

Aptean

C-TMS Menu Hierarchy

Calidus TMS - 12.45

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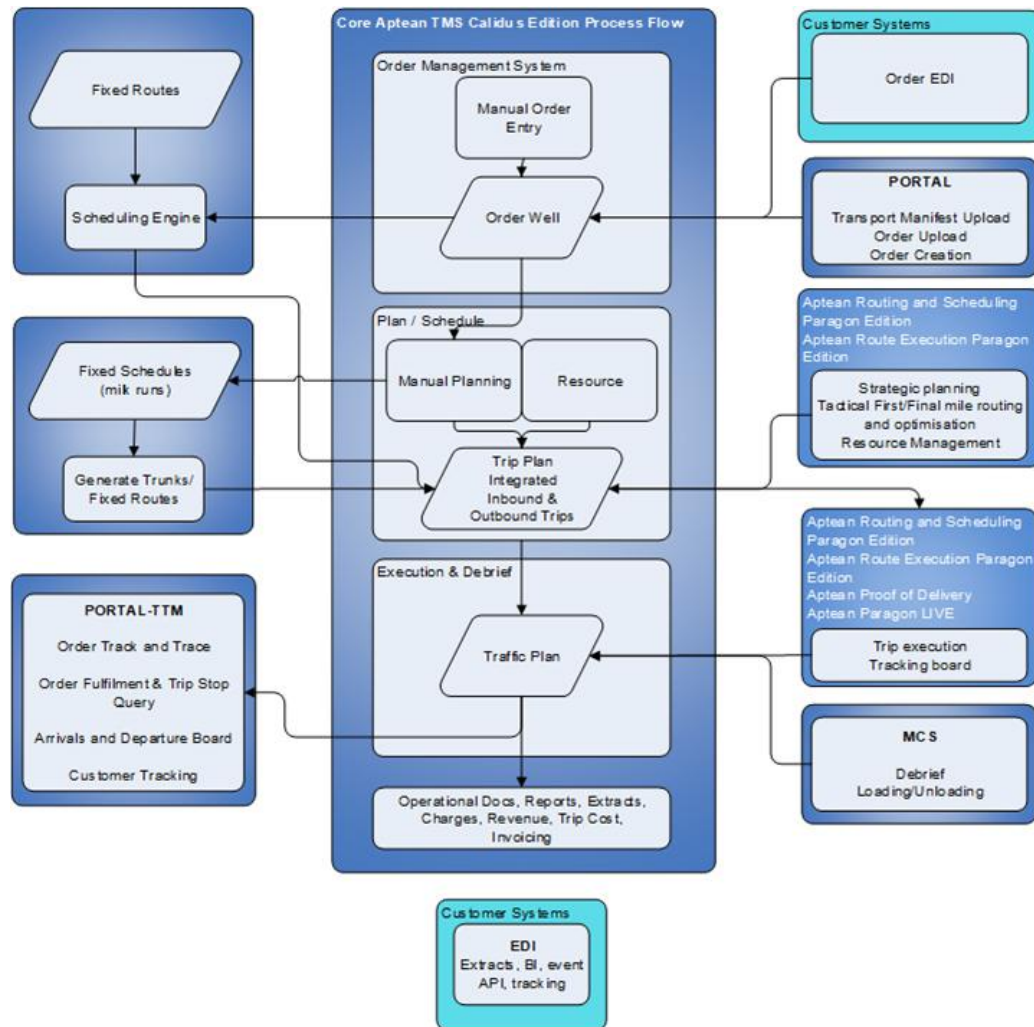
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1 Overview

1.1 System Architecture



Systems:

- Aptean TMS Calidus Edition
- Aptean Routing & Scheduling Paragon Edition
- Aptean Portal
 - ◆ TMS
 - ◆ TTM
 - ◆ Gateway
- Aptean Proof of Delivery
 - ◆ FlexiPOD
 - ◆ Track My Driver
- Aptean TMS Calidus Edition - Middle Mile Scanning (MCS)

Modules:

- Order Management
- EDI (import and export)
- Fixed Routes/Scheduling Engine (e.g. trunks)
- Fixed Schedules (e.g. Milk Runs)
- Planning, including:
 - ◆ Routing & Scheduling, including optimisation, resource management.
 - ◆ Manual planning
 - ◆ Resourcing
 - ◆ Tendering (3rd-party Carriers)



- ◆ Reporting - e.g. KPI/PvA
- ◆ Vehicle Tracking (through 3rd-party Vehicle Tracking links)
- Proof of Delivery - execution, tracking boards
- Customer Portal, including order entry/upload (TMS), track and trace (TTM)
- Customer Track and Trace self-service (Track My Driver and Gateway)
- Reporting, including extracts, formal reports (operational), customised extracts, scheduled BI extracts
- Finance - trip cost and order revenue generation from rate cards, invoicing

1.2 TMS vs Planning vs Both?

Aptean recommends Aptean Routing and Execution plus Aptean TMS for full system functionality across the whole process set of an organisation.

1.3 Overview of Functionality

Aptean Routing & Scheduling and POD:

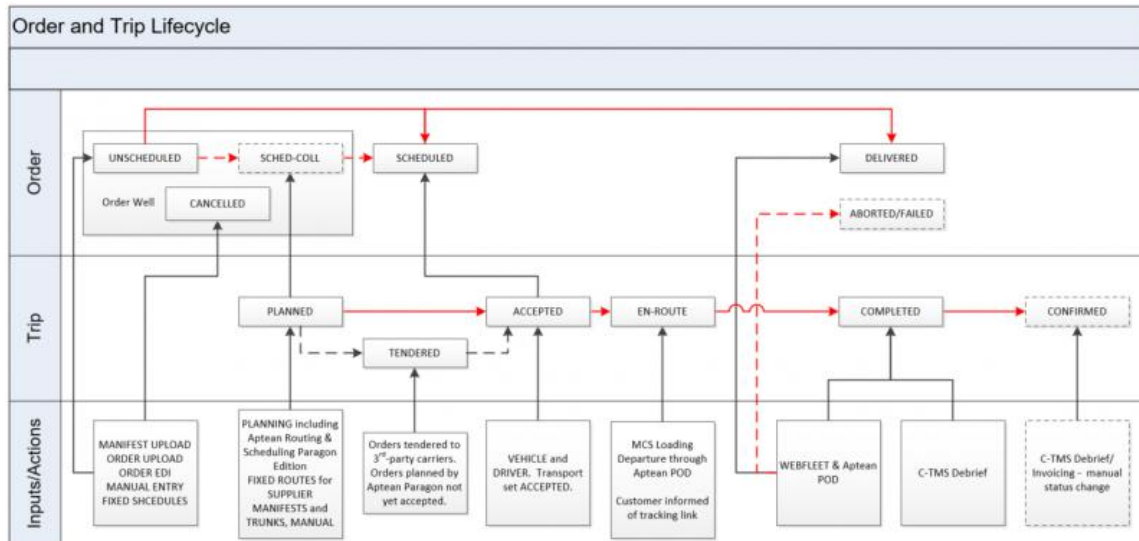
- Orders (high level volumes, not details)
- Planning
- Resource Management
- Execution - FlexiPOD, POD note
- Tracking - Track My Driver, Boards
- Vehicle Tracking
- Debrief - actual versus plan, reporting, dashboards, trip costs.

Aptean TMS Calidus Edition:

- Single point of data, regardless of source or how it is executed.
- Single process for order and trip lifecycles, regardless of source or how it is executed. In other words, when is planning, execution, middle mile, final mile, etc), automatically generating tasks for and importing tasks from other systems (such as Aptean Routing and Scheduling, Aptean POD, other third-party systems as required).
- Order well - much more detailed. Extensible, down to items and contents.
- Order generation - fixed schedules, milk runs, etc.
- Locations - reusable locations for variety of purposes (e.g. Depot, customer locations), with configuration that affects how jobs are planned or executed at a location level. Not just an address against an order.
- Order Integration - order well from many different inputs, in different formats
- Fixed routes - Middle-mile planning to outbase/RDC/Delivering depot
- Middle mile execution - scanning into and out of depots, palletisation, etc
- Manual or Overflow planning - 3rd party carrier
- Resource management - 1st/3rd party (known resources), 3rd party manual entry of resources.
- 3rd-party carrier process - tendering, acceptance, carrier invoicing, comparison, carrier restrictions.
- Finance - order revenue, trip costs, invoicing
- Operational documents (e.g. item labels, paper-based loading sheets, driver notes, manifests, etc)
- Pushed export back to system source, can be multiple, segregated based on source system.
- Single point of BI export regardless of source or how it was executed.



2 Order Import and Handling?



2.1 Order Import

Orders may be imported through

- EDI (flat-file SFTP or webservice OAUTH endpoint) in Aptean TripOrder XML format.
- Manual CSV upload (configurable formats) by CTMS users.
- Manual CSV upload (configurable format) by customers/clients.
- Manual entry.
- Fixed Schedule or Order Templates by CTMS users for milk runs.

2.2 Order Handling

Orders consist of multiple characteristics, including a type and a start and end point. For collections (OOH/SME), Aptean TMS Calidus Edition (TMS) and Aptean Routing and Scheduling Paragon Edition (Paragon) will plan the order into the required depot.

TMS may then use fixed routes to plan the order from the origin depot through any required cross-dock routes and depot to regional distribution centre (RDC) - i.e. the radial routes. These routes will obey cut-offs and use location postal regions to zone orders and apply regional responsibility to depots to route to the correct RDC.

TMS will pass the orders through to regional planning projects for each depot and defined schedule (a planning schedule) to Aptean Routing and Scheduling Paragon Edition (Paragon). This is on-demand and updated near real time after orders are trunk-planned

Paragon will route plan and optimise first mile collection routes through defined rules controlled by CTMS planners for own-fleet. Once planning is complete, routes are frozen and exported back to TMS, which makes them available for onward execution.

Orders which do not make the plan for own-fleet carriers are left unscheduled or part-scheduled and can then be planned for 3rd-party carriers (covered in more detail under question B-3.2 Subcontractor Management).

Aptean TMS is not expecting to have knowledge of or to be planning the final mile routes. However, if the order's destination location is a final destination address, then this may also be planned through Paragon from the RDC to final destination.



2.3 Resourcing

Acceptance of these generated trips (collection, trunk/radial, delivery) allows the trips to be resourced (vehicle, driver).

Resource for own-fleet is managed through Aptean Routing & Scheduling Paragon Edition Resource Manager.

Resources allocated to own-fleet routes for final delivery are automatically resourced in Aptean TMS Calidus Edition.

Radial/Trunk routes (and other milk runs, supplier collections, etc) will be assigned a carrier (3rd-party or own fleet) when generated. 3rd-party carriers can be resourced as per strong own-fleet rules or more generally (free-text).

2.4 Execution

Once trips are accepted, these are passed out to the Aptean Proof of Delivery system, which executes delivery or collection as part of the trip. Starting the trip automatically shows trips as en-route and begins the tracking process. Track and trace is enabled through the Aptean POD system and can be aided by 3rd-party tracking systems such as WEBFLEET.

Aptean POD will collect tracking and debrief information and can extend to data capture of forms at point of collection/delivery and other extended configurable functionality.

Sign on glass is fully supported and on completion of the job, Calidus TMS is debriefed with departure/arrival time, quantity/item variations and success/failure of the job, which automatically completes the order in the order well.

2.5 Finance

Each customer may have a rate cards, detailing charges, types (distance, time, unit, etc), breakpoints, fixed charges, etc. Geographical restrictions are typically enabled to generate different rates/charges for different areas of the country.

