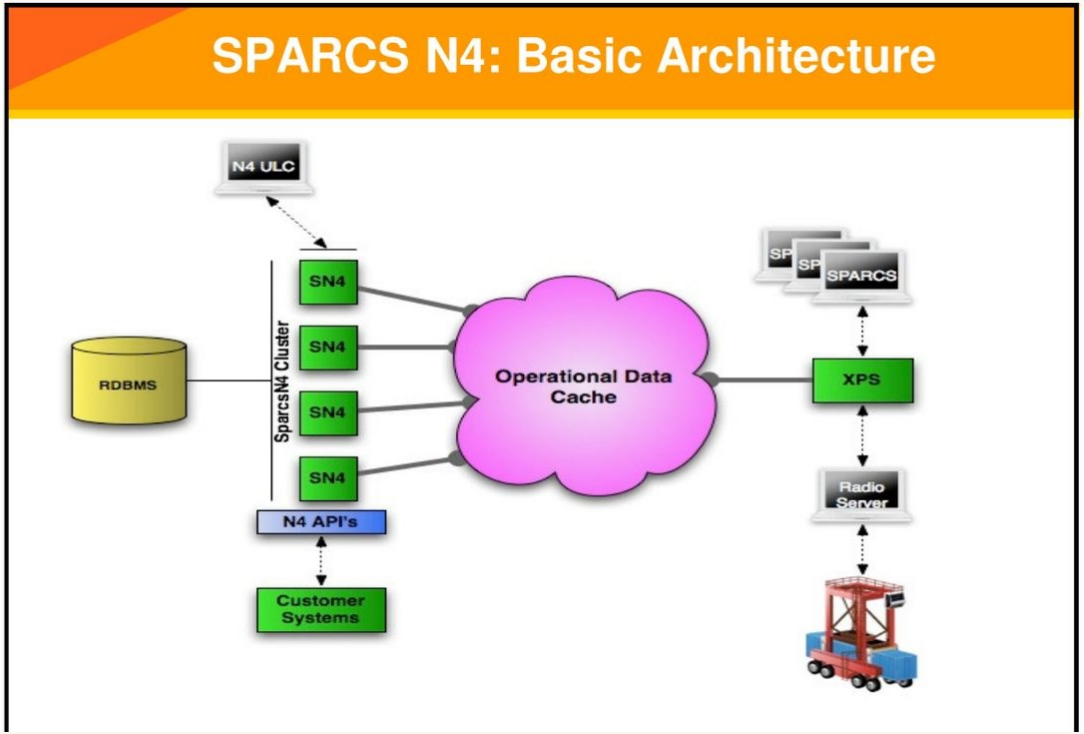
*From the Training Manual*




Reliable 24×7 operations | Redundancy and Fault Tolerance | Distributed architecture keeps operations running

# 1.1 – SPARCS N4 Cluster Architecture

*How N4 nodes connect to the cache and XPS*




*SPARCS N4 Basic Architecture: RDBMS → SparcsN4 Cluster (SN4 nodes) → Operational Data Cache → XPS, Radio Server, Customer Systems via N4 APIs, SPARCS clients*

# 1.1 – SPARCS N4 Architecture (Detail View)

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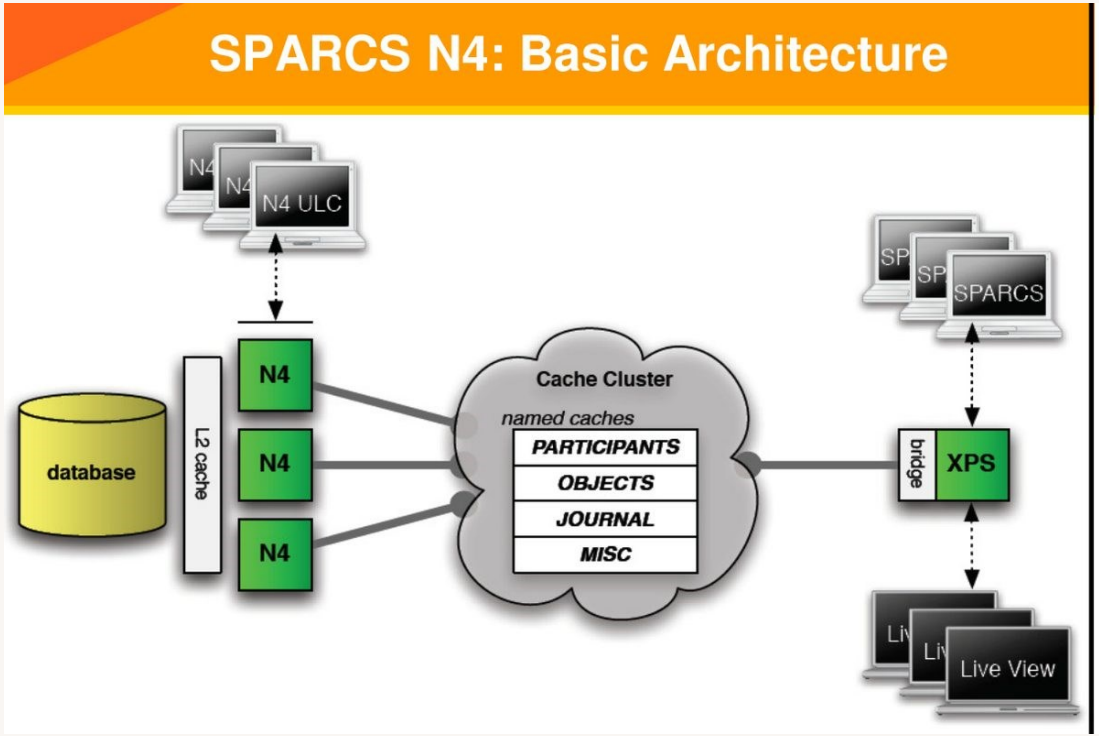
*Cache Cluster and XPS Bridge connection*




*Cache Cluster with named caches (PARTICIPANTS, OBJECTS, JOURNAL, MISC) → Bridge → XPS → Live View. N4 ULC, multiple N4 nodes, L2 cache, database.*

# 1.1 – N4 Architecture Components Reference

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*All system components and their roles*

| | |
|---|---|
| **N4 Application Nodes** | Multiple N4 service instances running on Cluster Servers |
| **Center Node** | Master controller of the Cache – communicates with XPS via the Bridge |
| **Standby Node** | Takes over if the Center Node goes down – minimises XPS downtime |
| **Cache (Cloud)** | Shared operational data layer between N4 nodes and XPS |
| **L2 Cache** | Named caches: PARTICIPANTS, OBJECTS, JOURNAL, MISC |
| **XPS** | Expert Planning System – reads from Cache for real-time yard/vessel planning |
| **N4 Mobile (RDT)** | Radio Data Terminal interface connecting field devices to N4 |
| **N4 Share** | High-availability file share – extremely important for stable operations |
| **N4 APIs** | Customer systems integration layer for custom extensions and third-party systems |

# 1.1 – How Updates Flow: N4 → Cache → XPS

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*The 6-step real-time update sequence*

## N4 Data Flow – From Update to XPS

Step 1: User makes an update in N4 (e.g., arrives a vessel, gates in a container)

Step 2: Update writes to the N4 Database (Oracle or PostgreSQL – the master record store)

Step 3: Database updates the L2 Cache (Coherence Cache Cluster)

Step 4: Cache is read by XPS in real time via the Bridge

Step 5: XPS updates graphical views for planners instantly

Step 6: N4 Mobile (RDT) also receives real-time updates from Cache

## Key Architecture Principle

N4 is the MASTER database of all information: containers, vessel visits, reference data

XPS is NOT a separate database – it reads from N4 via the Cache

In old SPARCS/Express the systems were SEPARATE – with N4 everything is defined ONCE

All changes flow automatically: N4 → Cache → XPS → N4 Mobile (no manual sync required)

📌 This is the most important concept to understand: ONE source of truth (N4), real-time everywhere else.

Section 1.2

# N4 Topology

Operator → Complex → Facility → Yard

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# 1.2 – N4 Topology Pyramid

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*From the Training Manual – Operator → Complex → Facility → Yard*


📌 When logging in, always select the correct Facility scope. All operational data is FACILITY-SCOPED.

# 1.2 – Topology Diagram (Detailed View)

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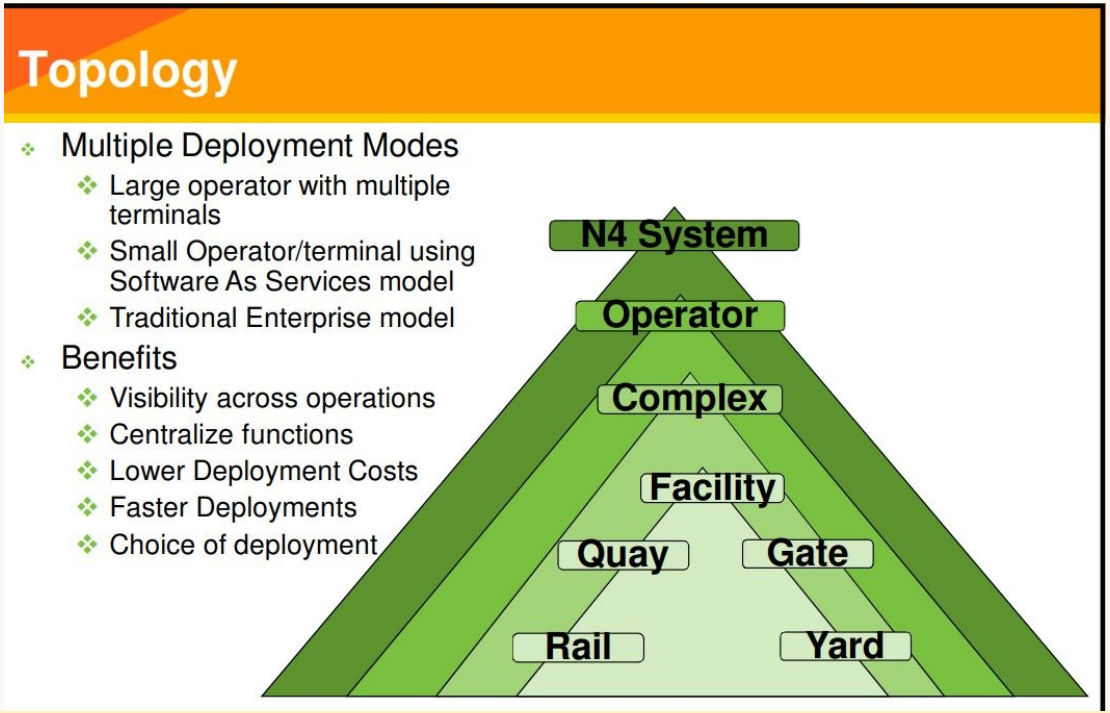
*All levels of the N4 topology hierarchy*




A unit (UFV) can only reside at ONE Facility within a Complex at any time.

# 1.2 – Topology Levels Reference

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*What each level represents and contains*

| | |
|---|---|
| **N4 System** | The top-level software platform. All reference data starts here. |
| **Operator** | An operator may have one or more Complexes. Complexes operate independently. |
| **Complex** | One or more highly integrated Facilities. A unit can only reside at ONE Facility within a Complex at a time. |
| **Facility** | Unique transport hub at a specific geographic location. Has a 1:1 relationship with a Yard. ALL operational data associated here. |
| **Yard** | Container positions (Block/Row/Tier). Cranes and yard operations work at Yard level. |
| **Quay** | Vessel berth area. Cranes, discharge/load operations are at Quay berths. |
| **Gate** | Truck entry/exit points. Gate transactions recorded at Gate level. |
| **Rail** | Rail car operations and rail ramp entry/exit. Rail schedules are Facility-scoped. |

📌 Tip: Always confirm you are working in the correct Facility before making changes – especially in a multi-facility environment like Lekki Freeport Terminal.

Section 1.3

# N4 Data Model

Unit States, Transit States & Routing

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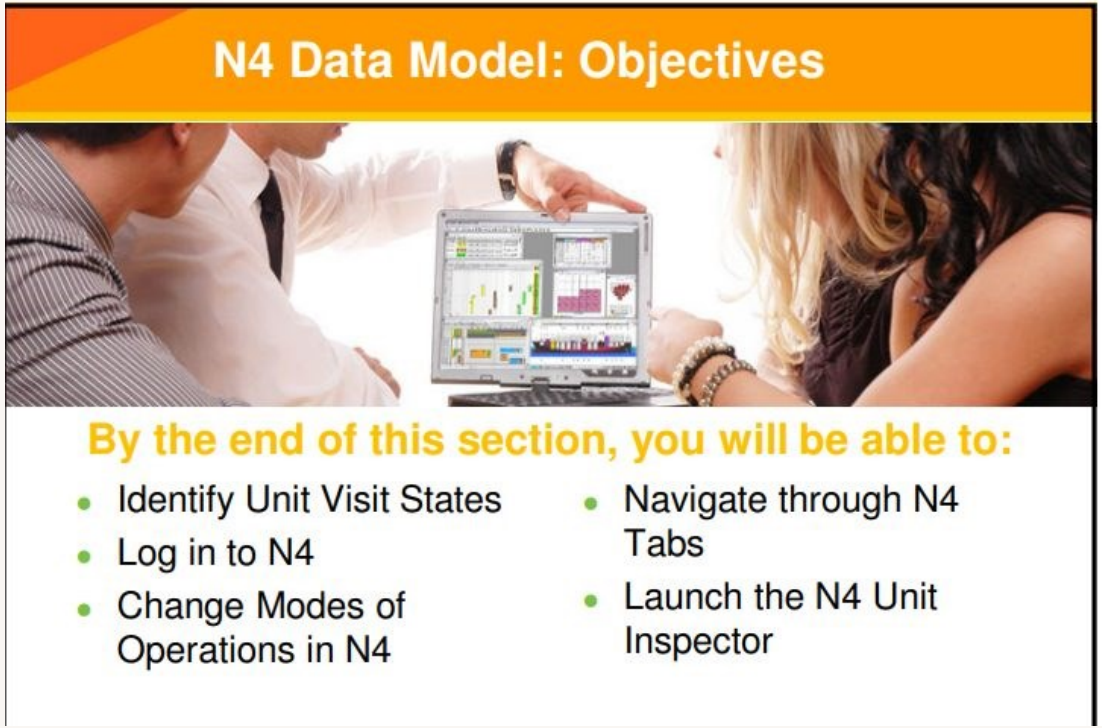
# 1.3 – Unit (UFV) Transit States Timeline

*From the Training Manual*




*UFV Transit State timeline: 1-Advised → 2-Inbound → 3-ECIn → 4-Yard → 5-ECOut → 6-Loaded → 7-Departed*

# 1.3 – Unit Visit States (Coarse-Grain)

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*Three top-level states for every container visit*

| | |
|---|---|
| **ADVISED** | Unit pre-advised (via EDI/booking) but has NOT yet arrived at the Facility. NOT visible in SPARCS XPS. |
| **ACTIVE** | Unit is currently at the Facility (in yard, on vessel, at gate). VISIBLE and manageable in SPARCS XPS. |
| **DEPARTED** | Unit has physically left the Facility (truck, vessel, rail). No longer in active yard inventory. |

📌 Visit States are the COARSE-GRAIN status. Within ACTIVE, the system tracks fine-grain Transit States (1-7).

# 1.3 – UFV Transit States (Fine-Grain)

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*7 transit states tracking precise location and movement*

| | |
|---|---|
| **1. ADVISED** | Incoming, but not certain to arrive at the Facility |
| **2. INBOUND** | Incoming and essentially certain to arrive (e.g., on an arrived vessel) |
| **3. EC-IN** | Received or discharged from carrier, but NOT yet placed in a Yard Position |
| **4. YARD** | Currently placed in a specific Yard Position (block/row/tier) – most common operational state |
| **5. EC-OUT** | In progress toward delivery or loading (work instruction created in XPS) |
| **6. LOADED** | Loaded onto the Outbound Carrier (vessel, truck, or rail) |
| **7. DEPARTED** | Has departed on the Outbound Carrier – visit state moves to DEPARTED |
| **RETIRED** | Special case – unit has come to end-of-life (e.g., empty stuffed into LCL cargo) |

# 1.3 – Category vs Routing – A Critical Distinction

*These are INDEPENDENT concepts – do not confuse them*

## CATEGORY – Legal Designation

IMPORT: Goods arriving from abroad for local delivery

EXPORT: Goods leaving the country on a vessel

TRANSSHIP: Transit cargo – arrives and departs by vessel

DOMESTIC: Coastal/inland movement within the country

STORAGE: Long-term storage at the terminal

THROUGH: Stay-on-Board or Restow containers

⚠ Category is INDEPENDENT of routing – a container's category does NOT change when its routing changes

## ROUTING – Carrier Journey

Declared Inbound: The carrier EXPECTED to bring the unit to the Complex

Actual Inbound: The carrier that ACTUALLY brought the unit to the Facility

Declared Outbound: The carrier that WILL remove the unit from the Complex

Load Port (POL): Where the unit was loaded onto the Declared Inbound carrier

Discharge Port (POD): Where the unit will be discharged from Outbound carrier

2nd Discharge Port: Where the unit goes AFTER the primary Discharge Port

💡 Routing defines the JOURNEY. Category defines the LEGAL STATUS.

📌 Example: A 20ft Import container with POD=NGAPP rolled to a different vessel still has Category=IMPORT – routing changed, category stayed the same.

Section 1.4

# Logging In & Modes of Operation

N4 Login, Scope Selection, Three Modes

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# 1.4 – Logging In to N4 – Login Screen & Scope Selector

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*From the Training Manual*

## Logging In

### Exercise

1. Use any Web Browser to access SPARCS N4
   - *http://10.234 :9080/apex/apex.jnlp*
   - Clicking on this link loads Java
   - Brings up the N4 login screen
   - User: userXY Password: userXY (XY is number assigned during class: 01,02,...12)
2. After selecting the site, N4 brings up the Rich Thin Client interface, ready to start working.

## Modes of Operation

- 3 Different Modes in N4
  - Operations
  - Configuration
  - Administration
- Allows us to limit users to specific tasks
- Keeps the selection menu tidy

📌 Training URL: http://[server]:9080/apex/apex.jnlp | Accounts: user01–user08 | Password: userXY | Facility: LFT | ⚠ TEST ENVIRONMENT ONLY

# 1.4 – Login Steps

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*Step-by-step login procedure for N4*

## Step-by-Step Login Procedure

Step 1: Open Google Chrome. Navigate to the N4 test environment URL provided by your trainer.

Step 2: Click the link to load the Java-based Rich Thin Client (N4 apex.jnlp). Java Web Start will launch.

Step 3: When the login screen appears, enter your Username (e.g., user01) and Password (userXY).

Step 4: After login, select your Operator, Complex and Facility scope from the dropdowns. Click OK.

Step 5: The N4 main window loads. You are now ready to begin working.

## Training Environment Details

URL: http://[server]:9280/apex/apex.jnlp (replace [server] with address provided by trainer)

Trainee Accounts: user01 through user08 (assigned by trainer on Day 1)

Default Password: userXY where XY is your user number (e.g., user01 = user01)

Facility to select: LFT (Lekki Freeport Terminal)

XPS Access: Via the XPS shortcut in the TOS Folder on your desktop

⚠ ⚠ ALWAYS use the TEST environment during training. NEVER perform exercises on the production system.

# 1.4 – Three Modes of Operation

*N4 top navigation bar showing mode selector tabs*

## Modes of Operation - Operations

- View/Update Containers (damages, hazards, seals, bundling)
- Gate Operations (receival/delivery)
- Yard Operations: Record Yard Moves, View Work Instructions
- Vessel Operations:
  - Define Specific Vessel Visits
  - Update or Enter Vessel Stow Plan
  - Record discharges and loads
- Rail Operations (if licensed)
  - Define Rail Schedule
  - Enter Inbound or Outbound Carriers
  - Record Rail discharges and loads
- Used to Define and Generate Reports

Switching modes changes the ENTIRE top menu bar. Access is controlled by user privileges.

# 1.4 – Three Modes – Detailed Functions

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*What each mode is used for*

### OPERATIONS Mode

Units – View, search, update and manage all container units
Vessels – Vessel visits, stowplan, discharge, load, bookings, BLs
Gate – Gate transactions, EDOs, EROs, appointments
Yard – Yard inventory, record yard moves, work instructions
Rail – Rail schedule, car management, discharges/loads
Reports – Define and run operational reports

### CONFIGURATION Mode

Equipment Types, Damage Codes, Prefixes, Ranges, Equivalents
Carriers – Vessel Classes, Vessels, Carrier Services, Port Rotations
Organizations – Line Operators (SCAC/BIC), Trucking Cos, Shippers
Services – Event Types, Auto-Update Rules, Holds/Permissions, Business Rules
Routing Points – UN Locations, Routing Points, Groups

### ADMINISTRATION Mode

EDI Configuration – Trading Partners, Mailboxes, Sessions, Posting Rules
Security – Roles, Privileges, Users, Business Groups, Delegated Security
Settings – 400+ N4 system settings per topology level
Fields (Flex Fields) – Custom field configuration and LOVs
Topology – Operator/Complex/Facility/Yard definitions

Section 1.5

# Navigation & the Unit Inspector

Tabs, Shortcuts, Inspector, Help System

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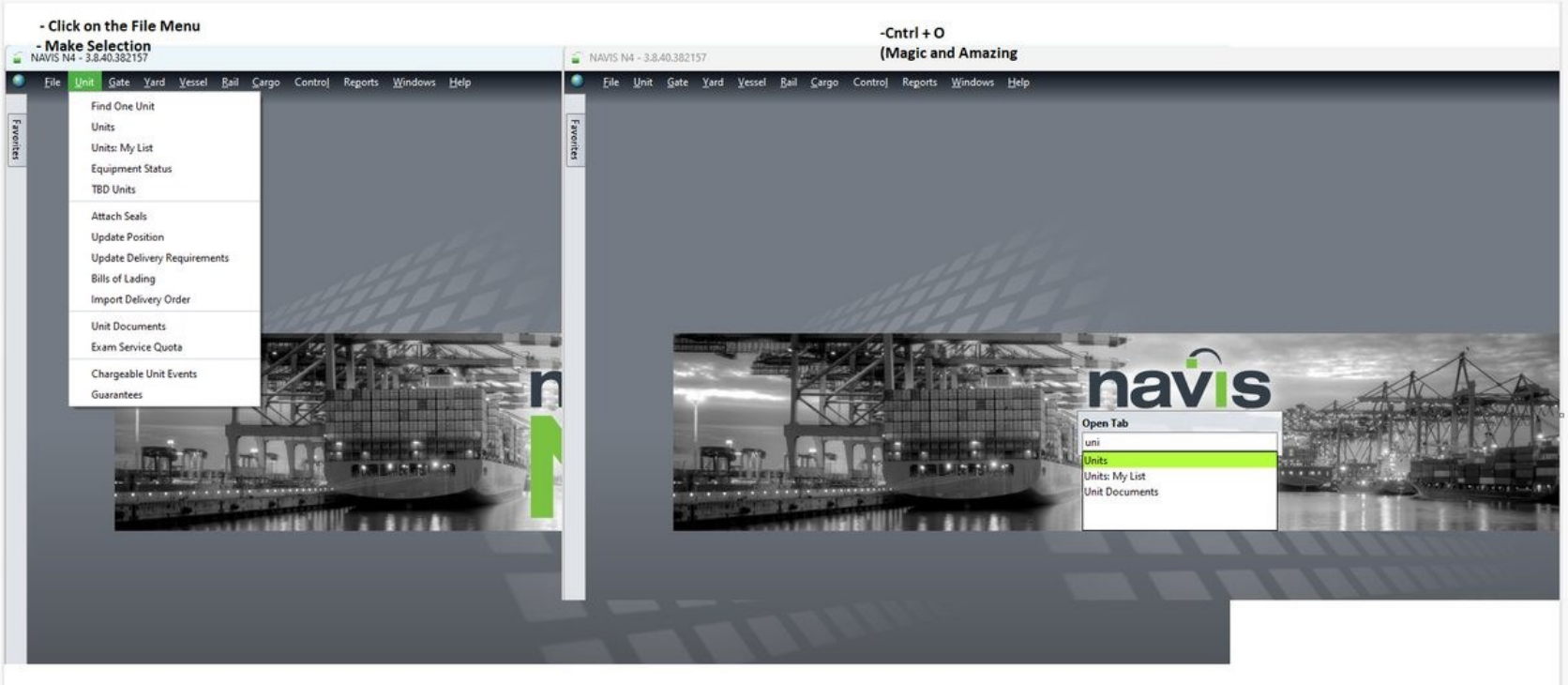
# 1.5 – Tab Management – N4 Multi-Window Interface

*Opening, closing and navigating N4 tab windows*




*N4 tab-based multi-window interface showing open tabs, tab headers and navigation options*

# 1.5 – Keyboard Shortcuts Reference

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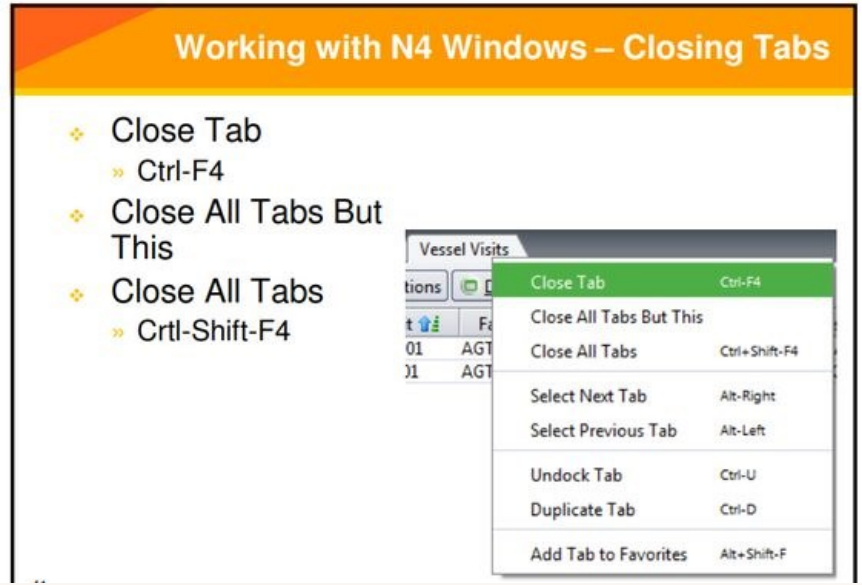
*All key shortcuts for efficient N4 navigation*

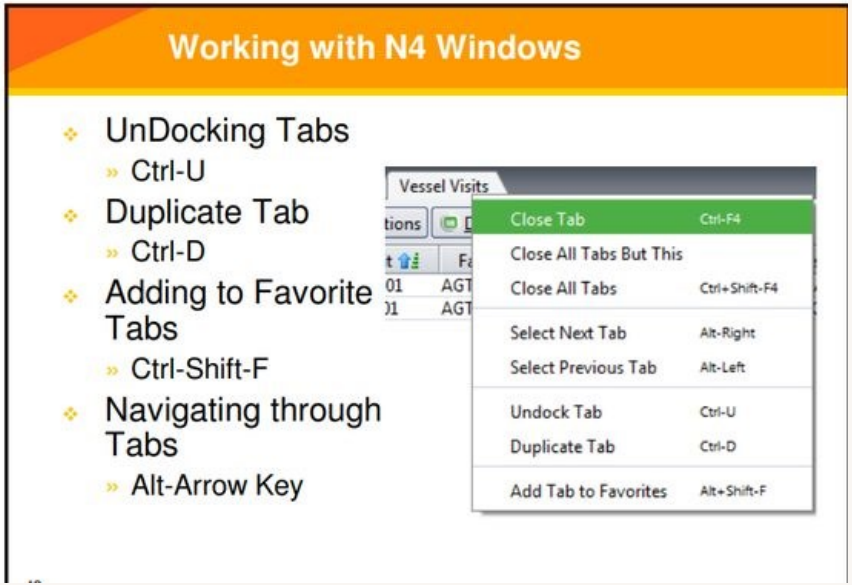
| | |
|---|---|
| **Ctrl + O** | Opens a quick search box to jump to ANY N4 screen instantly |
| **Ctrl + F4** | Close the current tab |
| **Ctrl + Shift + F4** | Close ALL open tabs at once |
| **Right-click tab header** | → Close All Tabs But This (context menu option) |
| **Alt + Left/Right Arrow** | Navigate between open tabs |
| **Ctrl + U** | UnDock (float) current tab as a separate window (cannot be re-docked) |
| **Ctrl + D** | Duplicate the current tab |
| **Ctrl + Shift + F** | Add current tab to Favourites |
| **Max tabs open** | 15 tabs maximum (can be reduced but not increased via N4 Settings) |

📌 ⚠ Tabs can be UnDocked (floated) but CANNOT be ReDocked. Forms with parent/child segments require saving the parent before updating children.

