GE Fanuc Automation

CIMPLICITY® Monitoring and Control Products

CIMPLICITY HMI Plant Edition

Tracker
Getting Started Guide

Following is a list of documentation icons:

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in the equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution provides information when careful attention must be taken in order to avoid damaging results.

Important flags important information.

To do calls attention to a procedure.

Note calls attention to information that is especially significant to understanding and operating the equipment.

Tip provides a suggestion.

Guide provides additional directions for selected topics.

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Preface

Contents of this Manual

Chapter 1. Introducing Tracker: Provides a brief description of the Tracker option, and discusses installation and hardware recommendations.

Chapter 2. Learning about Tracker: Discusses Tracker terminology and concepts, using abundant visual elements to describe the processes.

Chapter 3: Designing the Tracking Model: Step-by-step instructions for designing the Tracking Model. Included are diagrams of a sample Tracking Model.

Chapter 4: Configuring the Tracking Model: Instructions for beginner users to configure files to run the Tracking Model.

Chapter 5: Executing the Tracking Model: Check list and instructions for executing the Tracking Model.

Appendix A. Configuration File Guide: Complete guide to the PRT configuration files. Included are sample records.

Related Publications

For more information, refer to these publications:

CIMPLICITY HMI Plant Edition Base System User's Manual (GFK-1180)

CIMPLICITY HMI Plant Edition Getting Started (GFK-1500)

CIMPLICITY HMI Plant Edition Tracker Production Tracking Operation Manual (GFK-1216)

CIMPLICITY HMI Plant Edition Tracker Routing Control Objects Operation Manual (GFK-1408)

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Introducing Tracker

Welcome to Tracker

Welcome to Tracker, the production tracking and routing solution for your business! Tracker enables you to monitor the progress of your products as they make their way through the factory, from raw materials to finished goods. Tracker is built on and fully integrated with the CIMPLICITY® HMI family of products. As with all CIMPLICITY products, Tracker runs in a Windows NT-based environment enabling flexibility for multiple users and a familiar platform that decreases the learning curve.

Tracker provides runtime data for:

- Tracking products as they progress through the manufacturing cycle.
- Assessing cycle times.
- Measuring costs.
- Controlling inventory.
- Evaluating quality control.
- Eliminating downtime, bottlenecks, and product waste.

Simply put, Tracker gives you the critical information you need to make decisions that will enable you to streamline your operation, manage materials and resources, and reduce costs.

What's New in Tracker?

The latest development in Tracker is the new graphical user interface for configuring your Tracking Model. Within the user interface is a Wizard for taking you step by step through the configuration of your Tracking model, with easy-to-use dialog boxes based on the standard Windows platform.

As a convenience for those customers who are accustomed to using the older configuration files, we have included detailed information in the "Appendix A: Configuration File Guide."

System Requirements and Recommendations

The Tracker software is fully integrated into the CIMPLICITY HMI family of products, and is operable using the identical system resources; however, there are additional considerations for memory and hard disk resources. If you have an older system, you may need to upgrade in order to gain maximum functionality from the software. We recommend the following minimum system configuration.

Minimum Recommended Processors

- Pentium 90 MHz or better *(PRT only)*
- Pentium 233 MHz or better *(PRT & RCO software)*

Operating Systems

- Windows NT Server 4.0 *(Recommended)*
- Windows NT Workstation 4.0

Minimum Recommended Configuration

- 64 MB RAM *(see note)*
- VGA Monitor
- Graphics Accelerator
- CD-ROM Drive
- Mouse or Other Pointing Device
- 10 MB free disk space *(see note)*

Driver Requirements

- Third-party drivers, such as Data Highway Plus and MODBUS Plus require an ISA bus.
- Series 90 TCP/IP driver for networking requires an Ethernet adapter.

Database Requirements for Running RCO

- SQL Server or access to SQL Server
- SQL Server driver

Important: Tracker requires 1.5 KB of RAM *and* free disk space for every item location in your model.

Tracker Installation

Installing the Tracker option on your HMI Server takes just moments using your original installation CD for CIMPLICITY HMI.

Important: It is assumed that the Tracker option will be installed on your CIMPLICITY HMI Server to run with CIMPLICITY software. *See <u>CIMPLICITY Getting Started</u>, GFK-1500, for details about installing CIMPLICITY software.*

To install the Tracker option:

1. Place the installation CD in the CD-ROM drive.
2. Do one of the following:

   Option 1

   Allow the CD to AutoPlay.

   Option 2

   A. Click Start on the Windows task bar.
   B. Select Run.
   C. Type **d:\setup.bat** (where **d** is the CD-ROM drive).
   D. Click **OK**.
3. Select Install CIMPLICITY HMI from the menu.
4. Proceed to the CIMPLICITY HMI Setup dialog box.
5. Click the Review/Add Options radio button.
6. Click **Next** to display the HMI Server Options dialog box.

Check:
1. Tracker to install the Server application.
or
2. Tracker Display to install the Viewer.
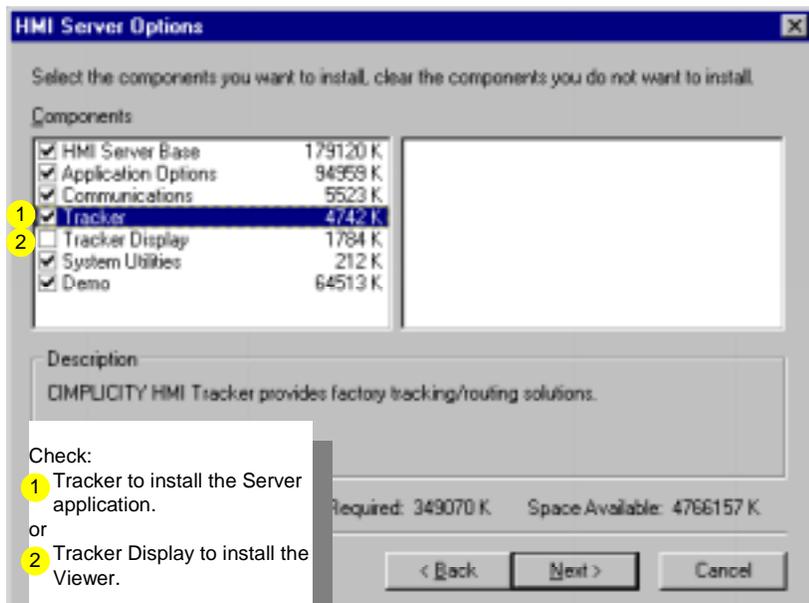
7. Do one of the following:

   Add Tracker to a Server

   Check the Tracker option box

   Add the viewing option to a Viewer

   Check Tracker Display.

   Important: Do <u>not</u> check both boxes.

8. Clear all other boxes in the Components group.

9. Click **Next** to proceed with installation.

10. Restart your computer once the Tracker option has been installed.

Register Tracker Option

In order to acquire all of the benefits from the Tracker options, register your product using the CIMPLICITY HMI Registration program. Registering your new option is quick and easy as described below.

To register the Tracker option:

1. Click Start on the Windows task bar.

2. Select Programs>CIMPLICITY>HMI> to run the Registration program.

3. Enter the serial number for each Tracker option.

Result: Tracker options are now registered, and software is fully functional.

See CIMPLICITY Getting Started, GFK-1500, for details about registering a new option.

Add Tracker Option to an Existing Project

You can add the tracker option to an existing CIMPLICITY project, or start a new project. In either case, once added the **PRT** configuration files will be available for editing to your specifications.

See the <u>CIMPLICITY HMI Base System User's Manual</u>, GFK 1180, for details about starting a new project.

Tip: To open a project quickly, create a shortcut for the project on your Windows desktop and double-click the icon.

To add the Tracker option to an existing project:

1. Open the appropriate project in the Workbench.
2. Click Project on the Workbench menu bar.
3. Select Properties.
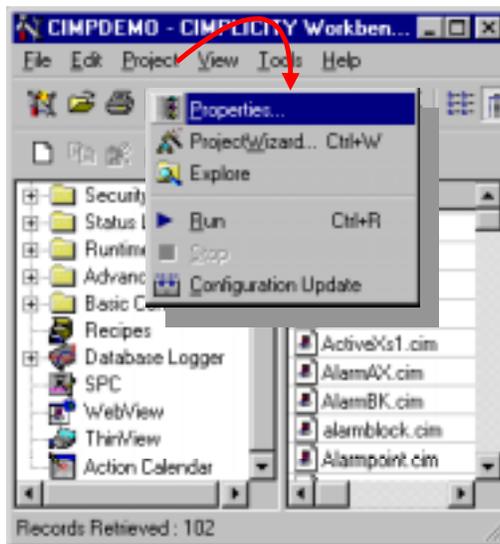
The Project Properties dialog box opens.

9. Check Tracker in the Options group.
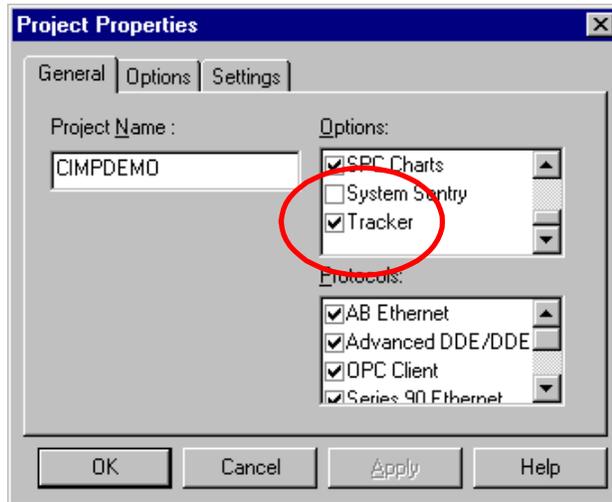
10. Click **OK**.

Result: The Tracker option is added to your existing project. All PRT configuration files are available for editing.

Note: You cannot add an option to a running project. Add the Tracker option first, then run your project.

System Architecture Overview

Your tracking model will run with CIMPLICITY to provide you with critical information during the production process. The following illustration is a simple rendition of Tracker's system architecture.

Example of a Simple Tracking Model
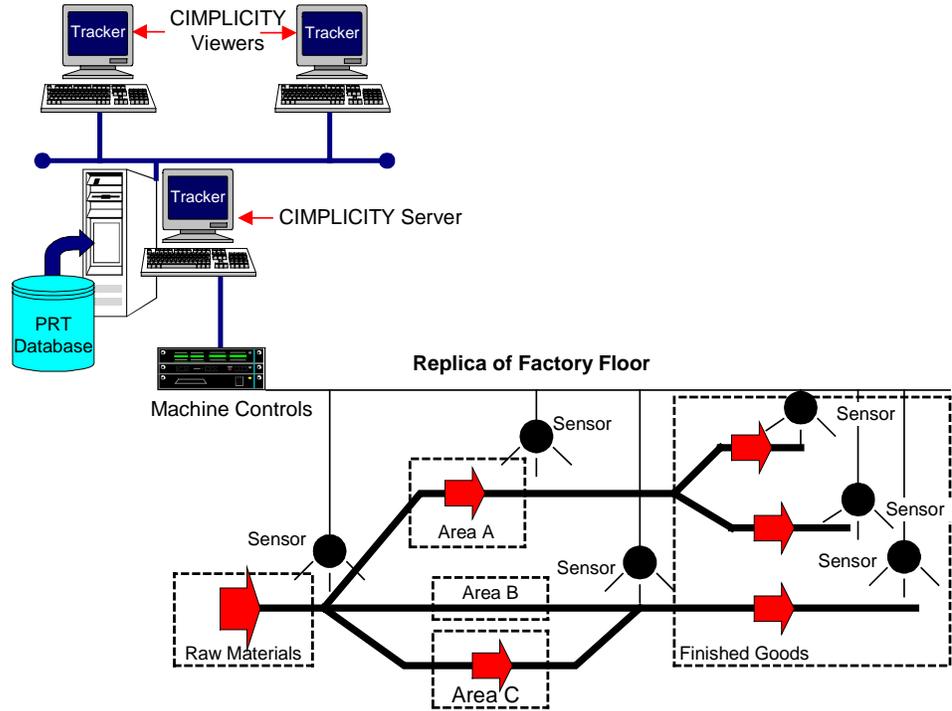
Learning about Tracker

A Note about this Guide

This guide has been designed to instruct both the novice and experienced user how to plan, implement and execute a Tracking model. Because your business is unique, you can design Tracker to specifically meets your requirements for tracking and routing products from the inception of raw materials on the plant floor all the way to loading and shipping your finished goods.

This guide is not intended to provide instruction on CIMPLICITY or your Windows operating system; it is assumed that users have a working knowledge of both software products. Please refer to the documentation that originally came with your software for questions about CIMPLICITY and Microsoft Windows.

About Production Tracking

There are two distinct, yet interrelated pieces to Tracker: Production Tracking (PRT) and Routing Control Objects (RCO).

- The ***Production Tracking Module*** monitors the progress of items through the production process

- The ***Routing Control Objects Module*** performs routing decisions for enhanced production flow.

It is recommended that you build your production tracking solution first; and then, if you plan to add the routing solution to your Tracking Model, build it second.

Production Tracking (PRT) Definitions

It is important to fully understand the concepts behind a powerful application such as Tracker, but equally important to understand the corresponding terminology. time to read Following are important definitions for PRT.

PRT terms include

Attribute

Named field of data describing a particular item.

Attribute–Mandatory Attribute

All serialized items contain these attributes by default configuration.

Basic Control Engine (BCE)

CIMPLICITY option that allows you to script routines and program applications using a Visual Basic-compliant language.

Discrete Part Production

A process in which the product being tracked flows through the plant as single separate parts (i.e. engines or light bulbs), or in easily identifiable separate units (i.e. barrels), as opposed to a continuous flow through the plant where production is measured in kilograms or gallons, for example.

Group

A logical means of *grouping* regions together. Represents a physical or functional space on the plant floor that holds regions.

Item

A physical part, assembly or product that is to be tracked.

Item Class

Logical grouping of item types. Item types can only belong to one item class; however, an item class can contain multiple item types.

Item–Non-serialized Item

Item that has no unique identifier, and holds two attributes: Parent ID and Item Type.

Item–Serialized Item

Item that has one or two unique identifiers and 40 attributes that are user-configurable.

Item Type

Logical grouping of items with similar characteristics, independent of region, group or service.

Limit Switch

Device that simply informs the tracking model that an item passed without identifying it.

Positive Identification

A means of uniquely identifying an item, such as through the use of a serial number attached to the item, for example on a barcode or an RF tag.

Production Tracking (PRT)

The overall tracking model for a CIMPLICITY project that manages all running PRT Services.

Region

A logical view of physical space on the factory floor that holds one or more region locations configured by the user. Can be configured into one of three primary types: Pooled, Sequential or Shifting; and subsequently configured into a secondary type: Normal, Combine or Disperse.

Region–Combine Region

Allows multiple item entries to combine in one region location, rather than placing them in successive locations.

Region–Disperse Region

Similar to combine regions, but allows combined items to be separated.

Region Location

Represents a physical location on the plant floor that can hold one or more items; for example, two items located on the same carrier.

Region–Normal Region

Tracks items through the plant—basic region.

Region–Pooled Region

Tracks that a serialized item entered or exited the region, without regard for the order in which the items entered. Also, items can exit the region in any order without causing an error.

Region–Sequential Region

Tracks the order in which items enter and exit. Allows skipped items (out of sequence items) to be deleted or sent to a detainment region.

Region–Shifting Region

Supports occupied and empty locations within the region. When a new item or a blank space is moved into the region, other items currently residing in the region shift over by one location.

Route

The physical path that an item travels between two regions.

Service

An independent PRT process running in a CIMPLICITY project that manages groups and regions.

Transition Indicator

Method used to identify an item's location by tracking its transition into or out of a region. There are two types of transition indicators: Tracking Entry and Tracking Exit Indicator.

Transition Switch

Point used to cause a transition of an item. There are two types of switches: Limit Switch and Positive ID Switch.

User Configurable

Ability to dynamically create, delete or modify during process.

Production Tracking Overview

The basic concept behind Production Tracking (PRT) is to track parts/assemblies through the factory production process. PRT can be configured to track even the most complex manufacturing processes using a powerful database to support the Tracking Model. The database is arranged in a hierarchy to simplify and speed up searches. *See page 2-7 for a diagram of the database hierarchy.*

1. **Item**

   At the **base level** of the PRT database is the tracking Item which is assigned to each part/assembly. Tracking items are identified either by their Item ID (serialized items), or by their location in a region (non-serialized items). Items can be non-serialized (not unique), or serialized to give you precise information about the tracking item in progress.

2. **Region Location**

   The **physical space** on the factory floor is divided into Region Locations. One or more items can reside within a region location, so that the progress of a single item or a group of items can be tracked. For example, a bin or pallet can hold more than one item, but will represent only one region location, whereas an automobile bumper hanging from an overhead conveyor would be only a single item, but would still occupy an entire location by itself.

3. **Region**

   A **physical area** in the factory that holds region locations, each region is bounded by some kind of device to inform the tracking model that a particular item has entered or exited the region. When designing your tracking model, you will decide the types of devices required at the entry and exit points of your regions. Devices range from simple limit switches to bar code readers to operator interfaces.

As stated, the PRT database is arranged in a hierarchy meaning that base-level data (i.e. regions and items) have higher level associations.

For example:

- **Items** with similar characteristics are logically grouped together into Item Types.

  Item types are logically grouped together into Item Classes.

  Forming logically related groups allows you to expediently search for items in the tracking system based on multiple criteria.

- **Regions** are also logically grouped together by physical location or by function into **Groups**.

  You can choose to group some of your regions together because they are physically close to one another, and other regions together because they are functionally the same or similar. However, a region can only belong to one group.

- **PRT Services** is the highest level of the hierarchy. Each PRT Service is a separately running process that supports an independent list of one or more regions. You can run multiple Services simultaneously allowing you to configure one part of your plant, while other parts are running in production.

PRT Overview Diagram

The following (non-scale) diagram illustrates the primary concepts behind Production Tracking.
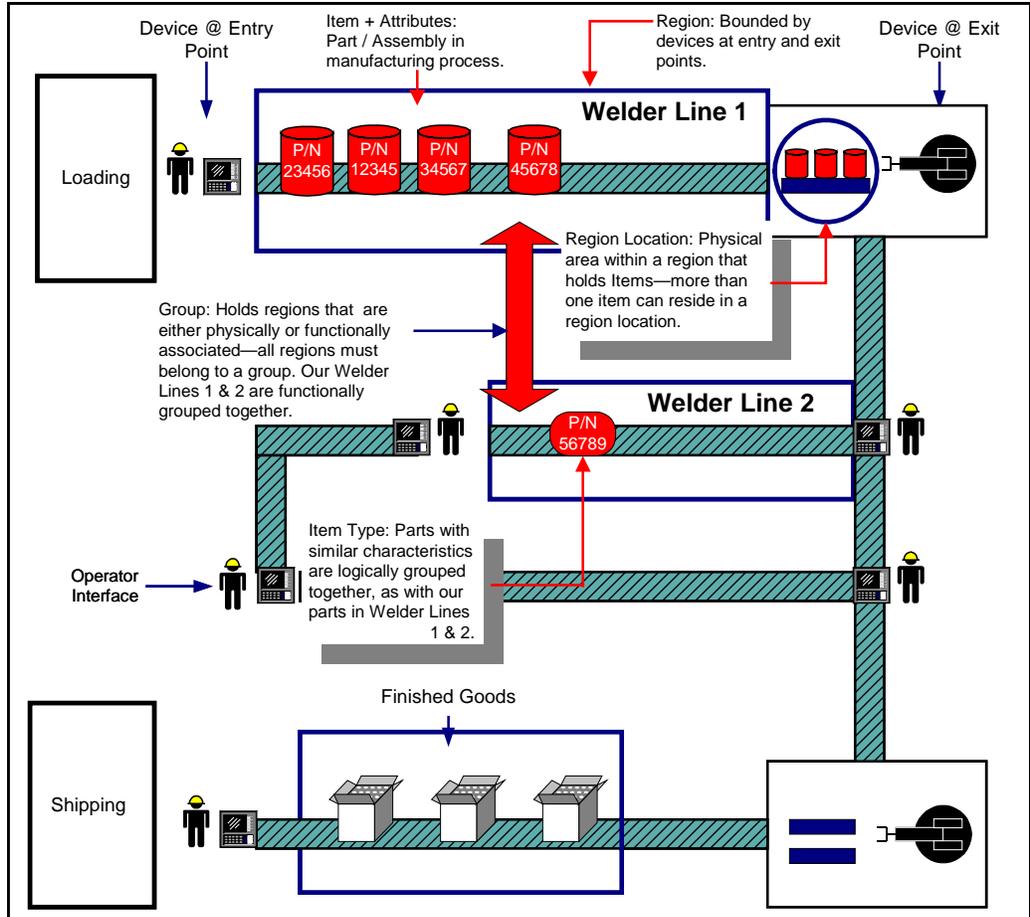
PRT Database Hierarchy

The PRT database supports the tracking model and houses all of the tracking and configuration data. The following diagram illustrates the hierarchy within the database. Note that data at the base level are related to one or more database types in the next level up. This kind of relational database serves to simplify and expedite searches for items in the tracking model.