The customer account controls the method of charge generation, type, consolidation, invoice production (point of invoice generation), method (planned or actual), etc. When an order is created, updated or debriefed, order revenue is generated from the order characteristics and the rate card.

Each carrier may have a rate card and settings, detailing similar characteristics, to generate trip costs, created and updated as trips are complete. Trip costs can be applied back as charges against order revenue.

Invoice lines are automatically generated as per account rules, and invoices can be printed, posted or emailed.



3 Modelling, Planning and Route Optimisation?

3.1 Aptean Routing and Scheduling - Paragon Edition

For your planned use of Paragon, we would provide a number of Paragon Planning Systems for operational and strategic planning use.

Paragon takes in details of the orders to be delivered/collected, the transport resources available, and general information such as shift details, break requirements, drop times and site details. Using a highly developed algorithm designed specifically for optimising road-based transport operations, the Paragon software calculates the most effective delivery and collection sequences that meet promised time windows, allocates loads to appropriate vehicles and drivers, and uses digital mapping to calculate road-based journey times and distances.

The Paragon software is also highly configurable, with many parameters that make it capable of handling the wide range of transport constraints that can arise. As a result, users come from all stages in the supply chain - manufacturing, wholesale, retail, parcels/mail and home delivery - and span vertical sectors that include the building supplies, food and drink, Hi-Tech goods, furniture, clothing, pharmaceutical and healthcare, waste management, service management, automotive and petrochemical industries.

Paragon includes Windows drop down menu control, data editors, automatic location geocoding, times and distance calculations, automatic routing and scheduling, interactive graphics facilities for modifying routes, interactive time vehicle utilisation bar chart and reporting facilities.

Paragon also caters for operations involving multi drop or single drop trips, multi trip routes, multi day routes, daily or weekly scheduling, deliveries and collections, multiple driver's shifts, order priority, delivery time constraints, vehicle access constraints, driver's shift details and drivers' hour's regulations.

When used as a strategic planning system Paragon would enable you to model the route planning for your existing and any potential future depot network. You could readily model alternative scenarios such as validating fixed routes, defining vehicle fleet types, understanding the effect of new customers on the existing operation and assessing what effect offering differing time windows may have.

Integrated Fleets Paragon enables a single planner to schedule routes for multiple depots with either fixed or flexible boundaries, taking into account resource availability at each depot. Alternatively orders can be constrained to a particular depot based on product availability.

Paragon's Integrated Fleets enables vehicles and drivers at multiple sites to be treated as a single integrated transport resource, so that movements from different locations can be combined into efficient routes that reduce overall empty running.

This generates efficient routes which increases asset utilisation, improves productivity and reduces empty mileage.

3.2 Paragon Strategic and Tactical Use

Many of our clients are successfully using Paragon for Strategic as well as operational planning.

When used as a strategic planning system Paragon would enable you to model the route planning for your existing depot. You could readily model alternative scenarios such as validating fixed routes, defining vehicle fleet types, understanding the effect of new delivery locations on the existing operation and assessing what effect offering differing time windows may have.

Some of the key facilities that are available in our software that will help address strategic use requirements include:

- the ability to compare the cost of alternative scenarios for example total route cost, cost per drop, and cost per mile
- the capability to hold a large number of different scenarios and their results, and the ability to switch between them and if necessary combine delivery requirements
- the ability to import and validate fixed routes
- planning multiple trips per vehicle per day
- handling daily and weekly schedules
- the interactive manipulation of routes and call details
- an interactive bar chart display showing the use of vehicles or drivers over the day or period



- the ability to universally adjust all time windows to test the effect of tighter or slacker constraints
- the ability to define that an order will not be available for despatch until a particular time, or similarly that a collection must be brought back to the depot by a particular time
- user defined Macros, Functions and Filters allow easy manipulation of single or multiple customer and call details.

3.3 Local Depot Access

In Multi User deployments we can provide additional Paragon Multi User Workbenches for local depot users to enable multiple users to review each schedule simultaneously.

The benefits of utilising additional Workbenches include:

- Enables several people to view & change the plan
- Retains the benefit of local involvement
- Plan can be changed based on local circumstances
- Transport resources allocated at branch level; overall transport optimisation carried out centrally
- Provides visibility of the transport plan to related departments
 - ♦ Warehouse, customer services and distribution management
- More than one planner can review the schedules before sign-off - routes released to warehouse earlier

3.4 Enhanced Mapping

You may also include the following enhanced mapping options to provide increased planning accuracy.

3.4.1 INRIX Average Road Speed Data

This option provides the average road speed information on major roads. This average speed data has been derived by detailed analysis of the average speeds achieved by goods vehicles on the road network. This is based on data provided by INRIX, and provides better estimates of journey times for the roads where the average speed information is available.

This enables the mapping within Paragon to provide accurate journey travel time and distance estimates allowing for the regional and local variation in the road network.

Use of this speed data would help improve the accuracy of your planning and help reduce the time you may need to calibrate the road speeds for use within Paragon.

3.4.2 HERE GB Street Level Mapping Detail

We are able to supply full street level map data sourced from HERE use with our Paragon routing and scheduling system.

Combining this data with sophisticated routing logic enables the Paragon system to be used for automatic routing and scheduling at street level detail, taking account of drive restriction information (DRI) including:

- One-way streets
- No entry
- No left turn /no right turn
- Must turn left / must turn right.

In addition, the street level map displays enable the user to picture the day's routes and schedules at a high degree of accuracy. The overall schedule is produced using times and distances planned to the nearest second and metre.

3.4.3 Truck Attribute Data

As an option we can also provide Truck Attribute Data for the HERE GB Street Level Map above. This enhances the detail of the map further by including vehicle Height, Width, Weight, Length (HWWL) Truck Attribute Data.

By using Truck Attribute Data with your Paragon routing and scheduling software, you can more easily create achievable transport plans that avoid truck restrictions such as low bridges, or roads where weight restrictions apply. The route



optimisation plan will automatically calculate transport plans that prevent detours, reducing mileage and streamlining the creation of cost effective, feasible transport plans.



4 Fixed Route Planning

Fixed Route Templates

- Day of the week
- Carrier
- Cut-offs
- Cross-dock points
- Zones

Delivering Depot Selection

- From location planning regions
- From depot assignment to planning regions

Scheduling Engine

- Takes the orders, assesses the delivering depot, uses the fixed routes to generate trunk trips between depots to get to the final delivering depot (RDC).
- This may generate multiple trips between multiple depots to get to the destination depot.



5 Manual Planning?

5.1 Trip Planning and Manipulation

The Trip Planning and Manipulation module provides users with a view of all the trips on a particular schedule. The unscheduled Orders on the Schedule chosen by the user are also displayed. Trips can be created directly within C-TMS from unscheduled Orders or can be created in an external scheduler and then transferred back to C-TMS (for example Aptean Routing & Scheduling - Paragon Edition).

All key information relating to a trip is displayed on the Trip Manipulation form and a mechanism is provided to link back to the Orders that are delivered on the Trip. A number of manipulation functions can be accessed through Trip Manipulation and these are discussed below.

The Postal Region, Planning Region, Location, Weight, RPE and Volume filters allow a user to restrict which Unscheduled Orders they are able to see, this helps to speed up the planning process.

Please note that distance and fuel units, displayed throughout C-TMS, but specifically on the Trip Manipulation form, are configurable. They default to 'Miles' and 'Litres' respectively.

It is possible to configure the fields that are displayed in the Trip Stop and Unscheduled Orders section, thus allowing a user to view the fields that are most relevant to their role.

The key functions are:

5.1.1 Trip Filter

The Trip Filter allows a user to control which Trips they can see.

5.1.2 Apply Order to Trip

Allows any Unscheduled Orders on that Schedule to be applied to a new or existing Trip. By default an Order will be automatically applied to what the system believes to be the most appropriate stops, it is also possible to apply an Order to a specific pair of stops to reduce the need for manual manipulation. When multiple orders are being applied to a trip, the system will try to minimize the number of stops required by selecting the largest trailer type available.

In order to speed up the Scheduling process multi select functionality has been added, thus making it is possible to select multiple orders and add them to a Trip in one go.

If multiple orders are being added to a trip, the system will automatically select the largest trailer available and ?fix? it to the stops when the 2nd order is added. The user can then manually change the trailer assignment as desired. Both assignment method are subject to the same trip validation routines and may still have to be altered before a trip?s status can be changed.

5.1.3 X-dock Order

It is possible to crossdock an Order via one of many locations, for example an Order going from Loc1 to Loc2 can be x-docked via Loc3. An order can be x-docked on a single Trip or multiple Trips.

5.1.4 Validate Trip

Performs validation checks on the selected Trip to ensure that the trip is valid and feasible. If the trip breaks any validation rules these will be reported back to the user. These checks include:

- Ensure that the trip has at least 1 load and unload activity and these activities are in the correct order.
- Ensures that the trip complies with driving regulations such as Drivers Breaks.
- Checks whether the Trip will deliver within the delivery windows of the Orders.
- Ensures that a valid Trailer Type is assigned to the Trip. If a Trailer has been ?fixed? onto a Trip (see Fixed Routes for more details) it will not be overwritten.



5.1.5 Recalculate Distance and Time

Allows the times on a Trip to be recalculated, wait times will be optimised and Drivers Breaks included (this can include an overnight stopover), all departure times will be made unique. This may result in Delivery windows being breached, however, these failures will be reported during Trip Validation.

5.1.6 Set Trip Status

Trip Statuses include ACCEPTED, TENDERED, DELETED, EN-ROUTE. This function allows the status to be changed to another status, there are restrictions to control the changes that are permitted. For instance it may not be valid to change a trip from EN-ROUTE to DELETED.

Trip status changes can be easily viewed and changed using a Waterfall screen, to aid in block changing statuses of trips and seeing any remaining actions to take in the current schedule.

5.1.7 Split Trip

Allows a trip to be split into 2 separate trips. Upon splitting a new trip will be created and Stops below the split point will be placed on the new Trip. Each Trip will then be validated to ensure that it has the relevant SU and CL activities.

5.1.8 Merge Trip

Two trips can be selected and merged together to make 1 trip. Two configurable system options are now possible for this function. Either duplicate Stops will be removed and stops will be combined together where possible, or Stops will be appended onto the end of the resulting trip. Upon completion the first trip will remain and the second trip will be deleted.

5.1.9 Delete Trip

If a trip is no longer required it can be deleted, the trip will remain on the Database with a status of deleted, the stops will be removed and the Orders set back to Unscheduled.

5.1.10 Insert Stop

Allows a new stop to be manually added to a Trip after the selected Stop, an Activity Type, Location and Trailer Type are required.

5.1.11 Append Stop

Allows a stop to be appended to the end of a Trip, an Activity Type, Location and Trailer Type are required.

5.1.12 Delete Stop

Allows a stop to be deleted from a Trip, any Orders at that Stop will be Unscheduled.

5.1.13 Costs and Revenue

Cost and Revenue details are displayed for a Trip, costs can also be allocated to a Trip (see the Accounting documentation for more details as to how these costs are generated).

5.1.14 Assign Resources

Within the Trip Manipulation form it is possible to assign resources to a Trip.

A Carrier can be selected from a list of valid Carriers. It is then possible to populate a Driver (and optionally 2 crew members), Vehicle and Trailer Id. Depending on the set up of the carrier (i.e. Fleet or Haulier) these values will either be selected from a list or entered as free text. If a Haulier is being used the details of all resources may not be stored in C-TMS so they will need to be entered manually. If selecting from a list the list will be restricted to those resources that are available to the Carrier that is assigned to the Trip.