# 1.5 – Tab Management (Continued)

*Additional tab navigation details from the manual*



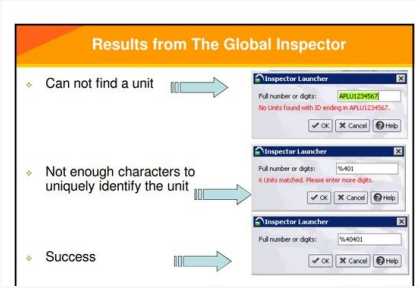

*N4 tab management interface showing multiple tabs, navigation controls and tab management options*

# 1.5 – The N4 Unit Inspector

*The most commonly used tool for investigation and action*

## The Inspector and Searches

- Inspector
  - Provides a quick view of many details about the entity
  - Can perform certain actions from the inspector
  - Used for a variety of entities (containers, visits, etc.)
- Show Inspector
  - Click on Magnifying glass in upper right 
  - Opens Inspector Launcher
  - Works for finding units (containers) only
  - Enter ending digits of container (at least 4 digits), or full container number. Hit OK.





Open methods: (1) Double-click unit row | (2) Right-click → Inspect Unit | (3) Global Inspector (top-right magnifying glass)

# 1.5 – Unit Inspector Tabs Reference

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*Complete guide to all Unit Inspector tabs and what they contain*

| | |
|---|---|
| **Details Tab** | Status (visit state, transit state), routing, position, category, line, weight, booking reference |
| **All Equipment Tab** | Physical equipment details, damage records, hazard placard information |
| **Container Basics Tab** | ISO type, nominal dimensions, equipment features, equipment grade |
| **Ownership Tab** | Freight kind (FCL/LCL), shipper, consignee, Bill of Lading number |
| **Position Frame** | Current yard position, planned position, yard slot details (Block/Row/Tier) |
| **Actions Menu** | All available update actions for the unit: Update, Transactions, Administration |
| **Event History** | Full chronological audit trail of ALL events recorded against the unit visit |
| **Holds/Perms Tab** | Active holds and ungranted permissions with source events and veto events |

# 1.5 – N4 Help System & Navis Community Portal

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*Support resources available to N4 administrators*

## N4 Built-In Help System

Access via the '?' icon on any N4 screen – help is CONTEXT-SENSITIVE to the current screen

The help panel is user-privilege controlled – content shown is relevant to the current user's screen

Help includes: Vessel Inspector Guide, Process Maps, Model Docs, Java API Docs

Help content changes as you click different hyperlinks – fully integrated with the application

Each N4 screen has its own dedicated help page – always accessible with one click

## Navis Community Portal (Online Resource)

URL: community.navis.com – access requires a Navis/Kaleris account (provided by trainer)

Knowledge base articles for all N4 versions and modules

Release notes and new feature documentation for each N4 release

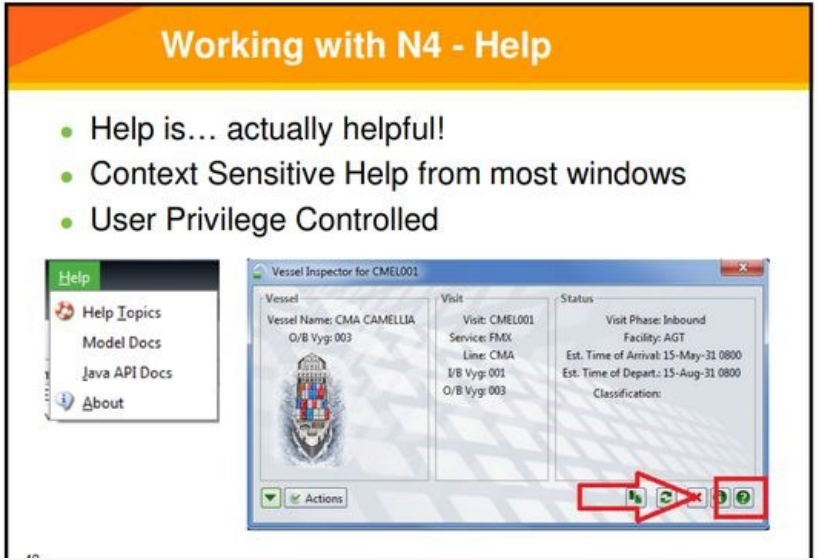
Submit and track support tickets for technical issues

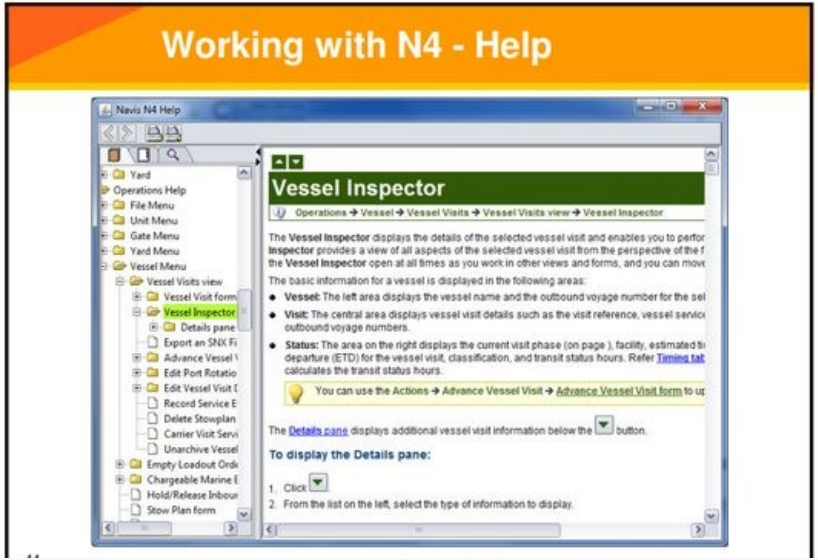
Community forums – peer support from TOS administrators worldwide

📌 Bookmark the Navis Community Portal – it is the #1 resource for post-training troubleshooting and self-service support.

# 1.5 – N4 Help System (Screenshot)

*Context-sensitive help panel in action*




*N4 Help system screenshot showing the help panel with content relevant to the current screen, hyperlinks and navigation*

Section 1.6

# Lists, Quick Search & Filters

Finding Containers Efficiently in N4

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# 1.6 – Using the Units List View

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*Navigate to Operations → Unit → Units*

## Units List View – Primary Workspace

Navigate to: Operations → Unit → Units – primary workspace for finding and working with containers

SORT: Left-click any column header to sort ascending. Click again for descending.

SECONDARY SORT: Right-click a column header → Sort ASC or Sort DESC (adds second sort level)

REORDER COLUMNS: Click and drag column headers to reorder the view

ADD/REMOVE COLUMNS: Right-click any column header to add new attributes or remove existing ones

TOTAL COUNT: Number of rows in current filtered view is shown in the tab header (e.g., Units [1,247])

ROW SELECT: Click to select one | Shift+click for range | Ctrl+click for multi-select

## Quick Search Field

Quick Search is at the TOP of every N4 list view – provides fast global text search

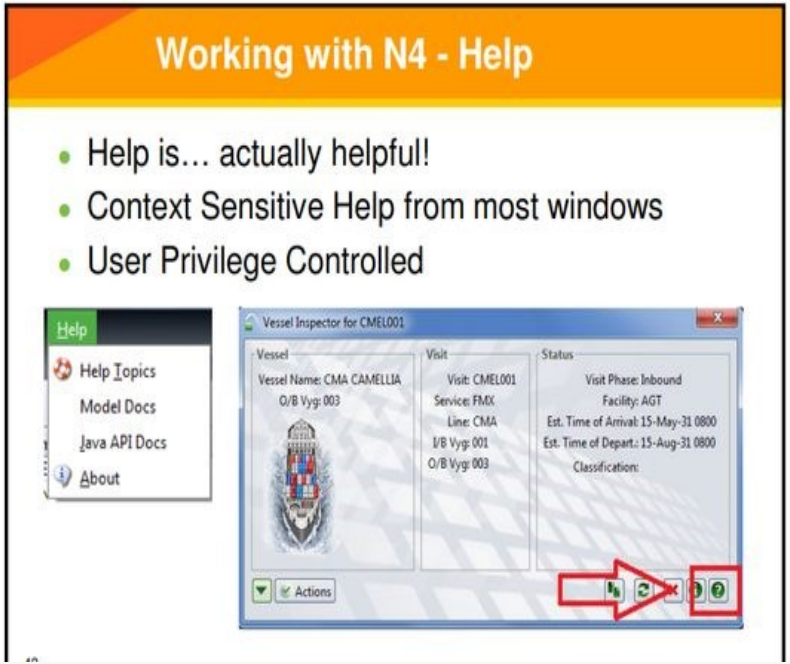
⚠ IMPORTANT: Only searches attributes that are VISIBLE as columns in the current list

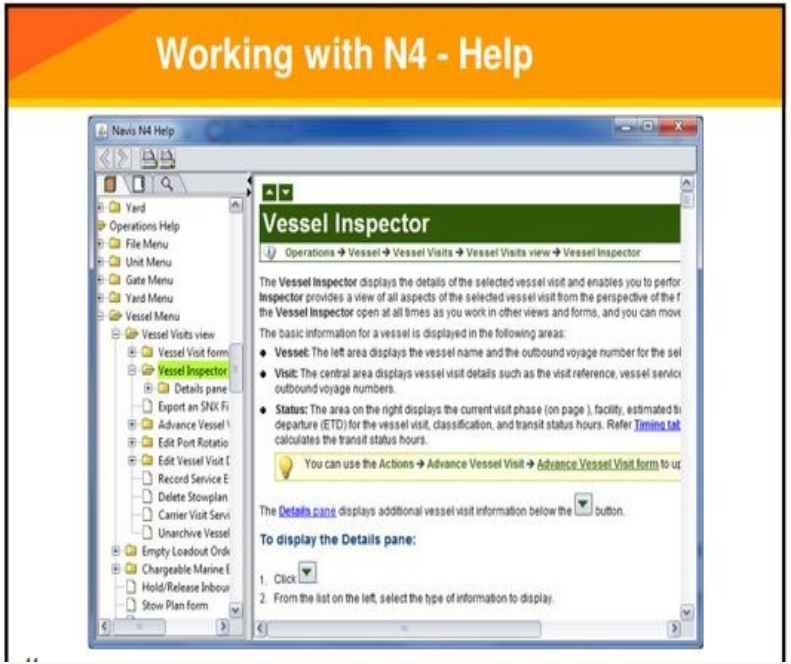
Use % as a wildcard character (e.g., MSKU% finds ALL containers starting with MSKU)

📌 If Quick Search returns no results: check that the attribute you are searching IS visible as a column in the list view.

# 1.6 – Quick Search & Filter Panel Screenshots

*Both search tools from the training manual*

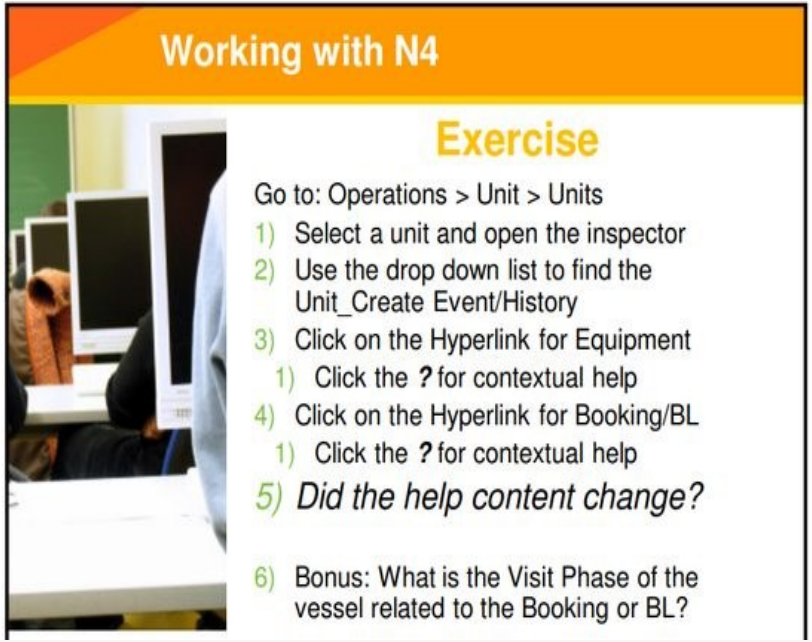


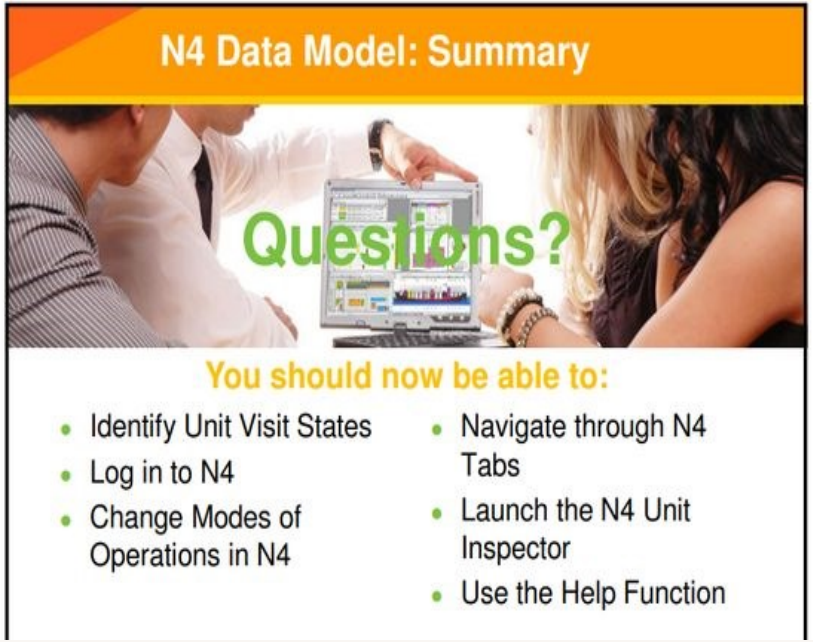




📌 Quick Search = fast wildcard search | Filter Panel = complex multi-criteria saved search (funnel icon)

# 1.6 – Quick Search & Filter Panel Screenshots

*Both search tools from the training manual*




📌 Quick Search = fast wildcard search | Filter Panel = complex multi-criteria saved search (funnel icon)

# 1.6 – Filter Panel – Advanced Multi-Criteria Search

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*Opening and using the Filter panel*

## Steps to Use the Filter Panel

Step 1: Click the Filter icon (funnel ▼) at the top of the list view to open the Filter Criteria panel

Step 2: Click 'Add Criterion' and select the attribute (field) you want to filter on from the dropdown

Step 3: Select the Filter Operator – operators are CONTEXTUAL based on the field data type

Step 4: Enter the filter value. For multiple criteria, click 'Add Criterion' again.

Step 5: Combine criteria using AND / OR groupings for complex searches

Step 6: Click 'Apply Filter' to execute the search and see filtered results in the list

## Filter Operators by Field Type

TEXT fields: Is (=), Matches (== allows %), Contains, Starts With, Is undefined (null), Is defined (not null)

NUMBER fields: Is (=), Is less than (<), Is greater than (>), Is >= , Is <=

DATE/TIME fields: Is before (<), Is after (>)

BOOLEAN (Yes/No) fields: Is (=), Is not (!=)

# 1.6 – Parameterising & Saving Filters

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*Making filters reusable across users and sessions*

## Parameterising a Filter (Making It Variable)

Open the Filter Criteria panel and select the attribute you want to parameterise

Click 'Parameterize' on that criterion row – this makes it a variable input at runtime

Enter a Parameter Name (e.g., 'Line Operator' or 'Category') to label the prompt

If the value is not required (filter still runs without it), leave Value Required unchecked

Save the filter. When applied in future, N4 will PROMPT the user for the parameter value

💡 One filter serves multiple searches – e.g., 'Yard By Category' prompts each time it runs

## Saving & Sharing Filters

From the Filter panel, click 'Save Table View as Filter...'

Give the filter a descriptive Name and Description so other users understand it

If NO Role assigned: filter is PRIVATE to that user only

If a ROLE is assigned: ALL users in that role can see and use the filter

To reuse: click the Filter dropdown (left of Quick Search) and select your saved filter

📌 Best practice: always assign a Role to shared filters so the whole team benefits. Name filters clearly (e.g., 'Imports In Yard – 20ft').

# 1.6 – My List Feature

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*Bookmarking specific containers for focused monitoring*

| | |
|---|---|
| **Purpose** | Bookmark up to 950 specific units for focused monitoring. Units stay until manually removed. |
| **Add via Inspector** | Click the '+' button in the Unit Inspector to add that unit to My List |
| **Add via List View** | Select units in the Units list, then Display → Add Selected to 'My List' |
| **Add via Free Text** | Operations → Unit → My List → Display → Add (paste container numbers directly) |
| **Remove** | Display → Remove Selected (removes highlighted units from My List) |
| **Subset View** | Display → List Selected – creates a temporary subset view of selected rows |
| **Scope – Personal** | My List is User-ID specific by default (private to the logged-in user) |
| **Scope – Shared** | Can be shared with a Company/Business Group for team monitoring |

📌 My List is the fastest way to monitor a specific set of containers (e.g., containers with holds, priority vessel cargo, customer disputes).

# 1.6 – My List Feature (Screenshot)

*My List in action – bookmarked containers*


*My List showing bookmarked containers with total count, Display menu with Add/Remove/List Selected options visible*

Section 1.7

# N4 Vessel Operations

Creating Vessels, Visits, Stowplans, Bookings & BLs

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DAY 1

# 1.7 – Vessel Planning Workflow – 6 Steps

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*From Service creation to final bay plan export*

1

**Vessel Service & Port Rotation**

Configuration → Carriers → Carrier Services. Define port rotation (NGAPP + ports). Max 3-char Service ID.

2

**Vessel Class**

Configuration → Carriers → Vessel Classes. Class ID MUST match XPS ship file name exactly.

3

**Vessel Record**

Configuration → Carriers → Vessels. Enter Identity, Class, Line Operator, Radio Call Sign, Lloyds Number.

4

**Vessel Visit**

Operations → Vessel → Vessel Visits. Create visit, advance to INBOUND to appear in XPS.

5

**Bay Plan (BAPLIE/Manual)**

Import via EDI BAPLIE or manually enter via Operations → Vessel → Vessel Stow Plan.

6

**Export Final Bay Plan**

Export outbound BAPLIE, run vessel reports, close the visit.

# 1.7 – Creating a Vessel Service & Vessel Class

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*Configuration → Carriers*

## Creating a Vessel Service

Navigate to: Configuration → Carriers → Carrier Services

Click (+) Add. Enter Service ID (max 3 characters, e.g., JXY where XY = your user number)

Fill ALL mandatory fields (highlighted in GREEN in N4)

Add port rotation: click 'Add Port' and add NGAPP plus several additional ports

Save the service

⚠ The Service ID and Port Rotation are READ-ONLY in XPS. All changes must be made in N4.

⚠ NEVER delete a service with active vessel visits.

## Creating a Vessel Class

Navigate to: Configuration → Carriers → Vessel Classes

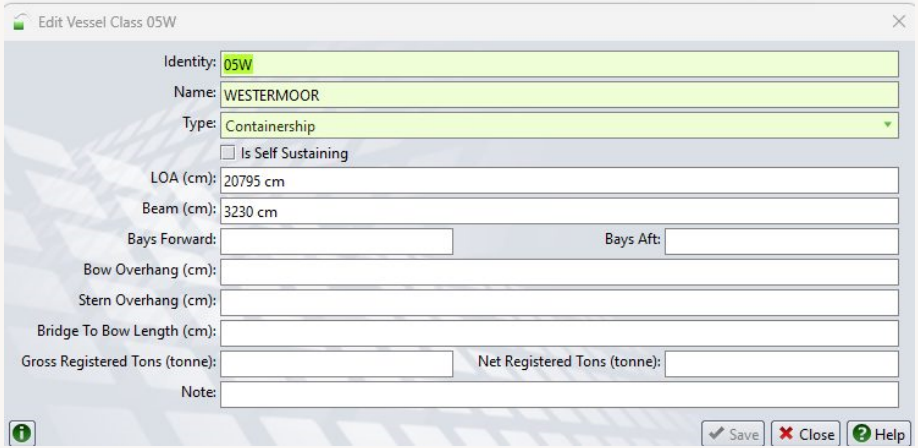
Add a new Vessel Class. Make the Class ID match your Service ID (e.g., JXY)

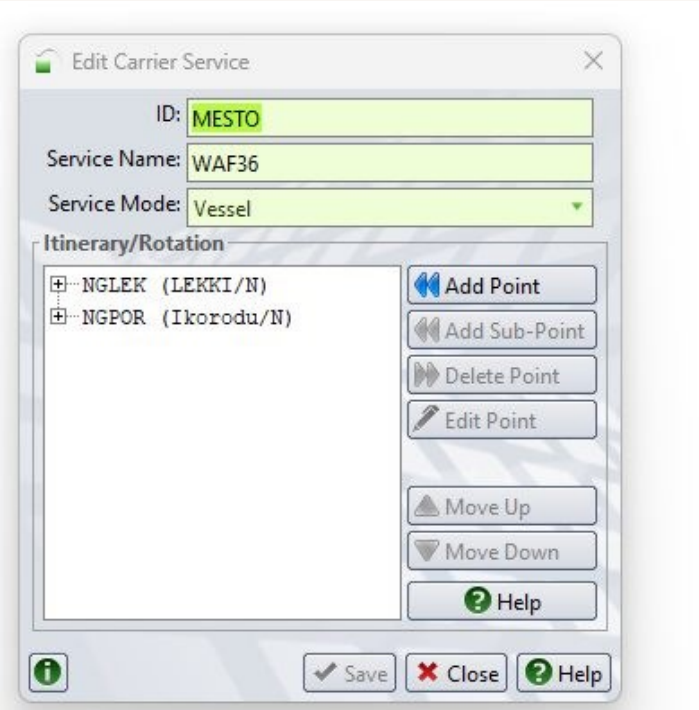
The Vessel Class ID links N4 to the physical XPS ship file (.NSD format)

📌 The Class ID → Ship File connection is critical. If the names don't match EXACTLY, the bay plan will be empty in XPS.

# 1.7 – Vessel Creation Form & Vessel Class Screenshot

*From the Training Manual*




Radio Call Sign is used in the TDT segment of BAPLIE EDI files. Lloyds Number is the Lloyd's Register ID.

# 1.7 – Vessel Record Fields Reference

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*All key fields when creating a Vessel in N4*

| | |
|---|---|
| **Vessel Identity** | Unique ID for the vessel in N4. Used for EDI (Lloyds Number, Radio Call Sign) |
| **Vessel Class** | Links to the XPS ship file (.NSD). Must match EXACTLY – case-sensitive. |
| **Vessel Name** | The official name of the vessel (can differ from the Vessel Identity) |
| **Line Operator** | The primary shipping line operating this vessel (e.g., MAE = Maersk) |
| **Radio Call Sign** | The vessel's international radio call sign (used in TDT segment of BAPLIE EDI) |
| **Lloyds Number** | Lloyd's Register identification number (used in EDI for vessel identification) |
| **Stowage Scheme** | Controls container stacking rules – usually set to 'Standard ISO' |

# 1.7 – Creating a Vessel Visit

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*Operations → Vessel → Vessel Visits*

## Vessel Visit Creation Steps

Navigate to: Operations → Vessel → Vessel Visits

Click (+) Add. Enter a unique Visit Reference code (e.g., USERXY where XY = your user number)

Select the Vessel you just created. Enter inbound and outbound voyage numbers (e.g., 001)

Leave Call Number = 1. Select the Service and Line Operator (MAE). Set Facility = LFT.

Save your new vessel visit

IMPORTANT: Advance the Visit Phase via Actions → Advance Vessel Visit → set to INBOUND

The vessel only appears in XPS ONCE it is set to INBOUND phase

## Associating Lines with the Vessel Visit

Lines must be associated with the vessel visit via: Vessel Inspector → Details → Lines Tab

⚠ Bookings for lines NOT associated with the vessel visit will be REJECTED at the gate

Association is required before any gate transactions can be processed against this visit

📌 After advancing to INBOUND, go to Actions → Arrive Vessel to record the physical arrival of the vessel at berth.