PRT CIMPLICITY PROJECT

Service
Independent PRT process running in a CIMPLICITY project that supports one or more regions

Group
Logical space on the plant floor that holds regions

Region
Represents a physical area in the factory, and holds region locations

Region Location
Physical space on the plant floor that holds one or more items

Item Class
Logical grouping of item types

Item Type
Logical grouping of items with similar characteristics

Item
Physical Product/ Carrier

Item Attribute
Data field associated with an item.

About Items

The primary purpose of Production Tracking is to monitor the progress of a product as it is being manufactured in your factory. Products, however, are rarely made up of just one or two parts; products are frequently comprised of several hundred different parts. For example, a personal computer or an automobile each has literally hundreds of parts that make up the whole. Tracker has the flexibility to monitor parts in production as they come together to make up your finished product.

An **_Item_** represents the physical part or assembly that is being tracked. It is assigned an Item Id and/or a Reference ID for identification purposes (*serialized items only*).

An item can:

- Be serialized when you want to positively identify the item in the tracking system, and can be described by 40 user-configurable attributes.

- Be non-serialized when you are only concerned with an item's location in the tracking system.

- Have associated attributes, including having one item dynamically become an attribute of another.

- Enter into parent-child associations between serialized and non-serialized items.

Serialized Items

Serialized items are the parts or assembly that you want to positively identify as they are tracked through production.

Serialized items:

- Have one or two unique identifiers.
- Have 40 dynamic attributes that are configured by the user.
- Allow positive identification as they progress through the tracking system.
- Must be tagged so that they can be recognized by a sensor device, e.g. a barcode or radio tag.

The following diagram shows a computer monitor (serialized item) identified by the tracking system. The sensor reads the barcode on the monitor and relays the data back to the tracking system where an operator can access it.

Example of a Serialized Item Identified by Tracking System

CIMPLICITY HMI Server
with Tracking System

Monitor with Serial #99653R-145 is on Assembly Line 1

PRT Database

Sensor reads barcode on item and relays back to tracking system

Serialized items - uniquely identified by their serial number.

Barcode on part.

Assembly Line 1

Non-Serialized Items

Non-Serialized items are parts, assemblies or other articles that you are not interested in positively identifying, but you want to know their location.

Non-Serialized items:

- Do not have a unique identifier.
- Hold two attributes, a parent ID and an item type.
- Do not require a tag for sensor recognition.
- Can be pallets, carriers, bins or other articles that are reused in production.

The following diagram shows a cart, an item that is reused in a factory, tripping a limit switch bounding a Carriage Return Region 5 (CR5). The tracking system is notified that an item has passed into CR5.

Example of a Non-Serialized Item going into a region

CIMPLICITY HMI Server with
Tracking System

A cart passed
into CR5

PRT
Database

Cart

Cart

Simple limit switch
signifies tracking system
that something passed.

Carriage Return Region
5 (CR5)
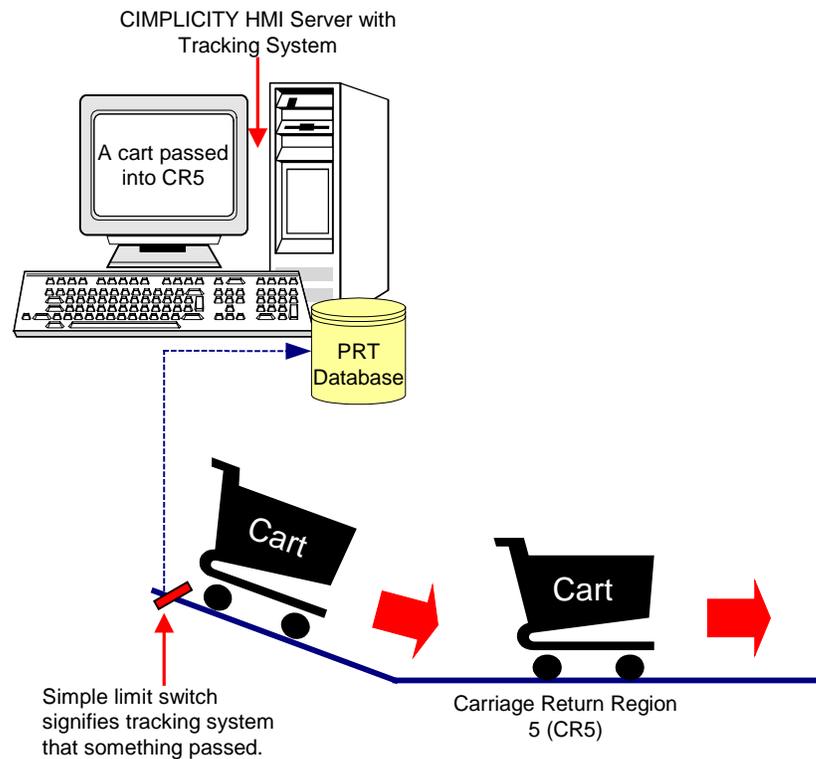
Item Attributes

In relation to the PRT database, an item is simply a record, and the attributes are fields in the record that you configure, such as color or model number.

Attributes:

- Are configured by the user.
- Can change during the production process.
- Provide information that enables positive identification of an item and its location.
- Can be dynamically created from one item when it is associated with another.

Note: You can positively identify a serialized item by assigning it a unique identifier, such as a serial or part number; you can also identify it by its attributes.

The following diagram shows how an item can dynamically become an attribute of another item during production.

In a sample automobile factory six and eight-cylinder engines are being tracked, along with two and four-door car frames. These are all serialized items that are positively identified through the production process. When the engine is inserted into a car frame, the engine dynamically becomes an attribute of that car frame in the tracking system.

Example of Dynamic Attributes

Sensor

1 6-cylinder engine serialized item.

2 The 2-door car frame now has an attribute "6-cylinder engine." This happens dynamically in the tracking system during production of the automobile.

6-cylinder engine = serialized item.

2-door car frame = serialized item.
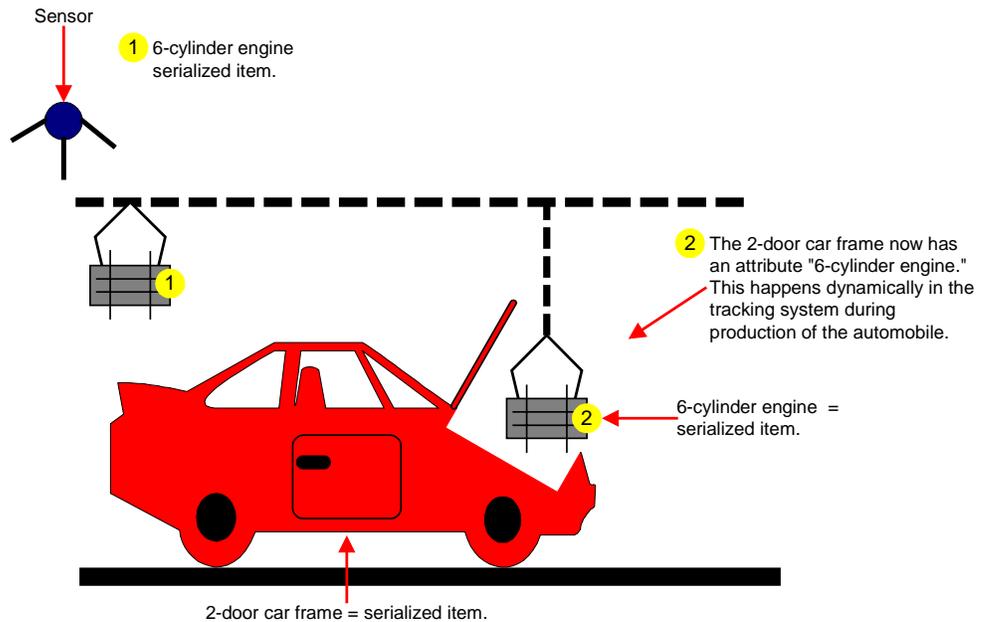
Item Parent–Child Associations

The Parent–Child Association involves both serialized and non-serialized items. When these two types of items come together during the manufacturing process, the non-serialized item becomes the child of the serialized item or parent. This association ensures that these two items will remain logically connected through the remainder of the manufacturing process.

Parent–Child Association:

- Makes non-serialized items serialized in the sense that they are now associated with an identifiable item.
- Ensures that both items stay logically connected.
- Ensures that both items become physically connected at the appropriate time in the manufacturing process.

The following diagram shows how a serialized item and a non-serialized item form a parent-child association. When two items comes together during production, and then must separate for processing, they form a parent-child association. By forming an association, the two parts can come together later on in the production process for assembly.

Example: Parent-Child Association

Example of Parent-Child Association
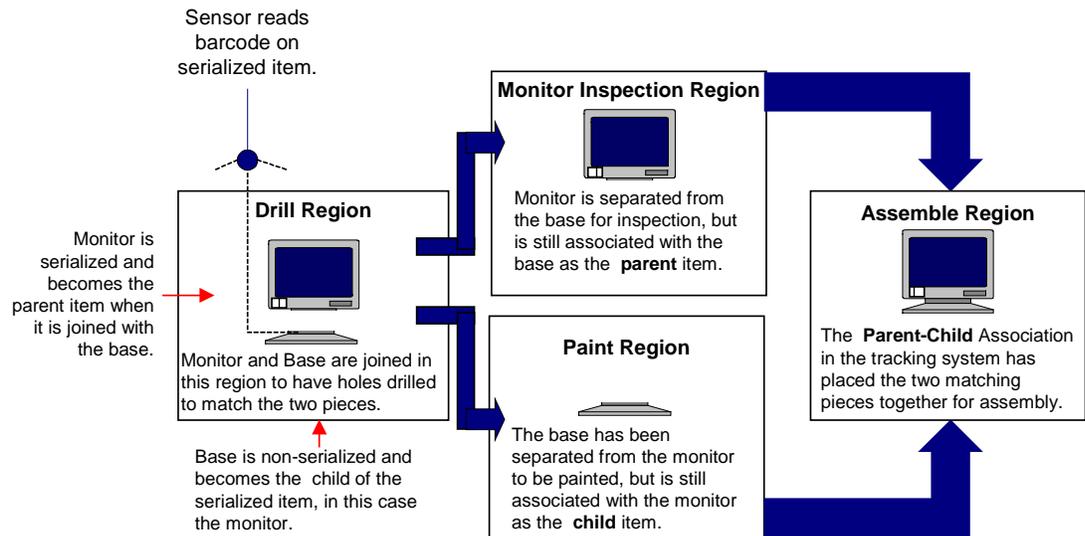
End of example.

About Item Types

Item types are a way of logically grouping items together in order to simplify and expedite searches in the PRT database.

Important: Every item defined in the tracking system *must* have an item type.

Item Types:

- Classify groups of items in the tracking system.
- Are independent of region, group or service.

Example: Item type

The following chart provides an example of grouping items together into types.

A sample automobile factory manufactures mini-vans and sedans, and has three engine sizes.

Items are grouped into the following types.

Item Classes Example for Car Factory

Car doors	Car roof	Van doors	Van roof	4-cylinder engine	6-cylinder engine	Car carrier
Car frame	Car bed	Van frame	Van bed	8-cylinder engine		Van carrier
	Car accessories		Van accessories			
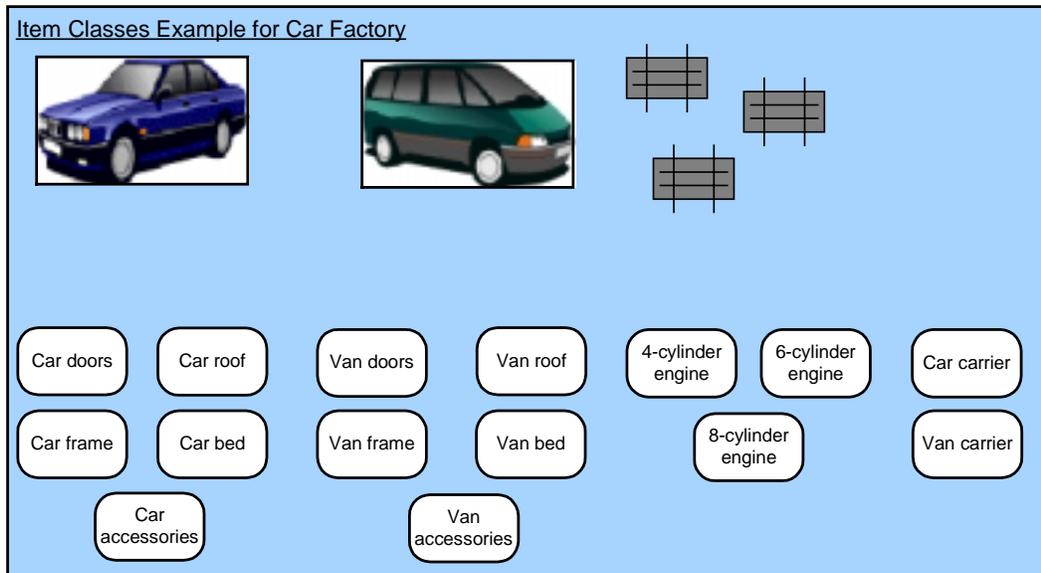
End of example.

About Item Classes

Item classes are a way of grouping together item types in order to further simplify and expedite searches in the PRT database.

Important: Although item types do not have to belong to an item class, it is strongly recommended that you create item classes. Feel free to create just one item class to which all of your item types can belong.

Item Classes:

- Group item types together to create a larger subset in the database.
- Are independent of region, group or service.

Example: Item class

The following chart demonstrates how you can create item classes based on defined item types.

The item types in the previous example are grouped into four major classes, creating an organized and logical hierarchy of information.

Item Classes Example for Car Factory

Broader categories represent Item Classes.

Cars · Vans · Engines · Carriers

Car doors · Car roof · Van doors · Van roof · 4-cylinder engine · 6-cylinder engine · Car carrier

Car frame · Car bed · Van frame · Van bed · 8-cylinder engine · Van carrier

Car accessories — Item Types · Van accessories
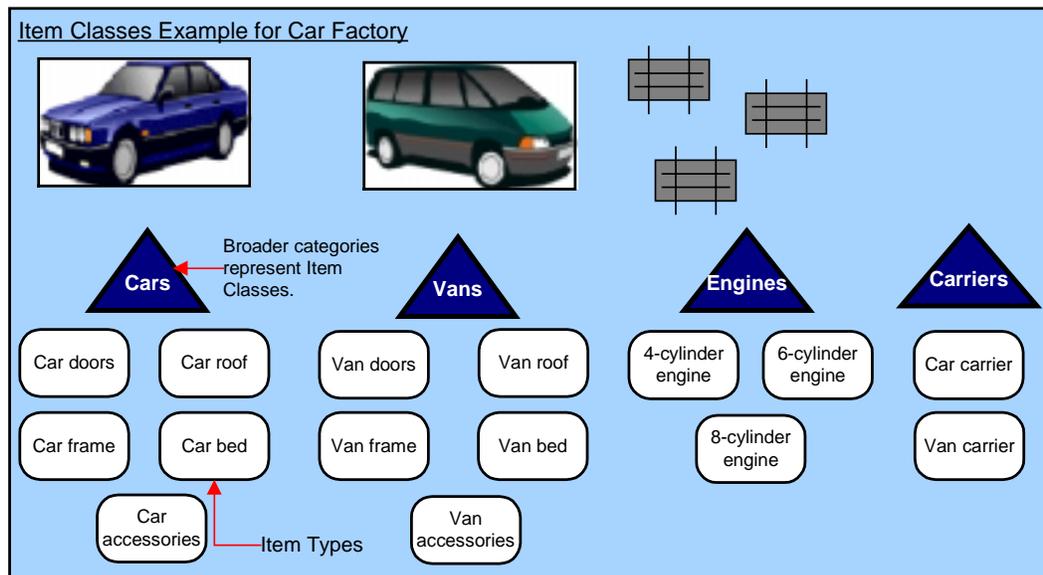
End of example.

About Region Locations and Regions

In order to fully appreciate and understand the PRT concept, further explanation about region locations and regions is needed. Review detailed descriptions about.

- Region locations,
- Primary region types and
- Secondary region types.

Region Locations

A region location is the physical space within a region in which an item or items reside.

Region Locations allow you to:

- Isolate items in the production process.
- Have multiple items reside in the same location.
- Track groups of items.

Example: Region locations associated with different kinds of regions.

Example 1

There is a one-to-one ratio between items and region locations.

Example of Region Locations holding one item each

This conveyor belt has 7 region locations.

1 2 3 4 5 6 7

One Region Location
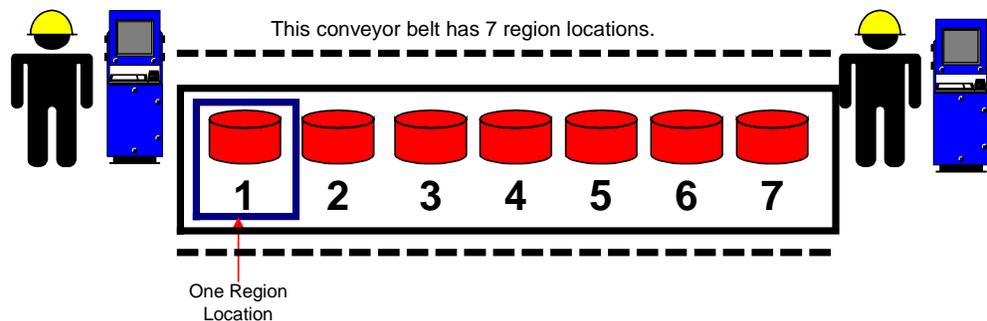
Example 2

Bin One region has only one region location that is capable of holding multiple items.

Example of Region Location holding multiple items

Sensor informing tracking model that Items 1, 2, 3 & 4 have entered Bin One Region.

1   2   **Bin One**   3   4

Bin One has one Region Location holding multiple items.
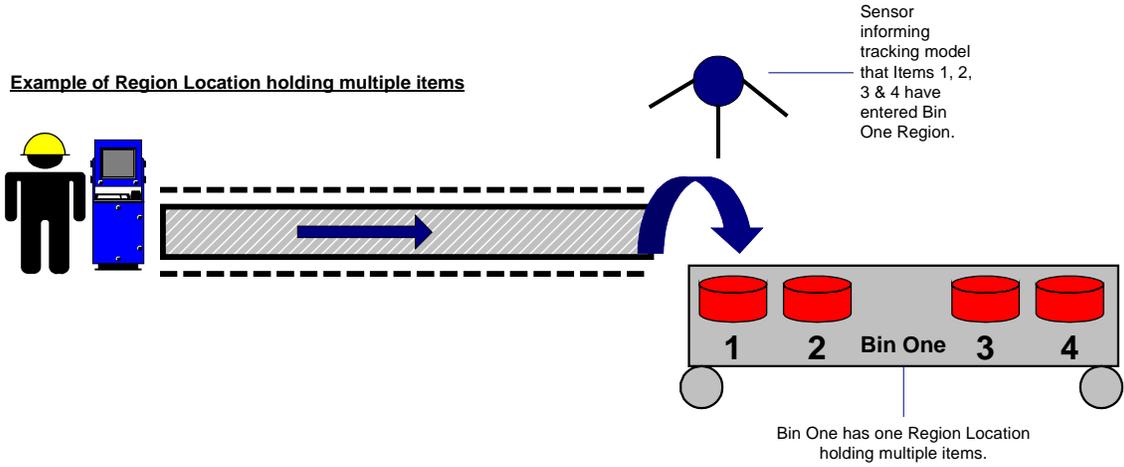
End of example.