It is also possible to manually assign a Trailer Type to a Trip. If a trailer is manually assigned to a stop it is also assigned to all subsequent stops and is ?Fixed?. The fact that it is fixed means it will not be overwritten by validate trip and gives the user the ability to force a trip to use a particular trailer. A large number of Trips that are created from Fixed Routes will have a trailer ?fixed?. A trailer can be 'un-fixed' by removing it from all stops, once this has happened validate trip will



again try and assign the best fit trailer.

The system can aid you in resource allocation through showing the availability of resources based on their current assignment or availability.



6 Subcontractor Management

Trips and orders follow the same lifecycle in Aptean TMS Calidus Edition whether these are for third-party carriers or own fleet. See ?Aptean Routing & Scheduling - Order Import & Handling? for details on the order and trip lifecycles. This document is ancillary to that one.

6.1 Orders

Orders can be for customers that require a specific carrier (i.e. 3rd party carrier or 3PC) for execution (a preferred or mandated carrier).

Further, the from and to locations may define a route that is assigned to a 3PC (for example, where the locations match a specific geographical area, then always immediately build a route for a specific 3PC).

Aptean TMS can specify these schedule rules and ensure that these are always automatically planned for execution by those carriers and never planned for trunk or first/final mile routes by own-fleet.

Specific Carrier Routes can be created to specify depots out of which third-party carriers will collect goods, so that orders can be routed to the correct depot, then collected by the carrier.

All remaining orders will then be planned for collection/radial/trunk routing. Where an overflow of orders is determined by insufficient resource to be undeliverable by the planners, these remaining orders will be left as UNSCHEDULED or SCHED_COLL (essentially not fully scheduled) status in the order well.

These orders may then be manually planned onto existing 3PC routes created above, or new routes.

6.2 Carrier Selection

When a carrier is known, the carrier may simply be selected for the trip created for these orders. If the carrier is not known or multiple carriers exist, the user can ask the system to select the best 3PC for the trip. TMS will calculate the charges for each carrier specifically and compare costs, selecting the best. The calculated charges from the carriers will be specified in the audit trail.

The system has specific carrier screens to manage third-party carriers, their trips and orders planned for those carriers, as well as helping to search for unplanned or partially-planned orders to tender to carriers. This includes visibility of previous costs for that carrier lane, to aid in cost management.

6.3 Carrier Restrictions

When planning orders to existing trips, carrier restrictions for maximum weights, volume, items, postal areas, DU types (e.g. parcel, pallet) can be checked to ensure that the trip being allocated to the carrier is capable of being handled by that carrier. This can also include full gazetteers.

6.4 Tendering

When a 3PC has been selected for a trip, this trip can be tendered to the carrier. Automatic transmission or emailing of trip manifests etc can be configured in the system, or this can be handled manually.

Certain 4PL systems are supported with automatic transmission of transport bookings e.g. LogiNext 4PL.

6.5 Acceptance

Like any other own-fleet trip, if the carrier accepts the trip, the trip status should change to ACCEPTED. This can then be resourced like other trips.



Carriers can be configured for free-text or pre-defined list resourcing (like own-fleet). Aptean TMS Calidus Edition can manage the lists of carrier crew and vehicles. If required, this can be linked to external fleet resource management software - currently Calidus TMS supports Aptean Routing & Scheduling Resource management automatically, and FleetCheck external resource management solution. If others are required, these will likely require additional development.

6.6 Execution

It is expected that 3PCs will have their own systems for execution, driven by the tendering process above.

Aptean TMS Calidus Edition can support the manual or automatic production of labels for a number of 3rd-party carriers.

6.7 Debrief

Aptean TMS Calidus Edition supports a carrier debrief message format that can mark orders as POD/POC and confirm items or line quantities and completion times.

6.8 Finance/Invoicing

Like any carrier, a 3rd-party carrier can generate charges for trip cost. Payments can be uploaded for self-bill carriers and a reconciliation process is available for aligning invoices to generated trip costs.



7 Communications and POD

7.1 Aptean Proof of Delivery (APOD)

Aptean APOD is a powerful and configurable job management and electronic proof of delivery solution. By providing mobile operatives with a user-friendly application, visit lists can be downloaded directly to a mobile device, and multiple data capture points such as vehicle check, GPS handshakes, visit outcome and confirmation data completed.

The system comprises a central management console, comprehensive integration and alerting options, and an application which can be deployed on a wide range of mobile devices such as phones, tablets, ruggedised devices and suitable satellite navigation units. APOD can handle multiple automated customer notifications, including day-before, morning-of and next-visit SMS, and post-delivery emailing of job reports.

The APOD central management console allows users to allocate or re-assign manifests to mobile users and view overall progress. It also allows the sending of messages to groups or individual drivers, and the addition of messages to orders. Dashboard reporting, and a transport execution progress screen, allows constant visibility of the day's progress and the ability to react to potential issues. ETA adherence, including recalculated ETA for later visits, is also provided within the console.

In addition to traditional electronic proof of delivery functionality APOD enables users to create, manage, deploy and utilise fully configurable data capture forms to change the driver's workflow to meet a variety of business requirements.

The configuration of APOD to meet your specific business requirements is under your control via the central console, and is handled via visit description options, data capture requirements, central control settings and bespoke forms triggered at defined points in an operative's working day.

You can define your own exception codes and workflows and setup consequent rules for the driver to follow. For example you may require a scan of the actual delivery media barcode or a photograph and authorisation code for a damaged product. In addition you may decide to implement a vehicle check before depot departure and a signatory name and POD upon successful delivery completion.

APOD provides comprehensive KPI data and can be implemented using client provided Android devices including tablets, smartphones, phablets and barcode scanners. APOD provides full access to all data captured during the delivery process such as debrief codes, signatures, photos and completed forms.

7.1.1 Track My Driver option for APOD

As an extension to the APOD system, Track My Driver provides the facility to allow your end customers or delivery points to track the progress of their delivery.

This Track My Driver option allows you to provide a web link to a portal which allows them to track the progress of the vehicle that contains their delivery. The link would typically be sent via SMS or email.

When accessing the portal the customer is given information on the progress of their delivery with the level of detail available to show being user configurable. For example this could be as simple as 'you are drop 6 the vehicle is currently at drop 2' or more detailed such as 'you are drop 6 the vehicle is currently at drop 2, your delivery is expected to take place between HH:MM and HH:MM'.

In both cases the text can be supported by the display of a map showing the current location of the vehicle and the customer's delivery location.

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7.2 APOD Summary

The APOD licence includes an Aptean provided hosted service and is based on the number of concurrent mobile application users.

The system will provide Central Console access for all required users.

The APOD Plus deployment includes:

- Environment build, start up support and system configuration



- Software licencing - console and mobile application, including middleware integration tools
- Apteau provided hosting
- 24/7 telephone hotline support
- Middleware integration tools
- Provision for further console and application releases
- Central console users
- Emailing of completed Job Report
- "Train the trainer" support

Please note, the APOD does not include the costs associated with any hardware or suitable communications equipment or any notification communication costs.



8 Middle Mile Execution

Aptean TMS - Calidus Edition has a scanning system (Aptean MCS) for scanning of uniquely identified items at receipt and despatch throughout the middle mile transport.

Middle Mile execution comprises the receipt, palletisation and despatch of scannable items (boxes, parcels, pallets) into and out of the network from entry to the transport network up to the final mile despatch depot.

This supports

- Scanning of items at receipt
 - ◆ Automatic completion of inbound trip.
 - ◆ Receiving additional items
 - ◆ Splitting deliveries.
- Scanning of items onto pallets
 - ◆ Palletisation by next depot, delivering depot or final trip
- Scanning of items at despatch
 - ◆ Automatic change of onward trips to En-Route status
 - ◆ Sending additional unplanned items and splitting consignments.
 - ◆ Cross-dock functionality, including trans-ship functionality.
- Exception management
 - ◆ Damages
- Auditing
 - ◆ All scans are audited with quantities, exceptions and reason codes.
- Operational Reports
 - ◆ Expected items, missed items, completed scans items

Coming Soon:

- Quarantine processes.
- Defined locations per product type.
- Scanned locations per item scanned.
- Scan to correct vehicle/trailer/compartment.



9 Asset Management

There are multiple elements of asset management:

- DU Management
- Resource Management

9.1 DU Management

Aptean TMS Calidus Edition contains multiple mechanisms for tracking DU assets.

- Permanent unique asset tracking
- Consumables counts

For permanent assets (e.g. cages), items can be marked as part of or scanned into parent assets. These assets are then audited and tracked through the trip events, i.e. asset X is planned out of location A to B, en route, arrived. The system audits all movements related to these permanent assets.

The asset tracking maintains the counts and dwell times of each of the assets at the locations.

The assets can then be planned back from customer locations for collection, through manual order entry or asset return functionality through a customer portal.

The system provides asset return scanning facility through a simple web-based system or the portal.

Assets counts, status and history can be reported on and managed through imports.

Aptean TMS also provides a white-glove section for orders, which can be used to capture consumables such as dry/wet ice, packaging, etc.

The system also provides a simple asset return count on debrief for simpler asset counting rather than full permanent asset tracking.

Note that asset tracking can only automatically track assets into and out of locations where that location is known and planned through Aptean TMS Calidus Edition. In the requested solution, Aptean systems are not managing assets to final delivery locations.

9.2 Resource Management

Aptean Route Execution includes Resource Managed planning functionality which enables transport resources - drivers, tractors, trailers and rigid vehicles - to be managed effectively.

This adds a further dimension to Paragon's transport planning and optimisation capabilities. It provides a convenient facility for storing and managing information about driver shift patterns and vehicle availability, and integrates this with Paragon's transport planning and optimisation process. This means that Paragon schedules can be created that match the specific driver shifts and vehicles available, and historical performance can be monitored, for example in relation to drivers' hours regulations, such as the European Working Time Directive.



10 Execution

10.1 Paragon Live

Paragon Live comprises two modules: Route Execution and Live Management.

10.2 Route Execution

Route Execution is a Paragon software solution that enables real-time vehicle activity to be tracked automatically against the planned routes and schedules. This gives transport managers real-time visibility of how the day's plan is progressing and provides an accurate picture of transport and service performance. It enables companies to significantly improve their customer service achievement, respond efficiently to problems or delays that arise, ensure delivery schedules are legal and achievable, and unearth hidden inefficiencies for continuous performance improvement.

The integration of Paragon Route Execution with the industry's leading tracking systems enables real time information about vehicle location and status (moving or stationary) to be captured automatically and fed back to the Paragon system every few minutes. This information can then be used to automatically provide an accurate up-to-date picture of the execution of the day's transport schedule as well as accurate plan versus actual history.

Typical Route Execution benefits include:

- Improve operational management
 - ◆ Improve planning accuracy e.g. drop times and vehicle utilisation
 - ◆ Adjust the plan in real time
- Improve customer service at site
 - ◆ Automatically send alerts by text message or email while the vehicle is en-route.
 - ◆ Be alerted to, and deal with, potential missed delivery windows
- Driver de-brief, KPI reporting & continuous improvement
 - ◆ Highlight and correct hidden inefficiencies
 - ◆ Report Key Performance Indicators
 - ◆ Report planned vs. actual mileage, drop time, driving time & working time
 - ◆ Uncover off-route miles
 - ◆ Instant visibility of exceptions to enable immediate driver debrief
- Legal implications
 - ◆ Automatically check the routes are feasible & meet industry legislation

Route Execution includes Resource Managed planning functionality which enables transport resources - drivers, tractors, trailers and rigid vehicles - to be managed effectively.

This adds a further dimension to Paragon's transport planning and optimisation capabilities. It provides a convenient facility for storing and managing information about driver shift patterns and vehicle availability, and integrates this with Paragon's transport planning and optimisation process. This means that Paragon schedules can be created that match the specific driver shifts and vehicles available, and historical performance can be monitored, for example in relation to drivers' hours regulations, such as the European Working Time Directive.