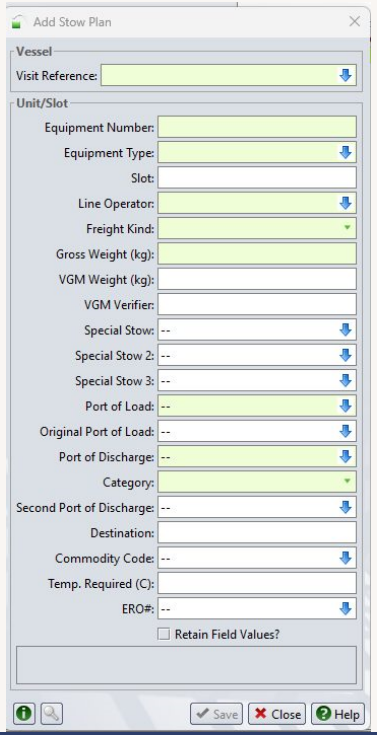
# 1.7 – Vessel Visit Phases Reference

*Phase transitions and what each enables in N4/XPS*

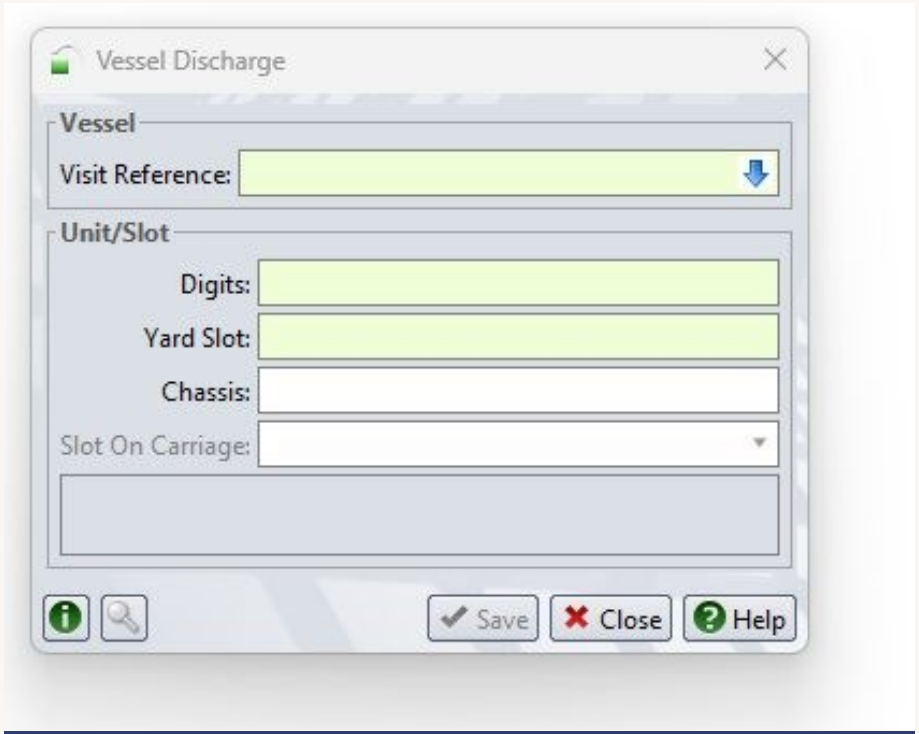
| | |
|---|---|
| **INBOUND** | Vessel appears in XPS for planning. Discharge planning can begin. Containers visible for pre-planning. |
| **WORKING** | Needed to properly dispatch containers and record actual moves via XPS/CTUI. |
| **DEPARTED** | Required to depart outbound Export containers from the facility via gate transactions. |
| **CLOSED** | Vessel and remaining containers removed from XPS view. Used for billing finalisation. |
| **Arrive (action)** | Confirms physical arrival of vessel at berth. Changes transit state of onboard containers to INBOUND. |
| **Line Association** | Vessel Inspector → Details → Lines Tab. Required before gate bookings will be accepted. |

# 1.7 – Stowplan, Discharge & Booking Screenshots

*From the Training Manual*




*Vessel Stow Plan entry – manually adding containers to bay positions (050182, 050184, 050186) with Equipment Type 22G1, Line MAE*




*Discharge screen – selecting containers from stowplan and entering yard slot positions*

# 1.7 – Manually Entering a Stowplan

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*Operations → Vessel → Vessel Stow Plan*

## Steps to Add Containers to the Stow Plan

Navigate to: Operations → Vessel → Vessel Stow Plan

Add a new container to the stow plan. Enter a bay position (e.g., 050182, 050184, 050186)

Bay position format: BBBRRTT → Bay=050, Row=01, Tier=82 (7 digits total)

Enter your vessel visit reference. Create a new Equipment number (container ID).

Set Equipment Type = 22G1 (20ft GP dry). Set Line Operator = MAE. Set Freight Kind = FCL.

Enter a gross weight (e.g., 14000) and set POD = NGAPP.

Save. View the newly created container in Operations → Unit → Units. Repeat for 3 containers.

## Discharging Containers

Confirm the Vessel Visit is in WORKING or INBOUND phase before discharging

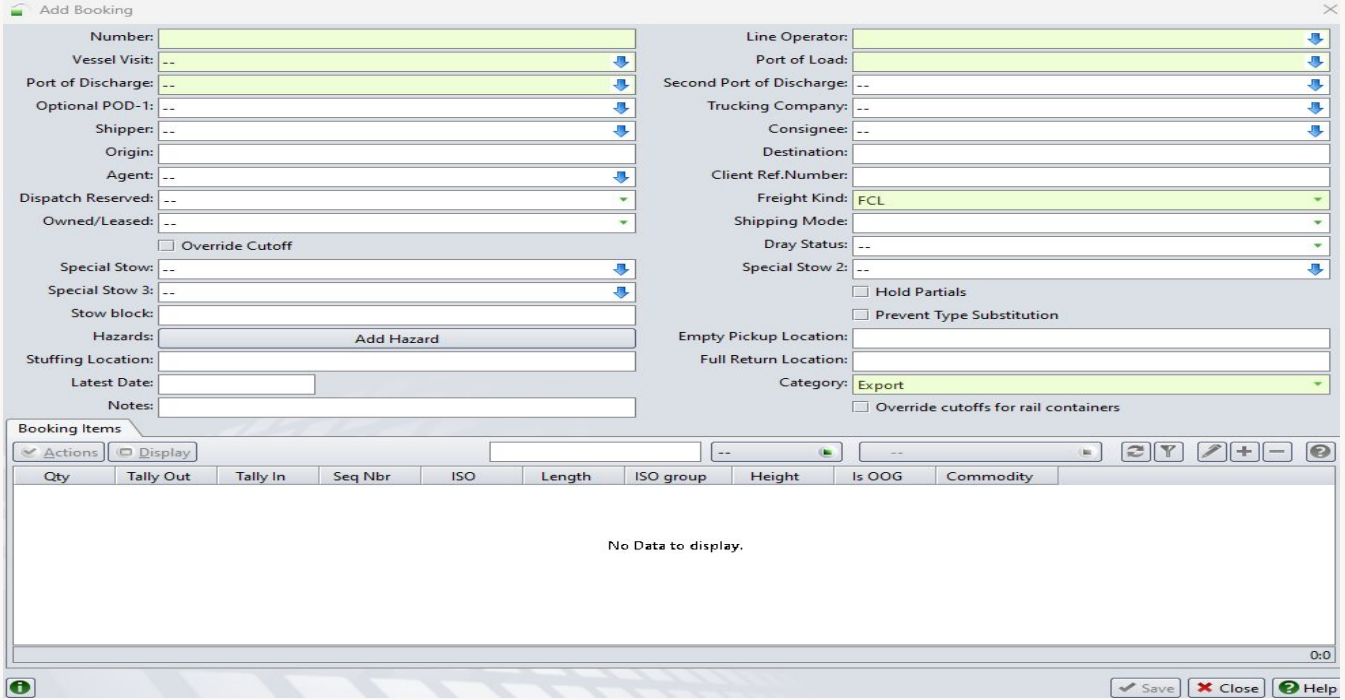
Navigate to: Operations → Vessel → Discharge

Select the containers from your vessel and discharge them

📌 After discharge the unit moves to EC-IN state (not yet YARD). It reaches YARD state when a yard slot position is confirmed.

# 1.7 – Booking Creation Screenshots

*Creating Export Bookings from the manual*




PRESS SAVE first before adding Booking Items. Note the Booking Number for gate exercises on Day 3.

# 1.7 – Booking Creation Screenshots

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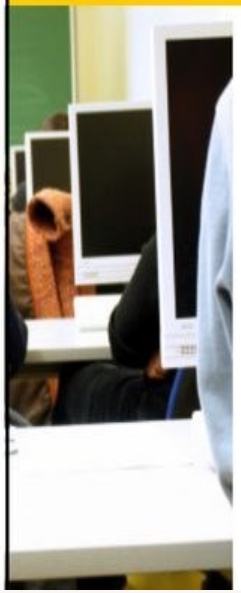
## All About Bookings

- Booking Tallies
  - Tally Out is Max # of MTs that can go out at one time against booking.
  - Tally In is the number of containers already in yard against the booking.
- Can be created by EDI.
- Can update old bookings.
- Can reserve equipment against a booking
- Bookings for domestic cargo
- Booking optional sites can enter the booking number at the gate, and N4 will create the booking.
- Can define substitutions (can high cube be substituted with standard height container?) via CONFIGURATION>Equipment Type Equivalents
- Can see a list of preadvised containers against a booking.

## Creating a Booking



### Exercise

Operations Mode, go to Vessel → Bookings

1. Add (+) a new Booking
   1. Line Operator: MAE
   2. Use vessel visit you created earlier
   3. POD = a POD from the carrier service for your vessel
   4. POL = NGAPP
   5. Freight Kind = FCL *PRESS SAVE*
2. Add Booking Items in booking just created.
   1. Quantity 20
   2. ISO Group 22G1 = General Purpose container without vent
   3. Length = 20' Height = 8'6"
   4. SAVE and refresh to see your booking is now created
   5. **Remember your booking number for gate exercises.**

PRESS SAVE first before adding Booking Items. Note the Booking Number for gate exercises on Day 3.

# 1.7 – Booking & Bill of Lading Reference

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*Key fields and concepts for bookings and BLs*

| | |
|---|---|
| **Navigate to Bookings** | Operations → Vessel → Bookings (or Operations → Vessel Mode) |
| **Line Operator** | Set to MAE. Select your Vessel Visit. Set POD from port rotation. POL = NGAPP. FK = FCL. |
| **SAVE First** | ALWAYS press SAVE on the booking header BEFORE adding Booking Items |
| **Booking Items** | Quantity=20, ISO Group=22G1, Length=20', Height=8'6". Note your Booking Number. |
| **Booking Tally Out** | Maximum number of MTs (empties) that can go out at one time against this booking |
| **Booking Tally In** | Count of containers already in the yard against this booking |
| **EDI Creation** | Bookings can be created via EDI (COPARN message from carrier) or manually |
| **Navigate to BLs** | Operations → Unit → Bills of Lading → (+) to create new BL |
| **BL Setup** | Set Vessel Visit, POD=NGAPP, POL=another port in rotation, Line=MAE. Save then add a container. |

# 1.7 – Bill of Lading Screenshots

*BL creation from the training manual*

## Bills of Lading

- Create New BLs: OPERATIONS>Unit>Bills of Lading
  - » Use Plus (+) to create new BL's.
  - » Can Include General Cargo or Units
- BLs can also be created by EDI.
- Can update old BL's.
- Can see a list of containers against a BL.

## Creating a Bill of Lading

### Exercise

1. Create a Bill of Lading
   a) Vessel Visit: Vessel Visit created previously
   b) POD: NGAPP; POL: another port in rotation
   c) Line: MAE
2. Add Container to BL just created, use one of the import containers you created previously.

📌 Save the BL header FIRST, then add a container to the BL – use one of the import containers created earlier.

# 1.7 – Bill of Lading Screenshots

*BL creation from the training manual*

## Bills of Lading

- Create New BLs: OPERATIONS>Unit>Bills of Lading
  - Use Plus (+) to create new BL's.
  - Can Include General Cargo or Units
- BLs can also be created by EDI.
- Can update old BL's.
- Can see a list of containers against a BL.

## Creating a Bill of Lading

### Exercise

1. Create a Bill of Lading
   a) Vessel Visit: Vessel Visit created previously
   b) POD: NGAPP; POL: another port in rotation
   c) Line: MAE
2. Add Container to BL just created, use one of the import containers you created previously.

## Other Equipment Order Types

- Vessel Operations
  - OPERATIONS>Vessel>**Export Bookings**
  - Used for export containers going out on a vessel
  - OPERATIONS>Vessel>**Empty Load Out Order (ELO)**
  - Used to move empty containers out on a vessel
- Other Orders
  - OPERATIONS>Rail>**Rail Orders**
  - OPERATIONS>Gate>**Equipment Delivery Orders(EDO)**
  - OPERATIONS>Gate>**Equipment Receive Orders (ERO)**
  - OPERATIONS>Unit>**Bills of Lading**
  - OPERATIONS>Unit>**Import Delivery Order (IDO)**
  - OPERATIONS>Unit>**TBD Units** (to be determined)

📌 Save the BL header FIRST, then add a container to the BL – use one of the import containers created earlier.

# HANDS-ON EXERCISE



1. Log in to N4 with your assigned training account (user01–user08). Select the correct Facility (LFT) when prompted.
2. Switch between OPERATIONS, CONFIGURATION and ADMINISTRATION modes. Identify 3 menu items in each mode and note their purpose.
3. Navigate to Operations → Unit → Units. Record the total unit count shown in the tab header.
4. Sort the Units list by Type ISO (ascending). What is the first equipment type? Sort descending.
5. Remove the 'Last Move' column from the Units list. Add the 'Is OOG' column. Are there any OOG containers?
6. Use Quick Search to find all containers with Line Operator MAE. Record the count. Then use MSKU% wildcard.
7. Open the Filter panel. Create: Transit State = YARD AND Category = IMPORT AND Nominal Length = 20. Record the count.
8. Parameterise the Category attribute in your filter. Save the filter as 'UserXY_YardByCategory'. Run it selecting EXPORT.
9. Select 5 containers from the Units list and add them to your My List. Confirm they appear in Operations → Unit → My List.
10. Open the Unit Inspector for one listed container. Identify Visit State, Transit State, Category and current yard position.
11. Create Vessel Service JXY (NGAPP + 3 ports). Create Vessel Class JXY. Create Vessel JXY (Class JXY, Line MAE, Radio Call Sign XYCall).
12. Create Vessel Visit USERXY. Advance to INBOUND. Associate Line MAE. Arrive the vessel.
13. Manually add 3 containers to your stowplan at positions 050182, 050184, 050186 with Equipment Type 22G1.
14. Discharge the 3 containers to yard slot 3H01-09 A.1. Use Unit Inspector → Event History to confirm UNIT_DISCH is recorded.
15. Create Export Booking for 20×22G1 on your vessel visit. Create a Bill of Lading and associate one import container.

DAY

# 2

**SPARCS N4 Basic Administration**

Reference Data | Services & Events | Holds/Permissions | Business Rules | Unit Admin | Security | Flex Fields

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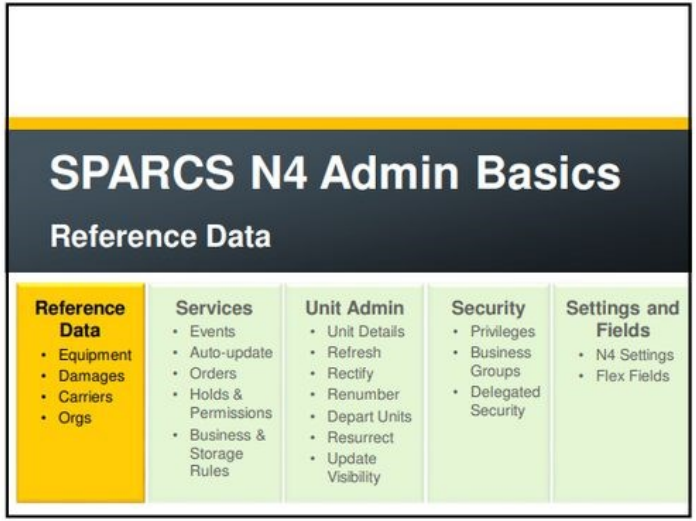
## TODAY'S AGENDA

1. Reference Data – Equipment Types, Features, Grades, Prefixes
2. Equipment Damage Types, Components, Ranges & Equivalents
3. Reference Data – Routing, Cargo & Organisations
4. N4 Events – Built-in vs User-Defined
5. Defining Event Types & Effects Configuration
6. Auto-Update Rules
7. Holds – Definition, Configuration & Application
8. Permissions – Definition & Configuration
9. Viewing Holds & Permissions in the Units List
10. Business Rule Types – Simple, Guardian, Guarded, Prerequisite
11. Service Business Rule Form
12. Storage Rules Configuration
13. Unit Administration Functions
14. Security – Roles, Privileges & Users
15. Business Groups & Delegated Security

# 2.0 – Day 2 Overview – SPARCS N4 Basic Administration

*From the Training Manual*

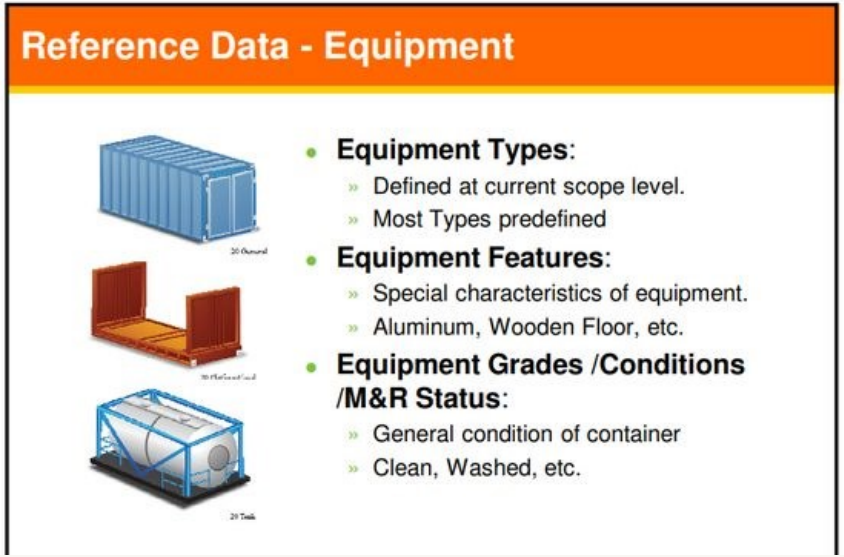
## SPARCS N4 Basic Admin


*Day 2 overview: SPARCS N4 Basic Administration – Reference Data, Services, Events, Unit Admin, Security, Settings & Flex Fields*

# 2.0 – Day 2 Content Map

*Administration topics and their organisation*


*Content map showing SPARCS N4 Admin Basics: Reference Data, Services, Unit Admin, Security, Settings and Fields sections*

Section 2.1

# Reference Data

Equipment, Routing, Cargo & Organisations

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DAY 2

# 2.1 – Equipment Reference Data

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*Configuration → Equipment*

## Reference Data - Routing

- **UN Locations**
  - Identify routing points
  - Part of global UN entity set
  - New can be added
- **Routing Points**
  - Physical location where cargo handled /transferred.
  - Vessel rotation / train hubs
- **Groups**
  - Used for discharges (imports).
  - Used by the XPS for allocations.

*Equipment reference data: Equipment Types (ISO codes, 22G1 = 20ft GP dry), Features, Grades, Prefixes, Damage Types, Damage Components, Ranges, Type Equivalents*

# 2.1 – Equipment Reference Data Reference

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*All equipment reference data entities in N4*

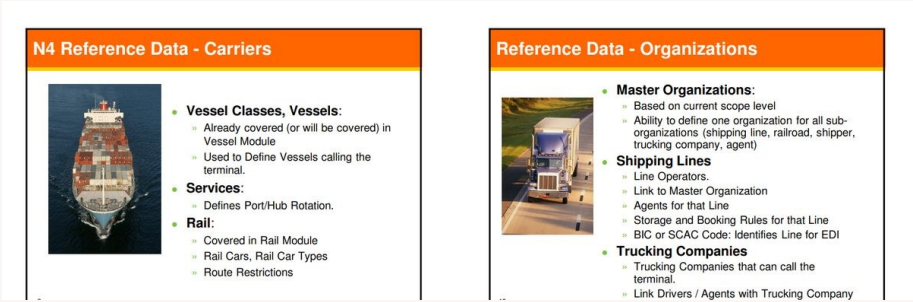
| | |
|---|---|
| **Equipment Types** | ISO container type codes (e.g., 22G1 = 20ft GP dry). Most predefined. Scope-level defined. |
| **Equipment Features** | Special physical characteristics: Aluminium, Wooden Floor, Side Door. Assigned to equipment types. |
| **Equipment Grades** | General condition: Clean, Washed, Out of Service, Grade A/B/C. |
| **Equipment Prefixes** | Assign container number prefixes to Line Operators. Configure check-digit algorithm per prefix. |
| **Damage Types** | Physical damage classifications: Hole, Rust, Wound, Dent. Used in N4 Mobile/Unit Inspector. |
| **Damage Components** | Location of damage: Front Wall, Left Side, Corner Post, Roof. |
| **Equipment Ranges** | Auto-tag a set of equipment of the same type (e.g., all containers in a number range = reefers). |
| **Type Equivalents** | Groups interchangeable containers for booking/delivery (e.g., 45ft 9'0" ≡ 45ft 9'6"). Can be line-specific. |

# 2.1 – Routing & Cargo Reference Data

*Configuration → Routing and Cargo entities*

## N4 Reference Data - Cargo

- **Commodities**:
  - Contents of container
  - Site-specific.
  - Use by XPS for allocations.
- **Special Stow**:
  - Special requirements for loading.
  - Examples: ADK (Above Deck), OOG (Out of Gauge).
  - Can also be used by XPS for allocations
- **Hazard Placards/Hazard Fire Codes**:
  - Site Specific Use if track hazard placards or fire codes
- **Package Types/Product Types**:
  - Site Specific Use for bills of lading and Hazard Checking




*Reference Data – Routing: UN Locations, Routing Points (vessel rotation ports, rail hubs), Groups (discharge import groupings)*

*Reference Data – Cargo: Commodities, Special Stow (ADK, OOG), Hazard Placards, Package Types for BLs*

# 2.1 – Organisations Reference Data

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*Configuration → Organizations*

## Reference Data - Organizations


- **Shippers and Consignees**:
  - Link to Master Organization
  - Define Agents for Shipper/Consignee
- **Agents**:
  - Trucking Companies that can call the terminal.
  - Link to Master Organization
- **Railroads Operators**:
  - Link to Master Organization
  - Define Agents for that Railroad Operator
- **Other Organizations**:
  - Assign a role for the organization.
  - Define Agents

## N4 Reference Data: Summary


You should now be able to:

- Setup basic Equipment Reference Data
- Setup Equipment Damage Codes
- Setup a New Shipping Line

📌 Line Operators must have the correct BIC or SCAC code for EDI message identification.

# 2.1 – Organisations Reference

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*All organisation types and their purpose*

| | |
|---|---|
| **Master Organisation** | Top-level entity. Multiple sub-organisations can be linked to one Master Org. |
| **Line Operators** | Shipping lines. Identified by BIC or SCAC code for EDI. Link Agents, Storage Rules, Booking Rules per line. |
| **Trucking Companies** | Truck operators that can call the terminal. Link drivers and agents to the trucking company. |
| **Shippers/Consignees** | Used in Bills of Lading for cargo ownership and documentation. |
| **Agents** | Representatives for lines, trucking companies, shippers. Linked to the Master Organisation. |
| **Railroad Operators** | Rail carriers. Link to Master Org, define agents for the railroad operator. |

# HANDS-ON EXERCISE

1. Create an Equipment Feature named 'DRINGXY' (XY = your user number).
2. Create an Equipment Grade named 'RinsedXY'.
3. Create an Equipment Prefix 'NGXY' and assign it to your designated Line Operator.
4. Create a Damage Type named 'DentXY'.
5. Create a Damage Component named 'Corner Post – CPXY'.
6. For your assigned Line Operator, create a 45ft Equipment Type Equivalent so that 9'0" and 9'6" high cube containers are interchangeable.