Primary Region Types

A region represents the physical space on the factory floor through which parts/assemblies flow during the production process. Regions are bounded by devices that signal the tracking model that an item passed. Different kinds of regions require unique configuration.

PRT recognizes three primary region types:

- Pooled,
- Sequential and
- Shifting.

Pooled Region

A pooled region tracks that an item entered or exited the region, but does not track items sequentially. An example of a pooled region would be a warehouse zone. Items going into a warehouse do not come out in the same order, and would therefore not be tracked in any particular sequence.

Example of a Pooled Region

This warehouse region was configured as a Pooled Region because the items will not enter and exit in the same order.

Bar codes on product are scanned by employees when entering and exiting the region.
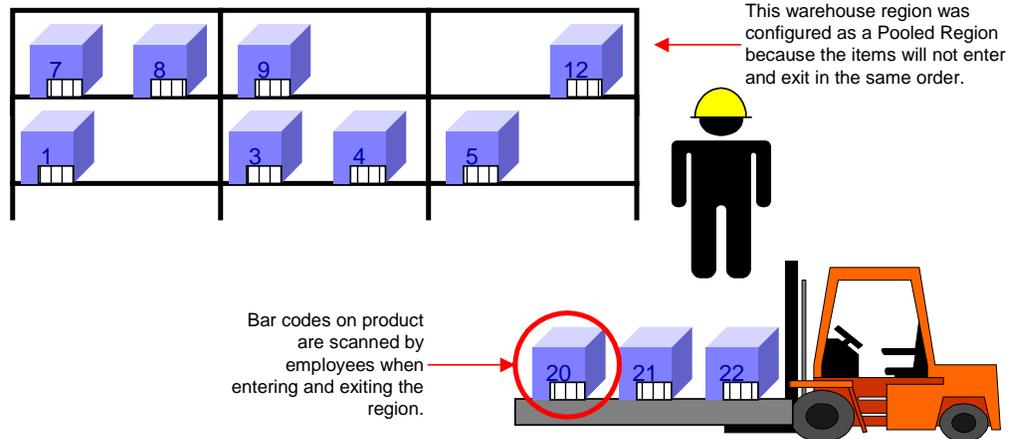
Sequential Region

A sequential region tracks the order in which items enter and exit the region. Skipped items can be deleted or sent to a user-configured detainment region. An example of a sequential region would be an oven zone where items that are sent into the oven must come out in the same order or they will be exposed to heat beyond the allotted time limit.

Example of a Sequential Region

Operator Interface:
Removes defective parts
from the line before they
reach the oven.

WARNING HOT

Oven 1

Sensor

5 4 3 2 1
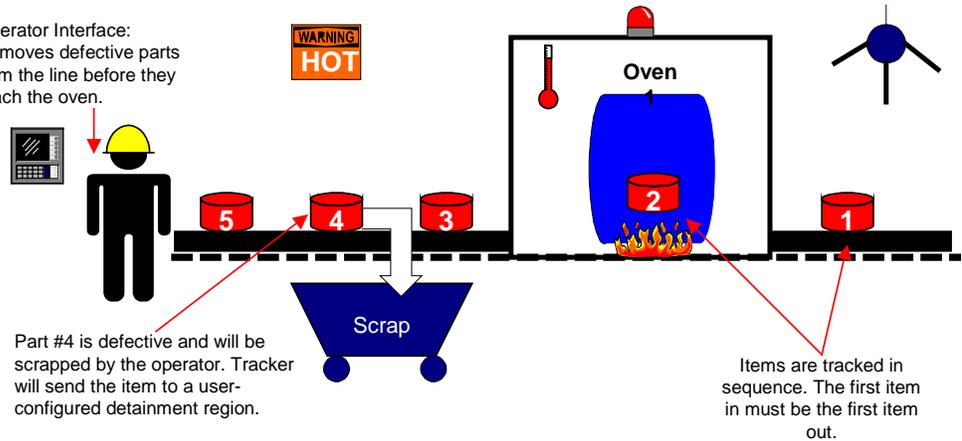
Scrap

Part #4 is defective and will be
scrapped by the operator. Tracker
will send the item to a user-
configured detainment region.

Items are tracked in
sequence. The first item
in must be the first item
out.

Shifting Region

A shifting region supports empty locations intermixed with occupied locations within the
region. As the item moves through the region, it is moved ahead one region location,
rather than moving directly to the end location in the region. As new items are introduced
into the region, current items in the region move ahead one region location. An example
of a shifting region would be in an automobile factory where empty carriers on the line
are counted as empty locations.

Example of a Shifting Region

Sensor

Sensor

This region is bounded by
sensors and has three
region locations.

Location 3
EMPTY
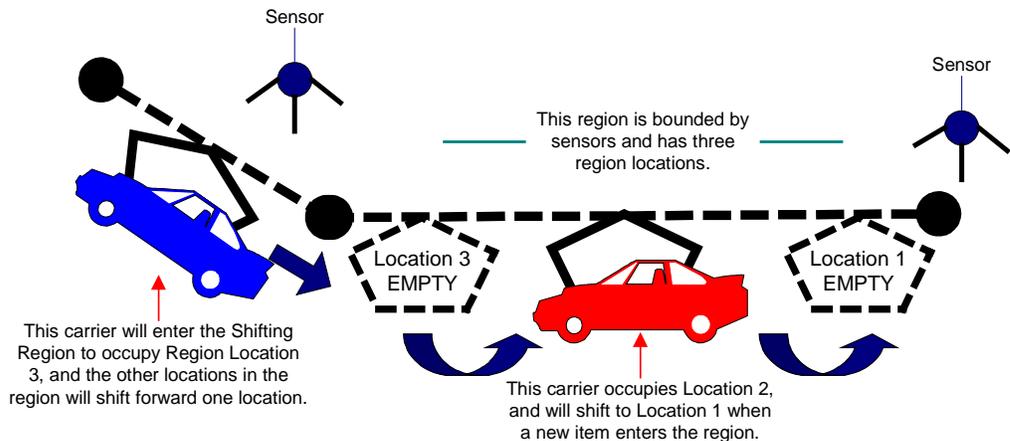
Location 1
EMPTY

This carrier will enter the Shifting
Region to occupy Region Location
3, and the other locations in the
region will shift forward one location.

This carrier occupies Location 2,
and will shift to Location 1 when
a new item enters the region.

Secondary Region Types

Once you have determined the primary type for your regions, you must select a secondary type. Often, regions may not be linked along a straight line and can have multiple paths or may combine items into a common region, or disperse items into separate regions.

The three secondary region types are.

- Normal
- Combine and
- Disperse.

Normal Region

A normal region is a basic region through which an item or group of items flow. For example if there are two assembly lines in a row, which are named Line 1 and Line 2, and employees are working on one item at a time in both lines, this would be configured as a normal region. The primary region type for Line 1 and Line 2 could also be sequential region because each item must progress in the order in which it entered the region—see figure.

Example of Normal Region
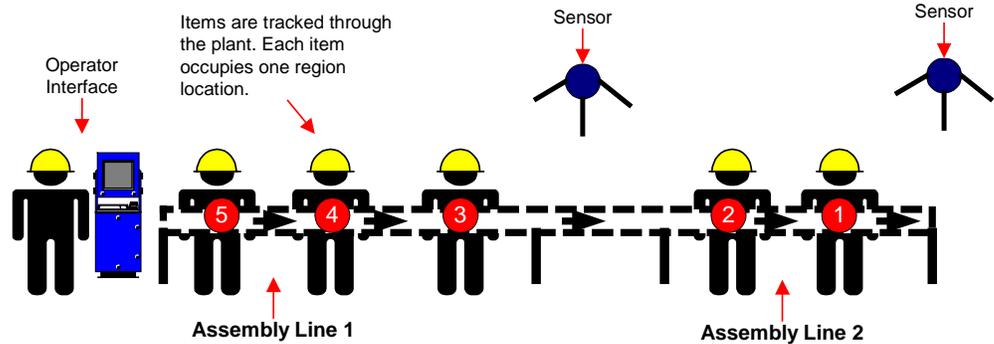
Combine Region

A combine region allows multiple item entries to combine into one region location. The combine region has one associated region location. An example of a combine region would be where items coming from three different conveyor belts converge into a robot region for processing. The robot region has only one region location that holds multiple items—see figure.
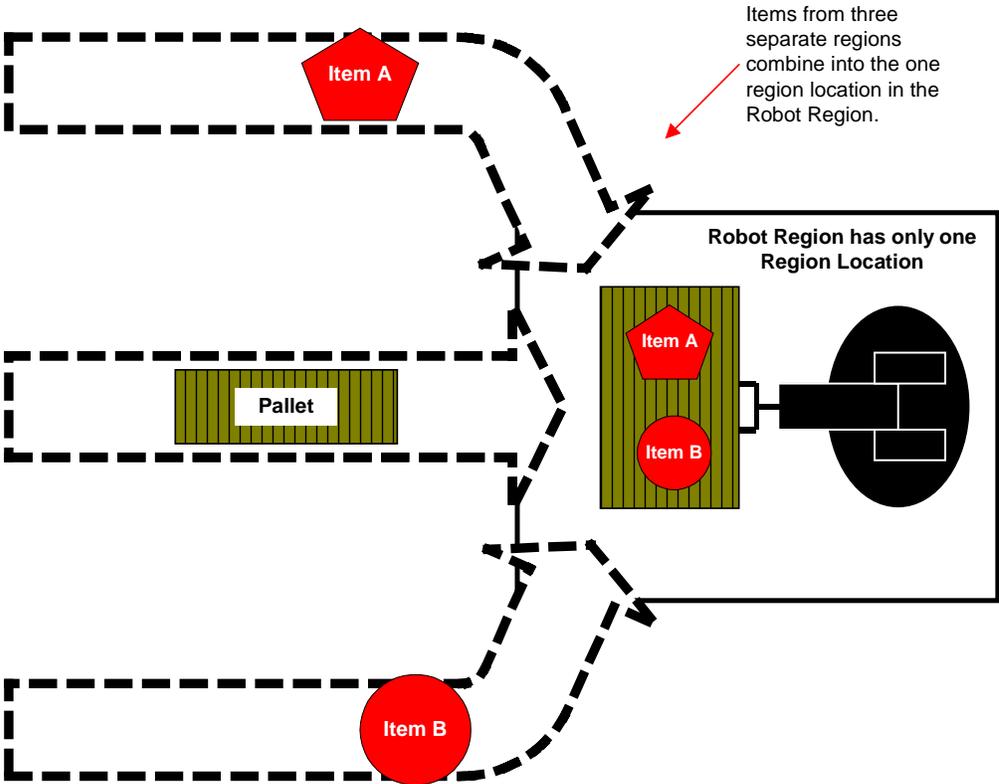
Disperse Region

A disperse region is the opposite of a combine region in that combined items are separated into successive regions. Using our earlier example of the robot region where three items combined into one region location, we can show how these three items can be separated into three successive regions once they have been processed—see figure.

Example of a Disperse Region

Items from the one region location disperse and flow into three separate regions.

Robot Region has only one Region Location

Item A

Item B

Pallet

Item A

Item B
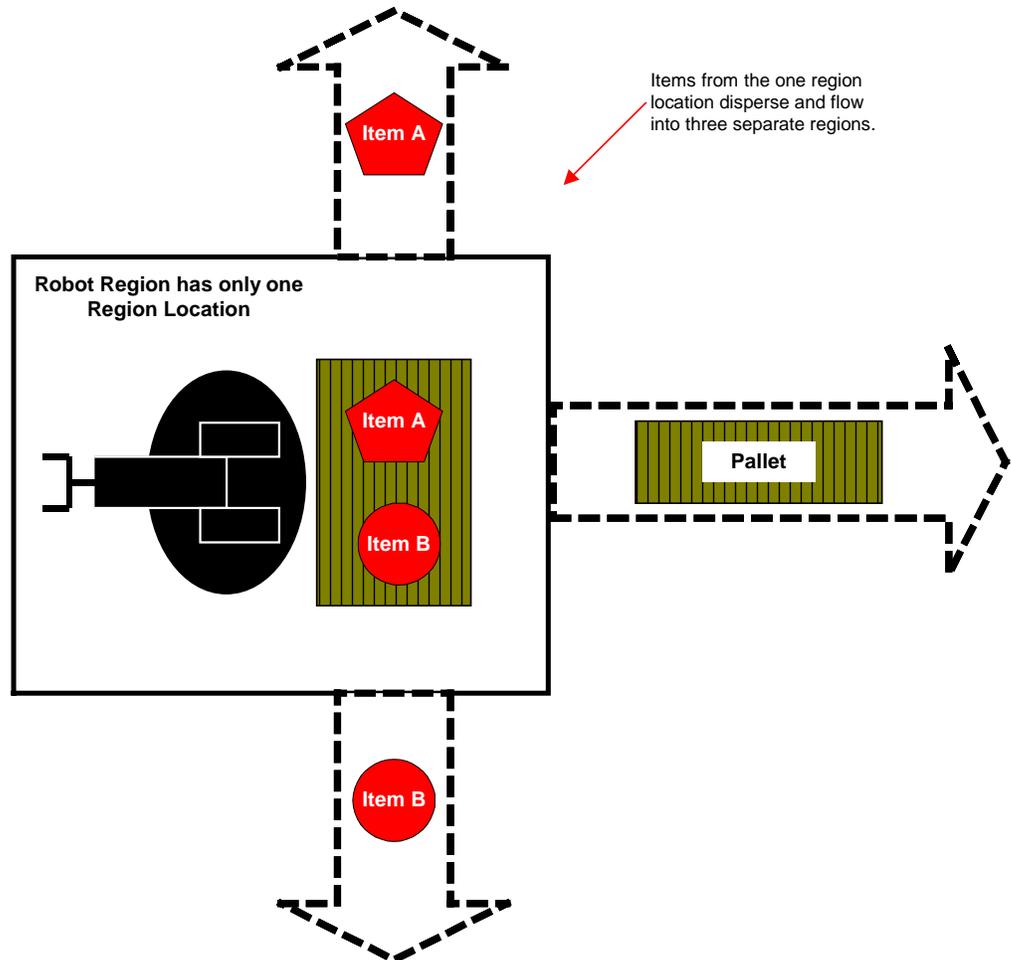
About Routes

In most factories a product does not follow a straight line all the way through the manufacturing process. There can be several occurrences during production where a part or assembly heads down a specific path to have an option added or to be painted a different color. All of these different paths are called routes.

Routes:

- Link one or more regions.
- Direct the flow of parts and assemblies in production.

Example of a Route

Device @ Exit Point for Region 1 &
Entry Point for Region 2

Device @
Entry Point

Device @
Exit Point

Region 1

Region 2

The path linking the two
regions is a Route.
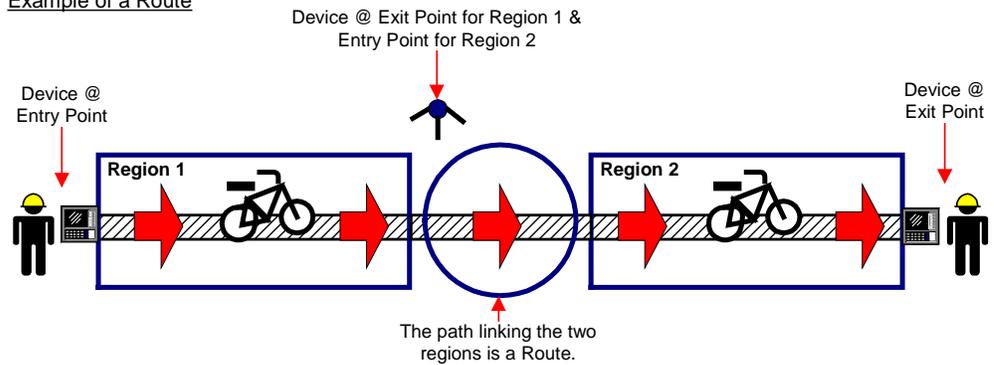
About Groups

Groups organize your regions by physical location or by function, and serve to simplify and expedite the search mechanism in the database.

Groups can:

- Hold multiple regions.
- Organize regions by function.
- Organize regions according to physical location.

The following diagrams illustrate the two different methods for grouping regions: by physical location and by function.

Example: Groups by function

Welder Line 1

Loading

Welder Lines 1 & 2 are grouped together by function into Welder Group.

Robot Region 1

Welder Line 2

Robot Regions 1 & 2 are grouped together by function into Robot Group.

Shipping

Robot Region 2
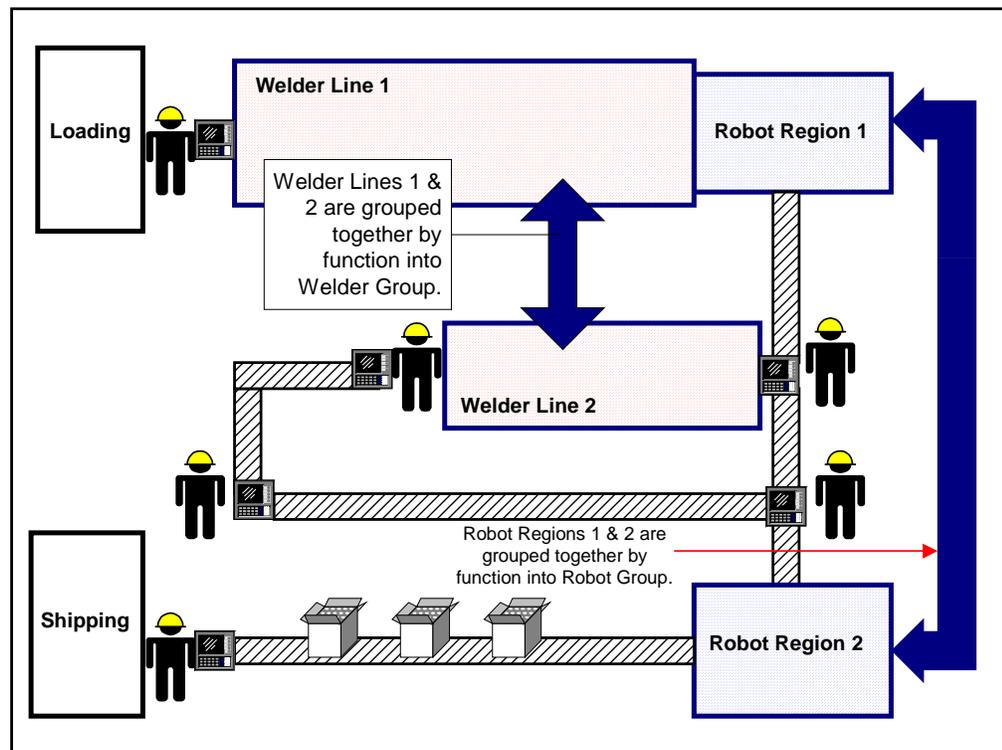
End of example.