Crucially, Resource Manager also calculates each driver's current rolling average weekly working time, so that the Paragon optimiser can give less work to drivers that are ahead, and more work to drivers that have fallen behind. This automatic process helps transport managers to allocate even workloads to drivers over their WTD reference periods and avoid violations.

By providing day-to-day resource data at individual driver/tractor/trailer/rigid level, Resource Manager provides required input for Route Execution, providing the link between the Paragon-planned routes and the individual vehicles being tracked.

10.3 Live Management

The Live Management option includes the capability of exporting near real time data to an SQL database for use with your own in-house reporting suite.



In addition, adding Live Management to a Live Route Execution system provides real-time reporting options from with Paragon including automated reporting, Management Dashboards and Customer Arrival time boards that allow your customers to have a real-time view of the vehicle arrivals that you have scheduled for them.

Paragon Live Management is an additional option and requires the use of a Paragon Route Execution licence.



11 Debrief?

11.1 Manual Debrief

The Aptean TMS Calidus Edition Debrief process has the capability to capture the following debrief information:

- Trip level
 - ◆ General comments
 - ◆ Fuel Drawn
 - ◆ ODO start/end
 - ◆ Comments - general/rejection/errors
- Stop level
 - ◆ Arrive/Depart times
- Order level
 - ◆ Actual quantities/weights
 - ◆ POC/POD complete
 - ◆ Additional Coll/Del debrief information, such as weighbridge/weight
 - ◆ Additional order references
 - ◆ Order level non-conformity/information/late codes
- Order Items
 - ◆ Actual quantities/weights
- Additional finance payments
- Additional trip services (for generation of trip cost)
- Additional Order Services (for capture of additional services per order, generating order revenue)
- Trip Tasks/Trip Stop Tasks - additional extensible task information

Order and trip statuses can be set to identify the status of the order, and rebooking of incomplete or partially incomplete orders is supported.

11.2 Automatic Debrief

Aptean TMS Calidus edition supports automatic debrief from a number of electronic POD applications, including Aptean POD and Aptean POD Calidus Edition.

Also supported are:

- Microlise SmartPOD
- WEBFLEET
- LogiNext 4PL

The interfaces support updating the following information:

- Aptean POD
 - ◆ Item quantity delivered
 - ◆ Item non-conformance reason codes
 - ◆ POD/POC flag set
 - ◆ Order Status DELIVERED/FAILED
 - ◆ Trip Stop Departure/Arrival Times
 - ◆ Trip Status COMPLETED
- Aptean POD Calidus Edition
 - ◆ Trip automatically marked as EN-ROUTE
 - ◆ Item quantity delivered
 - ◆ Item non-conformance reason codes
 - ◆ POD/POC flag set
 - ◆ Order Status DELIVERED/FAILED
 - ◆ Order HELD/RTB reason codes
 - ◆ Trip Stop Departure/Arrival Times
 - ◆ Trip Status COMPLETED
- Microlise SmartPOD
 - ◆ Item quantity delivered
 - ◆ Item non-conformance reason codes
 - ◆ POD/POC flag set



- ◆ Order Status DELIVERED/FAILED
- ◆ Order HELD/RTB reason codes
- ◆ Automatic Rebook
- ◆ Trip Stop Departure/Arrival Times
- ◆ Trip Stop Tasks
- ◆ Trip Tasks
- ◆ Trip Status COMPLETED
- WEBFLEET
 - ◆ Order Events Audit
 - ◆ Trip Stop ETAs
 - ◆ Trip ODO start/end
 - ◆ Start/End Latitude/Longitude
 - ◆ Trip Stop Departure/Arrival Times
 - ◆ Trip Status COMPLETED
- LogiNext 4PL
 - ◆ Trip automatically marked as EN-ROUTE
 - ◆ Item quantity delivered
 - ◆ Item non-conformance reason codes
 - ◆ POD/POC flag set
 - ◆ Order Status DELIVERED/FAILED
 - ◆ Trip Stop Departure/Arrival Times
 - ◆ Trip Status COMPLETED

11.3 3rd-Party Debrief

3rd-party carrier/haulier trips can be debriefed by invoice of the entire manifest.

Once the invoice is received and entered into the system, the invoice payments can then be shared between the different orders on the trip/manifest, or the pre-defined payments modified at that time to match the invoice received.

Aptean TMS Calidus edition also supports a carrier POD message to achieve this.

3rd-party carriers/hauliers can interface into Aptean TMS Calidus Edition through an existing message. This supports:

- update through tracking reference (order number),
- setting the line quantity to that captured
- updating POD/POC against the order.
- updating non-conformity reason codes against the lines.
- updating arrival and departure dates/times.
- updating signatory.
- automatically updating order and trip status.

Aptean TMS Calidus edition also supports a Import format for basic debrief information. It can be configured as to how field are extracted from a CSV and then uploaded into the system. This supports:

- adding or updating signature information (signatory, date and time).
- setting the quantity delivered against the items.
- setting the order to POD confirmed.
- Validating the order as delivered.
- auditing with a reason of CD (complete delivery).
- setting the delivery trip stop with the arrival time.



12 Monitoring and Reporting

There are multiple elements of monitoring and reporting:

- Operational reports
- Data Extracts and BI
- Finance
- Track and Trace
- Strategic and Tactical Planning reports/KPIs

12.1 Operational Reports

Aptean TMS Calidus Edition has hundreds of pre-formatted PDF reports for the Load Sheet, Driver sheet, Trip Sheet, Shunting report, Front Desk report, Customer/Supplier invoice formats. Variance reports and KPIs, labels, haulier performance, carrier manifests, etc.

12.2 Data Extracts and BI

Aptean TMS Calidus Edition has hundreds of pre-formatted data extracts. Further, the system supports configurable data extracts from BI cubes for configuration of the operations own extracts and for external BI systems.

12.3 Finance

Aptean TMS Calidus Edition has multiple predefined invoice formats and can export backing sheets and extracts for consumption by external finance systems

12.4 Track and Trace

Aptean TMS Calidus Edition provides a Portal Tack and Trace module that allows for customer self service of tracking, ETA and KPIs, with extracts.

Aptean Route Execution, with LIVE and Aptean Proof of Delivery can provide real time tracking of routes on the day, as explained in detail in documents 3.7 and 3.8.

12.5 Strategic and Tactical Planning reports/KPIs

Aptean Routing and Scheduling Paragon Edition includes a range of reports as standard, including KPI reports (e.g. vehicle utilisation, driver utilisation, vehicle fill, etc.). Strategic plans can be directly compared using customer's KPIs. Furthermore, the planned data can be compared with what actually happened as collected through Aptean Route Execution and Aptean Proof of Delivery systems.

Users are able to create and report on KPIs specific to their operation by using the powerful function capability.

This enables users to calculate new value based on values present in data fields within Paragon. For example a function can be used to calculate cost per litre per kilometer by dividing the total cost by the number of litres and by the kilometers travelled



13 Finance and Invoicing?

13.1 Finance

Aptean TMS Calidus Edition uses the order information and contracts to generate order revenue (payments) against the order profile.

Aptean TMS Calidus Edition uses the trip and carrier information to generate trip costs.

Contracts are set up between you and your third party, e.g. the customer, the carrier.

In both cases, tariffs are selected from the contracts that wholly match the order profile or trip details, matching such items as:

- Du type
- Weight
- Distance

And includes the following features:

- Quantity breaks
- Levels
- Discounts
- Fixed surcharges
- Fuel surcharges
- Additional services

Aptean TMS Calidus Edition collects debrief information from executed trips from Aptean Proof of Delivery. The actual values are collected at this point, which then uses the rate cards for the carrier and the customer to update the trip cost and order revenue.

Trip costs can be cross-matched against order revenue to generate pain-gain reports.

13.2 Invoicing

Payments and trip costs will be automatically actualised when orders and trips are completed, against a schedule set up against the customer or carrier.

All actualised payments can be exported in a variety of formats or invoiced, based on invoice scheduling rules against the customer or carrier.



14 Overview

14.1 About Aptean

OBS Logistics Ltd was acquired by Aptean and is now part of the Aptean group.

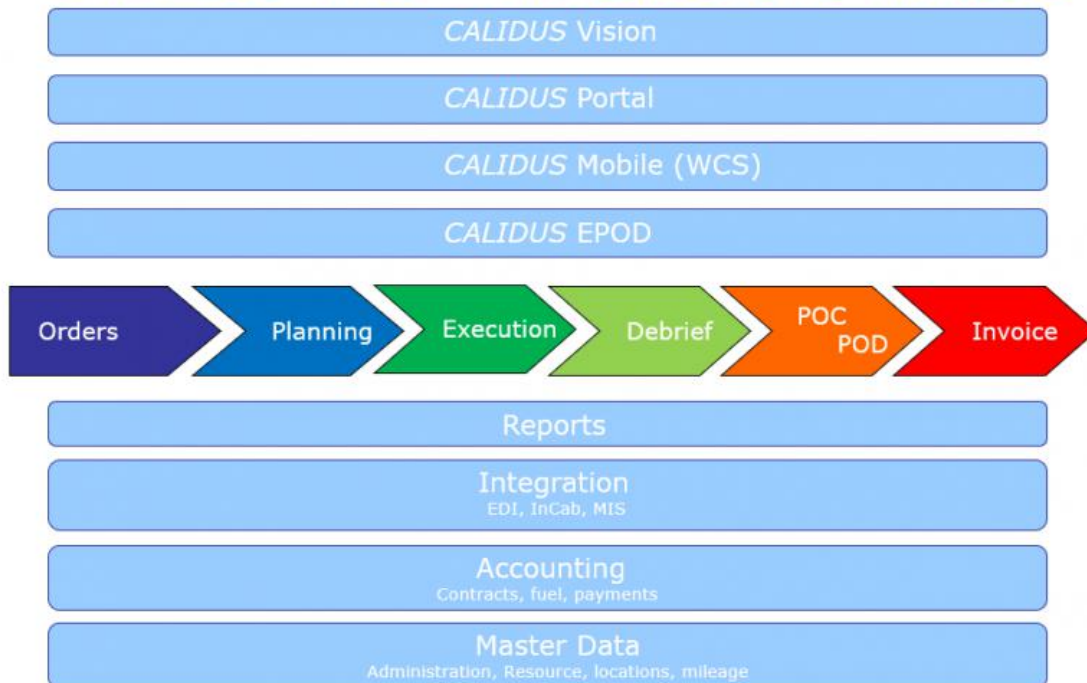
OBS Logistics is a leading provider of Transport Management and Warehouse Management Software Solutions, having worked with many of the world's largest logistics, supply chain and transportation companies over the last 25 years.

Using the latest technologies, OBS Logistics adds value to its core solutions through the development of unique functionality, providing true visibility across supply chain operations.

The CALIDUS Transport Management and Warehouse Management modules are the core of our supply chain solution.

14.2 The Calidus Product Suite

CALIDUS TMS – Modules and Process



14.3 Overview

C-TMS is a transportation and logistics solution that reduces costs by optimising transport management across depots, manufacturers, retailers & carriers, providing central planning and management services. C-TMS focuses on improving the whole transport management process, including order generation, planning, execution and administration, and payment. The C-TMS system known as the Managed Transport Services Host System, operates on an Oracle 10g database. The host system provides interfaces to customer systems, sophisticated order entry templates and reporting. Links to transport planning tools, real-time tracking and execution tools and Oracle Financials accounting package, support the whole process. C-TMS allows all or just selected functions of the system to be utilised according to customers' particular needs.