Section 2.2

# Services

Events, Auto-Update Rules, Holds, Permissions, Business Rules

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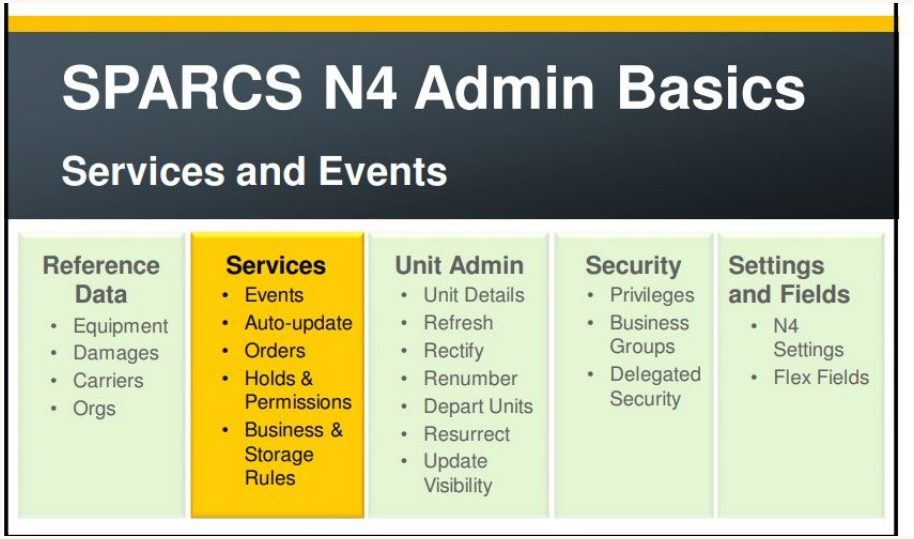
# 2.2 – N4 Events Overview

*Built-in vs User-Defined Events*



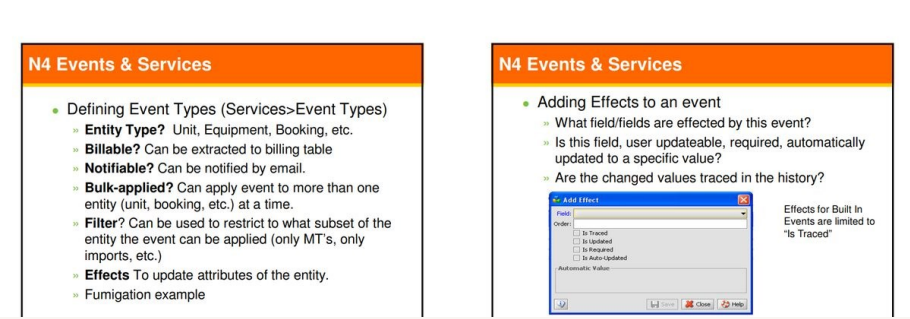



*Events overview showing Built-in Events (UNIT_DISCH, UNIT_LOAD, GATE_IN – cannot be disabled) and User-defined Service Events*

*Events table: Entity Types, Built-in events (Is Traced only modifiable), User-defined events configuration path*

# 2.2 – Defining Event Types – Form Screenshots

*Configuration → Services → Event Types*




*N4 Event Type definition form – Entity Type, Billable/Notifiable checkboxes, Filter Criteria tab visible*




*N4 Event Type form – Effects configuration tab showing Is Traced, Is Updated, Is Required, Is Auto-Updated, Automatic Value settings*


# 2.2 – Event Type Fields Reference

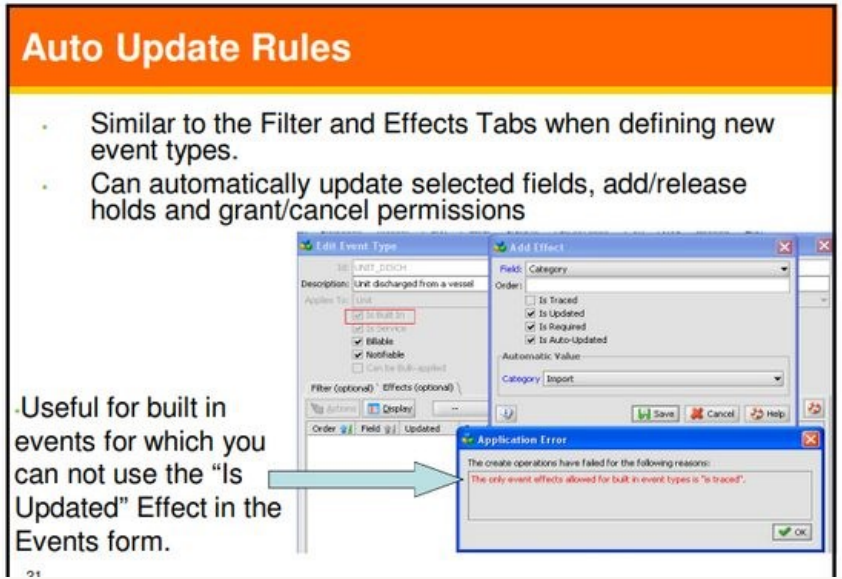
*All fields when creating a user-defined Event Type*

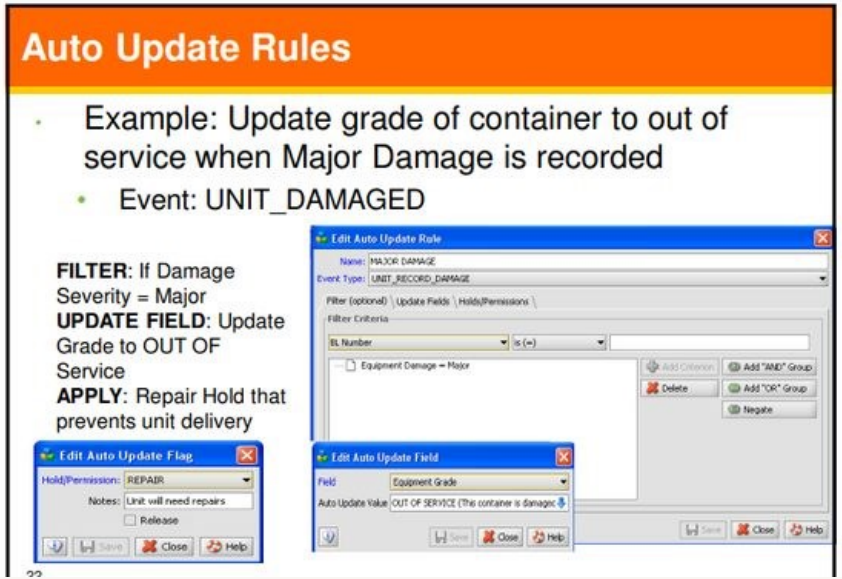
| | |
|---|---|
| **Entity Type** | Which entity this event applies to: Unit (most common), Equipment, Booking, Vessel Visit, etc. |
| **Billable** | If checked, the event is extracted to the N4 Billing table for invoicing when recorded |
| **Notifiable** | If checked, N4 can send email notifications when this event is recorded |
| **Bulk-Applied** | If checked, the event can be applied to multiple entities at once |
| **Filter** | Restricts which entities this event can be applied to (e.g., only imports in yard, only empties) |
| **Is Traced (Effect)** | Creates an audit record in the Event History when this field is updated |
| **Is Updated (Effect)** | Field CAN be edited by the user when recording the event |
| **Is Required (Effect)** | User MUST provide a value before the event can be saved |
| **Is Auto-Updated (Effect)** | N4 automatically sets this field to the Automatic Value when the event fires |

📌 After enabling a new Effect, click Actions → Reset in the Event Types screen, then re-record the event to see changes.

# 2.2 – Auto-Update Rules

*Configuration → Services → Auto-Update Rules*




📌 Auto-Update Rules automate field updates and hold/permission actions when specific BUILT-IN events occur (the mechanism for built-in events where Effects cannot be added directly).

# 2.2 – Holds & Permissions Explained

*Two mechanisms to control container operations*

## HOLDS – Prevention Mechanism

A Hold PREVENTS a specific service event from being performed on the unit

Applied MANUALLY by a user (or automatically via Auto-Update Rule)

Must be RELEASED before the blocked service event is allowed to proceed

STOP icons in Units list = active Holds that prevent vessel/rail/road operations

Can be placed on a GUARDIAN entity (e.g., Quarantine Hold on a vessel prevents discharge of ALL containers)

Reference ID: used when same Hold is needed for multiple purposes – allows releasing each individually

Billing Hold flag: required for Payment Holds (preventing gate-out until payment is made)

## PERMISSIONS – Authorisation Mechanism

A Permission GRANT must be present BEFORE a specific service event is allowed

Applied AUTOMATICALLY by N4 via Business Rule (or can be granted/cancelled manually)

Example: Customs Release permission must be granted before delivery (UNIT_DELIVER) is allowed

HOLD = STOP sign. PERMISSION = GREEN LIGHT that must be switched on before proceeding.

# 2.2 – Business Rule Types Screenshot

*Service Business Rule form from the Training Manual*

## Holds


- Prevents event type from being performed.
- Must be released to allow service
- May be applied to a guardian (i.e. quarantined vessel)
- Applied manually.

## Permissions


- Must be granted to allow event type to be performed.
- Container may need customs permission to be delivered
- Can be granted and cancelled.
- Applied automatically.

📌 Configuration → Services → Service Business Rules → Service Business Rules view → Service Business Rule form

# 2.2 – Business Rule Types Reference

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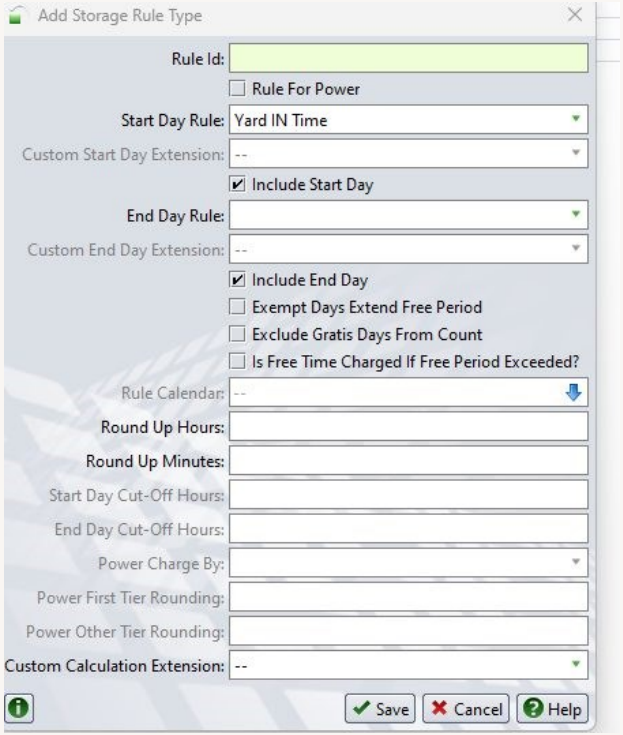
*All four business rule types with examples*

| | |
|---|---|
| **SIMPLE** | Hold/Permission applies DIRECTLY to the entity itself (the container). Most common type. 1:1 relationship. |
| **GUARDIAN** | Hold placed on PARENT entity prevents operations on ALL its children. Example: Quarantine Hold on a Vessel → ALL containers on that vessel blocked from discharge. |
| **GUARDED** | Hold/Permission applies ONLY for a specific relationship. Example: Customs Release for Vessel Visit ABC123 only – if container rolls to a new vessel, a NEW permission is required. |
| **PREREQUISITE** | A specific service event must be recorded BEFORE the blocked event is allowed. Example: Cannot strip until 'Fumigation Inspection' service event has been recorded. |
| **Rule Limit** | Adding more than 250 service business rules can impact N4 performance – review periodically. |
| **Config Path** | Configuration → Services → Service Business Rules → Service Business Rules view |

📌 Business Rules use Holds or Permissions to enforce process compliance. They control WHEN an event is allowed to occur.

# 2.2 – Storage Rules Screenshot

*Configuration → Services → Storage Rule Types*




*Storage Rule Types configuration showing Start Day Rule, End Day Rule, Include Gratis Days, Power Charges (Reefer power) settings*

# 2.2 – Storage Rules Reference

*Configuration → Services → Storage Rule Types*

| | |
|---|---|
| **Set Per Line** | Different storage rules can be configured per Line Operator (different free time terms) |
| **Start Day Rule** | When free time counter begins: Yard IN Time \| I/B Discharge Complete \| First Available Day |
| **End Day Rule** | When free time counter ends: Yard OUT Time \| O/B Carrier Start Work \| O/B Visit ETA |
| **Include Gratis Days** | Should holidays count as free days? Configure via Configuration → Other → Calendar |
| **Power Charges** | Reefer power: Start/End Day Cut-off Hours, Power Charge by Hour or Day, Tier Rounding rules |

📌 Storage Rules defined here feed into N4 Billing (Day 5). They control demurrage calculation for each Line Operator.

# HANDS-ON EXERCISE



1. Create user-defined Event Type '[FirstName] Inspection'. Set it to apply to Units, make it Billable. Add Filter: Imports in the Yard only.

2. Add Effects: (a) Special Stow 1 – Required, Updated, Traced. (b) Unit Notes – Auto-Updated with '[FirstName]Insp was recorded'. (c) Equipment Grade – Auto-Updated to CLEAN, Traced.

3. Record your Inspection event against an Import in the Yard. Review Event History – confirm Grade and Notes were updated.

4. Create Hold 'USERXYHold'. Create Simple Business Rule 'USERXYHoldRule' preventing UNIT_LOAD. Apply hold to an Export. Attempt to load – confirm the error message.

5. Create Permission 'USERXYPerm'. Create Simple Business Rule preventing UNIT_DELIVER for Imports. Confirm ! impediment appears. Grant it, then cancel it.

6. Create Auto-Update Rule 'USERXYAutohold': trigger = [FirstName] Inspection event fires → auto-apply USERXYHold.

7. Create Prerequisite Business Rule: UNIT_STRIP blocked until '[FirstName] Inspection' has been recorded. Test against a discharged container.

8. Create Storage Rule: Start = Yard IN, End = Yard OUT, 3 free days for IMPORT on your Line Operator. View storage info in Unit Inspector.

Section 2.3

# Unit Administration

Data Correction & Lifecycle Management

biznovate

DAY 2

# 2.3 – Unit Administration Functions Screenshot

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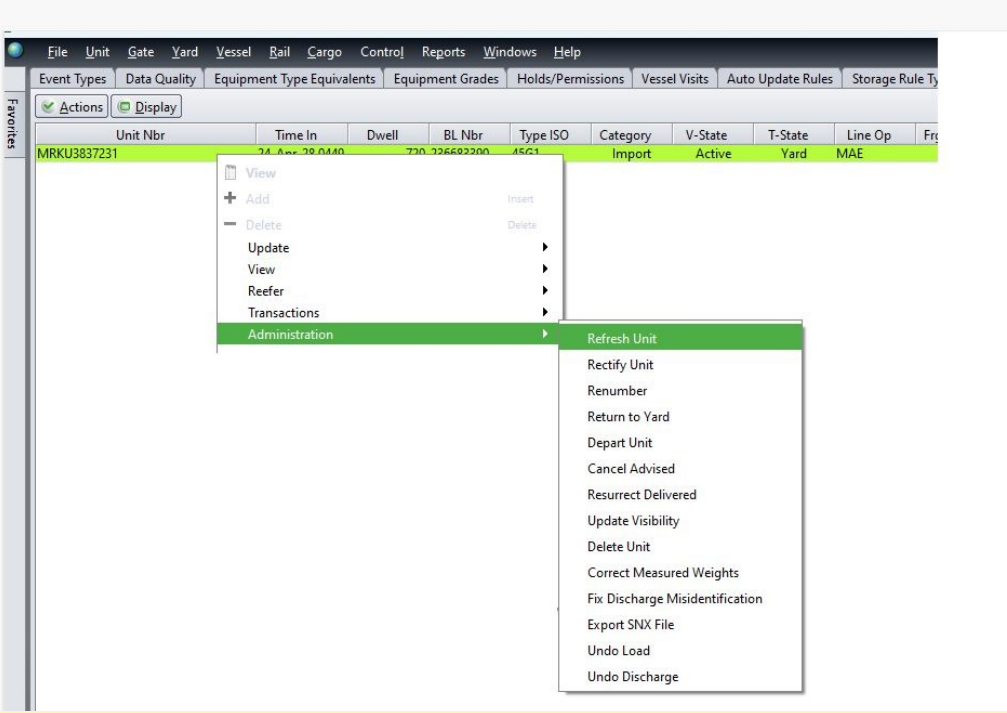
*Actions → Administration menu*




⚠ Rectify Unit and Unit Details Editor have LIMITED validation – bypass normal business rules. Always document reason and get supervisor approval.

# 2.3 – Unit Administration Functions Reference

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*All unit admin functions and when to use them*

| | |
|---|---|
| **Unit Details Editor** | Actions → Update → Show Unit Details Editor. Bulk edit unit attributes. ⚠ Limited validation. Checkbox with no value = sets field to NULL. |
| **Unit Refresh** | Recalculates unit impediments (holds/permissions). Via background job 'Launch Unit Maintenance Jobs'. Frequency: INVREFRESH001/002/003. |
| **Rectify Unit** | Actions → Administration → Rectify Unit. Corrects bad data or undoes an event. ⚠ Bypasses business rules. CAUTION – document and get supervisor approval. |
| **Renumber Unit** | Actions → Administration → Renumber. Changes container number. Respects check-digit calculations. Updates all Chargeable Unit Event records. |
| **Depart Units** | Forces a unit to depart if loaded onto outbound carrier but state not automatically updated. |
| **Cancel Preadvised** | Deletes Advised or Inbound state units not yet arrived at the facility. Only works for Advised or Inbound transit state. |
| **Resurrect Delivered** | Creates new Advised unit-facility-visit so departed unit can be received back (Dray-in scenario). |
| **Update Visibility** | Actions → Administration → Update Visibility. Make unit Visible/Not Visible in SPARCS XPS. |

Section 2.4

# Security Administration

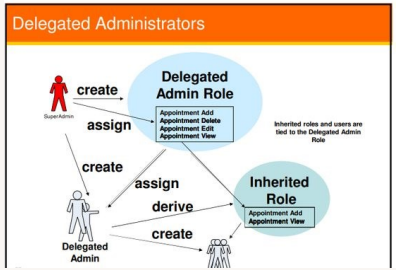
Roles, Privileges, Business Groups & Delegated Security

biznovate

DAY 2

# 2.4 – Security Privileges & Roles

*N4 is role-based – privileges assigned to Roles, Roles assigned to Users*





*Security administration: Privilege types (Static, Dynamic, Constrained), Roles and how they are assigned to users*

## N4 Security – Roles & Privileges

KEY RULE: Privileges → Roles → Users. NEVER assign privileges directly to users.

Static Privileges: Built into N4. Relate to work modes, menu options and actions (View, Add, Edit, Delete). Example: 'Vessel Visits – Edit'.

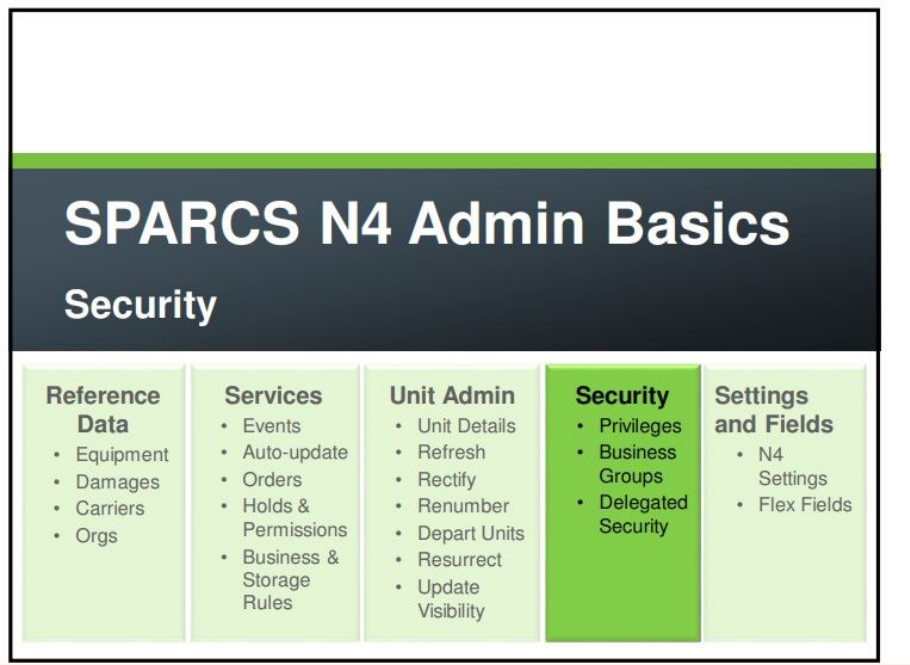
Dynamic Privileges: Created for configurable components. Examples: Gate Stages, Hold Add, Hold Release, Permission Grant, Permission Cancel.

Constrained Privileges: Standard privilege restricted to a specific organisation. Example: 'Unit Actions – Renumber constrained by Line Operator' – user can only renumber containers belonging to their line.

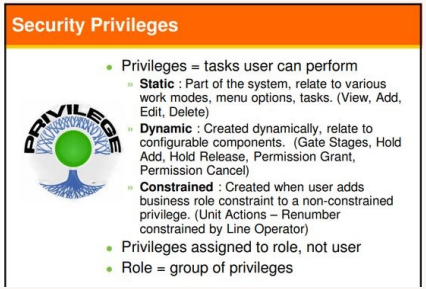
Role: A named group of privileges. Roles are assigned to users. A user can have MULTIPLE roles.

# 2.4 – Security Screenshots

*From the Training Manual*



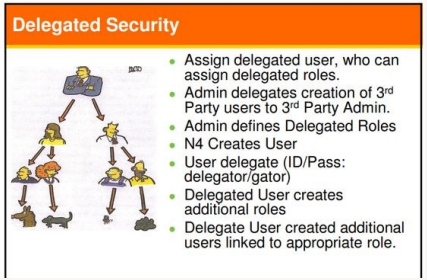

*Security Administration overview showing privilege types, role management interface*

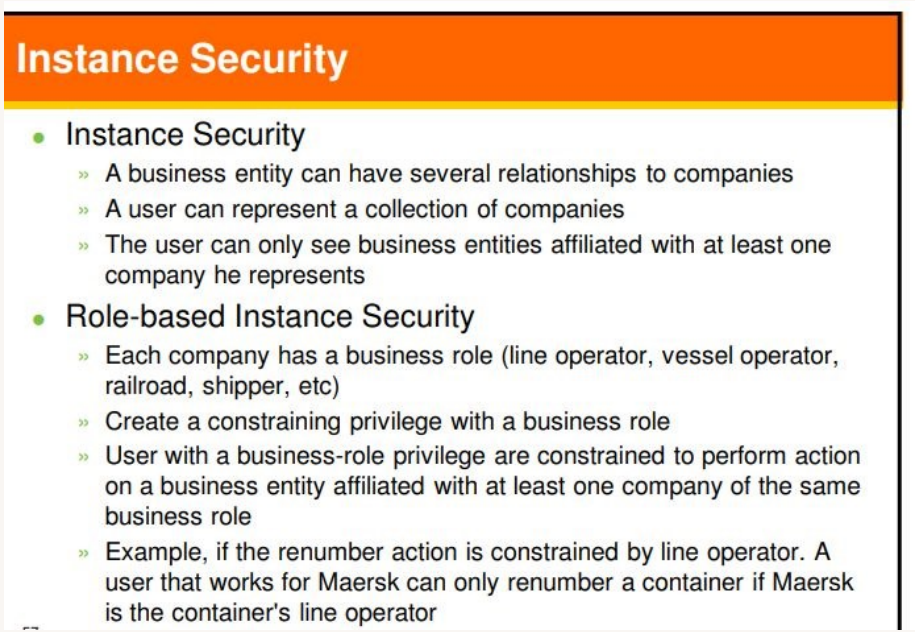




*Role creation form showing privilege list and assignment of privileges to a role*

# 2.4 – More Security Screenshots

*Role and user management*

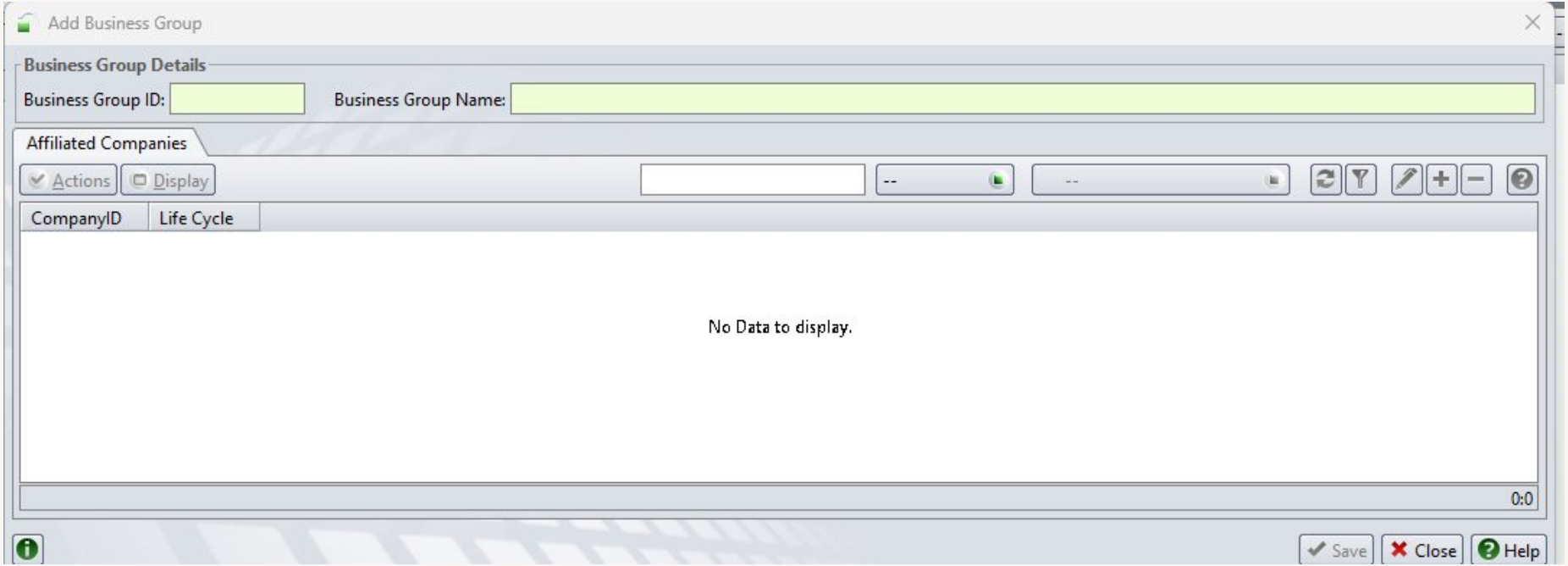




*User management screen showing user list and user creation/role assignment interface*

*Additional security configuration showing role privileges and constrained privilege setup*

# 2.4 – Business Groups & Delegated Security

*Data visibility control and delegated administration*




*Business Groups: affiliated to companies, users see only entities affiliated with companies in their group; Constrained privileges restrict actions within scope*

# 2.4 – Business Groups Reference

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*How Business Groups control data visibility*

| | |
|---|---|
| **Business Groups** | Control data VISIBILITY. Navigate to: Administration → Security → Business Groups. |
| **Affiliation** | Groups are affiliated to companies (Line Operators, Trucking Companies, etc.) |
| **Visibility Rule** | Users associated with a group can ONLY see entities affiliated with companies in that group |
| **Multi-Company** | A booking/container may relate to several companies – user must represent AT LEAST ONE to view it |
| **Constrained Privilege** | Further restricts which actions the user can perform on entities within their Business Group scope |
| **Super Admin** | Creates the Delegated Admin Role and assigns it to the Delegated Admin user |
| **Delegated Admin** | Can create additional roles (derived from Delegated Admin Role), create users and assign them to those roles |
| **Inherited Roles** | Derived roles and users are TIED to the Delegated Admin Role – revoking it removes ALL derived access |

📌 Test user for Delegated Security exercise: username = delegator / password = gator

# 2.4 – User Monitor & Authentication History

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*Administration → Security*

## Users Monitor and History


- Current Users Monitor
  - Display list of users who have logged into the system, when they logged in and at what scope level.
- Authentication History:
  - Log of attempted logins.
  - Can track activity of users
  - Patterns of high/low system use.