Example: Groups by physical location

```
┌─────────────────────────────────────────────────────────────┐
│  ┌──────────┐  ┌──────────────────────────────────────────┐  │
│  │          │  │                                          │  │
│  │          │  │                                          │  │
│  │ Loading  │  │        ┌────────────────────────────┐    │  │
│  │          │  │        │ The regions in this physical │   │  │
│  │          │  │        │ area have been grouped       │   │  │
│  │          │  │        │ together into Group 1.       │   │  │
│  └──────────┘  │        └────────────────────────────┘    │  │
│                │                                          │  │
│                │                                          │  │
│                ├──────────────────────────────────────────┤  │
│  ┌──────────┐  │        ┌────────────────────────────┐    │  │
│  │          │  │        │ The regions in this physical │   │  │
│  │          │  │        │ area have been grouped       │   │  │
│  │ Shipping │  │        │ together into Group 2.       │   │  │
│  │          │  │        └────────────────────────────┘    │  │
│  └──────────┘  └──────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────────────┘
```
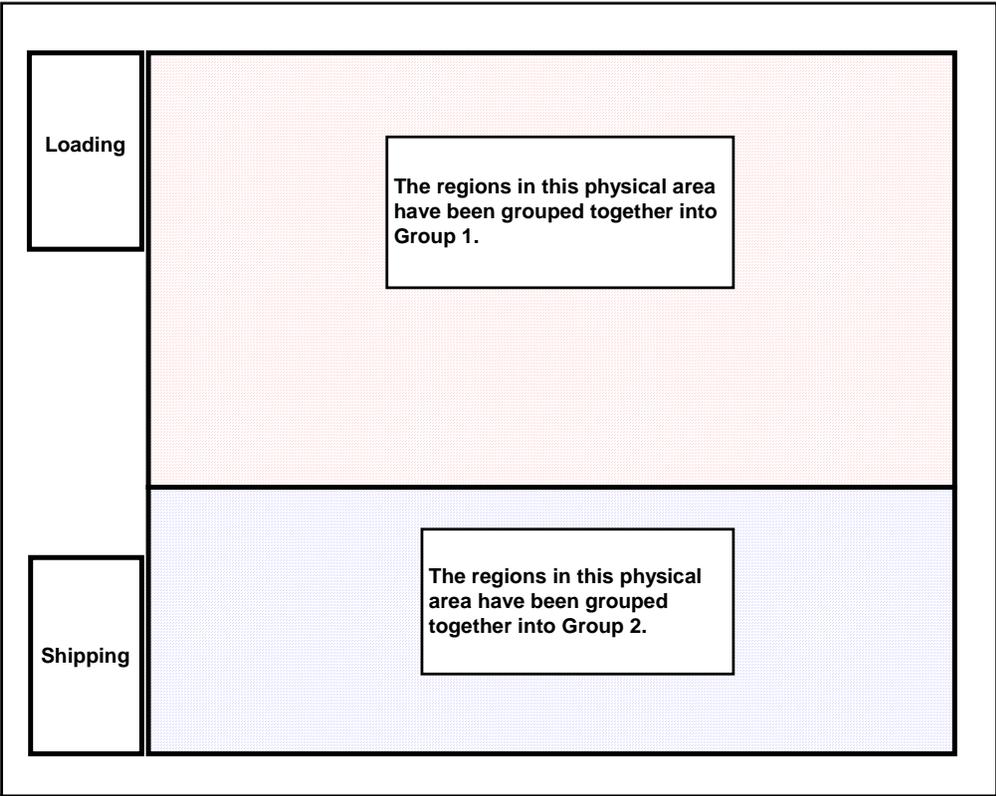
End of example.

PRT Services

At the highest level of the PRT database hierarchy are Services. PRT Services manage the configured groups and regions.

PRT Services:

- Manage groups and regions.
- Allow configuration of one part of the plant, while other parts are in production mode.
- Simplify and expedite database searches.
- Can run simultaneously with CIMPLICITY and other Services.
- Provide a snapshot of regions during production.

The following diagram shows three PRT Services configured for a set of groups and regions. All three of our services can run simultaneously providing us with an overall view of our factory production. In the event one part of our factory requires configuration, we can bring down one of the services to make the necessary adjustments, and leave the other two services running. Note that the services reside at the highest level of the hierarchy and present another method for streamlining searches in the PRT database.

Example: PRT Services managing groups and regions

Example of PRT Services Managing Groups & Regions
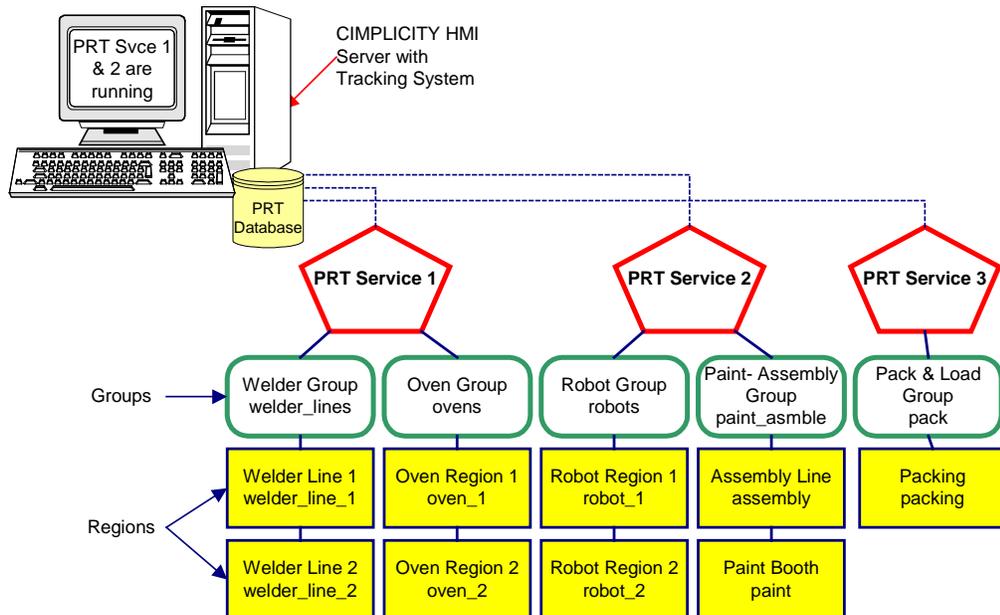
End of example.

Designing the Tracking Model

About Designing the Tracker Model

Designing your Tracking Model can be an involved process, especially if your factory is large and there are multiple production routes. In order to simplify the process, we will take you step-by-step through designing, implementing and executing your Tracking Model.

Designing your Tracking Model involves:

Step 1. Draw a picture of the production process.

Step 2. Isolate and name regions.

Step 3. Define routes.

Step 4. Isolate and name groups.

Step 5. Define item types and classes.

Step 6. Plan display points.

In order to demonstrate the process further, we will build our own sample **Tracking Model** right along with you. At the end of each section, we will show you examples of our work in progress so that you can make comparisons and modifications if needed.

So, let's get started with Tracker! Proceed to *Step One. Draw a Picture of the Production Process*.

Step 1. Draw a Picture of the Production Process

Start designing your Tracking Model by drawing a simple picture of the production process to be tracked. In order to make a complete representation, be sure to include all of the following in your illustration:

- All possible areas and paths through which the product can flow—ensure there are no gaps to prevent data leaks.
- Operator interfaces and devices that indicate a transition of items from one area to another.
- Detainment areas or regions where product is held or scrapped.

Sample Production Process Diagram

Here is an example of a simple manufacturing process. In our diagram we included all possible production paths and indicated production flow with arrows. Operator interfaces and devices where transitions take place are graphically represented as well.
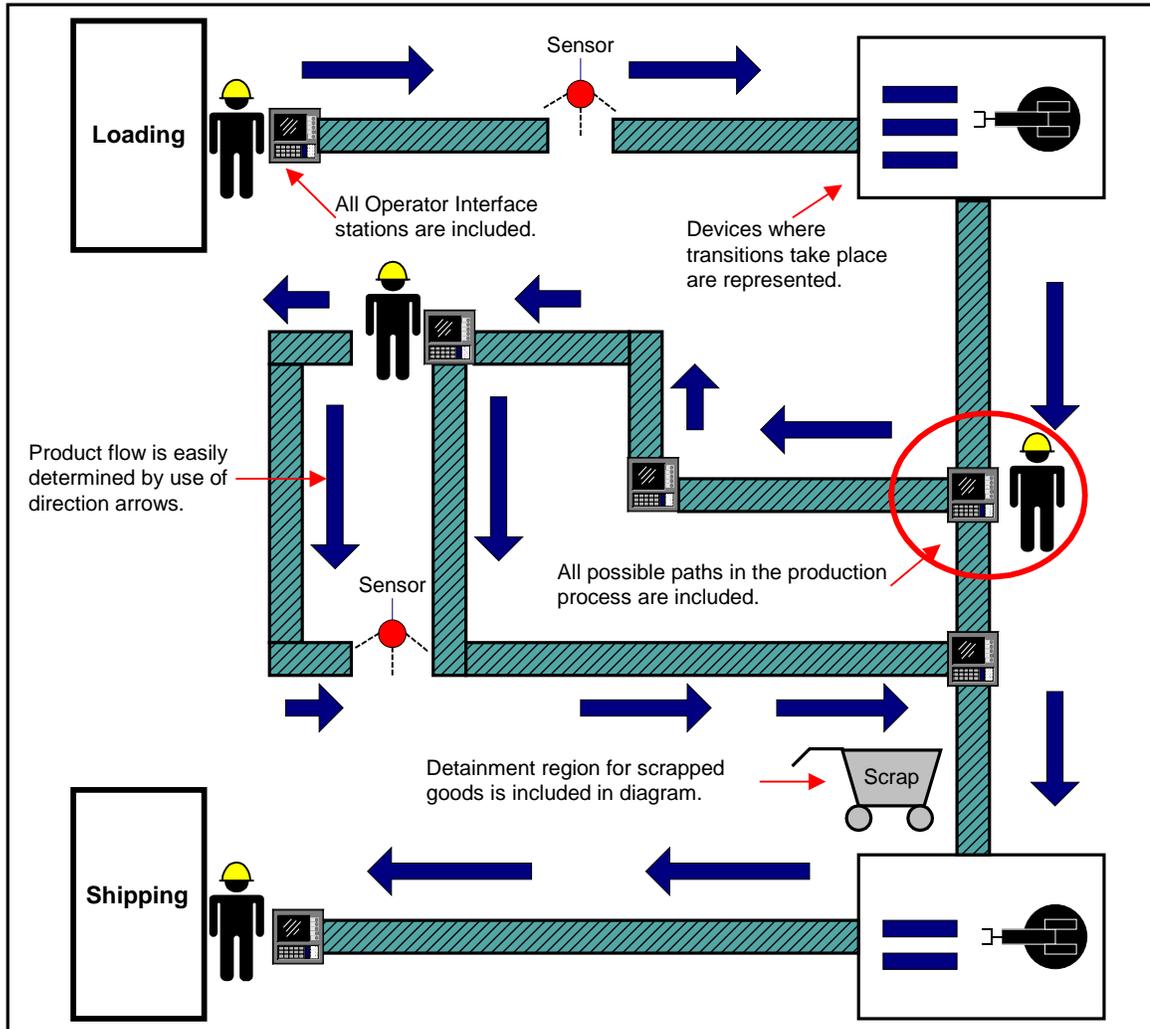
Step 2. Isolate and Name Regions

To isolate regions:

Using your diagram, draw rectangles around logical areas along the production route to identify your tracking regions.

Regions must:

- Be contiguous.

- Cover every physical part of the production process.

- Not have any physical gaps to prevent lost or misrepresented data by the tracking model.

- Have a data collection device or operator interface at its boundaries to inform the tracking model when a product or carrier passes.

Sample Region Diagram

On our sample Tracking model we have isolated regions using current operator interface workstations and devices to define the boundaries. Every physical part of the production process is accounted for without any gaps.
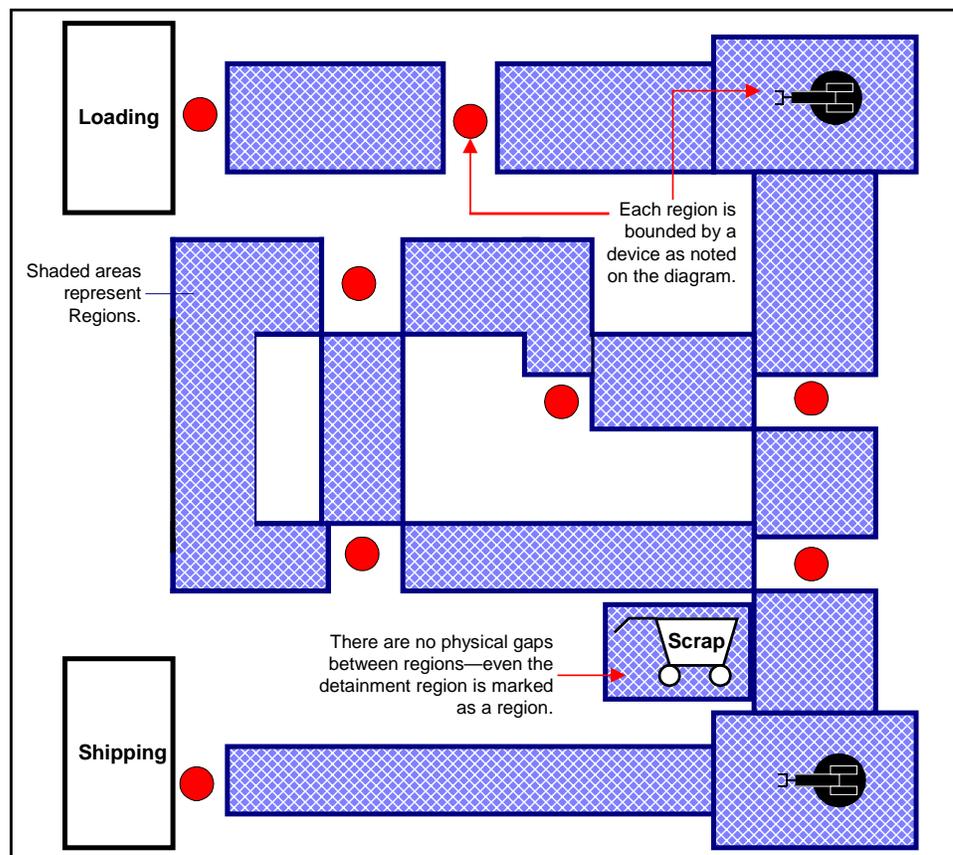
To name regions:

When naming your regions, the most important thing to strive for is consistency. We recommend devising a naming convention that makes sense for your organization, and then writing in the names on your diagram. By coming up with a standardized way of naming your regions, you prevent duplications in your database, and you can easily make additions to your Tracking Model in the future if needed.

Here are some ideas for naming conventions:

- Use the Workstation ID that marks either the entry *OR* exit point of the region.
- Use the device ID that marks either the entry *OR* exit point of the region.
- Base names on the functionality of the region, e.g. Assembly Line1, Oven 2, Robot 3, etc.
- Base names on the location in the factory.
- Limit names to a specific number of characters, for example 10 characters maximum.

Sample Diagram—Naming Regions

For our naming convention, we decided to limit names to 10 characters each, and to base them on the functionality of the region. This way if we expand in the future, we will have a consistent naming convention for new regions that we add.
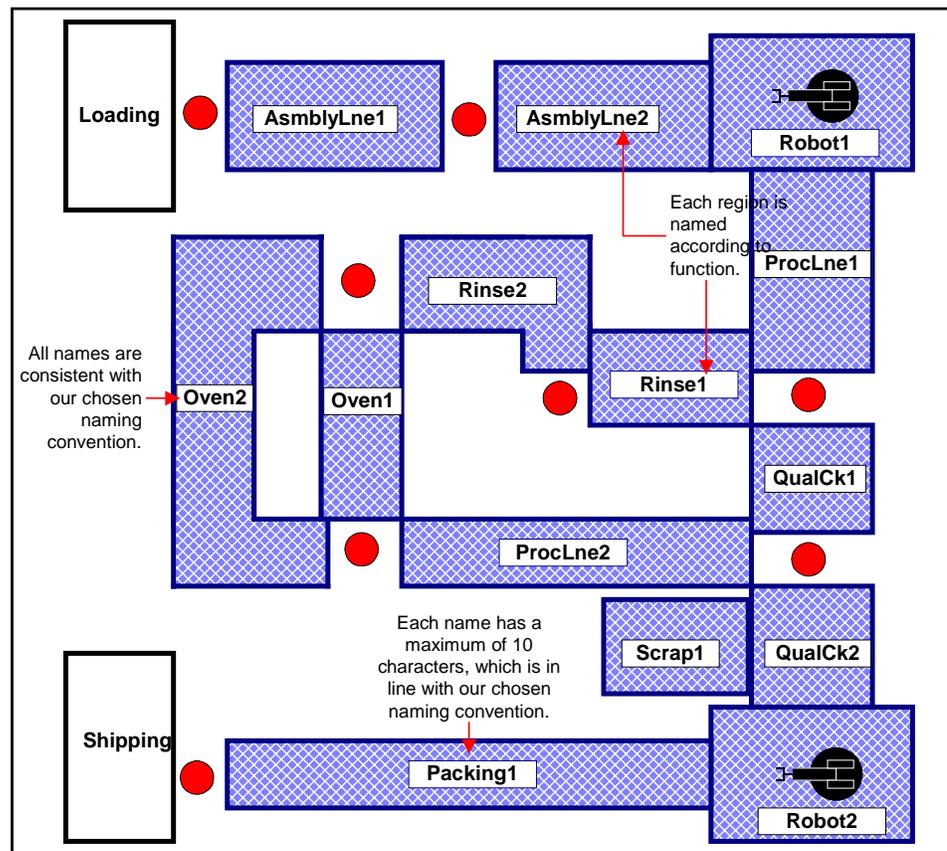
Step 3. Define Routes

Once you have isolated and named the tracking regions on your diagram, you must define all the possible routes through which products can flow. Each route will subsequently be associated with a CIMPLICITY Point that will signal the tracking model when an item has passed down a specific path. For this function, we recommend using positive ID switches; however, existing hardware or special production conditions may require that a limit switch be used instead. An operator interface or some other data collection device will normally set the Point associated with a route.

Using your tracking region diagram, indicate each and every possible route within the production process. Be sure to include routes to scrap or detainment regions as well.

Sample Route Diagram

We have defined our routes on our tracking region diagram using direction arrows. Every possible route is indicated, including our area for scrapped goods. Multiple paths are clearly illustrated on the diagram.
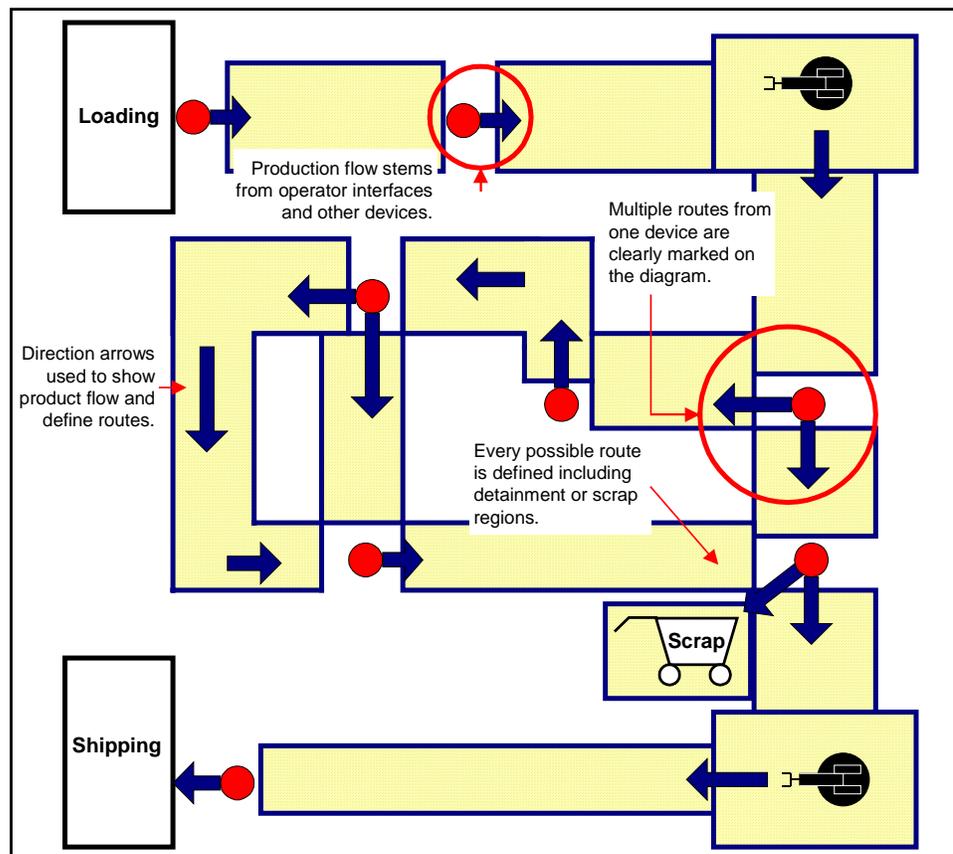
Step 4. Isolate and Name Groups

To isolate groups:

Later when your tracking model is up and running, you will want to perform searches in the database for information on regions and items. Tracker enables you to simplify searches by organizing your regions into groups. Depending on how you want to organize information in the database, you can group regions by function or by physical location. You may have one region in a group, or several regions in a group, but every region must belong to a group.