The C-TMS system incorporates several elements, order entry, order management, routing / scheduling, tracking and continuous improvement. These enable complete visibility of the optimisation process.



Order entry can be achieved in several ways, electronic interfaces enable the process to be fully automated, manual entry allows last minute requirements to be met and the ability to enter these via the internet allows flexibility and simplicity.

The order management functionality enables the system to create point to point orders encompassing the collection location, delivery location, time windows for these to be achieved and the vital information about the products and their size, weight and quantity. These items known as transport instructions are then available for routing.

Based on specific requirements set by the customer's priorities the system takes the transport instructions and optimises them into trips. During the optimisation process the system interrogates available resources, all locations to be visited, specific rules and regulations and the laws that the vehicles operate under and produces the most efficient schedule.

Once the trips have been accepted and are en route then the in cab tracking systems can offer real time information to the customers and the planning centre. The system uses GPS (Global Positioning Satellites) to pin point vehicle locations. The in cab equipment enables drivers to update collection and delivery information as they actually occur with detailed information including quantities against product code. The systems enables the planners to add emergency trips to the vehicles giving a flexible real time service to the customer.

Continuous improvement is a key part of any service; the C-TMS system enables this through detailed reporting and flexible configuration. C-TMS is used to measure the operation against Key Performance Indicators (KPI's).

The power of the system has made it an invaluable part of many services provided by OBS's customers to their own customers. In order that the system is available to provide full optimisation it is positioned with a strong infrastructure backbone and is supported by a dedicated Applications Management team. The main applications are located on IBM P570 mirrored servers within specialised data centres. This enables the service to be available twenty-four hours a day seven days a week on a high availability basis.

C -TMS includes a Web Portal for suppliers or customers to enter order details, returns and to track orders. The TMS application can also be deployed with full RF task driven scanning to support warehouse collection and cross docking.

14.4 C-TMS Host Modules

The C-TMS solution for each client is made up of a "C-TMS Host" configuration and the third party applications to which the host is interfaced.

The C-TMS Host configuration is made of a selection from a series of modules depending on the client's specific requirements.

A specific configuration of modules for a client is known as the "C-TMS Host" system for that client.

Throughout the wiki the term C-TMS is used interchangeably to refer to either the "C-TMS Host" or the C-TMS integrated solution.



15 GLOSSARY

Term or Acronym	Meaning
Ad Hoc Collection	Ad Hoc Collections are collections at a consignee or other point, where the actual items to be collected have not been defined, allowing for a free-form scanning of items.
AI	In barcode terms, an Application Identifier; some pre-defined characters in a barcode that define the data content rather than the format.
Asset	A traceable DU; the item that is tracked during delivery and collection. This Asset has a type (e.g. Cage, Tet, etc).
Audit Log	A log of events that have happened in the C-TMS system. It could include information, error, debug or audit messages. Users are able to search for messages of a certain type, on a certain day and from a certain area of the system.
Backloads	Orders that are placed on a pre-existing trip at the end of the trip before returning to the depot. They may be for customers other than the customer that is paying for the full trip and may result in a rebate to the customer, and a charge to the backload order's customer.
Booking	A quantity of a single Product Type on a single DU Type to be delivered from one location to another on particular date but not at a particular time. These records are usually created by the Auto Summary process. These records are displayed in the main view on the Bookings form.
Carrier	The carrier completing the trip. Can comprise any carrier configured in the system, but normally Home Fleet (usually a carrier per depot), 3rd-party carriers, supplier-/customer-own transport, own collection, etc.
Case	A Case of individual packets of a product e.g. a case of Cornflake packets.
Consolidating Centre	A depot that takes delivery of goods from several origins and consolidates them for trunking to outbases (q.v.) or final delivery to destinations. See also Consolidation.
Consolidation	In execution terms, this is the act of taking several jobs and combining them into a single execution job. This can be by several criteria but is broadly defined as: Same Location consolidation, where the delivery/collection points are identical; Linked Location, where the deliver/collection points have been configured to be seen as the same point within C-TMS and; Manual (Ad Hoc) Consolidation, where the driver decides that two jobs should be delivered/collected at the same time.
Containerisation	The action of taking items and placing them inside another item for tracking purposes. See also Asset.
Cost Centre	A part of an organization to which costs may be charged for accounting purposes. For C-TMS, this is used for accounting purposes, and also to generally configure the system.
C-Portal	CALIDUS Portal, Aptean's web-enabled external access system to the Calidus systems. Also, any electronic internet-based system designed to access functionality for a particular purpose (for example, customer enquiries, supplier activity, track and trace, etc.)
Cross-Dock	Also a specific location at which product is exchanged.
C-ePOD; EPOD, APOD	Electronic Proof of Delivery. The Aptean EPOD system is CALIDUS ePOD or Aptean POD.
C-TMS	CALIDUS TMS, Aptean's Transport Management System.
CSB	This refers to Carrier Self Billing, the process that C-TMS uses to produce and send invoices to carriers.
Customer	In 3PL terms, the customer on behalf of which the transport is being operated.
DDL	Drop-down list - a series of pre-designated answers to a particular question on a device, rather than requiring the user to key the answer in full.
Debrief	Comprises 3 parts: Trip debrief, where general trip notes and vehicle information is captured; Stop debrief, where actual arrival and departure times against a trip are entered; Order debrief, where actual product and item quantities are entered; Driver/Trip debrief, where additional information is captured from the driver relating to the trip.
Delivery Types	This defines the category of the order, and is intrinsically linked to revenue and cost tariffs.
Demurrage; Detention	Any time spent loading, unloading or waiting that is outside contractual obligation in execution of a trip. This usually incurs additional charges.
Depot	Any location that schedules and controls transport.
Despatch	In transport terms, the process of loading and despatching items out of a depot. In this implementation, the process of loading and despatching is predominantly controlled by C-MCS (q.v.). See also Loading.
DMS	Document Management Systems: Systems than manage the storage and viewing of (predominantly) scanned documents. Usually these systems also include some automation and indexing routines.



Term or Acronym	Meaning
DOT	Delivery On Time - see OTIF.
Driver	Comprising drivers and crew assigned to a trip.
Drivers Day	A schedule of work that a driver would undertake in a day including any rest periods and breaks.
Drop	A stop on a trip.
DU	Distribution/Despatch/Deliverable Unit - box, tray, cage, tet, etc.; Also Asset, Asset Type.
EDI	Electronic Data Interchange - a mechanism by which 2 systems can communicate normally without user intervention.
ERP	Enterprise Resource Planning
Fixed Route Template	A template in C-TMS that provides a series of timed slots into which orders will fit. This can be used to create fixed routes (q.v.) and also as a template for cross-docking and grouping similar orders together.
Fixed Route	In transport terms, a fixed route is a trip comprised of a series of fixed stops that are typically always visited. A C-TMS fixed route template (q.v.) can be used to create these.
Fixed Schedule	An order that occurs at a fixed time. Differing from the above, the order will be created in the schedule; Also Milk Run.
Fuel Surcharge	An additional charge that may be applied to a Transport charge to reflect the increasing price of fuel.
Isotrak	A third party software package that allows users to be informed of the whereabouts of their vehicles using GPS technology. Interfaces with C-TMS in order to provide ?actuals? information for trips (i.e. the time a trip arrived at a stop and the amount of pallets that were delivered).
Item	A single item for delivery/collection.
Load	C-TMS: A trip that encompasses just a vehicle-full of items, or one journey out and back to a depot.
Loading	In transport terms, the process of loading and despatching items out of a depot. In this implementation, the process of loading and despatching is predominantly controlled by C-MCS (q.v.). See also Despatch.
Location	In C-TMS terms, a trip comprises visits or drops to many locations. A location can be of many different types.
Location Types	Usually one of: Depot, Customer, Delivery/Collection Location, Store, etc.
MCS	Mobile Control System
OBD	On-Board Diagnostics - an automotive term referring to a vehicle's self-diagnostic and reporting capabilities. Also CANbus.
OMS Ref	A unique transport movement ID, referring to a single transport movement request.
OPS13	Vehicle Checks; Defect Reporting
Optimisation	Route Building and Optimisation
Order	Equiv: OMS Ref; a transport movement.
Order Line	An order can be made up of different order lines (i.e. an order from one location to another can contain many lines such as 20 ambient pallets and 20 chilled pallets)
Order Status	The lifecycle of an order, usually UNSCHEDULED->SCHED-COLL->SCHEDULED->DELIVERED/FAILED/CANCELLED.
OTIF	On Time In Full - Metrics to measure successful collection or delivery.
Outbase	A depot whose purpose is to deliver to final delivery destination within a geographically-restricted subsection of the whole catchment area; also ROC, RDC.
Payment	Monies paid by a cost centre to a third party such as a carrier.
Plan	A term used to describe the result from scheduling Orders onto Trips. The first set of Trips may be referred to as ?Plan A?, with a subsequent, more accurate plan later in the day being referred to as ?Plan B?.
Post Schedule	The period after Orders have been scheduled in the Scheduling Program and then returned to C-TMS. Any subsequent manipulation of these Orders would be Post Schedule manipulation.
Pre Schedule	The period before Orders have been scheduled in the Scheduling Program and then returned to C-TMS. Any manipulation of these Orders would be Pre Schedule manipulation.
Product Item	Another term for a case or SKU
Product Quantity	A quantity of a single Product Item or SKU to be delivered from one location to another on particular date but not at a particular time. These records are created by the inbound Bookings interface process. These records are displayed in the View Detail screen on the Bookings form.
Product Summary	Another term for Booking
Product Type	



Term or Acronym	Meaning
	The category that a Product Item, Case or SKU falls in to, usually associated with temperature e.g. FROZEN, PERISHABLE, AMBIENT
Reason Codes	Of many types: Adjustment, Non-conformance, Order.
Recalculate Distance and Times	A C-TMS function that is applied to a trip. The function checks the properties of the trip to ensure that it meets the defined rules for a trip in respect of drive times and driver's breaks.
Receipt	In transport terms, the process of receiving and uploading items into a depot. In this implementation, the process of receipt and unloading is predominantly controlled by C-MCS (q.v.). See also Unloading.
Region	Geographical Region. Also, Postal Region. Regions are allocated to Depots and are used to determine ownership of a particular Order.
Resources	Drivers, Crew, Tractors, Vehicles, Trailers
Revenue	Monies received by a cost centre from a third party such as a customer.
Route	A route is a fixed route that is repeated. A Trip is a unique trip, which may be created from a route.
ROC	Regional Operating Centre; a depot whose purpose is to deliver to final delivery destination within a geographically-restricted subsection of the whole catchment area; also Outbase.
RDC	Regional Distribution Centre.
RPE	Regular Pallet Equivalent - This is used to estimate volume and therefore capacity of vehicles within C-TMS.
Schedule	A day's plan, usually consisting of 24 hours, not necessarily from midnight to midnight.
Service Levels; Service Types	Typically used to determine additional services for an order, or a quicker transport service. This defines the order windows i.e. the collection and delivery windows and offsets relating to the service level, through schedule rules.
Shunt	A trunk (q.v.) movement between depots using the trunk network, typically of a much shorter length than a trunk movement.
Sourcing Unit	A second entity that can be applied to a Lane, and all charges relating to that Lane will then be applied to the Sourcing Unit and not the Customer.
Stop	Also Trip Stop. A stop on a trip. In this solution, Drop is the pre-assigned fixed route drop number, whereas Stop is the generated CTMS stop ID.
Surcharges	Any charges applied to an invoice at invoice stage, rather than generated from the order or trip itself. Examples are: Fuel Surcharge/Rebate, Demurrage.
Tariffs	Rate Cards, forming the basis of generating trip/carrier costs and order revenue.
TI	Transport Instruction - another term for an Order.
TLM	Transport Logistics Manager
Tractor	The driver cab, pulling the trailer.
Trailer	The trailer carrying the goods. Can be several types.
Transport	The transport management office.
Trip	C-TMS: A selection of work to be completed, specifically a workload that lasts for an entire shift for a driver.
Trip Manipulation	The manipulation of Scheduled Trips, whether it be to add a Carrier or to completely recalculate times on the Trip.
Trip Status	The lifecycle of a trip
Trunk	A route between depots, transporting goods usually to be delivered from the destination depot, but any transfer of goods from the original receiving or originating depot in the network to the final delivery depot (the out-base).
TTM	CALIDUS TTM; Track and Trace Module; Aptean's application dedicated to tracking and tracing order events with inputs from several external systems.
Unloading	The process of receiving and uploading items into a depot. In this implementation, the process of receipt and unloading is predominantly controlled by C-MCS (q.v.). See also Receiving.
WCS	Warehouse Control System
WMS	Warehouse Management System



16 Schedule

A schedule within C-TMS relates to a physical grouping of orders and trips that can be used to refer to a schedule of work. All orders, order lines, trips, trip stops, and haulage activities must belong to a parent schedule, which acts as a container for those key items of data which defines the work that C-TMS is managing.