*Current Users Monitor: shows all users currently logged in, when they logged in and at what scope level. Authentication History: log of all login attempts.*

Section 2.5

# N4 Settings & Flex Fields

System Configuration & Custom Fields

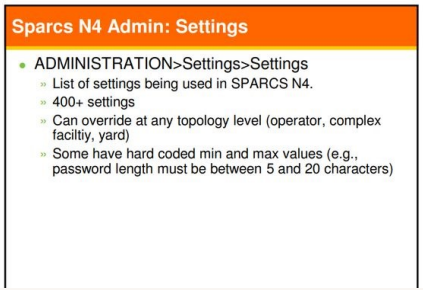
biznovate

DAY 2

# 2.5 – N4 System Settings Screenshots

*Administration → Settings → Settings*






📌 ⚠ Changing N4 Settings affects ALL users at that scope level. Always test in test environment first.

# 2.5 – N4 Settings Reference

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*Key settings categories and their purpose*

| | |
|---|---|
| **Scope Override** | Settings can be set at Operator level and overridden at Complex or Facility level |
| **Min/Max Values** | Some settings have hard-coded min/max values (e.g., password length 5–20 characters) |
| **INVREFRESH001-003** | Controls frequency of Unit Impediment recalculation (Unit Refresh background jobs) |
| **Gate Settings** | Control appointment requirements, transaction timeouts, gate stage behaviour |
| **Vessel Settings** | Control visit phase transitions, bay plan import rules, load/discharge validation |
| **N4 has 400+ settings** | Covering all aspects of terminal operations, security, EDI, billing and reporting |

📌 ⚠ Changing N4 Settings affects ALL users and operations at that scope level. ALWAYS test changes in the test environment first and obtain change management approval before modifying production settings.

# 2.5 – Flex Fields Overview

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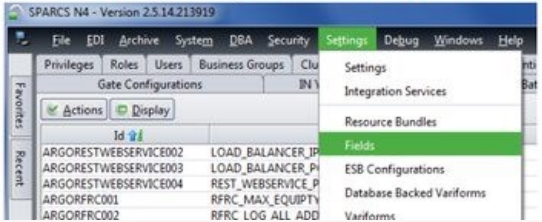
*Administration → Settings → Fields*

## Sparcs N4 Admin: Fields

- ADMINISTRATION>Settings>Fields
  - List of fields being used in SPARCS N4.
  - Display:
    - All fields, measurement fields, and custom fields.
  - Measurement fields: Can change display weight units, temp units, etc.
  - Custom (or flex) fields – more detail in next slides




## Why Flex Fields?

- Extensible
  - Customize unused fields to business needs
- UI Customizable
  - Via Group ID
- Scope Aware
  - Visibility in different scopes
- Can be used in:
  - Reports, gate forms, gate tickets, send and receive EDI, etc.
- Used by
  - **N4 Administrators** - Enable and configure flex fields
  - **Report Designers** - Include flex fields into report design
  - **N4 Users** - Set and view flex values, run report with flex fields/values, process EDI with flex fields

*Flex Fields: pre-defined placeholder fields in the N4 database for customisation without system development. Shows scope, importance, Short/Long names, Group IDs, LOV configuration.*

# 2.5 – Flex Field Group IDs – Where They Display

*Unit Flex Field Group ID reference*

## Where is my Unit Flex Field Displayed?

| Group ID | Block in Unit Inspector | Details Tab in Unit Inspector | Form to Edit Value |
|---|---|---|---|
| 1-Unit | Status | N/A | Physical Status |
| 2-Equipment | More | Primary Equip | Physical Status |
| 3-Routing | Etc | Routing | Routing |
| 4-Contents | General | Contents | Shipment Details |
| 5-Reefer | Reefer Requirements | Reefer | Reefer Requirements |
| 6-Rules | N/A | Holds/Permissions | Physical Status |
| 7-Position | As a column in the Units View | | Other Details |
| 8-Timestamp | As a column in the Units View | | Other Details |
| 9-Other | As a column in the Units View | | Other Details |

## Sparcs N4: Flex Field Representation

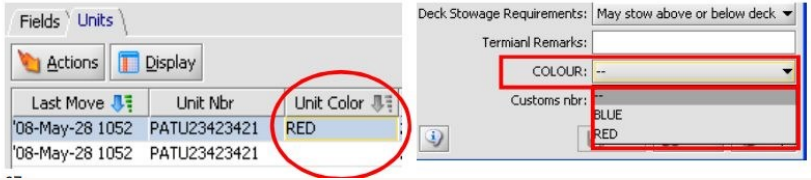
- Pre-defined place holders in database reserved to customization

Short Name/Long Name = Value

- Example:

Place Holder: unitFlexString01: "Unit Color" / "Color" = "Red"

ufvFlexDate01: "Unit POS Date"/"POS Date" = "2007/1/10"




*Unit Flex Field Group IDs – showing where each Group ID places the field in the N4 Unit Inspector tabs*

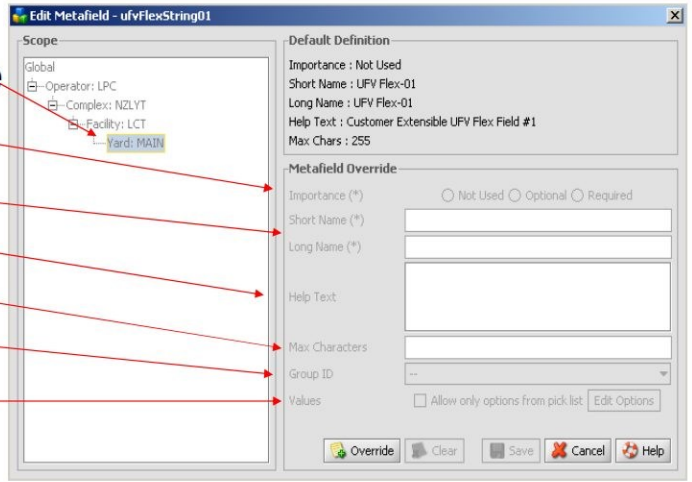
*Unit Flex Field Group IDs (continued) – all group positions and their corresponding N4 UI locations*

# 2.5 – Flex Field Group IDs (Continued)

*Additional Group ID placement reference*

## Enabling Flex Fields

- Admin Usage
- Choose Scope
- Importance
- Labels
- Help Text
- Max Chars
- Group ID
- LOV
- *Reset*
- Be Sure to Re-open Tab if just




After enabling a Flex Field: click Actions → Reset in the Fields screen, then re-open the relevant N4 tab. The field will NOT appear until the tab is refreshed.

# HANDS-ON EXERCISE



1. Create Security Role named after your last name. Assign: Units View, Vessel Visits View, Vessel Visits Inspect, Vessel Visits Actions – Edit Port Rotation.
2. Create a new User and assign them to your new Role. Log in as the new user in a new browser session. Verify the restricted menu options.
3. Log in as the delegator/gator user. Create a delegated role and demonstrate the difference in the Users/Roles management interface.
4. Create a Business Group named 'YourName Alliance'. Assign Line Operators CMA and MSC. Add the group to your new user.
5. Log in as the new user – verify you can ONLY see CMA and MSC containers in the Units view.
6. Create a Constrained Privilege: Unit Actions – Renumber constrained by Line Operator. Add it to your role. Test that renumbering an MSC container works but renumbering a CMA container is blocked.
7. Navigate to Administration → Settings → Fields. Filter to Custom Fields only.
8. Find unitFlexStringXX (XX = your user number). Click Override, set to Optional. Set Short Name='UsrXX Notes', Long Name='Terminal UsrXX Note'. Group ID 4-Contents. Save.
9. Click Actions → Reset. Re-open Units tab. Confirm you can enter a value for your flex field in the Shipment Details.
10. Add 3 List of Values (LOV) options. Confirm the input now shows a dropdown selector.
11. Change Group ID to 9-Other. Re-open Units tab. Where does your flex field now appear?

DAY

# 3

**N4 Mobile | Gate Config | Licensing | XPS**

RDT/Yard Inspection | Reefer Monitor | Gate Configuration | Licensing | XPS User Admin | Equipment Setup

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## TODAY'S AGENDA

1. N4 Mobile (RDT) – Overview & Architecture
2. N4 Mobile Login Screen & Operational Roles
3. Yard Inspection – All Shortcut Keys (D/R/S/H/O/B/W/A/E)
4. Reefer Monitoring – Power Status Colour Codes
5. Reefer Work List
6. Gate Configuration Overview (3.2)
7. Gates View (3.2.1) – Adding & Managing Gates
8. Gate Configurations View (3.2.2) – Hierarchy
9. Gate Transaction Processing Flow (8 Steps)
10. Gate Business Task Types (3.2.3)
11. Configuring Gate Business Tasks
12. Gate Business Tasks Reference Table
13. Gate Transaction Types (RF/DI/RM/DM + combos)
14. Gate Appointment Rules (3.2.3)
15. Setting Up Gate Printer (2.4)

Section 3.1

# N4 Mobile (RDT Option)

Overview, Architecture & Operational Roles

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DAY 3

# 3.1 – N4 Mobile Overview & Architecture

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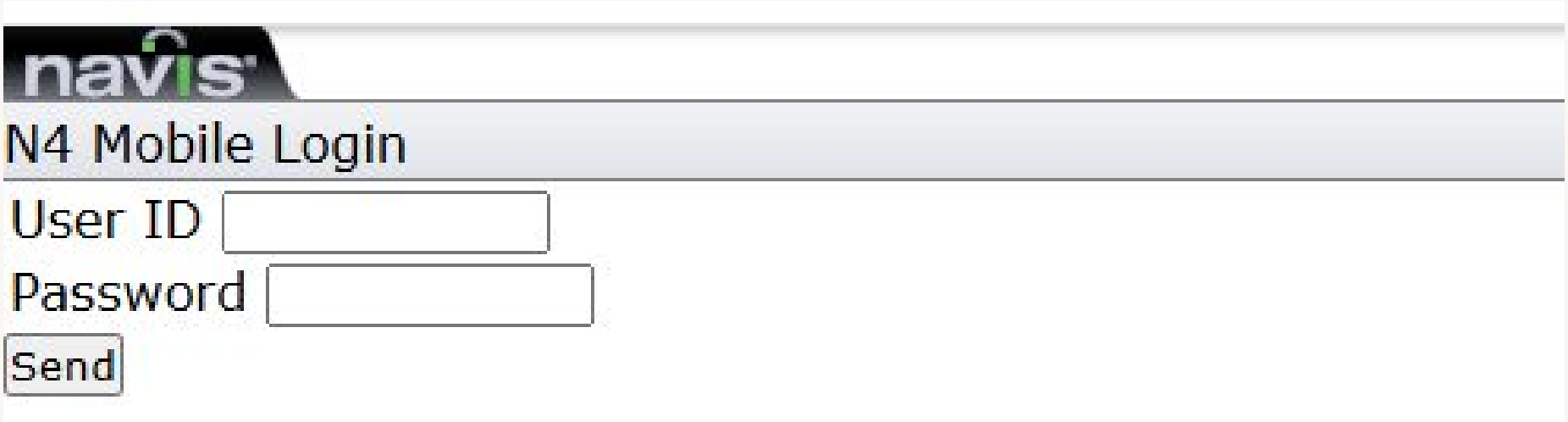
*Overview & RDT Communications from the Training Manual*




*N4 Mobile overview showing N4 Mobile Options and the RDT Communications Radio Server chain: Host/Server → Radio Server → Radio Controller → Radio Frequency Unit → Vehicle Mount RDT + Hand-held RDT*

# 3.1 – N4 Mobile Overview & Access Details

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*Key facts about the N4 Mobile interface*

| | |
|---|---|
| **Access Method** | Browser-based mobile interface optimised for small screens and handheld devices |
| **URL** | http://[server]:9080/apex/entry.faces (same credentials as N4 desktop) |
| **Login Scope** | Operator: APMT, Complex: NGAPP, Facility: PTM, Yard: PTM (Training: use LFT) |
| **Architecture** | N4 Mobile → Radio Server → Radio Frequency Unit → Handheld/VMT device chain |
| **User Setup** | Users defined in N4, linked to a Role with specific N4 Mobile privileges |
| **Shortcut → Login** | Navigation shortcut button returns you to the login screen |
| **Program Screen** | Navigation shortcut button takes you to the Program/Function selection screen |
| **Go Button** | Jump shortcut to specific program screens |
| **Real-Time Sync** | All changes via N4 Mobile are reflected IMMEDIATELY in N4 desktop and XPS |

# 3.1 – N4 Mobile Login Screen & Program Selection

*From the Training Manual*


*N4 Mobile login screen showing User ID, Password, Send button and Site Selection screen with Operator/Complex/Facility/Yard*


*N4 Mobile Program screen showing: Reefer Monitor(m), Yard Inventory(i), Gate Inspection(g), Rail Operations(r), Rail Inventory(x), Depot Hatch Clerk(d), Hatch Clerk(h)*

# 3.1 – N4 Mobile Operational Roles

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*All roles, functions and key screens*

| | |
|---|---|
| **Yard Clerk** | Update Yard Inventory, Damages (D), Reefer (R), OOG (O), Hazards (H), Seals (S), Bundles (B), Weights (W), Event Recording (E) → Yard Inspection screen |
| **Reefer Clerk** | Connect/Disconnect reefer orders, Monitor temperatures, Update Desired State (On/Off Power) → Reefer Monitor screen |
| **Gate Clerk** | Same as Yard Clerk PLUS Update Truck Details → Gate/Rail Inspection screen |
| **Rail Clerk** | Update RailCar Inventory, same as Yard Clerk functions, Record Rail Discharges/Loads → Rail Inventory screen |
| **Hatch Clerk** | Record Vessel Loads/Discharges, Vessel Shifts, Inspections (seals, damages), Create Orphan containers → Hatch Clerk screen |

# 3.1 – Yard Inspection – All Shortcut Keys

*After entering container number in Yard Inspection, use these shortcuts*

## Complete Yard Inspection Shortcut Key Reference

(D) – Record Damage: enter damage type, component and severity. Creates damage record in N4.

(R) – Update Reefer details: temperature, vent setting, humidity. Updates reefer record.

(S) – Record/Update Seal numbers: Seal 1 and Seal 2. Updates seal fields on the container.

(H) – Record/Update Hazard information: IMDG class, placard number.

(O) – Record Out of Gauge (OOG) dimensions: height, width and length overhangs.

(B) – Bundle container details.

(W) – Update gross weight. Updates the weight field on the container.

(A) – Additional functionality: Set Grade, Material and other attributes.

(E) – Event Recording: record a user-defined service event from the field.

(P) – Record Placard for Export (dangerous goods containers).

## Reefer Power Status Colour Codes in N4 Mobile

ON POWER (I) – RED: Container IS on power but SHOULD be unplugged ⚠ Action required

Section 3.2

# Gate Configuration

Gates View, Configurations, Business Tasks & Transaction Types

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DAY 3

# 3.2 – Gate Configuration Overview

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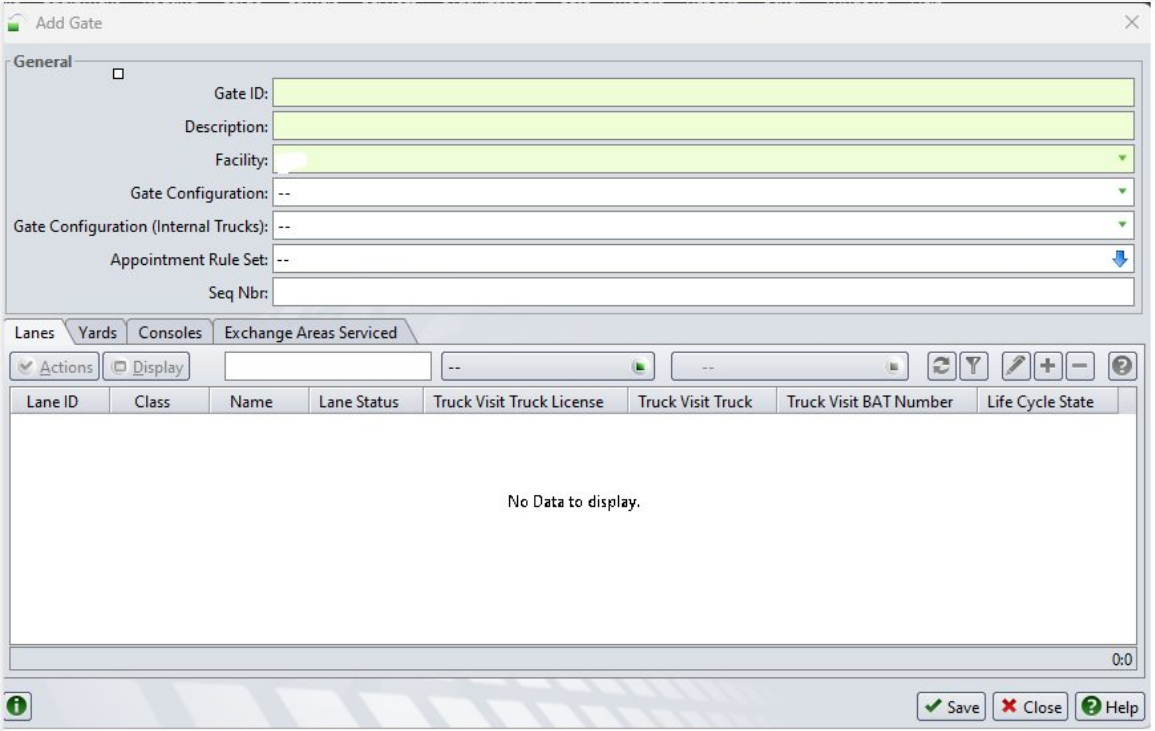
*Configuration → Gate → Gates → Gates view*




*N4 Gates view showing list of gates at the current scope level. Options to add new gates and edit/delete existing gates. Gate properties: type, direction, active status.*

# 3.2 – Gate Configuration Overview

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*What N4 gate configuration supports*

| | |
|---|---|
| **Purpose** | Configure gates to support all gate operations needed at a marine container terminal |
| **One-Stage Ingate** | Configurable single-stage ingate for simple gate operations |
| **Multi-Stage Ingate** | Multiple ingate stages (IN → INTERMEDIATE → OUT) for complex operations |
| **Ingate/Outgate** | Configurable one-stage or multistage ingate AND outgate |
| **Optional Bookings** | Gate transactions can validate against optional bookings |
| **Record Damages** | Ability to record damages, seals, hazards, and OOG information at the gate |
| **Gate View Path** | Configuration → Gate → Gates → Gates view |
| **Multiple Configs** | Multiple gate configurations can be added for one operator (full gate, empty gate, etc.) |

📌 To view a graphical representation of the gate configuration steps, see the Gate Configurations view (Configuration → Gate → Gate Configurations).

# 3.2.2 – Gate Configurations View

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*Configuration → Gate → Gate Configurations*

## What the Gate Configurations View Provides

Displays ALL gate configurations defined for the operator

Add, edit, delete gate configurations, gate stages, truck visits, and gate transaction types

Add an appointment stage for a gate configuration that uses appointments

## Actions Available on Gate Configuration

Import Gate Configuration: import from another operator or N4 instance (use this to import to production after testing)

Export Gate Configuration: export as XML file for other operators or N4 instances

Validate Gate Configuration: check for missing mandatory fields, missing business tasks, valid next gate stage

⚠ Requires 'Gate Configuration Validation' privilege in your role to see the Validate option

Recover Obsolete: recover deleted gate configurations

## A Gate Configuration Defines

📌 Before selecting any action, ensure the gate configuration NODE is selected in the left pane. If wrong node selected, N4 displays an error.

A TRUCK VISIT FORM for each gate stage

# 3.2.2 – Gate Configuration Hierarchy Screenshot

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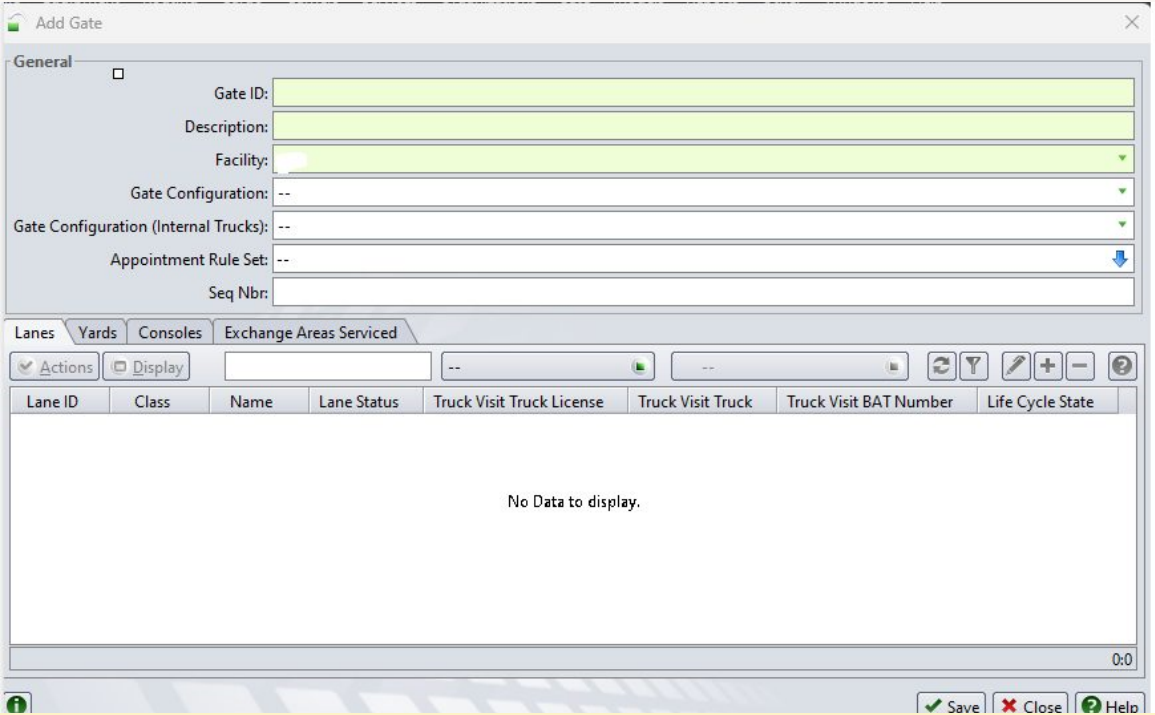
*N4 Gate Configuration view from the Training Manual*




The hierarchy shows: Gate Configuration → Stages → Transaction Types → Business Tasks

# 3.2 – N4 Gate Transaction Processing Flow

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*8-step sequence from truck pre-advice to CODECO EDI*

**1**

### Pre-Advice / Appointment

Truck Pre-Advice created in N4 via EDI COPINO or manually by gate operator

**2**

### Truck Arrives at Gate

Operator scans truck licence plate / driver ID at IN Stage

**3**

### N4 Matches & Validates

N4 matches truck to pre-advice and validates the transaction type selected

**4**

### IN Stage Business Tasks

Booking validated, holds checked, seals recorded, damage inspected

**5**

### Intermediate Stage(s)

Weight bridge, OCR scanning, customs inspection (if configured)

**6**

### OUT Stage Business Tasks

Transaction confirmed, unit transit state updated, gate ticket printed

**7**

### Transit State Updated

Unit T-state updated in real time: RECEIVED → YARD state or EC-OUT → DEPARTED

**8**

### CODECO EDI Generated

CODECO EDI message generated and sent to carrier/customs (if outbound session configured)

# 3.2.3 – Gate Business Task Configuration Screenshot

*From the Training Manual*


Navigate to: Configuration → Gates → Gates → select gate → Stages tab → select Stage → Business Tasks tab

# 3.2.3 – Configuring Gate Business Tasks

*The core engine of automated gate processing*

## What Gate Business Tasks Are

Configurable automated actions triggered at specific gate stages during transaction processing

Define what N4 automatically does at each stage: validate bookings, record damage, print tickets, update transit states, send EDI

Business Tasks are the CORE ENGINE driving automated gate processing in N4

## Configuration Steps

Navigate to: Configuration → Gates → Gates → select gate → Stages tab → select Stage → Business Tasks tab

Click Save. The task now executes automatically when a truck reaches this stage.

Set whether the task is INCLUDED (failure stops the entire transaction) or EXCLUDED (not required)

Configure the task parameters (each task type has specific settings)

## Hands-On Exercise

Open N4 Gates and create a new gate

📌 Business Tasks determine HOW the gate processes each truck visit. Getting these right is critical to gate operations.

Open the printer form → Create a new printer for outgate and assign necessary IP address with correct Description

# 3.2.4 – Gate Transaction Types Reference

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*What N4 validates for each transaction type*

| | |
|---|---|
| **RECEIVE EXPORT (RE)** | Container received INTO terminal. Category=Export/Transship. Unit→YARD. Validated against pre-advice, booking or BL. |
| **DELIVER IMPORT (DI)** | Container delivered OUT to customer. Category=Import. Validated against BL. Unit→DEPARTED. |
| **RECEIVE EMPTY (RM)** | Empty container received INTO terminal. Validated against ERO or line operator empty receive authority. |
| **DELIVER EMPTY (DM)** | Empty container delivered OUT. Validated against EDO or booking. Unit→DEPARTED. |
| **RECEIVE FULL / DELIVER FULL** | Combination: truck drops off full container AND picks up full container in one gate visit. |
| **RECEIVE EMPTY / DELIVER EMPTY** | Combination: truck drops off empty AND collects empty in one gate visit. |
| **RECEIVE FULL / DELIVER EMPTY** | Combination: truck delivers full export AND collects empty on exit. |
| **RECEIVE EMPTY / DELIVER FULL** | Combination: truck drops off empty AND collects full import for delivery. |

📌 ⚠ An incorrect transaction type will cause validation failures and prevent the transaction from completing. Always confirm with the truck driver before processing.