Once you have determined how you want to organize information, use your tracking region diagram to form groups.

Sample Group Diagram

For our tracking model we have decided to group our regions by physical location, except for our Scrap region which is by function. Each group has at least one associated region, with most having two or more associated regions. Every region belongs to only one group.
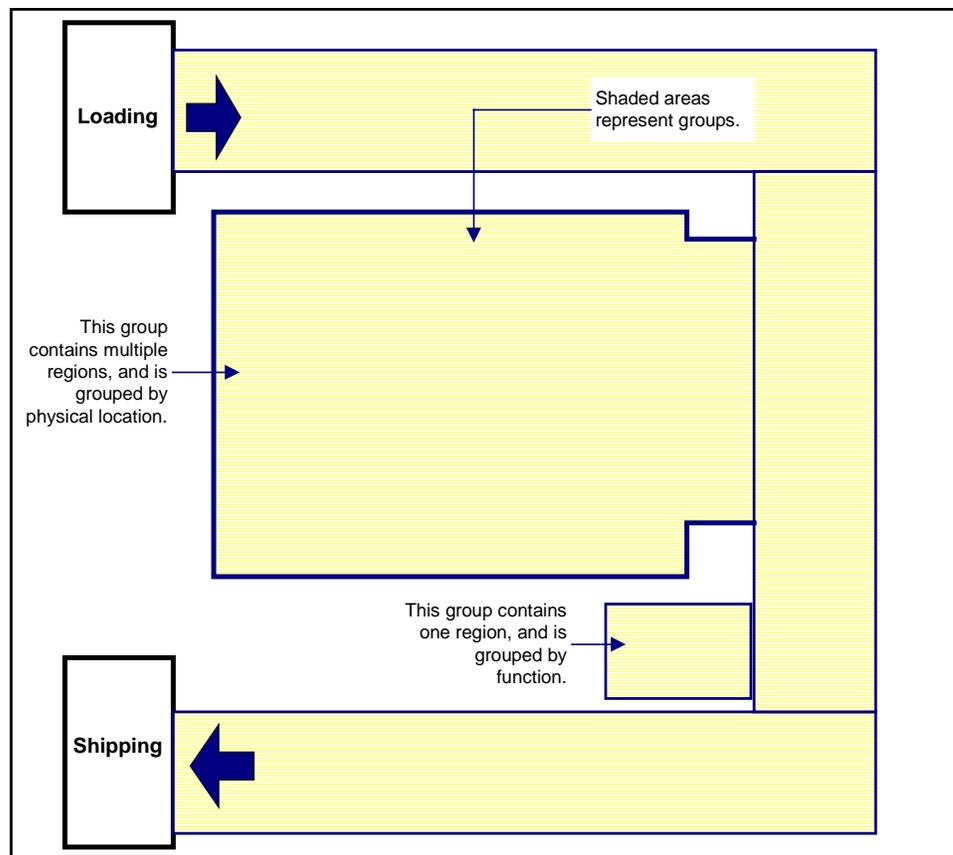
To name groups:

Once again, when naming your groups, we recommend coming up with a naming convention that makes sense for your organization, and that you will use consistently. Standardizing the names for your groups will prevent duplications in the database, and you can easily add new groups to your Tracking Model if needed in the future.

Here are some ideas for naming conventions:

- Base names on the physical location of the group of regions.

- Base names on the functionality of the group of regions, e.g. Oven Group or Assembly Group.

- Limit names to a specific number of characters, for example 10 characters maximum.

Sample Diagram—Naming Groups

Although we named our regions for their functionality, we grouped them by physical location. Therefore, for our naming convention, we decided to limit names to 10 characters each, and to base them on the location of the group.
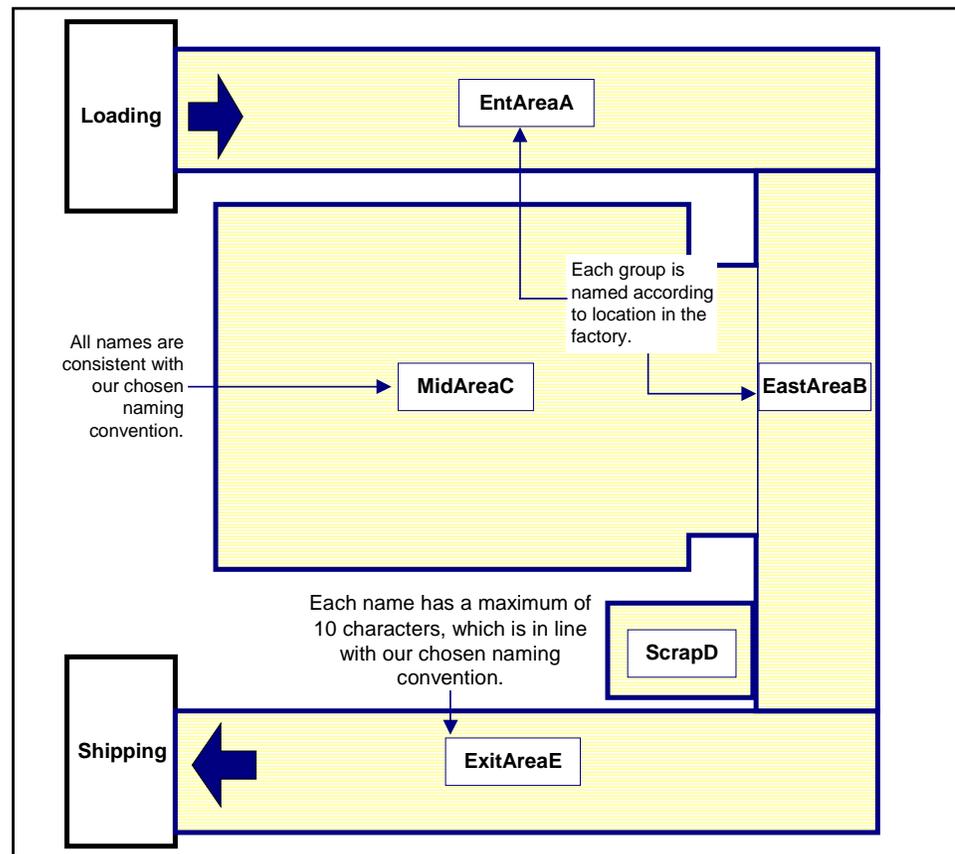
Step 5. Define Item Types and Item Classes

Item types are a logical grouping of items with similar characteristics. You must decide what kinds of items you are tracking through production and define item types that will group them together into logical subsets. Item classes are a broader category for grouping your item types, and provide another level in the database for simplifying and expediting searches.

To define item types:

Keep in mind all of the following when determining categories for your items. We follow up with an example for your reference.

- The level of detail in terms of parts/assemblies that you plan to track.
- The parts/assemblies that must be serialized to support positive identification.
- The parts/assemblies that will be non-serialized items.
- A standardized naming convention that is consistent for your organization.

Example of Item Types

An appliance factory manufactures refrigerators, washers and dryers. The categories are very broad because many of the parts, such as nuts and bolts, are used in all three of the main products. The following chart illustrates the item type definitions.

Serialized Items

Refrigerator Base

Refrigerator Frame

Shelving

Compressor

← Item types for the Refrigerator

Serialized Items

Dryer Motor

Heating Units

Dryer Frame

Dryer Base

← Item types for the Dryer

Serialized Items

Washer Motor

Pumps Hoses

Washer Frame

Washer Base

← Item types for the Washing Machine

Non-serialized Items

Electrical

Nuts & Bolts

Bins

Pallets

← Item types for all three products and for articles that are reused during production

To define item classes:

Item classes are a way of further organizing your data into larger groups. Think on a broader level when defining your item classes. Use a standardized naming convention that is consistent for your organization. Item types do not have to belong to an item class but it is recommended.

Important: Although item types do not have to belong to an item class, it is strongly recommended that you create item classes. Feel free to create just one item class to which all of your item types can belong.

Example of Item Classes

Using the earlier example of the appliance factory, four broad categories have been defined for the item classes. The following chart provides an example of the item class definitions.

Serialized Items

Refrigerator Base
Refrigerator Frame
Shelving
Compressor

Item Class for the Refrigerator item types

Refrigerator

Serialized Items

Dryer Motor
Heating Units
Dryer Frame
Dryer Base

Item Class for the Dryer item types

Dryer

Serialized Items

Washer Motor
Pumps Hoses
Washer Frame
Washer Base

Item Class for the Washing Machine item types

Washer

Non-serialized Items

Electrical
Nuts & Bolts
Bins
Pallets

Item Class for all other item types

Universal

Step 6. Plan Display Points

In order to plan display points, you must think about what data you want to collect from the tracking model and how you want to present it in CimView displays and scripts. Data can be displayed on screen at a main operating station and at workstations on the plant floor to provide operators with runtime information about the product during production.

To plan display points:

Keep in mind all of the following when planning your display points. We follow up with some examples for your reference.

- The kind of information needed at workstations on the plant floor and at main interface stations.

- The type of display needed for information: graphic or text representation.

- When to generate alarms when certain production conditions exist.

- The placement of detainment regions, e.g. shifting regions may need user-configured detainment regions.

- How to standardize your displays with consistent features. Keep in mind all of the following:

    Function buttons reside in the same place on each screen

    Color scheme

    Font

    Language for column heads, buttons, products, machinery, etc.

    Screen size and geometry.

Sample of Display Point #1

Here is an example of a point set to display at an operator's workstation in the appliance factory. When a refrigerator comes down the line on the conveyor belt, the operator reads the CimView screen that tells him if an electrical unit is required. This particular display uses text only.

Example of a point set to display at an operator workstation in production
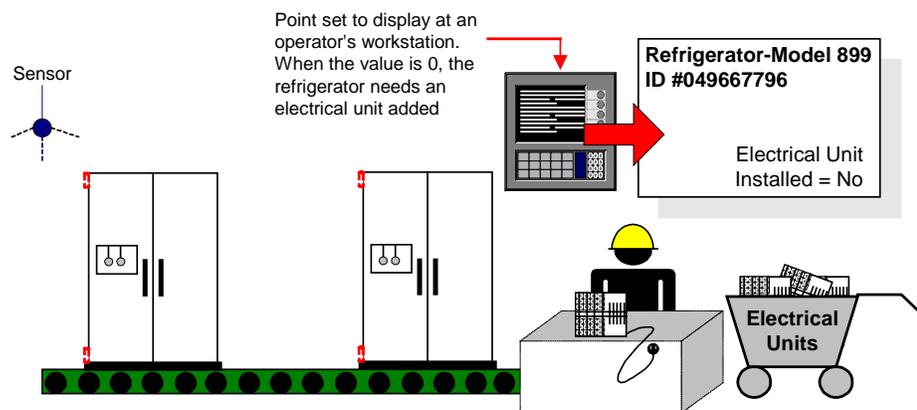
Sample of Display Point #2

In this example, a Quality Control station graphically displays a point values. As the dryers move through the station, the operator reads the interface that is color-coded to provide information during inspection. Here, the graphic display helps the operator spot problems quickly while inspecting the unit.

Example of a point set to display graphically at an operator's workstation

Point set to display at an operator's workstation. Values are graphically represented in a color chart for each item on the Quality Control list.

Dryer-Model 784 ID #38596777
Blue = Yes
Red = No - send back to station

Motor installed
Paint applied
Bolts fastened
Electrical unit installed
 Knobs adjusted

Sensor

Quality Control
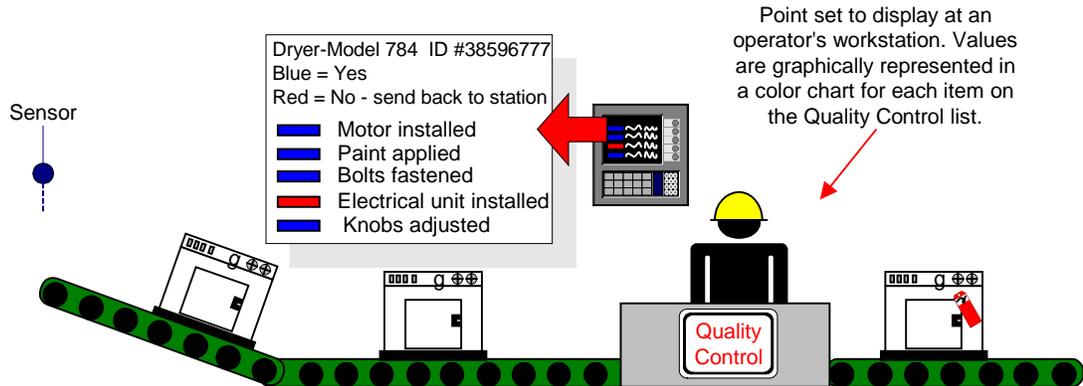
Sample Display Point List

Listed below is a sample of the factory display points.

Workstation ID	Tracking Information to be Displayed	Graphic or Text
Main 01	Plant floor	G – entire view of factory
Main 02	Plant floor	G – regions by service
WK 01	Electric Unit installed Y/N	T
WK 02	Coil installed Y/N	T
WK 03	Shelving Type	G – color chart
QC 01	Installed components	G – color chart
QC 02	Final Inspection	G – color chart T – warnings
Shipping	Send to warehouse or loading	G – graphic representation

Functional Design Checklist

Before you begin to configure the files necessary to run your tracking model, make sure that you have all of the following:

Checklist for Tracking Model

Diagram of the plant floor showing regions and production flow.

Diagram of the plant floor showing groups of regions.

Naming convention for regions, groups, item types and item classes.

Diagram of the plant floor showing devices where transitions will occur.

Diagram of the plant floor showing all possible production routes.

List of item types and item classes.

Some kind of representation of the planned display points, e.g. a list or a diagram.

Configuring a Tracking Model

About Configuring a Tracking Model

After you have designed a tracking model that meets your company's requirements, you are ready to enter into the PRT database using the Tracker Configuration User Interface. You can easily configure your database using the provided Tracking Model Wizard that walks you through each step of the configuration process. Properties for your regions, groups, items and the rest are all set using familiar dialog boxes in one contained structure. The Tracking Configuration User Interface is accessed through your project Workbench making this a convenient tool for performing the actual configuration and maintaining all of the information contained in your Tracker database.

Steps to begin configuring your tracking model include:

Step 1. Open the Tracker Configuration User Interface.

Step 2. Start the Tracking Model Wizard.

Step 3. Configure regions.

Step 4. Configure routes.

Step 5. Configure item types.

Step 6. Configure PRT Services.

Step 7. Configure system definitions.

Step 8. Finish basic Tracking Model configuration.

Step 9. Do additional Tracking configuration.

The Tracking Model wizard provides you with a one-stop shopping tool for configuring your Tracking Model. This easy-to-use and intuitive process takes you step by step through the entire configuration. When you are finished, you can run the PRT_UI to view the results of your work.

Tip: You can exit the Wizard anytime and pick up where you left off later. Upon exiting the Wizard you may receive a message box asking if you want points configured automatically for you. Clicking **Yes** will save you the time and effort of configuring a number of points for which default values will be provided.

Note: The Tracker Configuration User Interface is a new feature developed to better help you configure and maintain your tracking data. However, for reference purposes the IDT files that some clients are accustomed to using are outlined in "*Appendix A: Configuration File Guide*."

Step 1. Open the Tracker Configuration User Interface

Use the Tracker Configuration User Interface to configure your Tracking Model. You can open it directly from your project Workbench.

Important: You must have installed and added the Tracker option to your project to enable access to the Tracker Configuration User Interface.

Step 1. Open the Tracker Configuration user interface:

1. Open the CIMPLICITY Tracker project in the Workbench.

2. Double-click ◎ **Tracker Configuration** in the Workbench left or right pane.
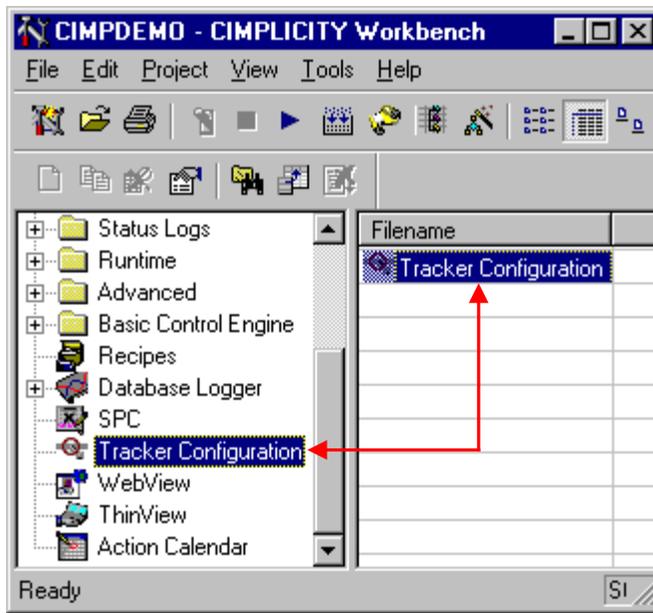
Result: When starting the user interface for the first time, the Options dialog box displays for you to enter data source information; otherwise, the Tracker Configuration User Interface displays.

Tip: Open your project quickly in the Workbench by placing a shortcut on your Windows desktop.

Options Dialog Box Entries for the PRT Data Source

When you first access the Tracker Configuration User Interface, the Options dialog box displays so that you can set parameters for the data source to be used with the PRT database. Associated configuration data is stored in an SQL Server database.

To enter data source information:

1. Use the drop-down list in the Datasource field in the Options dialog box to specify the data source. This must be defined as a system data source.

2. Enter the Login ID that allows access to the SQL Server data source in the Login ID field.

CIMPLICITY Logging - Alarms
CIMPLICITY Logging - Points
CIMPLICITY Logging - SPC
CIMPLICITY Logging - Tracker
PRT Databasee
RCO Database

Enables drag and drop functionality.

Opens the ODBC Database Administrator dialog box.
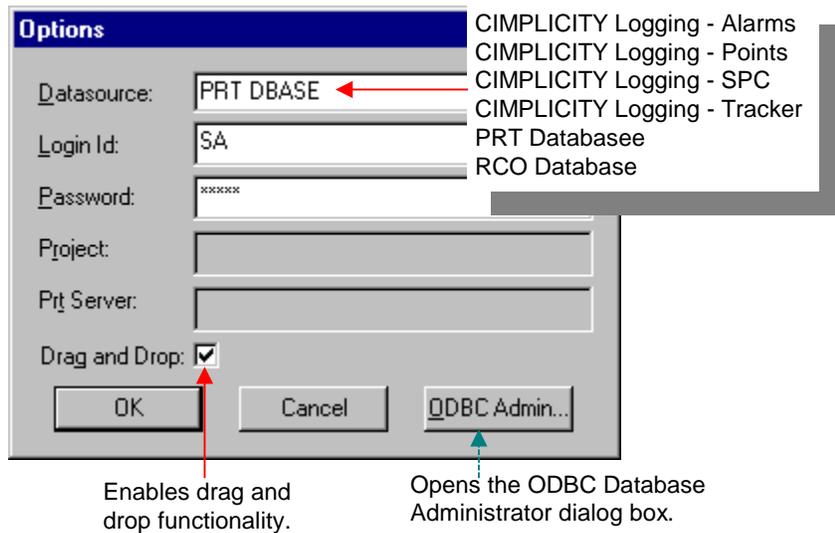
3. Enter the corresponding password for the Login ID in the Password field.