As such a schedule is a driving entity within the C-TMS system and is used to restrict the view of data presented within forms, reports, exports, interfaces and many other elements of the C-TMS system.

However, the creation of a schedule itself is not something that a user has to necessarily be concerned about, since schedules are automatically created when creating orders in C-TMS.

Schedules generated by the C-TMS application will either have a name of YYMMDD e.g. 020101 (if the date was 1st Jan 2002); this is the default, or WKDAY e.g. 01MON.

In the case of YYMMDD a "Key DateTime" is taken from the order (usually the early delivery date). The schedule has a nominal start time, stored in a system parameter and if the time component of the Key DateTime is after this time, then the date component of the Key DateTime is used as the schedule name, otherwise the previous day is used.

In the case of WKDAY, this format uses the week number and a three-letter abbreviation for the day of the week as the schedule name. For example, in the case of 01MON the WK 01 would represent a schedule for the first week of the financial year and the DAY MON would represent a Monday within that first week of the financial year. The WK part of the schedule name is in fact the number of weeks elapsed since a fixed date specified by a system parameter. (The week containing this date is deemed to be week 1.) The Schedule Start time is used as above.

In the case of YYMMDD, which is the most commonly used format for schedules within C-TMS, (WKDAY does not indicate year so has implications after a system configured in this manner has been operational for more than a year) a schedule can be for any number of days although 1 day and 7 days (a week) are the most commonly used values.

When a user or an interface creates an order in C-TMS, the Schedule module will look to see if a schedule already exists for the Key DateTime that is defined and if it does the order will be placed into that schedule, otherwise a new schedule will be created for that order and any other orders which have the same Key DateTime will also be placed into that schedule too.

Schedules have a status of either 'active' or 'closed'. If a schedule is active then operations can be undertaken on the trips and orders that reside in that schedule, assuming for the operation that the user wants to perform, the trip or order being worked upon is in an appropriate status.

The screenshot shows a window titled "MTS_OWNER on CONST" with a red header bar containing "ORI_STATS v2.14" and "MTS v10.5.0". Below the header, there are two checkboxes: "Show Stats" and "Show History". A table lists schedules with columns: Schedule, Sched Start, Sched Status, and Locked. The table contains four rows of data. Below the table, there are four input fields labeled "Unscheduled Orders", "Scheduled Orders", "Unconfirmed Trips", and "Confirmed Trips". At the bottom, there is an "Active Profile" dropdown menu and five buttons: "Apply", "Refresh", "Delete", "Close Schedule", and "Exit".

Schedule	Sched Start	Sched Status	Locked
950505	04-MAY-2095	ACTIVE	
950405	04-APR-2095	ACTIVE	
950404	03-APR-2095	ACTIVE	
950403	02-APR-2095	ACTIVE	

The schedule form is the entry point to the C-TMS application, in that it is the first form that a user would be presented with after they have logged in using their username and password. It lists all of the schedules within the database, their start date and their status and whether the schedule is locked or not. It also provides statistics about orders and trips within the schedule (if the show status checkbox is selected) and allows the user to create a new schedule close a schedule and delete a schedule (assuming that they have the correct access privileges).



The locked by property of a schedule is used if a user is performing an operation that affects the whole of the schedule and the schedule must not be viewed or updated by another user. When this type of activity occurs the locked property would display the username of the user that is running the process that is locking the schedule such as a synchronisation of trips from a planning tool back to C-TMS, once the process that has locked the schedule has completed the locked property would be unset.

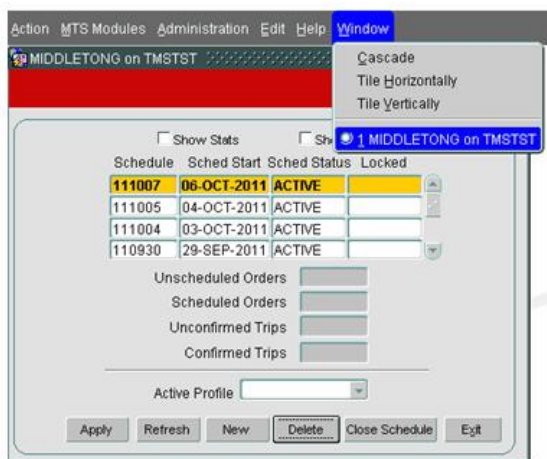
Since the schedule form is the entry point to the C-TMS application it is also the exit point in that when a user wants to end their session in C-TMS they should use the Exit button to gracefully exit the C-TMS application.

In general, schedules are created automatically in C-TMS as a result of standard system functionality. Initially, no schedules will exist until transactional data (Order, Booking, Trip etc) is created which requires a schedule for a particular date. The action of creating this data will generate the schedule for you.

There are instances which may require a new schedule, where the C-TMS functionality does not automatically create this record - e.g. Manual booking creation, Fixed Schedules. There exists the ability to create this record manually:

This is actually generated from the main access screen ORI_STATS - no menu selection is required; however, if other screens are open, you may need to:

- Select Window
 - ♦ <User name> on <database name>
 - ♦ e.g. SMITHJ on MASTST



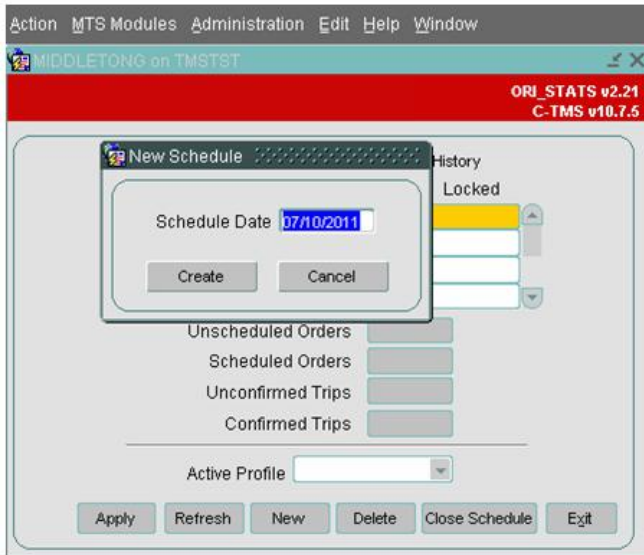
The main C-TMS Stats form will be displayed.

The System Parameter SCH_MANUAL_CREATE_SCHED will need to be set to 'Y' in order for the "NEW" button to be displayed.

16.1 Create Schedule

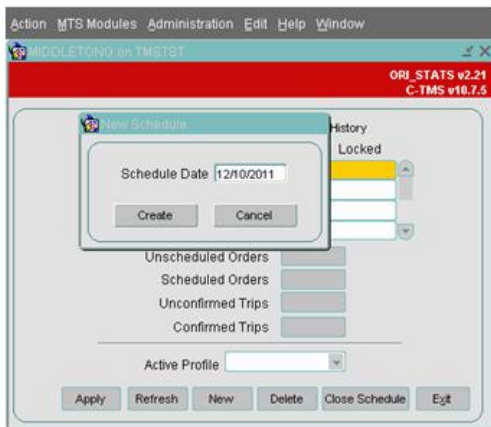
Click on the "New" button and the New Schedule window is displayed.





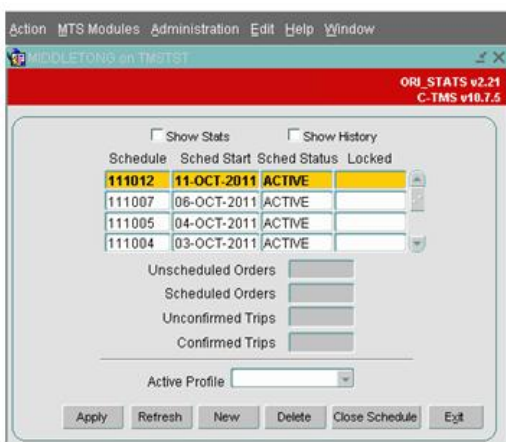
The Access Control Group Function SCH_Manual_Create_SCHED will need to be authorised for use by the C-TMS Group to which user name is applied.

This will default the "Schedule Date" to today's date. Enter the date you wish to create in the format DD/MM/YYYY.



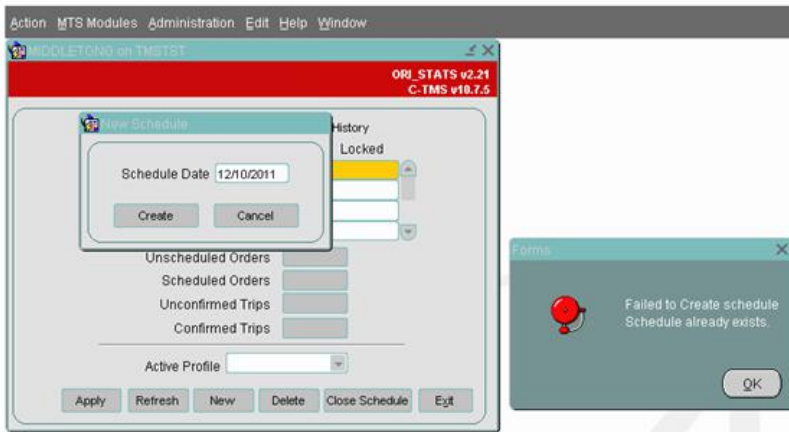
Click the "Create" button to generate a schedule for the date entered.

This will display a refreshed version of the main C-TMS Stats form, highlighting the created schedule.



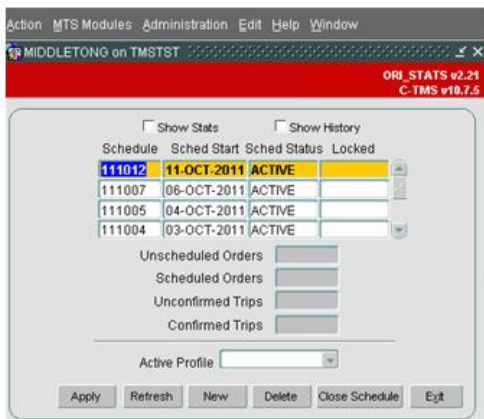
If a schedule already exists for the chosen date, a pop-up window is displayed showing an appropriate error message.