# 3.2.3 – Gate Appointment Rules Reference

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*Configuration → Gates → Gate Appointment Rules*

| | |
|---|---|
| **Appointment Required** | YES = truck cannot gate-in without a valid appointment. Trucks without appointments are rejected. |
| **Appointment Window (mins)** | Minutes before/after the appointment slot when a truck is still accepted for processing. |
| **Max Trucks Per Slot** | Maximum number of trucks that can hold appointments in a single time slot. |
| **Slot Duration (mins)** | Length of each appointment time slot (e.g., 15, 30 or 60 minutes). |
| **Gate Operating Hours** | Operating hours for the gate. Trucks arriving outside these hours are rejected. |
| **Pre-Advice Required** | When YES, a truck cannot gate-in without a matching pre-advice (COPINO or manual) in N4. |
| **Configuration Path** | Configuration → Gates → Gate Appointment Rules → select your gate |

# 2.4 & 2.5 – Gate Printer & Gate Documents Setup

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*Setting up printing and document types for gate operations*

## 2.4 Setting Up Gate Printer – Configuration → Gate → Printers

Navigate to: Configuration → Gate → Printers

Create a new printer for each gate stage that requires printing (e.g., outgate ticket printer)

Assign the correct IP address for the network printer

Enter a descriptive Description so operators can identify the printer

Associate the printer with the appropriate gate stage in the Gate Configuration

## 2.5 Gate Documents – Configuration → Gate → Documents

Navigate to: Configuration → Gate → Documents

Define document types that can be used for gate documents or any other type of documents (e.g., invoices)

Uses an associated style sheet to define the layout of data on the document

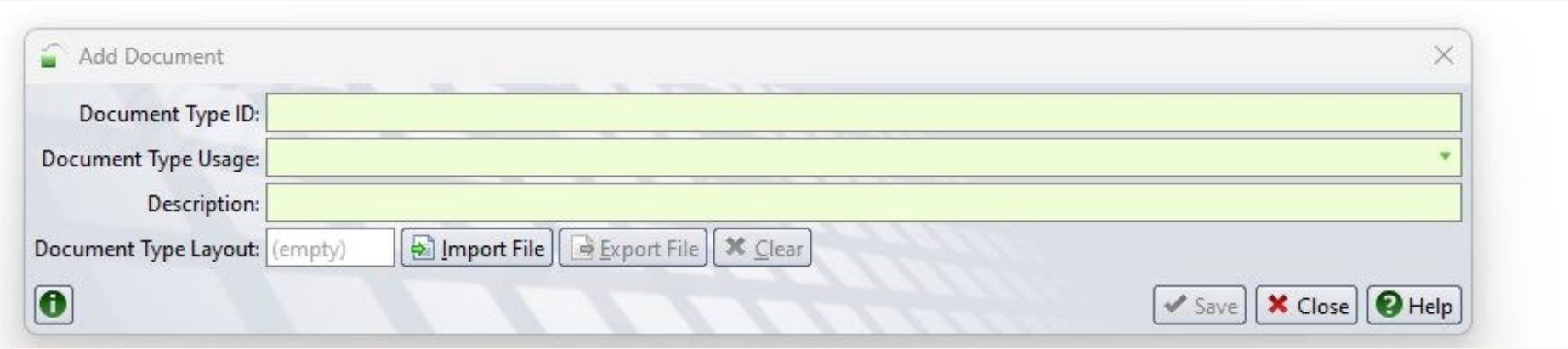
Although under Gate menu, gate documents are NOT restricted to gate documents only

A document type can be used in code extensions for ANY entity – not just gate entities

You can add new documents, and edit or delete existing documents from this view

# 2.5 – Gate Documents Screenshot

*From the Training Manual*




*Gate Documents view showing document configuration options including document type definition and style sheet assignment*

Section 3.3

# N4 Licensing

How It Works, View, Download & Upload

biznovate

DAY 3

# 3.3 – How N4 Licensing Works

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*The licence file controls system access and enabled modules*

| | |
|---|---|
| **Licence File Format** | .lic file provided by Navis/Kaleris Support |
| **Licence Contents** | Enabled modules, user session limits, facility count, expiry date, feature flags |
| **Storage Location** | Uploaded via N4 Administration interface; stored on the N4 Application Server |
| **Expiry Warning** | N4 warns when licence is within 30 days of expiry. System STOPS after expiry date. |
| **Multiple Licences** | A single N4 installation may have multiple licence components (Base N4, Mobile, Billing, etc.) |
| **Licence Check** | N4 validates the licence on EVERY startup. Always verify after uploading a new licence file. |
| **View Licence** | Administration → N4 Licensing (shows expiry date, enabled modules, user session limits, facility count) |
| **Upload Licence** | Administration → Security → Licenses → Licenses view → Upload Licence button |
| **No Restart Needed** | No system restart required for most licence updates – verify by checking module availability |

📌 ⚠ Set a calendar reminder 60 days before licence expiry to request renewal from Navis/Kaleris Support.

# 3.3 – N4 Licensing Screen

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*Administration → N4 Licensing from the Training Manual*

```
<customer:code>LFT</customer:code>
<license>
    WvMr_fVWDFq,
    SwVYp70JiT6JummXUli6UUfG,
    pLEnwVqDn22ODDgENQZqXXOUb,
    fSWQxrNDe144qDjTAECeVVqOm,
    hDEfgLEG2huSDDbs5Bp,
    hSI2vVSh95KxpDE,
    jDO3bBZEjkHGht8eeaCVkg,
    SxMalYZi46Lqfh,
    sTh8CIUAG2QVSWdbjtjfBMpp1,
    qHs81GZ5BLZEnrr0,
    AwJd92H2X6NQRmyy,
    eKf03JAkvZChgV,
    BvqP4kF2sC41P49,
    ScwtZiIz2oR3,
    moP35GSnAJR85,
    zABbSqIC,
    xSU57wPVBK2KcZITdxJ,
    2FKelxqB3H2q6XOI,
    ctmAHiux2O2PYcYa6ZKTh,
    gQ2SVJmBFDux1A,
    pvO2vDsl2,
    5dvcLLiN,
    SD4pg1am012
</license>
```

Always verify the expiry date AND enabled modules after uploading a new licence file.

# 3.3 – Viewing, Downloading & Uploading Licences

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*Step-by-step procedures for licence management*

## How to View / Download the Current Licence

Step 1: Navigate to Administration → N4 Licensing

Step 2: Review the licence details: expiry date, enabled modules, user session limits, facility count

Step 3: Confirm all expected modules are active (N4 Base, Mobile, Billing, XPS connection, etc.)

Step 4: Click Download to save a copy of the current licence file to your local machine as a backup

Step 5: Record the expiry date and set a calendar reminder 60 days before expiry

## How to Upload / Activate a New Licence

Step 1: Obtain the new .lic file from Navis/Kaleris Support or your Navis account manager

Step 2: Navigate to Administration → Security → Licenses → Licenses view

Step 3: Click 'Upload Licence' and select the new .lic file from your local machine

Step 4: N4 will validate the licence file – a success confirmation message appears when accepted

Step 5: Review the licence details to confirm the new expiry date and all expected modules are present

Step 6: No system restart required for most licence updates – verify by checking module availability

📌 ⚠ Contact Navis/Kaleris support IMMEDIATELY if modules are missing or the expiry date is incorrect after upload. Keep a backup copy of EVERY licence file.

Section 3.4

# XPS Administration Basics

User Admin, Roles, Equipment, Settings File, Ship Files

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DAY 3

# 3.4 – What is XPS and How Does It Relate to N4?

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*XPS is the real-time graphical planning and dispatch module*

| | |
|---|---|
| **Full Name** | eXpert Planning System (XPS) |
| **Function** | Real-time equipment dispatch, yard crane planning, work instruction management |
| **N4 Relationship** | XPS reads from N4 Operational Data Cache. N4 is the MASTER – XPS is view/dispatch only. |
| **NOT a Separate DB** | Unlike old SPARCS/Express – XPS is NOT a separate database. Everything defined in N4 flows to XPS. |
| **Access Method** | XPS client application via the XPS shortcut in the TOS Folder on your desktop |
| **Config Files** | XPS operational parameters managed via the XPS settings file (XML/txt-based) |
| **Primary Users** | Yard Planners, Vessel/Rail Planners, Execution Managers |

📌 Everything is defined in N4 and flows to XPS automatically. You should NEVER need to enter the same data twice.

# 3.4 – XPS User Administration Screenshot

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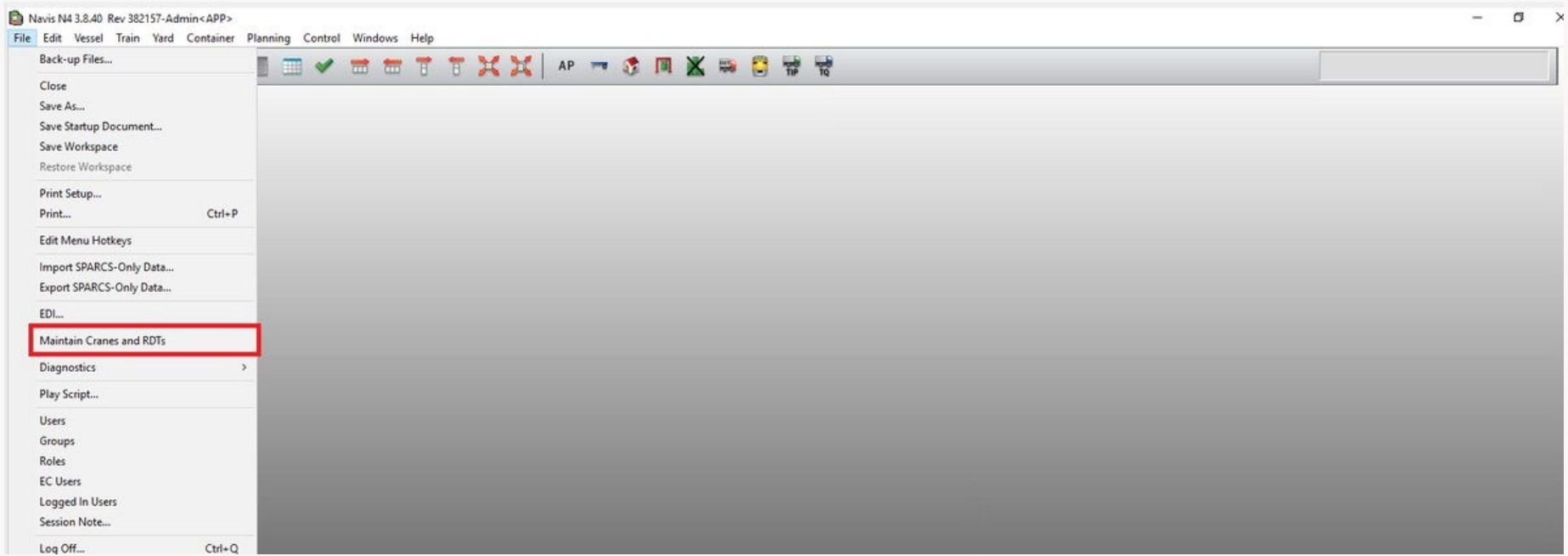
*XPS > File > Users from the Training Manual*




All XPS users are created and managed in N4 Administration → Security → Users. They log in to XPS using their N4 credentials.

# 3.4 – XPS User Administration & Role Management

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*Creating and managing XPS users and roles*

## XPS User Administration

All XPS users are created and managed in N4 Administration → Security → Users

Navigate to: Administration → Security → Users. Click Add User.

Enter: Username, Full Name, Email Address, Default Role.

Assign the user to one or more Roles that include XPS-related privileges

Set a temporary password and enforce change on first login

Click Save. The user can now log in to XPS using their N4 credentials.

## Role/Privilege Management for XPS

Yard Planner Role: view and plan container positions, manage yard allocations, create yard move filters

Vessel Planner Role: access vessel schedule, set work patterns, plan discharge/load, manage crane splits

Execution Manager Role: full access to all XPS dispatch and planning functions, complete moves, manage queues

View Only Role: read-only access to XPS yard views, vessel views and work queues – no planning functions

📌 XPS privileges are controlled through N4 Roles. Always add XPS-related privileges to the role before assigning to users.

# 3.4 – XPS Equipment Types Reference

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*All crane and equipment types available in XPS*

| | |
|---|---|
| **RTG** | Rubber Tyred Gantry – mobile stacking crane for container yard operations |
| **STS** | Ship-to-Shore crane – fixed quay crane for vessel loading and discharge |
| **RS** | Reach Stacker – for stacking and transport in smaller terminals |
| **EH** | Empty Handler – specialised crane for stacking empty containers |
| **YT** | Yard Tractor – horizontal transport vehicles between quay and yard |
| **Create Equipment** | XPS File → Maintain Cranes and RDTs OR Configuration → Equipment → Equipment |
| **Equipment Steps** | Click Add (+) → Select Equipment Type → Enter Equipment ID, Name, Max Lift Capacity → Assign Facility → Save |
| **Available in XPS** | Equipment is now available in XPS for dispatch and assignment to work queues |

# 3.4 – Equipment Creation Form Screenshot

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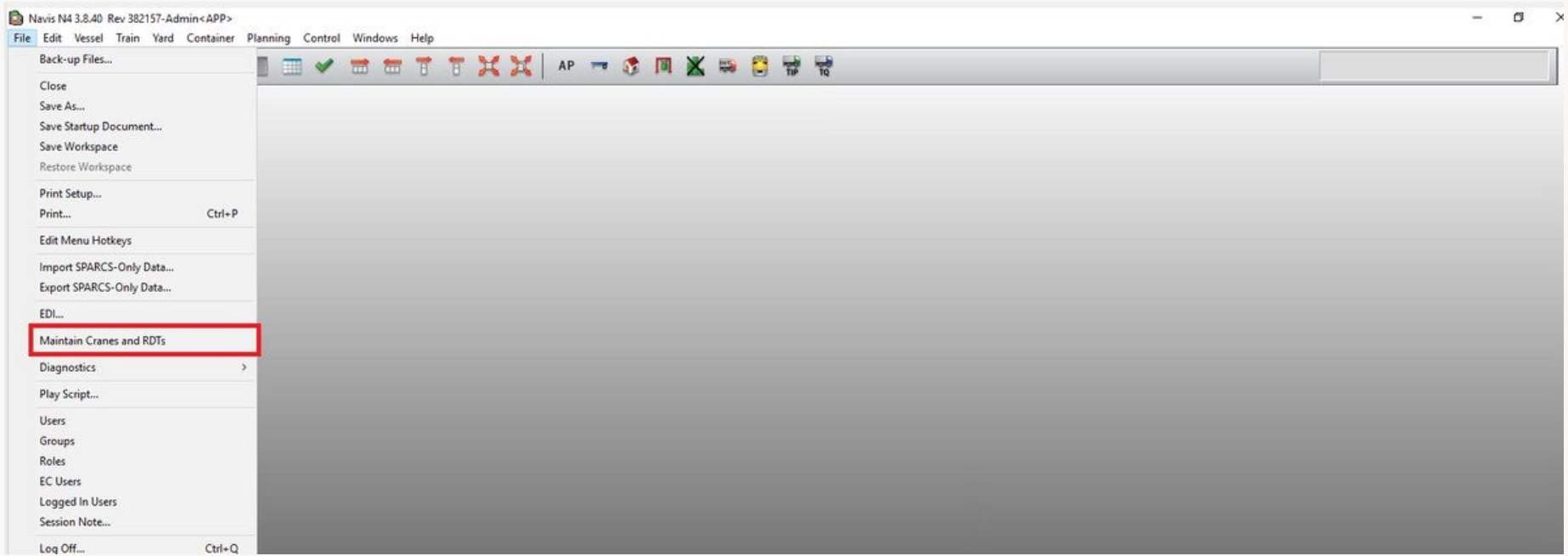
*N4 Equipment creation form from the Training Manual*




*N4 Equipment creation form showing Equipment Type selector, Equipment ID, Name, Maximum Lift Capacity and Facility assignment fields highlighted*

# 3.4 – Creating Pools & Points of Work (POW)

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*Group equipment and define work locations for dispatch*

## Creating Equipment Pools

In N4 (or XPS Equipment Control), navigate to: Equipment Control → Pools

Click Add (+). Enter Pool ID (e.g., 'RTG-ZONE-A') and Pool Type (must match equipment type)

Add equipment to the pool from the list of registered equipment

Save. The pool is now available for job assignment in XPS dispatch queues

## Creating Points of Work (POW)

Navigate to: Equipment Control → Points of Work

Click Add (+). Enter POW ID (e.g., 'BLOCK-A01') and Description

Select the Equipment Pool that services this Point of Work

Define the yard block or zone this POW covers

Save. The POW is now available in XPS for job sequencing and dispatch

# 3.4 – Updating the XPS Sparcs Settings File

*C:\ProgramData\Navis\xps\data Sparcs Settings.txt*

## What the Settings File Controls

Location: C:\ProgramData\Navis\xps\data Sparcs Settings.txt

Controls: job timeout values, priority weights, zone boundaries, display configurations

Format: XML/text-based configuration file (open with Notepad++, VS Code or similar)

⚠ NEVER open with Microsoft Word – it corrupts the file format

## Key Settings That May Need Modification

Job timeout values: how long before a dispatched job is considered failed

Priority weights: container categories (Import vs Export vs Transship)

Zone boundary definitions: which yard blocks belong to which planning zone

Flex Field display settings: which unit flex fields are visible in XPS graphical views

## Modification Procedure

⚠ ⚠ ALWAYS take a backup BEFORE making any changes. Incorrect settings can cause dispatch failures. Test all changes in the test environment first.

Step 2: ALWAYS copy the file to a safe location BEFORE making any changes (keep a backup)

# 3.4 – Updating XPS Licences & Ship Files

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*Separate from N4 licence – own file and procedure*

## Updating XPS Licences

XPS has its OWN licence file separate from the N4 licence

The XPS licence controls: number of connected equipment, cranes and concurrent planner sessions

Step 1: Obtain the new XPS license.xml file from Navis/Kaleris Support

Step 2: STOP the XPS service before uploading the new licence (coordinate with Operations Manager)

Step 3: Replace the existing XPS licence file in the XPS installation licence directory

Step 4: Restart the XPS service

Step 5: Log in to XPS and verify: Help → About or XPS Administration → Licensing

Step 6: Confirm the new expiry date and that all expected equipment counts and planner seats are correct

## Accessing the Ship File in XPS (.NSD files)

Ship File Format: .NSD file (NAVIS Ship Definition) – XML-based vessel structural definition

Location: XPS ship file directory on XPS server (C:\ProgramData\Navis\xps\data\Ship Files)

📌 The .NSD file name MUST match the N4 Vessel Class ID exactly – case sensitive. If they don't match, the bay plan will be empty in XPS.

Access in XPS: Vessel → Vessel Schedule → select vessel visit → Actions → Open bay plan

# 3.4 – XPS Licence Screen Screenshot

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*XPS licence verification after upload*

```
<customer:code>LFT</customer:code>
<license>
    WvMr_fVWDFq,
    SwVYp70JiT6JummXUli6UUfG,
    pLEnwVqDn22ODDgENQZqXXOUb,
    fSWQxrNDe144qDjTAECeVVqOm,
    hDEfgLEG2huSDDbs5Bp,
    hSI2vVSh95KxpDE,
    jDO3bBZEjkHGht8eeaCVkg,
    SxMalYZi46Lqfh,
    sTh8CIUAG2QVSWdbjtjfBMpp1,
    qHs81GZ5BLZEnrr0,
    AwJd92H2X6NQRmyy,
    eKf03JAkvZChgV,
    BvqP4kF2sC41P49,
    ScwtZiIz2oR3,
    moP35GSnAJR85,
    zABbSqIC,
    xSU57wPVBK2KcZITdxJ,
    2FKelxqB3H2q6XOI,
    ctmAHiux2O2PYcYa6ZKTh,
    gQ2SVJmBFDux1A,
    pvO2vDsl2,
    5dvcLLiN,
    SD4pg1am012
</license>
```

*XPS Licence screen – showing licence verification after upload with equipment counts and planner seats correctly licensed*

# HANDS-ON EXERCISE



1. Log in to N4 Mobile using your assigned credentials. Select Operator: LFT, Complex: LFT, Facility: LFT.
2. Navigate to Yard Inspection. Find any container in the Yard. Update Seal Number 1 using (S). Verify in N4 Unit Inspector.
3. Record a Damage (D) on the same container – enter damage type and component as directed by trainer.
4. Record Placard for Export (P) for the container.
5. Navigate to the Reefer Monitor. Find your assigned reefer container (e.g., REEF0703111 for User01).
6. Update the reefer temperature reading. Toggle On Power / Take Off Power. Verify changes in N4.
7. Open N4 Gates and create a new gate (ID, Name, Direction, Type as directed by trainer).
8. Navigate to Gate Stages → Ingate → DI → Include Storage Paid Through Date → set Grace hour to 12hrs.
9. Open the printer form → Create a new printer for outgate. Assign the IP address provided by trainer.
10. Identify 4 business tasks in any gate form and explain their uses when Included or Excluded.
11. Navigate to Administration → N4 Licensing. Record the current licence expiry date and list all enabled modules.
12. Click Download and save the current licence file to your training desktop folder as a backup.
13. Upload the test licence file provided by your trainer. Confirm the success message appears.
14. After uploading, verify the new expiry date and confirm all modules remain enabled.
15. In XPS: File → Users – create a new user and assign them the 'Yard Planner' role. Confirm user can log in to XPS.

DAY

# 4

## Advanced TOS Administration

Application Management | TOS Full/Partial Restart | EDI (Inbound/Outbound/Mapping) | Reporting

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TODAY'S AGENDA

1. TOS Architecture – Component Reference
2. Full TOS STOP Sequence (11 Steps – in order)
3. Full TOS START Sequence (11 Steps – in order)
4. Partial TOS Restart
5. Basic TOS Troubleshooting Framework (6 Steps)
6. EDI Overview & Terminology
7. Supported EDI Message Types
8. Reading a BAPLIE File – Segment by Segment
9. BAPLIE Segment Reference Table
10. N4 EDI Setup Sequence (10 Steps)
11. Inbound EDI Processing – 5 Stages
12. Outbound EDI Processing – 5 Stages
13. Key EDI Terminology Reference
14. Common EDI Errors & Resolutions
15. Reporting in N4 – Report Definitions

Section 4.1

# TOS Application Management

Stop/Start Sequences, Partial Restart, Troubleshooting

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DAY 4

# 4.1 – TOS Architecture Components Reference

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*All TOS components and their roles*

| | |
|---|---|
| **N4 Application Server** | Java-based application server hosting the N4 application nodes |
| **N4 Database Server** | Oracle or PostgreSQL – the MASTER record store for all N4 operational data |
| **Cache Cluster** | Coherence Cache Cluster: PARTICIPANTS, OBJECTS, JOURNAL, MISC named caches |
| **XPS Engine** | eXpert Planning System – separate service reading from Cache via the Bridge |
| **EDI Engine** | Message broker handling inbound/outbound EDI file processing and scheduling |
| **N4 Mobile Server** | Radio Server and N4 APM layer handling handheld RDT device sessions |
| **N4 Share** | High-availability shared file system – CRITICAL for multi-node N4 deployments |
| **ECN4** | Crane Network 4 – interface for CTUI (Crane Team UI) crane workstation integration |
| **ECN4 Daemon** | Background service maintaining ECN4 connections and crane session persistence |

# 4.1 – Full TOS STOP & START Sequences

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*Execute EACH step in order – confirm service state before proceeding to next*

## STOP SEQUENCE (in this exact order)

1. Stop N4 billing service
2. Close XPS Client application (Users, XPS Decker, Dispatcher, Crane Scheduler, etc.)
3. Stop ECN4
4. Stop ECN4 daemon
5. Stop XPS
6. Stop XPS daemon (Bridged Service)
7. Stop Stand-by Center Node
8. Stop Center node
9. Stop all Cluster nodes one by one EXCEPT Node 1
10. Stop Node 1
11. Stop Apache Node Balancer Service (optional)

## START SEQUENCE (in this exact order)

1. Start Node 1
2. Start Center Node
3. Start XPS daemon (Bridged Service)
4. Start XPS
5. Start all other nodes one by One
6. Start ECN4 daemon Service
7. Start ECN4 Webservice
8. Start Standby Center Node
9. Start Apache Node Balancer Services
10. Launch XPS Client Services (Decker, Dispatcher, CraneScheduler, etc.)
11. Start billing services

📌 ⚠ NEVER perform a full TOS stop during active vessel operations without explicit written sign-off from the Operations Manager. 15 minutes advance warning minimum – 30 minutes is best practice.

# 4.1 – Partial TOS Restart Reference

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*Restart specific services without affecting others – always try this FIRST*

| | |
|---|---|
| **Identify failing service** | Check logs and user reports to determine which specific module is unresponsive |
| **Restart EDI Engine (Linux)** | systemctl restart navis-edi |
| **Restart EDI Engine (Windows)** | net stop NavisEDI \| net start NavisEDI |
| **Restart XPS (Linux)** | systemctl restart navis-xps |
| **Restart XPS (Windows)** | net stop NavisXPS \| net start NavisXPS |
| **Restart N4 Mobile (Linux)** | systemctl restart navis-mobile |
| **Monitor logs (Linux)** | tail -f /opt/navis/n4/log/server.log |
| **Monitor logs (Windows)** | Monitor via log viewer in Windows event viewer or application log directory |

📌 💡 Always keep an N4 log tail running (tail -f server.log) during a restart so you can see startup progress in real time and catch any errors immediately.

# 4.1 – Basic TOS Troubleshooting Framework

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*6-step systematic approach to resolving TOS issues*

## 6-Step TOS Troubleshooting Framework

Step 1 – Identify Scope: Is the issue affecting ALL users (server-side problem) or ONE user/workstation (client-side problem)?

Step 2 – Check N4 Logs: Review n4.log / server.log on the application server for ERROR or WARN entries and stack traces

Step 3 – Check EDI Logs: If the issue involves message processing failures, check the EDI engine log files

Step 4 – Check Connectivity: Verify network: client → app server → database. Check firewall rules if applicable.