4. Check the Drag and Drop box to allow drag and drop functionality.

5. Click **OK**.

Result: The data source is designated. All required tables are created in the database as specified by the designated data source. The Tracker Configuration User Interface displays.

Note: Click **ODBC Admin** to run the standard ODBC 32-bit administrator tool for ODBC configuration. Any change to the designated data source must be changed through the Tracker Configuration User Interface.

Tip: You can access the Options dialog box from the View menu.

Reviewing the Tracker Configuration User Interface

The Tracker Configuration User Interface opens after the data source has been initially designated, and when subsequently starting it from the Workbench. All of the tools necessary for configuring items, regions and associated components are provided within the integrated structure. A Tracking Model Wizard is also available so you can quickly configure your tracking model in one session.

Once your Tracking Model is up and running, editing any of its components is easily accomplished using the menu bar options, toolbar buttons and popup menus. The integrated structure holds all of your PRT and RCO files in the left pane directory, and the related configuration dialogs in the right pane. This enables you to quickly edit configuration data for all of your Tracker files.

Tracker Configuration User Interface
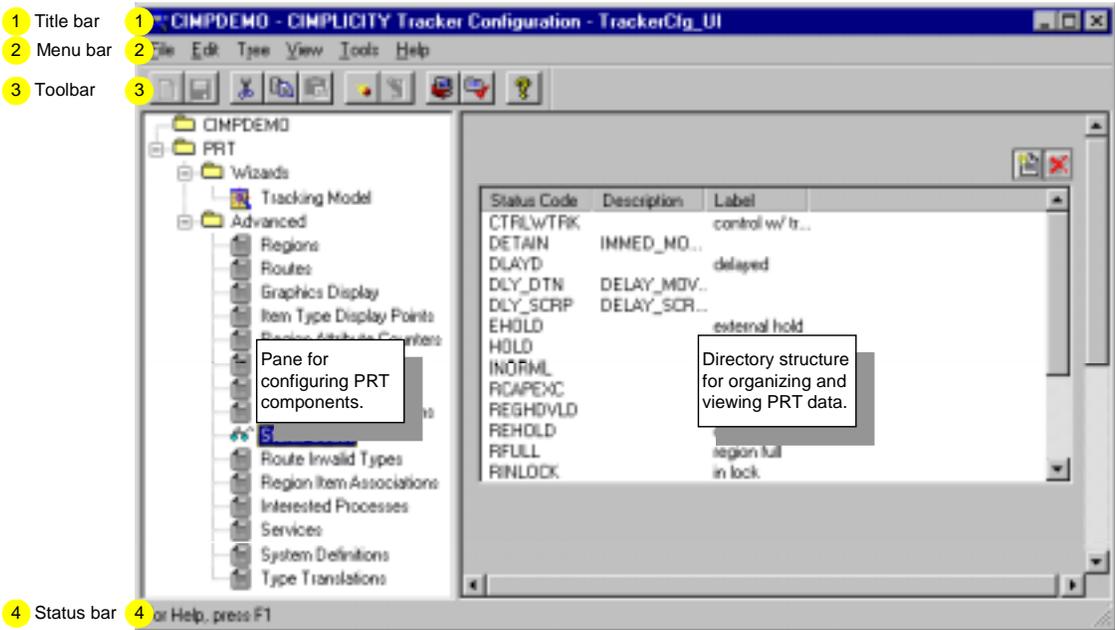
Tracker Configuration Directory for PRT

The PRT directory is organized in a hierarchy with the Tracking Model Wizard in the Wizards folder, and PRT data in the Advanced folder. Each category is clearly defined in its own subfolder within the Advanced folder. Clicking on a category activates the associated dialog in the left pane, making configuration editing a snap!

1 Main project configuration folder
2 PRT configuration folder
3 Wizards folder
4 Tracking Model Wizard
5 Advanced PRT configuration
6 Tracking Model items

```
1 📁 rco_test
2 📁 PRT
   3 📁 Wizards
      4 🔲 Tracking Model
   5 📁 Advanced
          📄 Regions
          📄 Routes
          📄 Graphics Display
       6  📄 Item Type Display Points
          📄 Region Attribute Counters
          📄 Item Types
          📄 Tracking Groups
          📄 Group Tracking Regions
          📄 Status Codes
          📄 Route Invalid Types
          📄 Region Item Associations
          📄 Interested Processes
          📄 Services
          📄 System Definitions
          📄 Type Translations

For Help, press F1
```
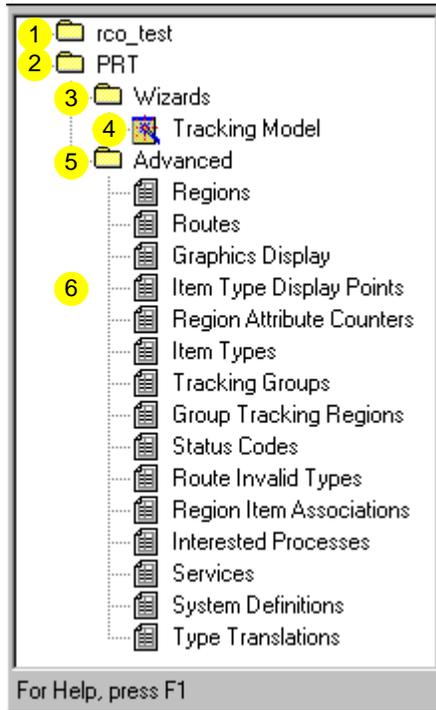
Step 2. Start the Tracking Model Wizard

Open the Tracking Model wizard from the Tracker Configuration User Interface.

Step 2. Start the Tracking Model wizard:

1. Expand the PRT folder in the Tracker Configuration User Interface.

Expand.
Expand.
Double-click.
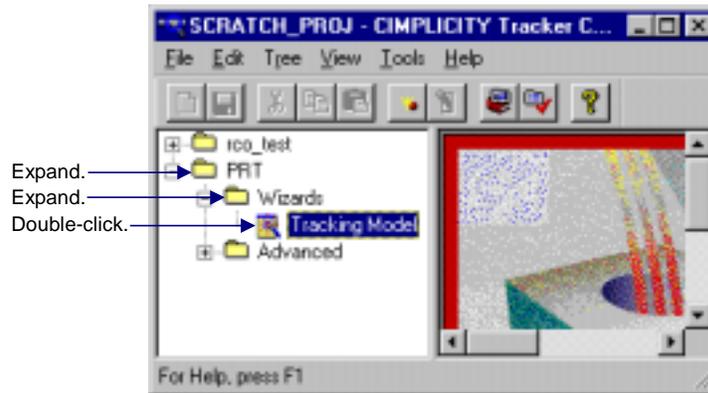
2. Expand the Wizards folder.
3. Double-click the Tracking Model folder.

Result: The Region dialog box displays to start the Tracking Model configuration.

First Dialog Box to Begin Tracking Model Configuration

Comment Box

Popup
Browse

Regions list
box
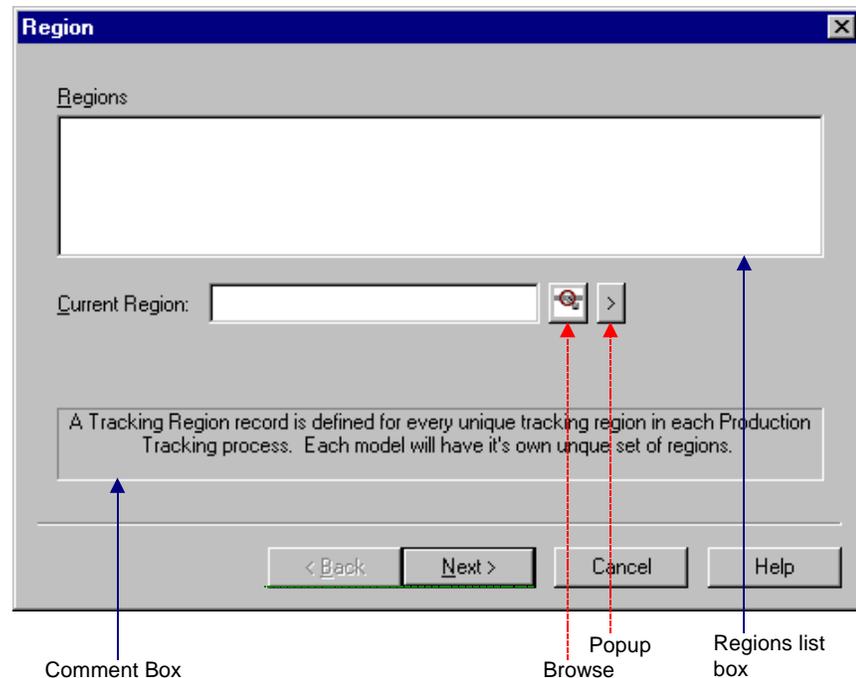
Step 3. Configure Regions

Once the Tracking Model Wizard is opened, configure regions in your Tracking Model using the PRT Region Configuration dialog box. You must configure at least two regions to be able to continue to the next dialog box in the wizard.

Tasks to configure regions include:

Task 1.   Set general region parameters

Task 2.   Set advanced region parameters

Task 3.   Set out of sequence parameters

Task 4.   Set alarming options

Task 5.   Set logging options

See "Region Configuration Guideline" for important information about changing a region's configuration after you have started Tracker.

Step 3. Configure Regions
Task 1. Set General Region Parameters

Task 1. Set general region parameters:

1. Click the **Popup Menu** button ⟩ to the right of the Current Region field in the Region dialog box.

2. Select New from the popup menu.

   The PRT Region Configuration dialog box opens displaying the Region tab.

3. Enter a unique name for the region in the ID field.

   Note: Tracker fills the Prefix field automatically as you type in the region ID.

4. Enter a brief Description for the region.

5. Enter the maximum number of available region Locations in the region.

6. Enter the maximum number of items that can reside at a single region location, to include serialized and non-serialized items in the Items per Location field.
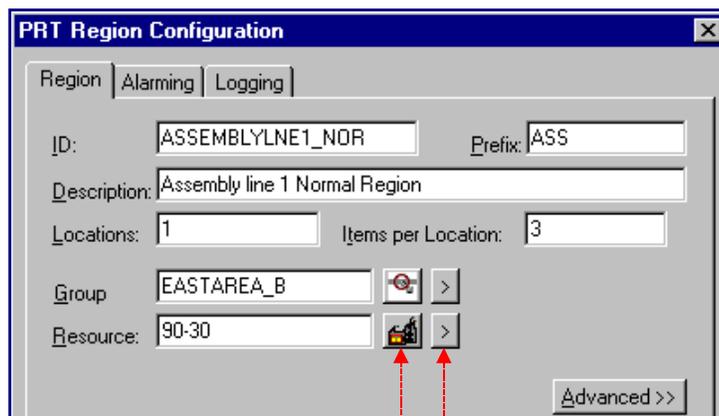
Popup
Browse

7. Enter a name for the group with which this region will be associated in the **Group** field.

   Note: If you do not have any groups already configured, it is recommended that you use the **Popup** button to create a new group here in order to run the PRT User Interface after completing the Tracking Model wizard.

8. Enter the resource with which alarms will be generated at the tracking region level in the **Resource** field.

   Note: If a resource is not designated, $SYSTEM resource will be used by default for alarm generation.

Step 3. Configure Regions
Task 2. Set Advanced Region Parameters

Task 2. Set advanced region parameters:

1. Click **Advanced**.

   Advanced fields display at the bottom of the advanced PRT Region Configuration dialog box.

   PRT Region Configuration Dialog Box: Advanced Section

   Pool / Sequential / Shifting

   Normal / Combine / Disperse

   Popup / Browse
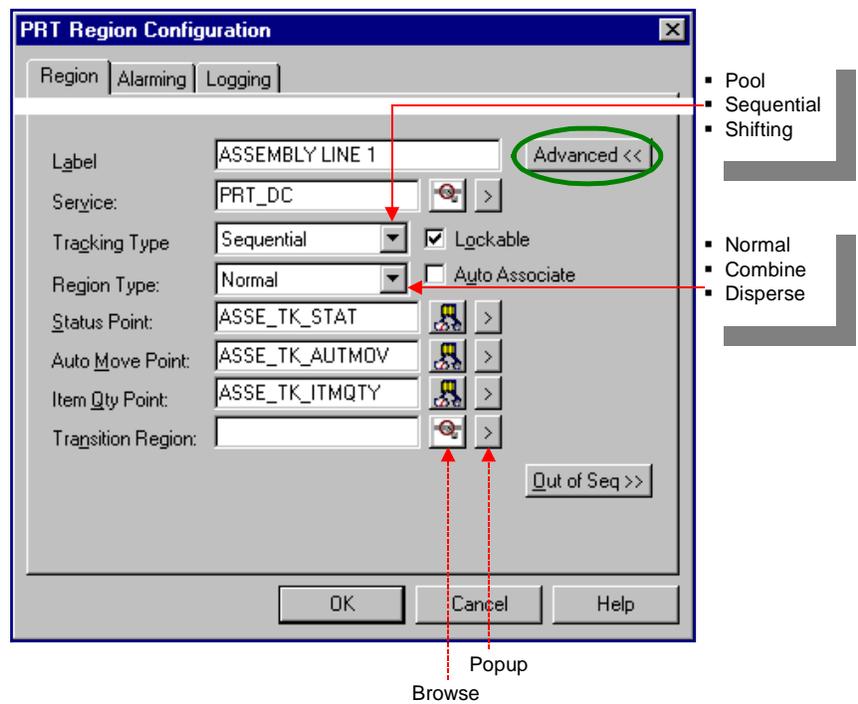
2. Enter text in the **Label** field that will display with the region and provide user recognition.

3. Enter a name for the PRT Service in the **Service** field that will manage this region.

   Note: PRT_DC is the default.

4. Select a Tracking Type (primary region type) from the drop-down list as follows:

- Pool
- Sequential
- Shifting

See the "Production Tracking Overview" chapter in the <u>Tracker Production Tracking Operation</u> manual, GFK-1216, for detailed information about tracking types.

5. Select a Region Type (secondary region type) from the drop-down list as follows:

- Normal
- Combine
- Disperse

See the "More about Region Locations and Regions" section in the "Learning about Tracker" chapter in this manual for detailed information about region types.

6. Check the Lockable box to lock the region.

   Guidelines: In order to make modifications to the region, and to be able to move items into the region, it must be locked. By checking the Lockable box, you enable this functionality.

7. Check the Auto Associate box to enable parent-child association between a serialized and non-serialized item.

   Note: Must be a Combine region type.

8. Enter the point ID in the Status Point field that will represent the region's status.

   Point must be of type DIUNT.

   Note: A default point ID is inserted in the next 3 fields to help standardize point IDs in your database.

9. Enter the point ID in the Auto Move Point field that will display when an item moves into the region due to a "point-based" move.

   Point must be a text point of no more than 55 characters. The point should contain the item ID and other optional information depending on the value of the `num_setpt_param` in the global parameter files.

10. Enter the point ID In the Item Qty Point field that will display the total number of items contained in the region. Point must be of type INT or UINT.

11. (*For a shifting region*) Enter a Transition Region ID.

Tip: The Status, Auto Move and Item Qty points will be automatically configured for you using default values upon exiting the wizard. Click **Yes** in the message box for automatic point configuration to occur.

Task 3. Set Out of Sequence Parameters

■■▶ **Task 3. Set out of sequence parameters:**

1. Click **Out of Seq** ⌜Out of Seq >>⌝.

   Out of Seq fields display at the bottom of the advanced PRT Region
   Configuration dialog box.

2. Enter the ID for the Detainment Region where items will be sent when they
   are out of sequence.

   *See the Tracker Production Tracking Operation Manual, GFK-1216, for details
   about detainment regions.*

3. Specify the maximum number of items in the OOS cycle count field that are
   allowed to exit out of sequence from the region.

   PRT Region Configuration Dialog Box: Out of Sequence Section
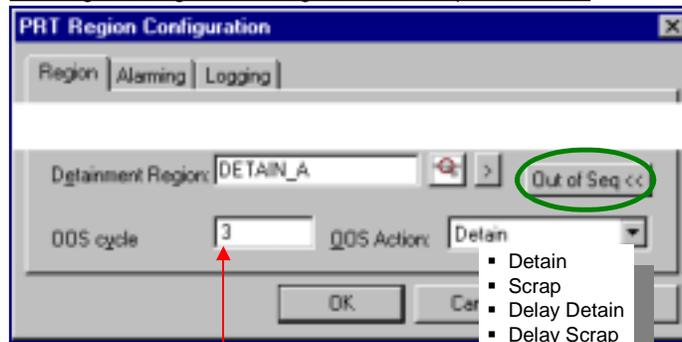
   Maximum number of items
   allowed to exit out of
   sequence.

4. Select an action to be taken when an item is out of sequence from the OOS
   Action drop-down list as follows:

Detain	Move item to detainment region.
Scrap	Scrap (delete) item.
Delay Detain	Allow item to be in out-of-sequence condition using the OOS cycle count, and then move to the detainment region.
Delay Scrap	Allow item to be in out-of-sequence condition using the OOS cycle count, and then scrap (delete).

Task 4. Set Alarming Options

> **Task 4. Set alarming options:**
>
> 1. Select the Alarming tab in the PRT Configuration dialog box.
>
> 2. Check the Enable Alarms box to activate Alarm Switches.

PRT Region Configuration dialog box - Alarming tab

3. Check boxes in the Alarm Switches group to enable alarming as needed for your Tracking Model:

Alarm Switch	Enables alarm generation when…
Alarm Detain	An item(s) is moved to the detainment region.
Alarm Region Not Empty	A Disperse region is not empty and new items have arrived.
Alarm Region Locked	An item enters an 'in-locked' region or exits an 'out-locked' region.
Alarm Location Capacity	The number of items at a single region location exceeds
Exceeded	the configured maximum.
Alarm Item Hold	An Item enters a region with an attribute that matches an item-hold specification.
Alarm Unknown Item	Information cannot be retrieved for a serialized item.
Alarm OOS Condition	An 'out-of-sequence' condition occurs.
Alarm Invalid Item Type	An invalid item type enters the region.
Alarm Unknown Item Type	An unknown item type enters the region.
Alarm Region Capacity	The region capacity has exceeded its configured maximum.

Task 5. Set Logging Options

⏩ **Task 5. Set logging options:**

1. Click the Logging tab in the PRT Configuration dialog box.

2. Check Master Logging Enable to activate logging options.

PRT Region Configuration dialog box - Logging tab

3. In the logging options group, check boxes to enable logging as needed for your Tracking Model:

Logging Option	Enables logging when…
Log Detainment	Items are moved to the detainment region.
Log Region Not Empty	A Disperse region is not empty and new items have arrived.
Log Region Status	An items enters an 'in-locked' region or exits an 'out-locked' region.
Log Capacity Exceeded	The number of items at a single region location exceeds the configured maximum.
Log Item Hold	An Item enters a region with an attribute that matches an item-hold specification.
Log Unknown Item	Information cannot be retrieved for a serialized item.
Log Item Scrapped	An item has been scrapped (deleted) from the region's queue.
Log Item Entry	An item is entered into the region's queue.
Log Item Exit	An item exits the region's queue.
Log Item Modify	An item's tracking data is modified.
Log Production Start	Item tracking starts in this region.
Log Production Stop	Items tracking stops in this region.
Log Invalid Item	An invalid item type enters the region.
Log Unknown Item Type	An unknown item type enters the region.
Log Region Capacity Exceeded	The region capacity has exceeded its configured maximum.