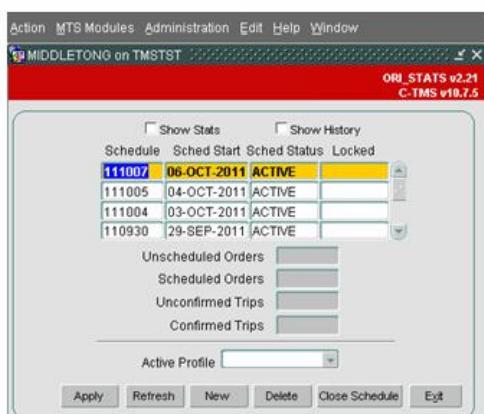
16.2 Delete Schedule

Highlight the Schedule record which you wish to delete from the main C-TMS Stats form.



Click the "Delete" button, this will remove the schedule.

A refresh of the main C-TMS Stats form shows the schedule as removed. Note: this is not yet saved.



Click the "Apply" button to save the deletion.

You can only remove a schedule for which no transactional data occurs, e.g. Orders or Trips. If attempted, a pop-up window is displayed with appropriate error message.





17 System Functional Areas

C-TMS FUNCTIONALITY	Description
Forms	Standard Oracle 11g Forms
Oracle Reports	Standard Oracle 11g Reports
Imports	Oracle Forms functionality using WebUtil which allows CSV format data upload from local or network PC
Exports	Oracle Forms functionality which will produce a data extract in CSV format and display in a separate web browser window
EDI	Automated inbound and outbound file transfer and upload. Both CSV and XML format.
Navteq	External web based service to provide Time and Distance information via the Web
Email	Oracle Forms Functionality to produce email manually or automatically from various C-TMS functions
Tokairo	External application to provide visibility of non-electronic Proof of Delivery documentation. Automated CSV Extract provides information to TokOpen Web server which feeds an inbound EDI message (via ESI) as documents are scanned.
Documents are visible via Oracle Forms functionality and displayed in a separate web browser window	
EFX	External application to provide planning, tendering and acceptance information of jobs sent to carriers. EDI interface communicates messages from C-TMS to EFX and from EFX to C-TMS
Optimiser	External application to provide planning of orders onto loads/trips, e.g. Paragon, DPS. Oracle Forms functionality to produce Export of orders from C-TMS and Import into C-TMS of planned loads/trips
Microlise	External application to provide an outbound trip manifest and receive real-time arrival times and debrief information based on GPS and user activity captured by in-cab units.
Isotrak	External Interface to provide real time debrief information of actual collection and delivery times and other load/trip information
VB interface hosted on an XP server passes inbound and outbound messages via MSMQ to Isotrak HUB server	
Smartphone	External Interface to provide an outbound trip manifest and receive real-time arrival times and debrief information triggered by a driver Smartphone application, mobile network and GPS.
EPOD	External OBS application to provide real time arrival, departure and debrief information. Also includes mapping, tracking and route information.
MIS	Data flow that can be set up to push large data extracts from configured C-TMS tables to third party data warehousing applications.
TTM/LOTS	Live order tracking application linking Warehousing and Transport application data to give an end-to-end view of an order. The web based front end also allows data updating between systems via EDI.
Portal	Web based portal allowing real-time data visibility for transport order enquires, also with order updating for suppliers and tracking of delivery items.
WCS	External OBS application which controls scanning actions on arrival of goods at depot/cross dock. This supports the remote hand held terminals which can be used to track and record delivery units, supporting order fulfilment for onward planning and internal goods movements.

}

Application Functionality	Functional Screen Listings
Order Management	Bookings
	Purchase Orders
	Orders
	Order Lanes
	Order Templates



Application Functionality	Functional Screen Listings
	Order Debrief
	Order Tracking
	Shipments
	Order Entry Targets
	Slot Usage
Trip Management	Trip Find
	Trip Manipulation
	Trip Planning
	Trip Summary
	Trip Overview
	Trip Debrief
	Fixed Routes
	Carrier Trip Management
	Carrier Trip Planning
	Execution
	Loading Management
	Trip Message Holds

Application Functionality	Maintenance Screen Listings
Maintenance	Customer / Cost Centres
	Resources
	Locations
	Network
	Countries
	Contracts
	Products
	Order Offsets
	Business Data
	Lane Based Order Entry Admin
	Message Maintenance (email)
	Accounts
	Warehouse
	WCS Maintenance
	Task Lists
	Fixed Routes
	Imports
	Delivery Targets
	SAP Data Maintenance
	Static Data Maintenance
	Asset Management
	Schedule Rules
	Carrier Rules
	Milk Round Maintenance

Application Functionality	Administrative Screen Listings
Accounts	Invoicing
	Payments
	Saving
	Debrief Invoice
	Carrier Invoice Consolidation
File Interface	Imports
	Exports
	Extracts Suite



Application Functionality	Administrative Screen Listings
Interfaces	Interface Errors
	Paragon Interface
	Isotrak Interface
	LogiX Interface
	EDI Maintenance
	Web Services Audit Enquiry
Reporting	Oracle Reports
Administration	Audit Log
	Access Control
	Message Monitoring (Email)
	Archived Messages
	Fixed Schedules
	Lock Monitor
	System Parameters
	Configuration
	Task List Inbox



18 INTRODUCTION

This document details the Menu hierarchy and structure of C-TMS.

18.1 Objective

The primary purpose of this document is to detail the Menus and Sub-Menus that are accessible within the Calidus Transport Management System, so that they can be easily referenced.

The secondary purpose of this document is to provide a brief description on each form accessible within the Menu Items stated in the diagram.

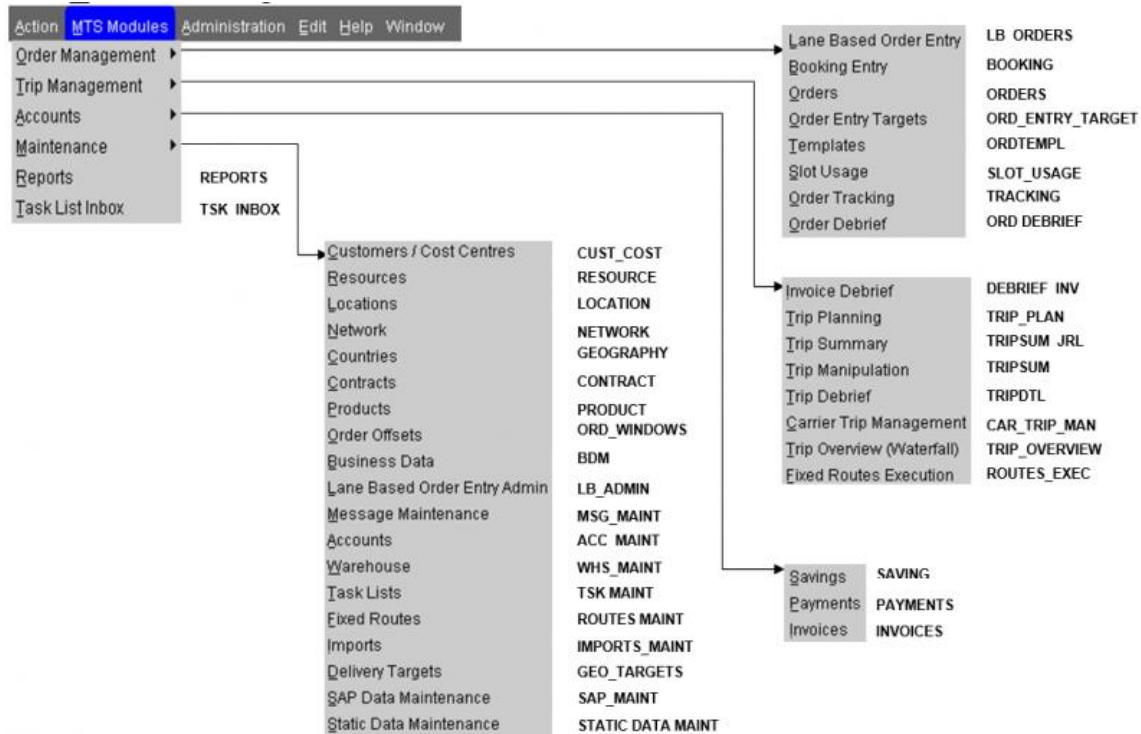
18.2 Scope and Limitations

This document is based on the C-TMS Functional Specification and Application User guides as well as information gleaned from using the C-TMS Test system. The OBS development database (C-TMSTST) was used as the basis for this guide.



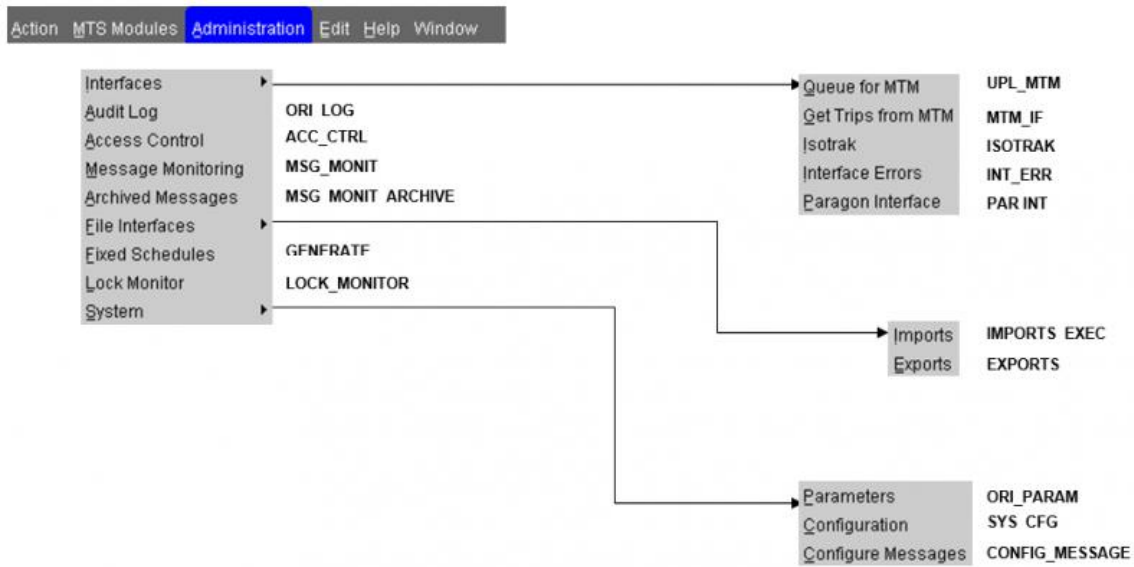
19 C-TMS MODULES MENU HIERARCHY

19.1 C-TMS Module Diagram



20 ADMINISTRATION MENU HIERARCHY

20.1 Administration Menu Diagram



21 DETAILS OF C-TMS MODULES MENU ITEMS

21.1 C-TMS Modules > Order Management > Lane Based Order Entry

The Lane Based Order module enables speedy entry of order as the user does not have to key in the information that remains the same each time the order is placed. This standard information is stored in 'Lanes' and is automatically applied.

21.2 C-TMS Modules > Order Management > Booking Entry

The Booking module enables the processing of product item quantity and product quantity records which detail the quantity of each item, case, SKU or product that is to be delivered from one location to another on a particular date. Once the Bookings records have been created the Booking module allows the user to convert them into Transport Instructions (Orders).

21.3 C-TMS Modules > Order Management > Orders

Orders or Transport Instructions form the input to the scheduling process. They are created in several ways, including via the Create TI's function, Order Templates, Imports and manually, via Order Entry, using the Orders form or Order Entry Target form.

21.4 C-TMS Modules > Order Management > Order Entry Targets

The Order Entry Target module is used to detail the actual collection and delivery windows on which an order should be collected or delivered.