Step 5 – Restart Service: If logs show a hanging thread, memory issue or unresponsive module – perform targeted partial service restart

Step 6 – Escalate: If unresolvable, raise a support ticket via the Navis Community Portal with FULL log files attached

Section 4.2

# Electronic Data Interchange (EDI)

Overview, BAPLIE, Setup Sequence, Inbound & Outbound Processing

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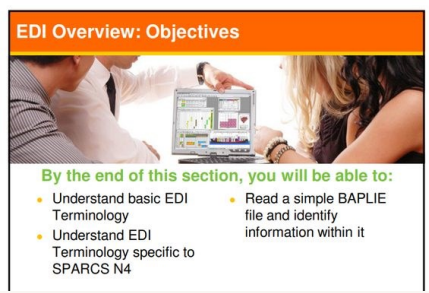
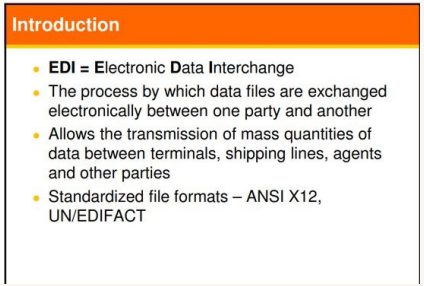
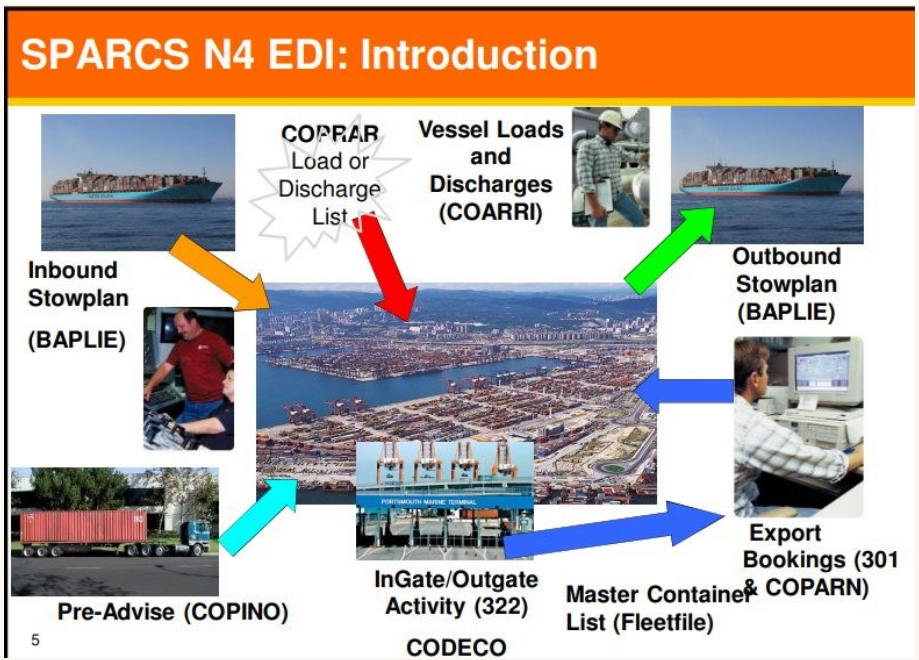
DAY 4

# 4.2 – EDI Overview & Terminology

*From the Training Manual*




*EDI overview: Electronic Data Interchange definition, standards (UN/EDIFACT, ANSI X12), file format (ASCII text, delimiters), message types*

*EDI terminology: Message, Message Type, Segment, Field, Segment ID – how EDI messages are structured*

# 4.2 – Supported EDI Message Types

*Full reference from the Training Manual*

### Supported EDI Message Types - EDIFACT

- **APERAK** Acknowledgement (release 96B)
- **BAPLIE** 1.5 and 2.0 Stowplan (release 95B)
- **COARRI** Activity (release 95B)
- **CODECO** Activity (inbound and outbound, release 95B)
- **COPARN** Booking (releases 00B and 95B)
- **COPINO** Appointment/Preadvise (releases 95A and 95B)
- **COPRAR** Load/Discharge List (releases 95A and 95B)
- **CUSRES** Release (release 96B)
- **IFTMBC** Booking (releases 98B and 95B)
- **TPFREP** Performance (release 00B)
- Other various proprietary EDI messages (LOADLIST, SAUDILDP, and SAUDIMNF)

### Terminology – Messages and Standards

- **Message** (aka EDI Document aka EDI File) - File containing data formatted according to EDI standard.
- **Standard** – Set of standard EDI Message Types (i.e. EDIFACT or X12).
- **Message Type** - EDI message template based on EDI Standard (e.g. BAPLIE, CODECO, 315, etc.)
- **Segment** - Structured parts of an EDI Message. (i.e. equipment record in a stow plan).
- **Field** - Element within an EDI Segment that defines a particular attribute (i.e. container height).

### Terminology – EDI Processing

- **Load** – Loading an inbound Message into the Staging Tables. Review in EDI Interchanges.
- **Post** – Commit inbound EDI data from Staging Tables to the N4 database.
- **Extract** – Extract data from N4 and convert to outbound Message.
- **Error** - Error that occurs when processing EDI Batch.
- **Warning** – Minor Problems (bad load port)
- **Mapping File** - An XML file that maps Segments of Message to fields in N4.

### EDI Formats, Standards, and Terminology

- An EDI **File** is made of ASCII text
- EDI **File** can contain many **Message Types (X12)**
  - i.e. 309 and 350 in one EDI file
- **Files** are arranged into **Segments** and **Fields**
  - A **File** has many **Segments**
  - A **Segment** has many **Fields**
- **Segments** usually grouped for each entity (i.e. container)
- **Segments** are identified by their **Segment ID**
- **Fields** within **Segments** are separated by delimiters
- Each **Field** in a **Segment** represents a specific attribute, according to the EDI Standards
- Attributes include container number, size, type, height, etc.

*EDI Message Types table: BAPLIE, COPRAR, COARRI, COPINO, COPARN, CODECO, CUSRES, APERAK, IFTMBC, TPFREP standard and purpose*

*EDI Message Types (continued): 417/418 Rail (X12), additional EDIFACT message details and purposes*

# 4.2 – EDI Message Types Reference

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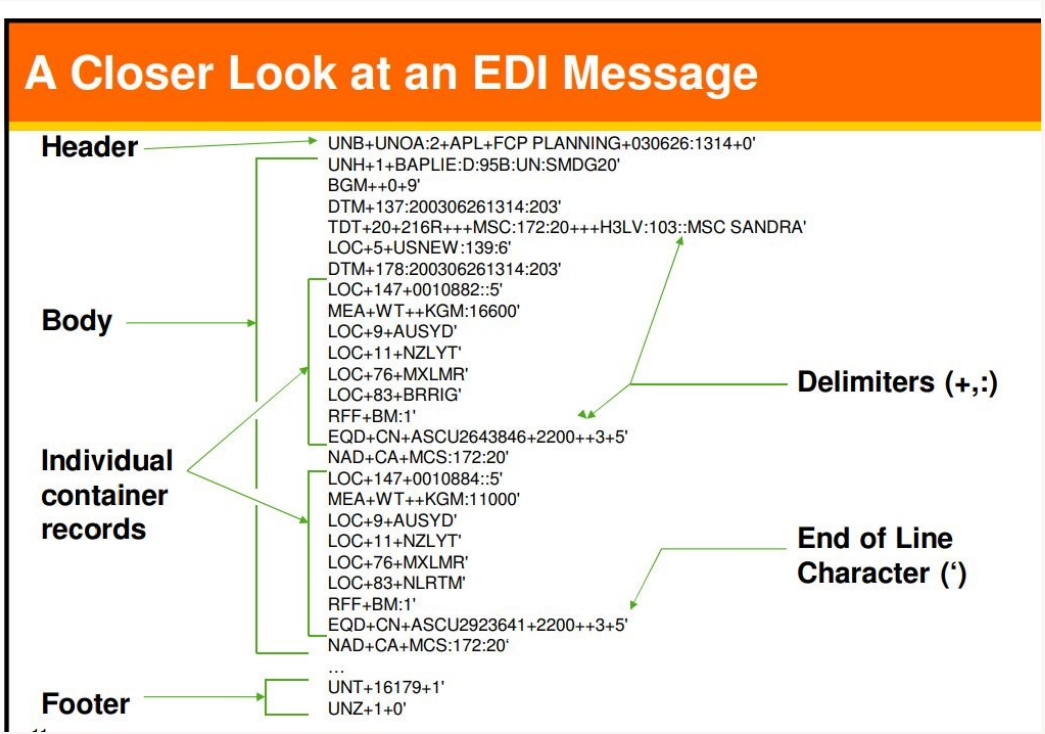
*All supported EDI message types and their purpose in N4*

| | |
|---|---|
| **BAPLIE 1.5 & 2.0** | Vessel Bay Plan / Stow Plan (Inbound from carrier, Outbound to carrier) |
| **COPRAR** | Load or Discharge List (container lists for vessel operations) |
| **COARRI** | Container Activity Report – confirms vessel loads and discharges to carriers |
| **COPINO** | Appointment / Pre-Advise (truck gate pre-notification from carrier) |
| **COPARN** | Export Booking (booking from carrier to terminal) |
| **CODECO** | InGate/OutGate Activity (inbound/outbound, release confirmations) |
| **CUSRES** | Customs Release (from customs authority to terminal) |
| **APERAK** | Acknowledgement message |
| **IFTMBC** | Booking Confirmation |
| **TPFREP** | Terminal Performance Report |
| **417/418 Rail** | Rail Waybill / Rail Consist (ANSI X12 standard, North America) |

# 4.2 – Reading a BAPLIE File – Example

*From the Training Manual*




*BAPLIE EDI file example showing the 3 sections: Header (UNB/UNH), Body (TDT/LOC/MEA/EQD segments) and Footer (UNT/UNZ) with field delimiter labels*

# 4.2 – BAPLIE File – Segment by Segment

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*Understanding each segment and what it contains*

```
UNB+UNOA:2+APL+FCP PLANNING+030626:1314+0'
← HEADER (Interchange): identifies sender, receiver, date/time
UNH+1+BAPLIE:D:95B:UN:SMDG20'
← Message Header: Type=BAPLIE, Release=95B
TDT+20+216R+++MSC:172:20+++H3LV:103::MSC SANDRA'
← VESSEL: voyage=216R, line=MSC (BIC=172), callsign=H3LV, name=MSC SANDRA
LOC+147+0010882::5'
← Bay Position: 001=Bay, 08=Row, 82=Tier (above deck)
MEA+WT++KGM:16600'
← Weight: 16,600 KG gross weight
LOC+9+AUSYD' LOC+11+NZLYT' LOC+83+BRRIG'
← POD=AUSYD, POD2=NZLYT, Destination=BRRIG
EQD+CN+ASCU2643846+2200++3+5'
← Container: ID=ASCU2643846, ISO=2200(20ft GP), Full=3, Transship=5
UNT+16179+1' UNZ+1+0'
← FOOTER: segment count=16179, interchange end
```

📌 Delimiters: + = field separator | : = sub-field separator | ' = end of segment (apostrophe character)

# 4.2 – BAPLIE Segment Reference

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*Key segments and what each contains*

| | |
|---|---|
| **EQD Segment** | Equipment Detail: container number, ISO type, Full/Empty status (3=Full, 5=Empty), Import/Transship status |
| **TDT Segment** | Transport: voyage number, line operator SCAC/BIC, radio call sign, vessel name |
| **LOC+5** | Port of Loading (POL) |
| **LOC+9** | Port of Discharge (POD) |
| **LOC+11** | Second Discharge Port (POD2) |
| **LOC+83** | Destination |
| **LOC+147** | Bay Position on the vessel (BBBRRTT format) |
| **MEA+WT** | Measurements – weight in KGM (kilograms) |
| **Delimiter +** | Field separator within a segment |
| **Delimiter :** | Sub-field separator within a field |
| **End of Line '** | Marks the end of each segment (apostrophe character) |

# 4.2 – N4 EDI Setup Sequence Flowchart

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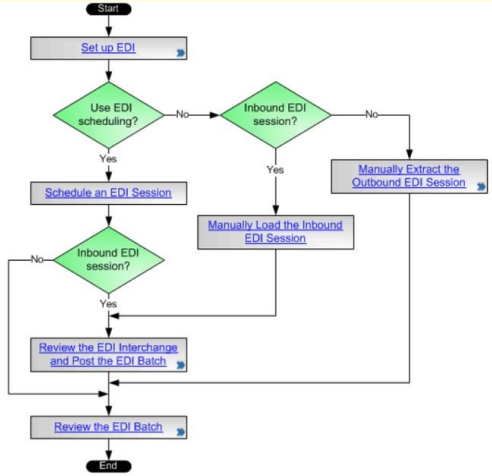
*From the Training Manual*

## SPARCS N4 EDI: Set Up




### Setting up an EDI Directory Structure

- Setup a unique directory for each direction/message type/trading partner combination
- N4 will automatically sweep to get inbound EDI files
- N4 will automatically put outbound EDI files

**Examples**:

- **/u01/edi/in/MSK/315 :** Inbound 315 received from Maersk
- **/u01/edi/in/MSK/baplie :** Inbound BAPLIE from Maersk
- **/u01/edi/out/MSK/322 :** Outbound 322 sent to Maersk
- **/u01/edi/out/MSK/baplie :** Outbound BAPLIE sent to Maersk

### Defining EDI Message Types

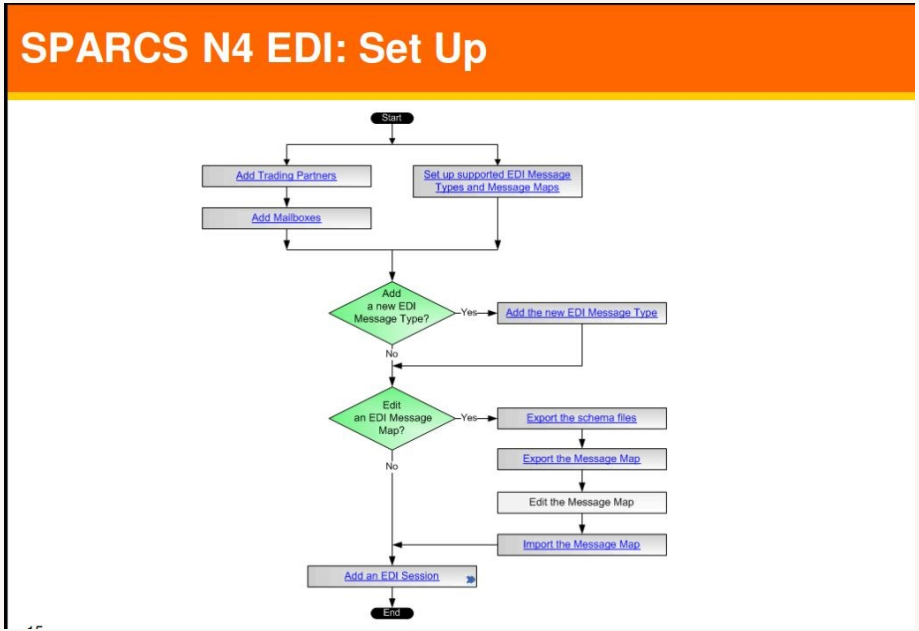
- Version/Release Numbers validated against message
- Default maps provided by Navis
- Specify EDI map to be used with message type: custom or default

*N4 EDI Setup flowchart (Part 1): Start → Add Trading Partners → Set up EDI Message Types and Maps → Add Mailboxes → Add new EDI Message Type? → decision path*

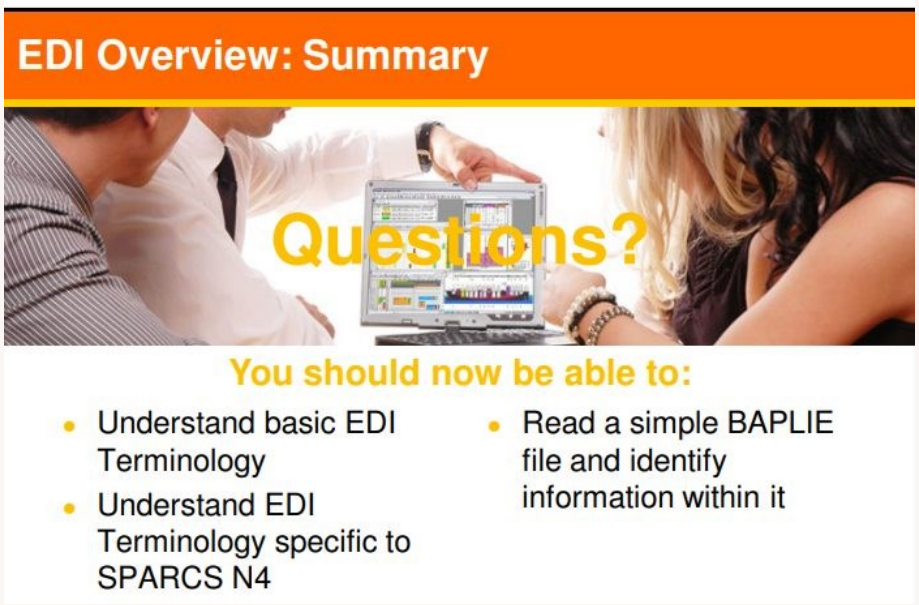
*N4 EDI Setup flowchart (Part 2): Edit EDI Message Map? → Export schema files → Export Message Map → Edit Map → Import Map → Add EDI Session → End*

# 4.2 – Additional EDI Setup Screenshots

*More EDI configuration detail*




*EDI Setup (continued): full sequence flowchart showing all 10 configuration steps*




*EDI configuration: Session, Filter, Mailbox and Job setup screens*

# 4.2 – N4 EDI Configuration Sequence (10 Steps)

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*Administration → EDI → EDI Configuration – follow in this exact order*

**1**

**EDI Directory Structure**

Unique folder per direction, message type and trading partner

**2**

**Define EDI Message Types**

Version/release. Assign mapping file (custom or Navis default).

**3**

**Import Message Maps (XENOS)**

Import predefined Message Maps via XENOS GoXML tool

**4**

**Link to Message Classes**

Link Message Types to Classes (stowplan, booking, activity, release)

**5**

**Create Trading Partners**

Organisations exchanging EDI with the terminal

**6**

**Create Mailboxes**

One per direction/message type combo per Trading Partner

**7**

**Create EDI Filters**

Session Filters: translate partner codes to terminal codes

**8**

**Create EDI Sessions**

Session = Filter + Mailbox + Message Type + Direction

**9**

**Create EDI Jobs**

Schedule polling/extract frequency. Inbound and outbound.

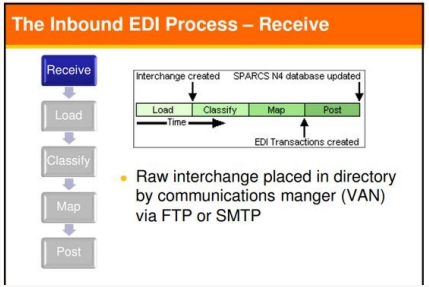
**10**

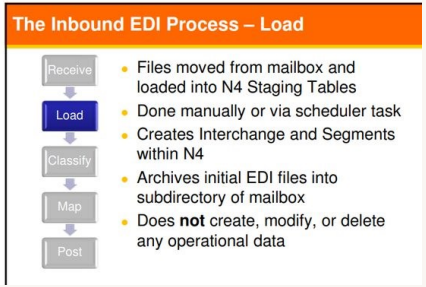
**Validate & Execute**

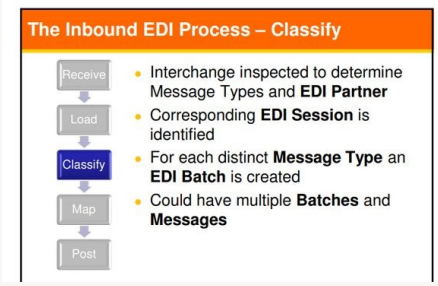
Post inbound / Extract outbound. Verify in Batch Inspector.

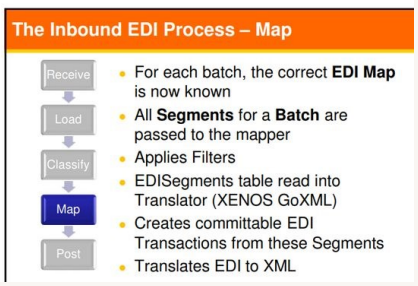
# 4.2 – Inbound EDI Processing – 5 Stages

*From the Training Manual*




*Inbound EDI Stage 1 (RECEIVE) and Stage 2 (LOAD): raw EDI file placed in directory, then moved to N4 Staging Tables. No operational data created yet.*

*Inbound EDI Stage 3 (CLASSIFY) and Stage 4 (MAP): N4 determines Message Type and EDI Partner, creates batches, then applies XENOS GoXML mapping to create transactions.*

# 4.2 – Inbound EDI Stage 5: POST

*Committing transactions to the N4 database*

## Inbound EDI Process – Post


- Finds key words
- Commits the records to the database
- Can be automatic or manual (determined by session)

## Before You Load Your First BAPLIE...


- Expect errors in Load & Post
- Go slowly
- Read the error messages
- Correct your BAPLIE file
- Correct reference data
- This will likely be the longest exercise of the course

*Inbound EDI Stage 5 (POST): N4 finds key entities, commits transactions to N4 database. Can be automatic (session setting) or manual. Creates operational data.*

# 4.2 – Inbound EDI – 5 Stages Reference

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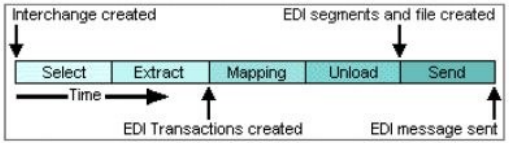
*What happens at each stage of inbound processing*

| | |
|---|---|
| **1. RECEIVE** | Raw EDI file placed in the designated inbound directory by VAN (Value Added Network) via FTP or SMTP |
| **2. LOAD** | N4 moves file to Staging Tables. Creates Interchange and Segment records. Archives original. Does NOT create/modify operational data yet. |
| **3. CLASSIFY** | N4 inspects the interchange to determine Message Types and EDI Partner. Creates one EDI Batch per distinct Message Type. |
| **4. MAP** | N4 applies the correct EDI Map (XENOS GoXML engine). Reads EDI Segments, applies Filters, translates EDI to XML, creates committable EDI Transactions. |
| **5. POST** | N4 finds key entities (containers, vessel visits, bookings), commits transactions to N4 database. Can be automatic or manual. |

# 4.2 – Outbound EDI Processing – 5 Stages

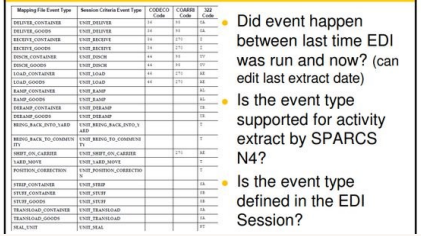
*From the Training Manual*

## The 5 Stages of Outbound EDI Processing




1. **Select** - Find events since last extract date
2. **Extract** – Extract transactions and apply filters
3. **Map** - Map transactions from extracted XML to EDI file using XENOS GoXML
4. **Unload** - Place mapped EDI file into designated mailbox and load segments to EDISegments table
5. **Send** - Sweep outbound mailbox and send file to trading partner. Archive file to sub-directory.

### How Does N4 Know What Data to Extract?



- Did event happen between last time EDI was run and now? (can edit last extract date)
- Is the event type supported for activity extract by SPARCS N4?
- Is the event type defined in the EDI Session?