4. Click **OK**.

The region, which is listed in the Region dialog box, is added to the Tracking Model configuration.

Configured region   Selected region
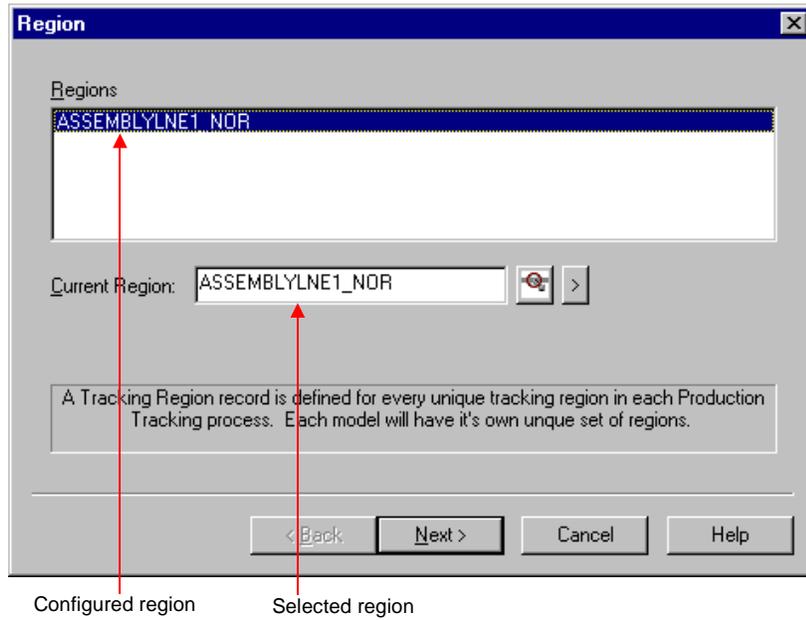
5. Repeat the tasks in Step 2 to configure at least two regions.

6. Click **Next**.

Result: The Route dialog box displays.

Step 4. Configure Routes

Important: Make sure you have configured at least two regions before you begin to configure routes.

Tasks to configure routes include:

Task 1. Set general route parameters

Task 2. Set advanced route parameters

See "Mapping Information between Route Configuration and Type Translation Configuration" and "Route Transition" examples following the procedures for additional information about type translations.

Step 4. Configure Routes
Task 1. Set General Route Parameters

Task 1. Set general route parameters:

1. Click [>] in the Route dialog box.
2. Select New from the popup menu.

   The PRT Route Configuration dialog box opens displaying the General tab.

3. Enter the region in the Source Region field from which the item will exit.

1 Region to leave.
2 Region to enter.

Translation Type Code	To Point Type
Limit Switch	Any type point, activated by value update
Automatic Item ID giving Item ID	Text point
Automatic Item ID giving Reference ID	Text point
Associated Reference ID to Item	Text Point
Associated Item Type to Item	Integer Point
Positive Edge Trigger	
Negative Edge Trigger	

4. Enter the region in the Destination Region field that the item will enter.

5. Select a Translation Type Code from the drop-down list as follows:

Note: The option that you select will translate to an internal code as those shown listed below in the first column.

Code	Option	Description
1	Limit Switch	Transitions any item type.
2	Type Detector	Transitions matching item type in the Type Translation file. Set point to value (integer) and region is checked for an item type with the matching value and then moves it to the destination region.
3	Automatic Item ID giving Item ID	Transitions item type matching value type (Item ID) to text point.
4	Automatic Item ID giving Reference ID	Transitions item type matching value (Reference ID) to text point.
5	Associated Reference ID to Item	Associates reference ID in setpoint (text) with Item. **Example:** Item ID = Red Setpoint = Blue Item ID = Red; Reference ID = Blue
6	Associated Item Type to Item	Transitions item type matching value to integer point. Uses item type code configured in PRT Item Type Configuration dialog box.
7	Positive Edge Trigger	Transitions any item type when the setpoint value changes from zero to nonzero.
7	Negative Edge Trigger	Transitions any item type when the setpoint value changes from nonzero to zero.

6. Enter the point ID in the Transition Point ID field that represents the transition between the two regions.

Step 4. Configure Routes

Task 2. Set Advanced Route Parameters

Task 2. Set advanced Route parameters:

1. Click **Advanced.**

   Advanced fields display at the bottom of the advanced PRT Route Configuration dialog box.

2. Enter the name of the item type, in the Item Type ID field, that will most likely travel between the source and destination regions.

   Use the wildcard character (*) to validate all item types through this route.

3. This is now a Setpoint ID field.

    Enter the point ID, in the Item ID Point field that will display when the item is transitioned.

    Guidelines: The point must be:

    ▪ A text point and

    ▪ No more than 36 characters.

    The

    ▪ Item Type ID is displayed in the first 16 characters and

    ▪ Item ID is displayed in the last 20 characters (when the item type is serialized; otherwise, associated or parent item ID).

PRT Route Configuration Dialog Box Advanced Settings

Item type most likely to go from
source to destination.
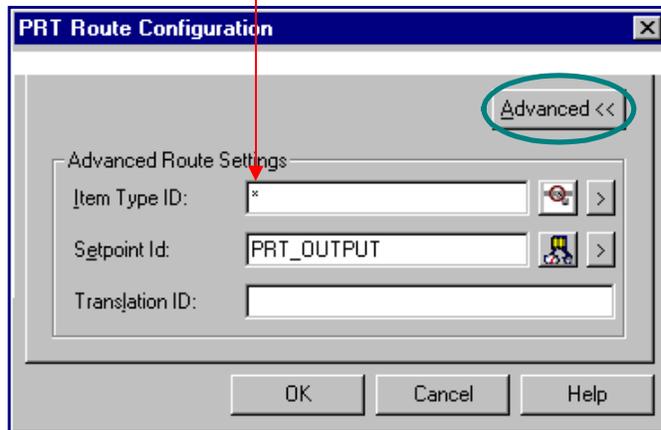
4. Enter an ID in the Translation ID field that will map to the translation ID in the PRT Type Translation file.

    See the examples below for more information.

5. Click **OK.**

    The route, which is listed in the Route dialog box, is added to the Tracking Model configuration.
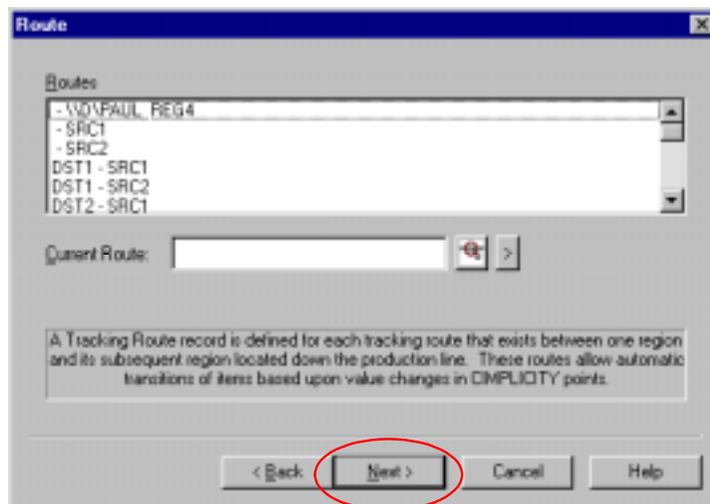
6. Click **Next.**

Result: The Item Types dialog box displays.

PRT Route Configuration

General

Source Region: SRC4
Destination Region: DST4
(1) Translation Type Code: Type Detector
(2) Transition Point ID: S4_X_D4

PRT Type Translation Configuration

General

Advanced Route Settings

Item Type ID: CAR
Setpoint Id: S4_T_D4
(3) Translation ID: S4_TRAN

(3) Translation ID: S4_TRAN
(4) Input Code: 1
(5) Item Type ID: CAR

OK   OK   Cancel   Help
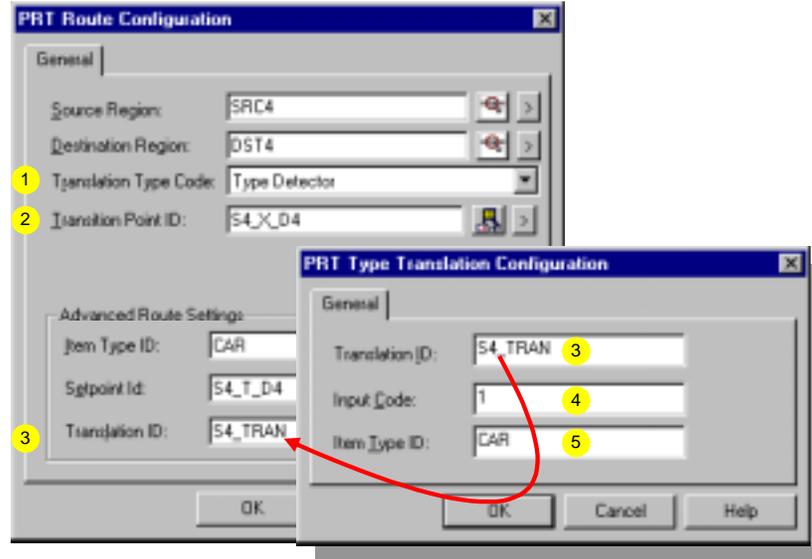
(1) When the Translation Type Code = Type Detector, configure one or more entries in the PRT Type Translation Configuration dialog box.

(2) The Transition Point ID values change when an item type is detected.

(3) The Translation ID Field of the route maps to the Translation ID field of the PRT Type Translation Configuration. You can use this ID to group similar Item Types together.

(4) The Transition point changes to an integer value that matches the input code to determine the Item Type to move.

(5) The Item Type ID indicates the item that is to be moved when the input code matches the Transition point value.

Example: Route Transition

TRANSITION_PT
Value = 10

Source Region   Route   Destination Region
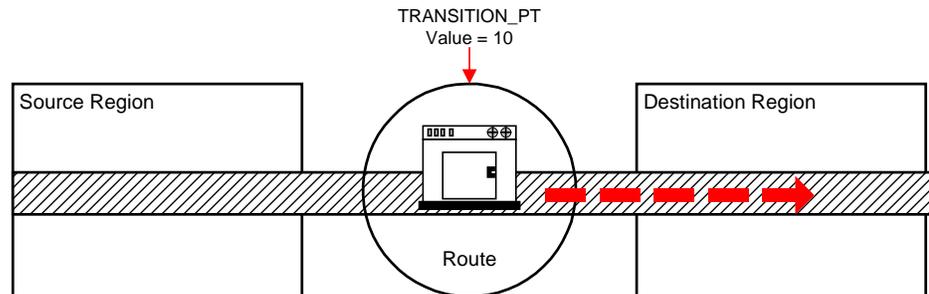
Route Configuration:
1. Translation Type Code = Type Detector.
2. Transition Point ID = TRANSITION_PT
3. Translation ID = ONCHANGE.

Type Translation Configuration:
1. Translation ID = ONCHANGE.
2. Input Code = 10.
3. Item Type ID = DRYER.

System Implementation
1. An item type is detected.
2. TRANSITION_PT value is set to 10.
3. PRT searches configuration for translation to determine what item type to move.
4. Dryer item type is moved to destination region.
5. PRT is updated.

End of example.

Step 5. Configure Item Types

Once you have configured your routes, proceed to the next dialog box of the wizard to configure the Item Types for your Tracking Model.

Step 5. Configure Item Types:

1. Click the **Popup Menu** button ⊡ to the right of the Item Type field in the Wizard's Item Types dialog box.

2. Select New.

   A PRT Item Type Configuration dialog box opens.

2. Enter a unique name for the item type in the Item ID field.

3. Enter a brief Description for the item type.

4. Enter an Item Type Code (integer) that will identify this item type.

   Guidelines: This code is used internally by PRT to identify the Item Type. Each item type must have a unique code, for example COMPRESS = 4 and BASE = 5. You can also apply a unique code for the same item type to identify something unique about the item, for example, BASE = 5 and a painted BASE = 6.

5. Enter the Item Class to which this item type belongs.

   Reminder: Item Classes are not required but are recommended. Feel free to create one Item Class for all of your item types.

6. Click the appropriate radio button for the Tracking Type as follows:

   ▪ Serialized

   ▪ Non-serialized
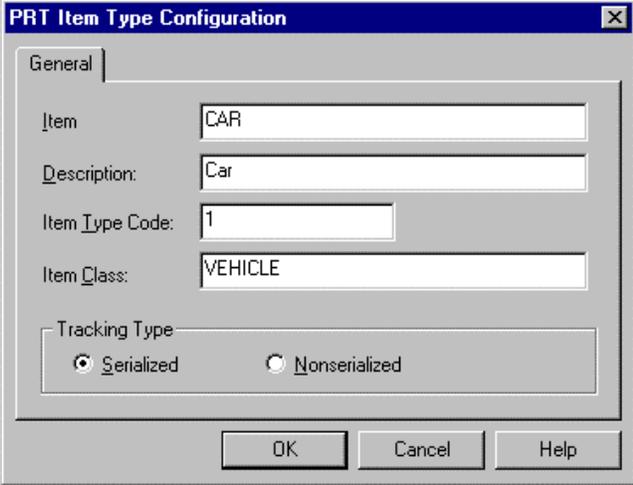
7. Click **OK**.

   The item type is added to your Tracking Model configuration.

8. Click **Next**.

Result: The Service dialog box displays.

Step 6. Configure PRT Services

Once you have configured your item types, proceed to the next dialog box of the wizard to configure the PRT Services for your Tracking Model. By default PRT_DC is already configured. Usually only one service is configured per Tracking Model, which you are encouraged to use. There is an option for editing the pre-configured service to meet your requirements or you can configure additional services as needed.

Step 6. Configure a PRT Service:

1. Click the **Popup Menu** button [>] to the right of the Service field in the Wizard's Service dialog box.

2. Select the appropriate menu option from the popup menu as follows:

Menu Item	Use to:
New	Create a new service.
Edit	Edit service listed in the Service ID field.

   The PRT Service Configuration dialog box displays defaulted to the General tab.

3. Enter a name for the Service ID, or use the default name, **PRT_DC** .

Select an Alarm Class
Popup menu

4. Enter the Search Order in which this service will be searched for information relative to the configured services.

5. Enter the service ID of the external process that will provide item tracking data in the External item service ID field, .

6. Enter the service ID of the external process that will provide hold information in the External hold service ID field.

7. Complete, as needed, the next several fields that are used to provide alarm IDs for certain conditions in the tracking system:

Alarm ID field	Alarm ID when…
Detainment region alarm	Items are sent to a detainment region.
Region lock alarm	An item enters an 'in-lock' region or exits an 'out-lock' region due to a point-based move.
Region Capacity Exceeded Exceeded	The region has exceeded its configured maximum.
Location capacity alarm ID	The number of items in a single region location have exceeded the configured maximum.
Sequence alarm ID	An item is out of sequence at a region exit transition indicator.
Item hold alarm ID	An item arrives in a region and is determine to have an item-hold specification.
Invalid item type alarm ID	An invalid item type is detected in a region.
Unknown item type alarm ID	An unknown item type is detected in a region.
Invalid item ID alarm ID	Information for a serialized item cannot be retrieved.
Region not empty alarm ID	All items have not left a disperse region and new items have arrived in the region.

8. The Batch que field is not currently used.

9. Click **OK** to add modifications or new PRT Service to your Tracking Model configuration.

10. Click **Next** to go to the System Definitions dialog box.

Step 7. Configure System Definitions

Once you have configured, or made modifications to your service, proceed to the next dialog box of the wizard to configure the System Definitions for your Tracking Model. By default each port is defaulted to a queue size of 10, which is the minimum recommended value.

Important: GE Fanuc recommends that each of the ports on this dialog box be set to a minimum value of 10.

Step 7. Configure system definitions:
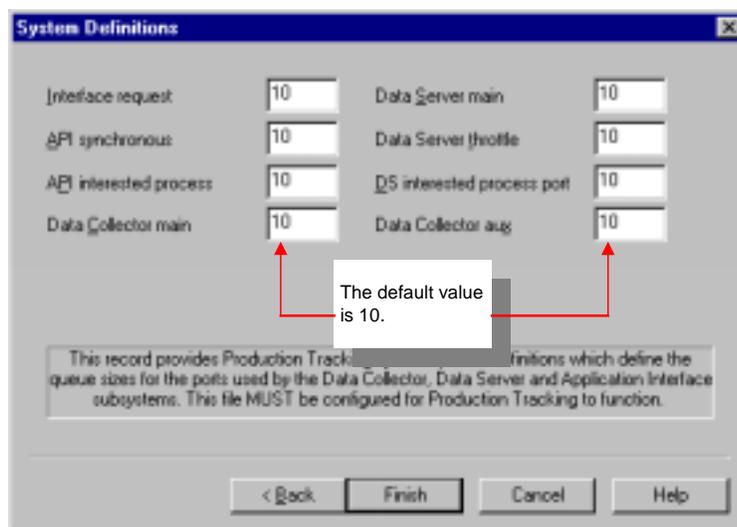
1. Enter an integer to set an update queue size in the Interface Requested Port field in the System Definitions dialog box.

   This is used to receive interested process updates from the PRT data server(s).

2. Enter an integer to set a response queue size in the API Synchronous Port field.

   This is used to send requests to PRT data collector(s), and to send requests and receive responses from the PRT data server(s).

3. Enter an integer to set a receive requests queue size in the API Interested Process Port field.

   This is used to receive requests for item and item-hold data from the PRT data collector(s).

4. Enter an integer to set the In the Data Collector Main Port field, type an integer to set the queue size.

5. In the Data Server Throttle Port field, type an integer to set the queue size.

6. In the DS Interested Process Port field, type an integer to set the queue size.

7. In the Data Collector Aux Port field, type an integer to set the queue size.

Step 8. Finish Basic Tracking Model Configuration

Once the system definitions have been configured, you have completed all of the dialogs in the Tracking Model wizard.

Step 8. Finish Tracking Model configuration:

1. Click **Finish**.

2. Click ⊞ to save configuration data.

   All of the PRT data that you have entered in the configuration dialogs is added to the Tracking Model configuration.

3. Expand the Advanced folder.

4. Double-click categories to view configuration data in the left pane.

Important: If you want to move items across project boundaries, you have to do additional PRT startup configuration.

See the appendix "Configuring PRT Client Setup" the CIMPLICITY HMI Plant Edition Tracking Operation Manual for details.

Example: Configuration data in left pane lists

Tracker Configuration User Interface - Configuration data

Step 9. Do Additional Tracking Configuration

The Tracking Model Wizard enables you to configure all of the basic components needed to run Tracker. However, there are a number of other configuration options available to you so that you can fine-tune your tracking system and collect the most comprehensive, meaningful data for your operation.

The basic components that are configured upon completion of the Tracking Model wizard are:

- Regions
- Routes
- Item Types
- Tracking Groups
- Services
- System Definitions

Tracker Components that can be Configured
through the Tracking Model Wizard
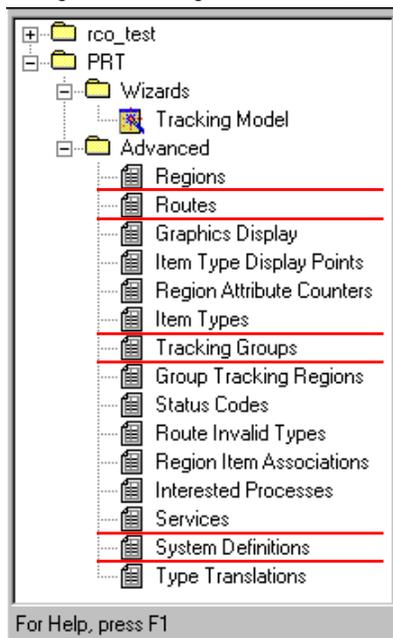
Note: There is no dialog in the Tracking Model wizard for configuring groups. It is recommended that you configure your groups when configuring your regions. A popup menu provides the options.

The remaining configuration options include:

Option 1. PRT graphics display.

Option 2. Item type display points.

Option 3. Region Attribute counters.