21.5 C-TMS Modules > Order Management > Templates

Order Templates provide the facility to create Orders from Order Templates. A Template can be created that stores similar information as an Order, which can then be generated to create an Order that inherits the details on the Template. The Template can then be re-used to generate similar Orders perhaps every day.

21.6 C-TMS Modules > Order Management > Slot Usage

This module is used to maintain collection and delivery slots. Each slot details the collection and delivery windows on a particular day that the collection or delivery of goods from one location to another should be scheduled.

21.7 C-TMS Modules > Order Management > Order Tracking

The Order Status Tracking (OST) module provides both DHL Planners and Customers with a means to track the progress of Orders and trips. The form provides a real time view enabling users based at a location to identify collections and deliveries that are planned in the near future, and it ensures that they are ready when the truck arrives.

21.8 C-TMS Modules > Order Management > Order Debrief

Order Debrief supports the process of manually updating the actual collection and delivery details, rather than the planned details, on Orders and their associated Trips. This form provides the user with a straight forward means of



updating and storing 'actuals' and focuses the user on their current workload i.e. those Orders that need to be debriefed so that the subsequent billing activities can be undertaken.

21.9 C-TMS Modules > Trip Management > Invoice Debrief

Debrief by Invoice supports the process of manually generating customer invoices based on the receipt of an invoice from the Haulier for transport undertaken.

21.10 C-TMS Modules > Trip Management > Trip Planning

Trip planning can be used for both the pre-planning of trips, and the execution of that plan. A Planner will often be responsible for creating the Orders and then putting these Orders onto trips. Fixed routes will often automate part of this job for you, leaving some orders to be tripped up manually using the skill of the planner. There is functionality within trip planning that will aid and guide the planner to making an informed decision.

21.11 C-TMS Modules > Trip Management > Trip Summary(JRL)

The Trip Summary module provides the same operations as both the Trip Planning and Trip Manipulation screens. This was specifically created for Joint Retail Logistics and is not used as part of the core C-TMS system.

21.12 C-TMS Modules > Trip Management > Trip Manipulation

The Trip Manipulation module provides users with a view of all trips on a particular schedule. The Unscheduled Orders on the schedule chosen by the user are also displayed. Trips can be created directly within C-TMS Host from unscheduled Orders or can be created in MTM and then transferred back to C-TMS Host. All key information relating to a trip is displayed on the Trip Manipulation form and a mechanism is provided to link back to the Orders that are delivered on the Trip.

21.13 C-TMS Modules > Trip Management > Trip Debrief

The Trip debrief functionality is used to enter the actual milestones of the trip, order, point of delivery (POD), Odometer Reading, etc.

21.14 C-TMS Modules > Trip Management > Carrier Trip Management

Carrier Trip Management (CTM) is used to manage those Trips that require a third party carrier to perform the trip and therefore the haulage, loading and unloading of orders associated with that trip.

21.15 C-TMS Modules > Trip Management > Trip Overview (Waterfall)

The Trip Overview or Waterfall screen provides a high level operational overview of the Trip status flows for a particular schedule. It can be used as a tracking screen to gain a snapshot of the current status of the days trips as well as to update the main trip attributes such as assigning resources, basic debrief and status setting operations.



21.16 C-TMS Modules > Trip Management > Fixed Route Execution

Execution is performed for a Schedule and optionally for a Depot. Access Control is used to control which Depots a user can run Fixed Routes for. The process considers all Routes that are defined to run on a specified day and attempts to match any Unscheduled Orders to the user defined Fixed Routes.

21.17 C-TMS Modules > Accounts > Savings

This module provides the ability to see the Savings generated for a particular date range for a particular customer.

21.18 C-TMS Modules > Accounts > Payments

The Payments module is used to view Fuel Surcharges. These surcharges are calculated via the ACC package either at the time of manual surchargeable payment creation, on trip status change, or on automated creation of a trip.

21.19 C-TMS Modules > Accounts > Invoices

C-TMS can be configured so that a customer invoice can be generated, once 'Trip Debriefing' has taken place. This module will display all invoices which have been created and also payments which make up the invoice.

21.20 C-TMS Modules > Maintenance > Customers / Cost Centres

This module is used to maintain data related to Customers, Customer Groups and Cost Centres.

21.21 C-TMS Modules > Maintenance > Resources

The Resource module encompasses the maintenance of the Resources used throughout the C-TMS system. Resources define the various core entities used in the transport system to enable trips to be made. These are entities such as Carriers, Trailers, Despatch Unit Types and Drivers.

21.22 C-TMS Modules > Maintenance > Locations

The Locations module assists the creation, maintenance and retrieval of C-TMS data pertaining to how each location functions. The Locations data determines to a small degree how the orders are created in the Booking form.

21.23 C-TMS Modules > Maintenance > Networks

Network Tables are used to maintain the Distance and Time between two locations in C-TMS

21.24 C-TMS Modules > Maintenance > Countries

This module enables Country information to be maintained as for those clients who trade with other countries, VAT may need to be calculated at a different rate.



21.25 C-TMS Modules > Maintenance > Contracts

The Contract module is used to calculate the payment and revenue relating to an order for a cost centre and a counter party.

21.26 C-TMS Modules > Maintenance > Products

This module assists in the creation, maintenance and retrieval of C-TMS Host Products data. Product data configures the way the C-TMS Host functions and is used by many of the key functions including Trip Manipulation, Generating TI's and Bookings.

21.27 C-TMS Modules > Maintenance > Order Offsets

This screen is used to configure the system time offsets that will be applied to the order collection and delivery time windows based on the location types used.

21.28 C-TMS Modules > Maintenance > Business Data

This module is used to maintain Business Data, including Group Names, CrossDock Paths, Adjustment Reason Codes, Reason Codes, Min TI RPE Quantities, Trip Statuses, Order Statuses, Service Types, Surcharges, Location Types and Paragon Locations.

21.29 C-TMS Modules > Maintenance > Lane Based Order Entry Admin

This module is used to create C-TMS orders. This is similar to Order Templates where one or many 'Lanes' can be setup with basic Collection, Delivery and Product information.

21.30 C-TMS Modules > Maintenance > Message Maintenance

This form allows the user to define recipients and their addresses and to configure which recipients will receive which messages. It also allows users to configure the fields and text that will be displayed in each message.

21.31 C-TMS Modules > Maintenance > Accounts

This module is used to maintain Accounts, Invoice Requirements; Payment Types and Accounting Periods (used for Oracle Financials Interface). An account record needs to be set up for each carrier, customer and cost centre that is used within the C-TMS system.

21.32 C-TMS Modules > Maintenance > Warehouse

This functionality provides the opportunity to map particular Product Items to alternative DU Types, to those that would usually be assigned in the Booking Auto Summary process. It exists to cater for the situation where a single depot is made up of multiple warehouses. Each warehouse will distribute particular Product Items.



21.33 C-TMS Modules > Maintenance > Task Lists

This module provides functionality to execute a sequence of C-TMS Tasks without having to manually run each Task on completion of the preceding Task. Examples of Tasks are Bookings Auto Summary and Create TI's function.

21.34 C-TMS Modules > Maintenance > Fixed Routes

This module provides a mechanism to define a set of 'template' Trips that can be built from a pool of Unscheduled Orders. This is typically used to try and plan certain trips before sending the remaining unscheduled orders to an external scheduling tool or building them manually. Typically these Trips will be key Routes that are repeated on a frequent basis.

21.35 C-TMS Modules > Maintenance > Imports

The C-TMS Flat File functionality allows for data to be loaded into the system without the need for a formal electronic interface. The import mechanism allows a file from a users PC to be uploaded to the server and from there it can be loaded into the database.

21.36 C-TMS Modules > Maintenance > Delivery Targets

This allows configuration of time offsets for the collection and delivery windows of orders to specific locations for specific products.

21.37 C-TMS Modules > Maintenance > SAP Data Maintenance

This is a maintenance screen which allows the user to configure data sent to and from the SAP system.

21.38 C-TMS Modules > Maintenance > Static Data Maintenance

This is a maintenance screen which allows the user to maintain and manage high level static data. This includes Post Code links to Planning Regions, Order Types for use with EDI order flows and Booking Types for EDI data flows.

21.39 C-TMS Modules > Reports

The Report module enables the generation of pre-defined reports. Requirements for particular reports are defined by the business and once reports have been developed and installed onto C-TMS, they are available to users via the reports form.

21.40 C-TMS Modules > Task List Inbox

The Task List Inbox displays the task Execution 'area'. The area holds all Task Lists that are due for execution or have been executed. The screen can be filtered to display only Task Lists for a particular day and a particular status.



22 DETAILS OF ADMINISTRATION MENU ITEMS

22.1 Administration > Interfaces > Queues for MTM

The C-TMS/MTM Interface allows orders to be selected for queuing to the Manugistics (MTM) software where they can be built onto optimized trips. These Trips can then be synchronized back into C-TMS for further manipulation.

22.2 Administration > Interfaces > Get Trip from MTM

This form allows users to retrieve orders that have been built into optimized trips. The user selects a schedule from the Schedule drop-down box and the form then displays statistics about trips and orders within that schedule.

22.3 Administration > Interfaces > Isotrak

The purpose of the Isotrak/C-TMS Interface is to transfer information between the Isotrak system and C-TMS which will result in the Master Isotrak system and C-TMS containing the latest information that is available about trips within a given schedule.

22.4 Administration > Interfaces > Interface Errors

Interface Errors allow users to view the errors on Orders and POD which have been interfaced to C-TMS from other external systems.

22.5 Administration > Interfaces > Paragon Interface

This is an interface which allows C-TMS data to be transferred from and to the Paragon application. Paragon is an optimisation tools and can receive a schedule of orders from C-TMS and return a planned list of trips. The orders sent are locked down from further modification until the planned trips are returned.

22.6 Administration > Audit Log

This is a high level audit tool which allows the user to search for system generated audit records in order to identify basic information about historic task which have occurred on the system. These audit records are written from most functional areas in the system.

22.7 Administration > Access Control

User Groups are created to control the forms that a user can access and what capabilities/functions a user has within each form.

22.8 Administration > Message Monitoring

Allows a user to choose a date and view all the messages that have been created on that day.



22.9 Administration > Archived Messages

This form holds all messages that are more than 30 days old.

22.10 Administration > File Interfaces > Imports

Allows the user to select the type of file to import and lets them search for the file on the server. Once the import is complete the user will be able to view the results and failure file.

22.11 Administration > File Interfaces > Exports

The Exports module of C-TMS enables the generation of pre-defined CSV files. Requirements for particular exports are defined by the business and once exports have been developed and installed onto C-TMS, they are available to users via the Exports form.

22.12 Administration > Fixed Schedules

Fixed templates provide functionality to copy an entire schedule of trips, orders and their associated Haulage Activities for a specific Depot in to a named Template. The Template can then be generated into another schedule to effectively copy a Depot based Schedule from one Schedule Date to another.

22.13 Administration > Lock Monitor

Lock Monitor functionality in C-TMS allows users with appropriate authority to view and monitor user sessions that are locking a particular transaction. It is possible to close sessions that have been locked. One simple example where the system could lock a transaction is that when in midst of changing the details of a Order/Trip the users closes the session with C-TMS by using the 'x' button of the windows explorer and not properly 'Exiting' the C-TMS system

22.14 Administration > System > Parameters

System Parameters will be added initially by the Development Team and can then be viewed or modified as appropriate using this form.

22.15 Administration > System > Configuration

This module allows System resources to be configured including Source Systems, Printers, Reports and Menus.

22.16 Administration > System > Configure Message

This allows user configurable messages to be displayed from various areas of system functionality. When ever a particular error message is called the user can use this screen to define the content of the message displayed.



23 Category:Process Flows