### Extract Session Filter Examples

- Gate Activity for a Single Line Operator:


*Outbound EDI Stage 1 (SELECT) and Stage 2 (EXTRACT): N4 finds events since last extract date, extracts transactions and applies Session Filters (translate terminal codes to partner codes)*

*Outbound EDI Stage 3 (MAP), Stage 4 (UNLOAD) and Stage 5 (SEND): XENOS maps to EDI format, places in outbound mailbox, sends to trading partner and archives*

# 4.2 – Outbound EDI – 5 Stages Reference

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*What happens at each stage of outbound processing*

| | |
|---|---|
| **1. SELECT** | N4 finds events since last extract date. Checks event type supported and defined in EDI Session. |
| **2. EXTRACT** | N4 extracts transactions and applies Session Filters (translate terminal codes to partner codes). |
| **3. MAP** | XENOS GoXML engine maps extracted transactions from N4 XML to the outbound EDI file format. |
| **4. UNLOAD** | Maps EDI file into the designated outbound mailbox directory. Loads segments to EDI Segments table. |
| **5. SEND** | Sweeps the outbound mailbox directory and sends file to trading partner. Archives sent file in subdirectory. |

# 4.2 – Key EDI Terminology & Error Reference

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*From the Training Manual*

## Resolving Common EDI Loading Errors

| Errors | Resolution |
|---|---|
| •System exception occurred: class=class java.lang.ArrayIndexOutOfBoundsException, message=68, root cause={2} / {3}. | •EDI File is empty or doesn't follow EDI standard. Make sure you've chosen the right EDI file, and that it matches the right EDI standard. |
| •Exception occurred while Classifying, EDI Envelope or Header not found | •Your EDI file is missing its header, or has the wrong delimiter. Correct your EDI file and load again |
| •Exception occurred while Classifying, EDI Trading Partner "XXX" not found | •Make sure the Trading Partner you setup in N4 matches the one in your BAPLIE. |
| •EDI session for Partner: XXX Message Id: ABC, Version and Release: DD1234 does not exist | •Make sure the Session you setup in N4 matches the BAPLIE message header codes. |

## Resolving Common EDI Posting Errors

| Errors | Resolution |
|---|---|
| •Unrecognized SCAC Line Id: XXX<br>•Invalid operator SCAC (or BIC) | •Go to Shipping Line in N4 and add SCAC (or BIC) code that matches EDI SCAC |
| •XXX is not in the itinerary set for carrier visit ABC123. | •Edit Port Rotation for Vessel Visit and add missing routing point.<br>•May need to add Routing Point before adding it to Port Rotation |
| •Invalid unitRouting.rtgPOD : "XXX"<br>•Unknown location code 'XXX' for field 'eqoPol'. | •Add Routing Point in EDI to UN Location and Routing Point reference table in N4. |
| •Could not find a Vessel Visit for convention [AAAA], value [XXX] with O/B Voyage [123]. | •Make sure Vessel Visit convention (i.e. Lloyds Code or Call Sign) matches that in EDI file. |

*Key EDI Terminology: Trading Partner, Mailbox, Session, Session Filter, Batch, Run, Transaction, Interchange, Staging Tables, Job, Posting Rules*

*Common EDI Errors & Resolutions table showing error messages, causes and resolution steps*

# 4.2 – Common EDI Errors & Resolutions

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*When things go wrong – what the error means and how to fix it*

| | |
|---|---|
| **ArrayIndexOutOfBoundsException / message=68** | EDI file empty or wrong standard. → Verify correct file and EDIFACT vs X12 standard. |
| **EDI Envelope or Header not found** | Missing header or wrong delimiter character. → Correct EDI file header/delimiter and reload. |
| **EDI Trading Partner XXX not found** | Partner ID in file doesn't match any Trading Partner in N4. → Match Trading Partner in N4 to sender ID in UNB segment. |
| **EDI session for Partner XXX Message ABC does not exist** | Session version/release doesn't match BAPLIE message codes. → Match Session message map version/release to UNH segment codes. |
| **Unrecognized SCAC Line Id / Invalid BIC** | SCAC or BIC code in EDI file not found in N4 Line Operators. → Add SCAC/BIC to the Line Operator in N4 Configuration. |
| **XXX is not in the itinerary for carrier visit ABC** | Port code in EDI not in vessel visit port rotation. → Edit the Port Rotation to add the missing routing point. |
| **Invalid unitRouting.rtgPOD / Unknown location code** | Location code in EDI not in N4 UN Location/Routing Point. → Add routing point to Administration → EDI → EDI to UN Location table. |
| **Could not find Vessel Visit for convention XXX** | Vessel convention in EDI doesn't match N4 Vessel Visit. → Ensure Vessel Visit Radio Call Sign matches EDI TDT segment. |

Section 4.3

# Reporting in N4

Report Definitions, Jasper Integration & Report Scheduling

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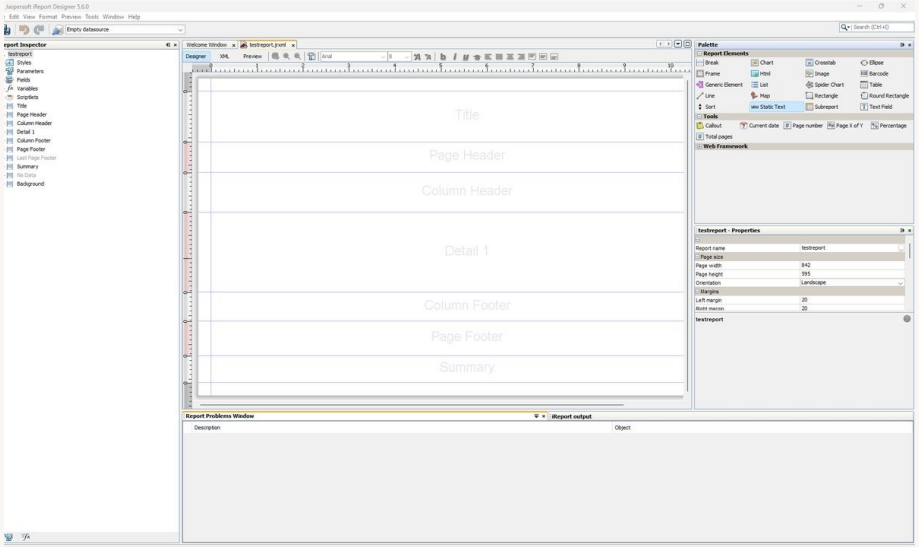
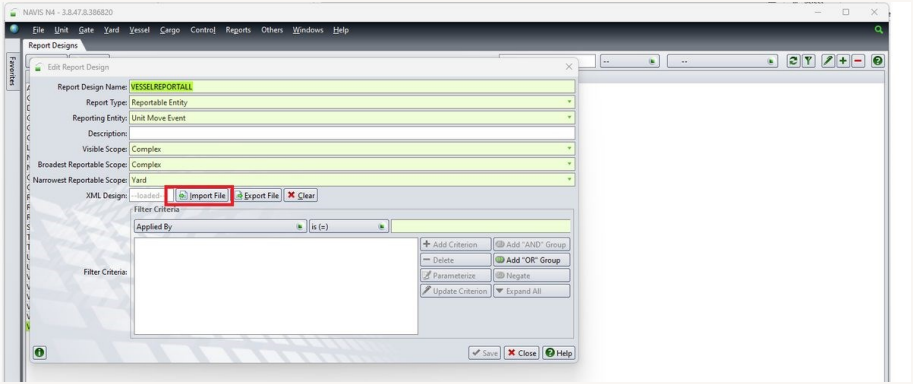
DAY 4

# 4.3 – Jasper Report Integration

*JasperSoft Studio and N4 report deployment*




*Jasper report integration: .jrxml design file → compile to .jasper → deploy via Administration → Reports → Jasper Reports → Upload. Shows VW_ data source views.*

*Modifying existing reports: Report Design → Export to .jrxml → Open with Jasper iReport Designer → edit → re-upload*

# 4.3 – Reporting Reference

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*N4 built-in reports and Jasper integration*

| | |
|---|---|
| **Reportable Entities** | Unit Visits, Vessel Visits, Gate Transactions, Equipment, Yard Inventory, Bookings, BLs, Events, Holds/Permissions, Financial data |
| **Output Formats** | PDF, CSV, Excel, HTML (as configured in the report definition) |
| **Filter Criteria** | Same filter logic as N4 list views – apply criteria to limit the report scope |
| **Column Selection** | Choose which attributes (fields) to include as columns in the report output |
| **Report Scheduling** | Scheduled via Administration → Reports → Report Jobs. Automatic at defined intervals. |
| **Jasper File Format** | .jrxml (design file) compiled to .jasper (execution file) |
| **Design Tool** | JasperSoft Studio – Eclipse-based IDE (free from jaspersoft.com) |
| **N4 Data Sources** | ALWAYS use VW_ views – officially supported and version-safe across N4 upgrades |
| **Deployment** | Compile .jasper → upload via Administration → Reports → Jasper Reports → Upload |
| **Report Jobs** | New Job → select report → set schedule → set output format → set delivery → Save |

# HANDS-ON EXERCISE



1. RDP to the TOS test server. Perform a partial restart of the EDI Engine service. Monitor the log file during restart.
2. Create a new Shipping Line (Line Operator) with ID UXY (XY = your user number). BIC must match the ID.
3. Create a Vessel Service, Vessel and Vessel Visit for your new Line Operator. Advance the visit to ARRIVED.
4. Navigate to Administration → EDI → EDI Configuration. Create a Trading Partner named UXY.
5. Add an inbound Mailbox: Direction=Receive, Directory=C:\UXY\test, Communication Type=NONE. Name it BAPINUXY.
6. Create EDI Session UXYBAPIN: Direction=Receive, Message Class=STOWPLAN, Message Map=BAPLIE_IN_20_MAEU, Mailbox=BAPINUXY.
7. Modify the sample BAPLIE file (USERXY.baplie.edi.txt) – update Line ID, Voyage ID, Vessel Name and Call Sign to match your records.
8. Load your modified BAPLIE via Administration → EDI → EDI Load (do NOT check Post Immediate). Review EDI Batch Inspector for load errors.
9. Post the BAPLIE. Review and resolve any posting errors. Confirm containers appear in Operations → Vessel → Vessel Visit → Onboard.
10. Create an outbound COARRI session. Discharge one container to create an event. Extract the COARRI and verify the output file.
11. Create an outbound EDI Job with a 5-minute repeat interval. Schedule it and verify it executes successfully via Execution Logs.
12. Create a Report Definition for Unit Visits: filter=IN YARD AND Category=IMPORT. Columns: Unit ID, ISO Type, Line Operator, Position, POD, Days In Yard.
13. Run the report in CSV format. Verify the output contains unit data matching your filter.
14. Schedule the report to run daily at 06:00 and deliver to your training email address.

DAY

# 5

## N4 Billing

Billing Overview | Configuration | Contracts | Invoicing | Payments | Sequencing

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TODAY'S AGENDA

1. Introduction & Overview of N4 Billing
2. Billing Charge Types
3. Modes of Operation in N4 Billing
4. Operations Mode – Invoices, Payments, Credit Notes, Statements
5. Configuration Mode – Tariffs, Contracts, Service Types, GL Codes
6. Administration Mode – Sequencing, Settings, Billing Groups
7. Billing Configuration Order (8 Steps)
8. Service Type Configuration
9. Tariff Configuration & Tier Steps
10. GL Code Configuration
11. Invoice Type Configuration
12. Contract Setup & Tariff Rate Configuration
13. Invoice Generation Process
14. Reviewing & Approving an Invoice
15. Recording Payments

Section 5.1

# N4 Billing Overview

What N4 Billing Does and How It Works

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DAY 5

# 5.1 – N4 Billing Overview

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*Core function, data sources and output*

| | |
|---|---|
| **Core Function** | Automated terminal charge calculation and invoice generation based on N4 operational events |
| **Data Source** | Reads directly from N4: unit visit events, gate transactions, vessel visits, reefer monitoring, damage records |
| **Charge Types** | Storage/demurrage, reefer monitoring/power, crane moves, gate transactions, cleaning, damage repair, customs examination |
| **Output** | Invoice documents (PDF/print), financial postings to GL, payment records, customer statements, credit notes |
| **Access** | N4 → Billing mode selector (SEPARATE from Operations, Configuration and Administration) |
| **Billing Events** | N4 unit events flagged as Billable (in the Event Type definition) are extracted to the billing table for invoice generation |
| **Module Licensing** | N4 Billing is a separately licensed module. Verify it appears in the N4 Licence screen. |

📌 N4 Billing eliminates manual invoicing by automatically applying configured tariffs to unit visits based on actual operational data captured by N4.

# 5.2 – Modes of Operation in N4 Billing

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*Three billing modes – Operations, Configuration and Administration*

## Operations Mode – Day-to-Day Billing

Invoices – View, generate, approve and dispatch invoices to customers

Payments/Receipts – Record and reconcile customer payments against outstanding invoices

Credit Notes – Issue credits to reverse or reduce previous invoices (corrections or disputes)

Customer Statements – Generate outstanding balance summaries per customer/line operator

Billing Events – View the event-based triggers that generated charges for specific units/visits

## Configuration & Administration Modes

CONFIGURATION: Tariffs – Define charge rates and rules (base tariff schedule)

CONFIGURATION: Contracts – Customer-specific pricing overrides to the standard tariff

CONFIGURATION: Invoice Types – Standard, Proforma, Credit Note document templates

CONFIGURATION: Service Types – Storage, Reefer, Gate Move, Crane Move, etc.

CONFIGURATION: GL Codes – Map billing charges to financial general ledger codes

CONFIGURATION: Tax Codes – Configure taxes per service type or customer

ADMINISTRATION: Billing Settings – Currency, rounding, free time defaults

ADMINISTRATION: Sequencing – Invoice/credit note/receipt number formats

ADMINISTRATION: Billing Groups – Restrict which customers a user can see

ADMINISTRATION: Archive – Archive historical invoices and billing records

Section 5.3

# Billing Configuration

Service Types, Tariffs, GL Codes, Invoice Types

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DAY 5

# 5.3 – Billing Configuration Order – 8 Steps

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*Follow this EXACT sequence to avoid dependency errors*

**1 — Configure GL Codes**
Map to your terminal's chart of accounts

**2 — Configure Service Types**
Define chargeable services and link to GL codes

**3 — Configure Invoice Types**
Standard, Proforma, Credit Note document templates

**4 — Configure Sequencing**
Number formats – do this BEFORE first invoice!

**5 — Configure Tariffs**
Base charge rates for all service types with tier steps

**6 — Configure Contracts**
Customer-specific overrides to base tariffs

**7 — Configure Billing Settings**
Global parameters: currency, free time defaults, rounding

**8 — Test Invoice Generation**
Test in test environment before going live

# 5.3 – Service Type Configuration

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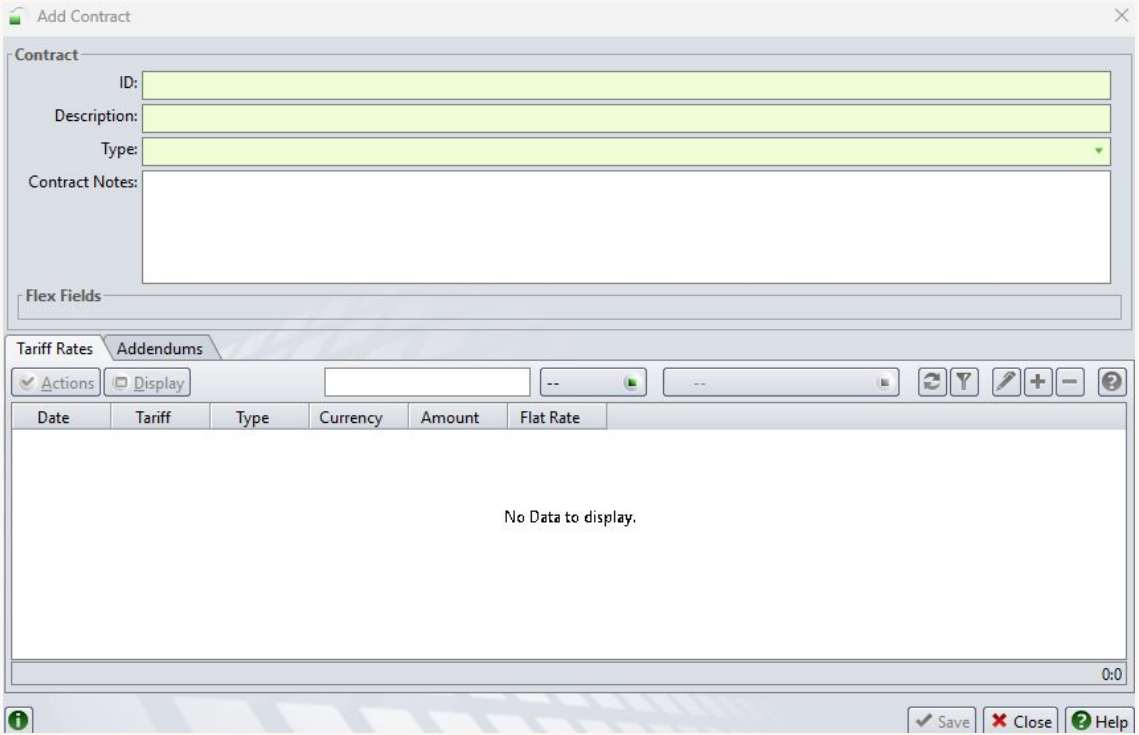
*Billing → Configuration → Service Types*

| | |
|---|---|
| **Service Type ID** | Unique identifier for the chargeable service (e.g., STORAGE-20FT, REEFER-MON) |
| **Description** | Human-readable description of the service |
| **Chargeable Entity** | What entity the charge applies to: Unit, Vessel Visit, or Gate Transaction |
| **Charge Basis** | How the charge is calculated: Per Day \| Per Move \| Per Unit \| Per Container \| Per Hour |
| **GL Code** | Link to the General Ledger code for financial accounting |
| **Storage** | Daily storage charge on units IN YARD beyond the free time period |
| **Reefer Monitoring** | Per-day or per-plug-event charge for reefer container power monitoring |
| **Gate Transaction** | Charge per truck gate transaction (inbound or outbound) |
| **Crane Move** | Charge per crane lift (discharge or load move) |

# 5.3 – Tariff Configuration Screenshot

*Billing → Configuration → Tariffs from the Training Manual*




*N4 Tariff configuration screen showing tariff lines with Service Type, Rate, Currency and Conditions columns. Tier step configuration visible.*

# 5.3 – Tariff Configuration Reference

*Billing → Configuration → Tariffs*

| | |
|---|---|
| **Tariff ID** | Unique identifier for the tariff schedule |
| **Effective Date** | Date from which this tariff applies (required field) |
| **Expiry Date** | Date after which this tariff is no longer valid (leave blank for open-ended) |
| **Tariff Lines** | One line per Service Type: Rate, Currency, Unit of Measure, Conditions |
| **Conditions** | Filters that determine when the rate applies (size, category, carrier, container type) |
| **Tier Steps** | Progressive rate increases based on dwell time. Example: USD 10/day days 1-7, USD 25/day from day 8+ |
| **GL Code Configuration** | Billing → Configuration → GL Codes. Maps billing charges to terminal's financial accounting system. |
| **Invoice Types** | Standard Invoice \| Proforma Invoice \| Credit Note \| Statement (summary of outstanding invoices) |

📌 Create GL codes matching your terminal's chart of accounts. Link each GL code to one or more Service Types.

Section 5.4

# Contract Setup & Invoicing

Contracts, Invoice Generation, Payments, Credit Notes

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# 5.4 – Contract Setup

*Billing → Configuration → Contracts*

## Creating a Contract

Navigate to: Billing → Configuration → Contracts

Click New Contract. Enter: Contract ID, Customer (Line Operator or Organisation), Effective Date, Expiry Date

Add Contract Lines for each service type: specify the contracted rate, currency and conditions

A contract can: override the base tariff rate, provide extended free time, or apply percentage discounts

Click Save and then Activate the contract

## Contract Precedence Rule

Contract rates ALWAYS take precedence over the standard published tariff when BOTH are active

This applies when both the contract AND the tariff are active for the same service type and customer

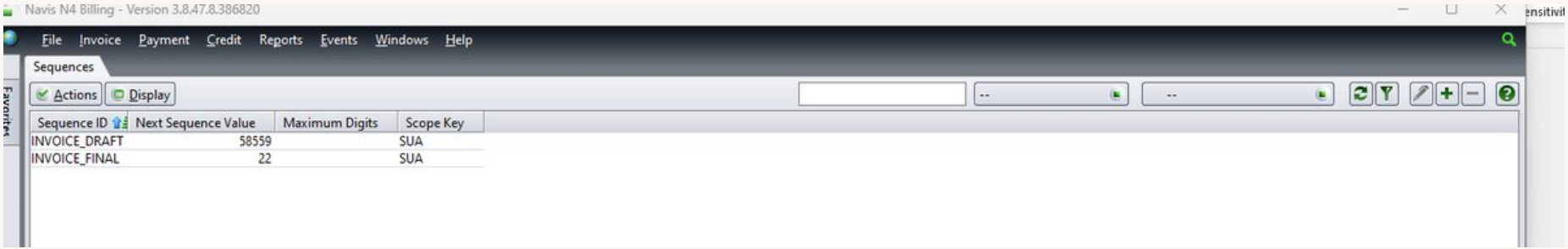
ALWAYS verify contract status (Active/Expired) when investigating unexpected or disputed charges

💡 An expired contract will automatically revert to the standard published tariff

📌 💡 Tip: Always check contract status (Active/Expired) first when a customer disputes a charge. The contract may have expired without renewal.

# 5.5 – Invoice Generation Process

*Billing → Operations → Invoices*




⚠ Once an invoice is Approved and Dispatched it CANNOT be edited. To correct: (1) Issue Credit Note to reverse, (2) Re-invoice with correct charges.

# 5.5 – Invoice Generation Step by Step

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*Billing → Operations → Invoices*

## Invoice Generation Process

Step 1: Click Generate Invoice (or use batch invoice generation for multiple customers)

Step 2: Select the Customer (Line Operator / Organisation) and billing period (or specific unit/vessel visit)

Step 3: N4 calculates all applicable charges based on: tariffs, active contracts, operational events and free time rules

Step 4: REVIEW the invoice preview carefully – verify all line items, rates, free time applied and totals

Step 5: Click Approve to finalise the invoice. This commits it PERMANENTLY.

Step 6: Click Dispatch to send to the customer (email, print or portal)

## Recording a Payment

Navigate to: Billing → Operations → Payments

Click New Payment. Select the Customer (N4 displays all outstanding invoices for that customer).

Enter: Payment Amount, Payment Date, Payment Method (Bank Transfer, Cash, Cheque, Online)

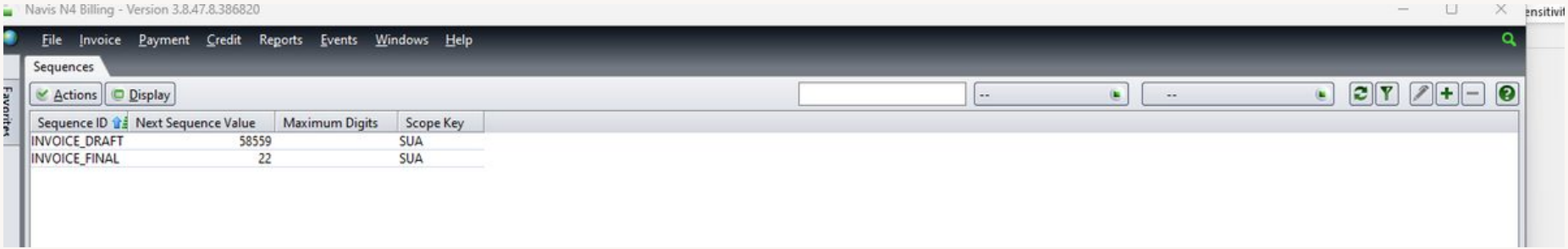
Allocate the payment against specific invoices (full or partial allocation). Enter bank reference number.

Click Save. Invoice status updates to Partially Paid or Fully Paid.

⚠ ⚠ Once Approved and Dispatched, an invoice CANNOT be edited. Always review the invoice preview BEFORE clicking Approve.

# 5.6 – Payment Recording Screenshot

*Billing → Operations → Payments from the Training Manual*




*N4 Payment recording screen showing customer name, list of outstanding invoices, payment amount field, payment method selector and allocation grid*

Section 5.7

# Invoice Number Sequencing

Configure BEFORE Generating the First Invoice

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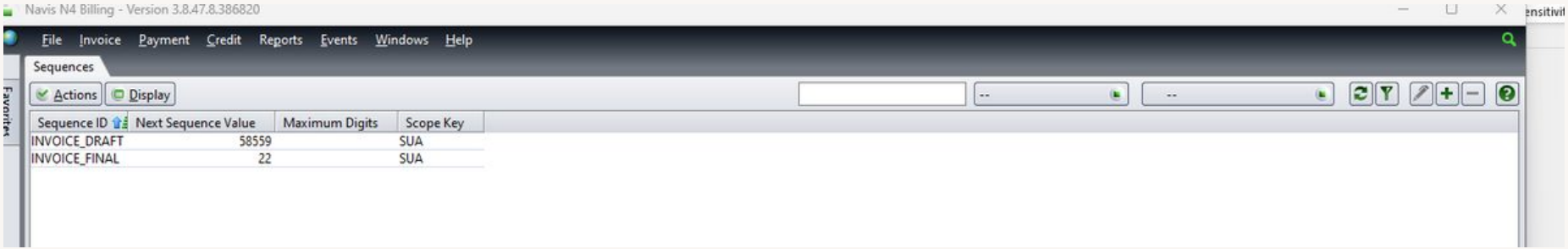
DAY 5

# 5.7 – Invoice Sequencing Screenshot

*Billing → Administration → Sequencing from the Training Manual*




*N4 Sequencing configuration screen showing Document Types, Prefix, Start Number, Number Length, Suffix, Reset Annually fields and example format*

# 5.7 – Invoice Number Sequencing Reference

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*Configure BEFORE generating the first invoice – critical setup step*

| | |
|---|---|
| **Document Types** | Invoice, Credit Note, Receipt, Statement – each has its OWN sequence definition |
| **Prefix** | Text added BEFORE the sequence number (e.g., 'INV-2024-') |
| **Start Number** | The first number in the sequence (typically 00001) |
| **Number Length** | Total digits in the numeric part, zero-padded (e.g., 5 digits gives 00001–99999) |
| **Suffix** | Optional text appended AFTER the number |
| **Reset Annually** | Whether the sequence resets to Start Number at beginning of each year |
| **Example Format** | INV-2024-00001 → Prefix='INV-2024-' + Start=00001 + No Suffix |

📌 ⚠ Configure sequencing BEFORE generating the first invoice. Once invoices have been generated, changing the numbering format creates GAPS in the invoice number series. Any gaps must be documented for audit purposes.

Section 5.8

# Billing Configuration Checklist

Complete All Steps Before Go-Live

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# 5.8 – Billing Configuration Summary Checklist

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*Complete all steps BEFORE generating live invoices*

| | |
|---|---|
| **Step 1** | Configure GL Codes to match your terminal's chart of accounts |
| **Step 2** | Configure Service Types (chargeable services) and link to GL codes |
| **Step 3** | Configure Invoice Types (Standard, Proforma, Credit Note) and document templates |
| **Step 4** | Configure Invoice/Credit Note/Receipt Sequencing (number format) – BEFORE first invoice |
| **Step 5** | Configure Base Tariffs with rates for all applicable service types (with tier steps) |
| **Step 6** | Configure Contracts for key customers with agreed pricing overrides |
| **Step 7** | Configure Billing Settings (currency, global free time defaults, rounding rules) |
| **Step 8** | Test invoice generation in test environment – verify calculation, free time and tariff application |
| **Step 9** | Train finance staff on invoice approval workflow and payment recording before go-live |

📌 All 9 steps must be completed and verified before generating live invoices at Lekki Freeport Terminal.

# HANDS-ON EXERCISE



1. Create a GL Code for 'Storage Revenue' linked to your terminal's chart of accounts code.
2. Create a Service Type for '20ft Storage' with a Per Day charge basis, linked to the GL code above.
3. Create a Tariff with two tier steps: USD 10/day for days 1-7 and USD 25/day from day 8 onwards.
4. Create a Contract for the test carrier (MAEU) with a 10-day free time period for storage.
5. Generate a test invoice for a unit that has been IN YARD for 12 days. Verify: days 1-10 free (contract), days 11-12 at USD 25/day = USD 50 total.
6. Review the invoice preview carefully. Verify all line items, rates, free time applied and totals are correct.
7. Click Approve to finalise the invoice. Confirm it is now LOCKED and cannot be edited.
8. Record a full payment against the test invoice. Confirm the invoice status changes to Fully Paid.
9. Issue a Credit Note for 2 days of storage charges. Enter the reason. Confirm the credit note is linked to the original invoice.
10. Configure Invoice Sequencing to use the format: INV-2024-XXXXX (5 digits). Confirm the next invoice uses this format.
11. Schedule an automated billing run for storage charges to execute nightly at 23:00.
12. Review the 5.8 Billing Configuration Summary Checklist. Confirm all 9 steps are completed for the test environment.

# Programme Complete

NAVIS SPARCS N4 & XPS – 5-Day IT Administrator Training Programme | Lekki Freeport Terminal

| | |
|---|---|
| **Day 1** | N4 Basics – Architecture, Topology, Data Model, Navigation, Vessel Operations |
| **Day 2** | Basic Administration – Reference Data, Business Rules, Security, Settings & Flex Fields |
| **Day 3** | N4 Mobile, Gate Configuration, N4 Licensing, XPS Administration Basics |
| **Day 4** | Advanced Admin – TOS Restart, EDI (Inbound/Outbound), BAPLIE, Reporting |
| **Day 5** | N4 Billing – Tariffs, Contracts, Invoice Generation, Payments, Sequencing |

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