Option 4. Tracking Groups.

Option 5. Group Tracking Regions.

Option 6. Status Codes.

Option 7. Route Invalid Types.

Option 8. Region Item Associations.

Option 9. Interested Processes.

Option 10. Type Translations.

Option 1. PRT Graphics Display

The PRT Graphic Display Configuration enables you to specify regions and associated array points for displaying runtime data textually and graphically. You can build screens that will display item types and attributes to keep operators up to date in your production facility, thereby improving performance and reaction time.

Tip: If you compiled a point display list, use it as a guide when configuring your graphics display.

Option 1. Configure a PRT graphics display:

1. Open a new PRT Graphic Display Configuration dialog box as follows:

   A. Expand the PRT folder in the Tracker Configuration left pane.

   B. Expand the Advanced folder.

   C. Double-click **Graphics Display**.

   A list box displays in the right pane.

   D. Click 📋 on the in the right pane.

   The PRT Graphics Display Configuration dialog box opens.

2. Enter a unique name for the graphics display Service.

   Recommendation: Use the default, **PRT_GRD**.

3. Enter the region ID for which you want to display graphical information in the Region field.

PRT Graphic Display Configuration

General

Service	PRT_GRD
Region:	DST1
Attribute	COLOR
Display Point	D1_VEHICLE_COLOR
Start Location:	-2
End Location:	3
Start Byte	1
End Byte	8
Item Class	VEHICLE

OK   Cancel   Help

PRT_ASSOC_ITEM
PRT_ITEM_ID
PRT_ITEM_STATUS
PRT_ITEM_TYPE_ID
PRT_REFERENCE_ID

Select a Point

PRT Browse
Popup menu
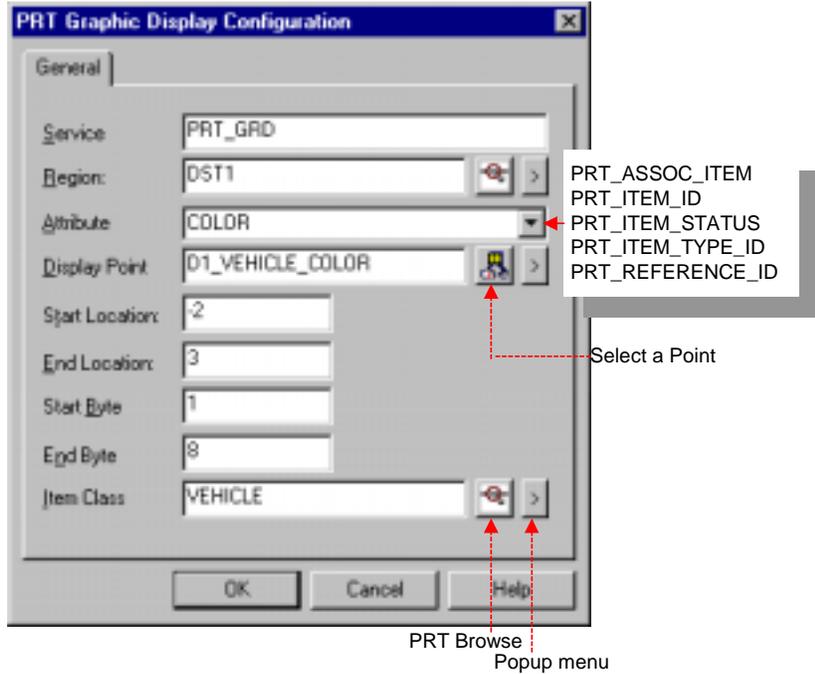
4. Select one of the default options or type in an attribute name in the Attribute field.

5. Enter the name of an array point in the Display Point ID field that will populate the graphic screen with values about the item type in the region.

Guidelines for display points:

Attribute	Point Guideline
PRT_ASSOC_ITEM	Text point that must define a text size of at least 20.
PRT_ITEM_ID	Text point that must define a text size of at least 20.
PRT_ITEM_STATUS	Analog point that must be of type **ANALOG_U32**.
PRT_ITEM_TYPE_ID	Text point that must define a text size of at least 20.
PRT_REFERENCE_ID	Text point that must define a text size of at least 20.
USER DEFINED	Text point with the number of region locations covered by the point equaling the number of elements in the array. Calculate elements as follows: End location – Start Location +1.

6. Enter the Start Location in the region.

7. Enter the End Location in the region.

8. Enter the Start Byte that will be populated with this attribute data.

9. Enter the End Byte that will conclude population of this attribute data.

Note: Use 0 in the both the Start and End byte fields if you do not plan to use this point to collect any other data.

10. Enter the name of the item class that will provide values for this point in the Item Class ID field.

Note: If you do not specify an item class, then any item class will provide data. However, if more than one item matches the item filtering, the value of the point is indeterminate.

11. Click **OK**.

Result: The graphic display configuration is added to your Tracking Model.

Example: Graphic display of DRY_ARRAY point values
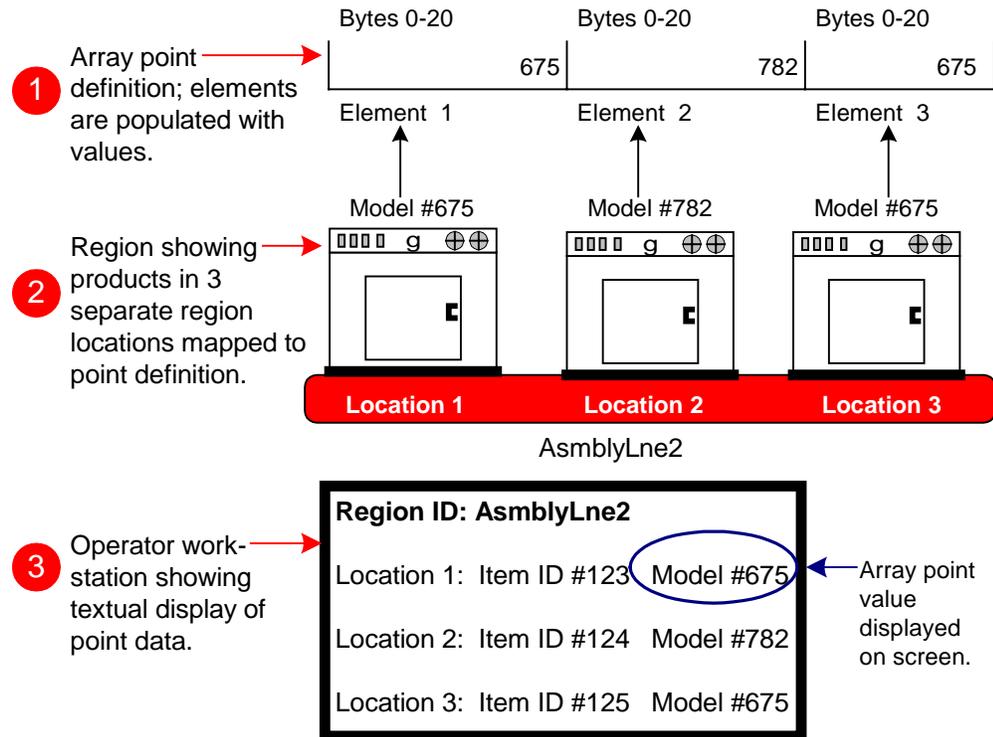
End of example.

Option 2. Item Type Display Points

The Item Type Display Points enable you to specify a setpoint that can be used to identify the quantity of a particular item type in a region. The point can be used in graphic screens to supply you with runtime data about the quantity of a particular item at any given time keeping operators abreast of potential problems in a region.

To configure Item Type Display Points:

1. Open the PRT Display Attribute Configuration dialog box as follows:

   A. Expand the PRT folder in the Tracker Configuration left pane.

   B. Expand the Advanced folder.

   C. Double-click **Item Type Display Points**.

   A list box displays in the right pane.

   D. Click 📄 in the right pane.

   A new PRT Display Attributes Configuration dialog box opens.

2. Enter the name of the region in the Region ID field, from which data is to be collected.

PRT Browse

Popup menu

Select a Point
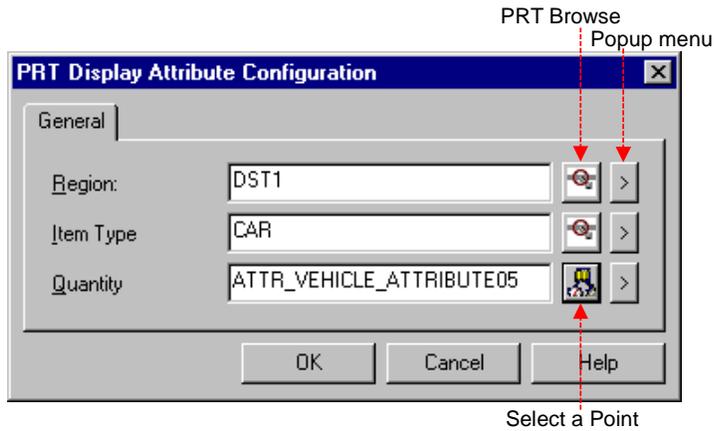
5. Enter the item type ID whose quantity is to be displayed in the Item Type field..

6. Enter a setpoint ID in the Quantity field that will be used to determine the item type quantity in the region.

7. Click **OK**.

Result: The item display point configuration is added to your Tracking Model.

Option 3. Region Attribute Counters

Region Attribute Counters are used to maintain a count of the number of times an item has been through a region. The counter is tied to a specific attribute that is either incremented or decremented as it re-enters the region. You can keep track of region attribute counters using the PRT User Interface or on a graphic screen. By specifying an alarm value, you can indicate a number to generate an alarm to avoid over-processing an item.

Option 3. Configure region attribute counters:

1. Open a new PRT Region Attribute Configuration dialog box as follows:

   A. Expand the PRT folder in the Tracker Configuration left pane.

   B. Expand the Advanced folder.

   C. Double-click **Region Attribute Counters**.

   A list box displays in the right pane.

   D. Click 🗎 in the right pane.

   A new PRT Region Attribute Configuration dialog box opens for configuration.

2. Enter the name of the Region for which you want to maintain a count by attribute.

PRT Browse
Popup menu
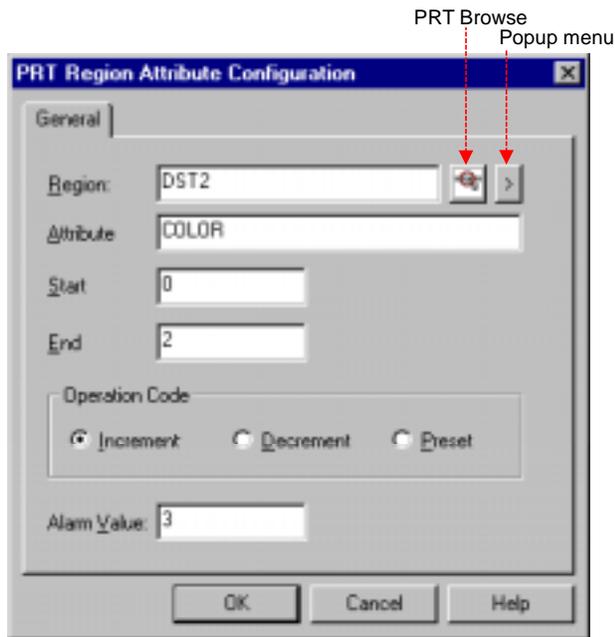
5. Enter the Attribute that will have a counter in the region.

6. Enter the first byte of the attribute value, in the Start Byte field, that will be used for the counter in the region.

   Reminder: Attributes have a maximum of 20 bytes.

7. Enter the last byte of the attribute value, in the End Byte field, that will be used for the counter in the region.

8. Check one of the following in the Operation Code group.

   Increment   Increase the counter by one whenever an item enters the region containing this attribute.

   Decrement   Decrease the counter by one whenever an item enters the region containing this attribute.

   Preset   Value is preset.

   Note: If using Preset, configure an additional counter to either increment or decrement the value for alarming purposes.

9. Enter an integer, in the Alarm Value field, that will generate an alarm when the counter reaches this value.

10. Click **OK**.

Result: The region attribute counter configuration is added to your Tracking Model.

Example: Region Attribute Counter generating an alarm

Attribute Counter for Color

0	3

PAINT Region

Alarm - Item #123
- Washer exceeds
# of times through
Paint Region

Item #123
WASHER
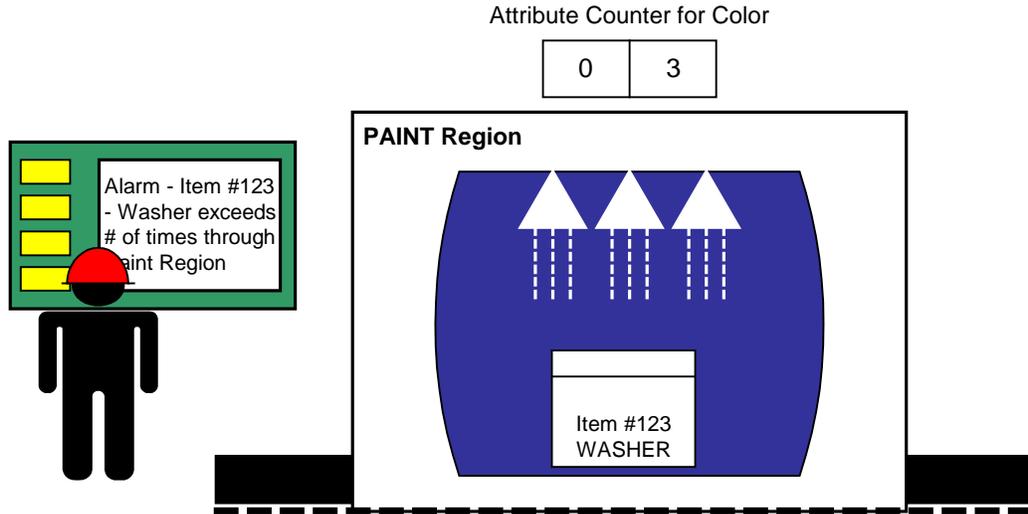
End of example.

Example: Multiple Region Attribute Counters for an attribute

Color Attribute - Bytes 0 - 19

Booth 1 Counter
Bytes 0 - 3

Booth 2 Counter
Bytes 4 - 7

Booth 3 Counter
Bytes 8 - 11

Paint Booth 1

Paint Booth 2

Paint Booth 3

Process
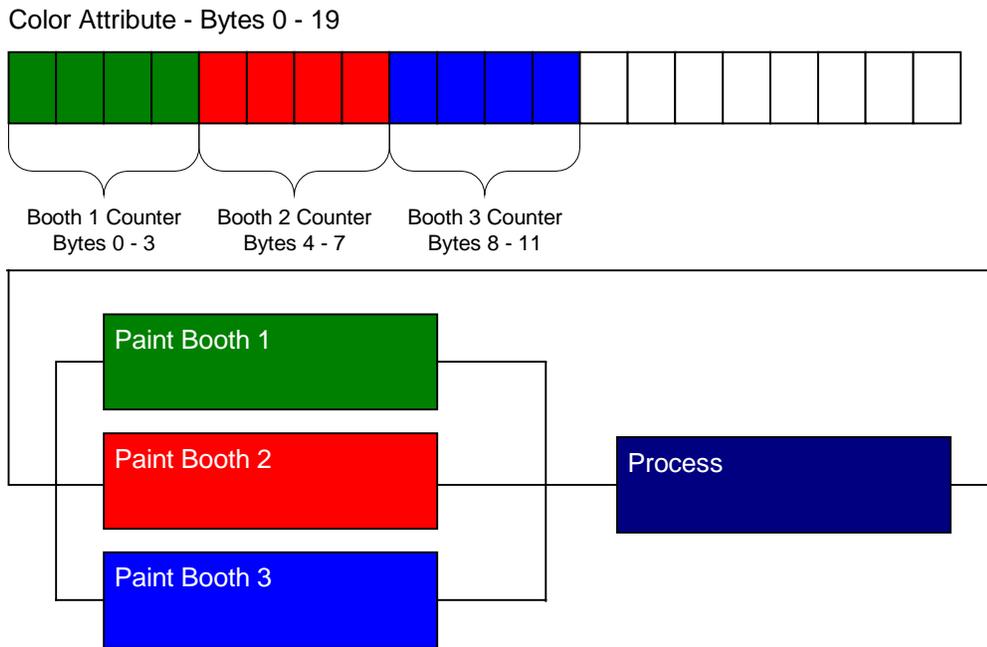
End of example.

Option 4. Tracking Groups

It is recommended that you configure your groups during the configuration of your regions. You can, however, configure new or additional groups anytime using the PRT Group Configuration dialog box.

Important: Every region in your Tracking Model *must* belong to a group.

Option 4. Configure Tracking Groups:

1. Expand the PRT folder in the Tracker Configuration left pane.
2. Expand the Advanced folder.
3. Double-click **Tracking Groups**.

   A list box displays in the right pane.

3. Click on the in the right pane.

   The PRT Group Configuration dialog box opens.
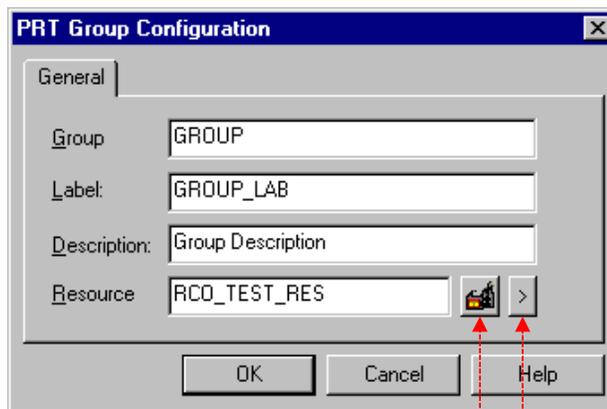
Select a Resource

Popup menu

4. In the Group ID field, type a unique name for the tracking group.
5. Type the Label that will help the user to recognize the group.
6. Type a brief Description for the group.
7. In the Resource ID field, browse for, create or type in the resource for this group.
8. Click **OK**.

Result: The group configuration is added to your Tracking Model.

Option 5. Group Tracking Regions

When a region is configured it must be assigned to a group, which automatically configures the Group Tracking Region. Configure additional Group Tracking Regions as explained below.

Option 5. Configure Group Tracking Regions:

1. Expand the PRT folder in the Tracker Configuration left pane.

2. Expand the Advanced folder.

3. Double-click **Group Tracking Regions**.

   A list box showing automatically configured group tracking regions displays in the right pane.

3. Click 📄 in the right pane.

   The PRT Region Group Configuration dialog box opens.
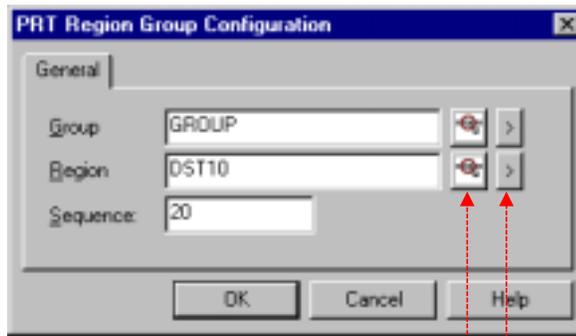
PRT Browse
Popup menu

4. Enter the tracking group in the Group ID field.

5. Enter the region belonging to the group in the Region ID field.

6. Enter the order of this region in the group in the Sequence field.

   Example

   There are 22 regions in a group and physically this is the twentieth region.

   Enter 20.

   Sequence numbering starts at 0.

7. Click **OK**.

Result: The group tracking region configuration is added to your Tracking Model.

Option 6. Status Codes

For each valid region and item status, a status code must be assigned. For example, valid region statuses involve capacity, sequential error, invalid or unknown item type and so on. Tracker provides you with several predefined status codes for the most common statuses. You may, however, configure additional status codes to meet your criteria.

There are 31 status bits each for regions and items. For every defined status code (either predefined or user-defined), a status bit is used. The status bit is Boolean and is either on (1) or off (0). When you define your own status codes, you must use the available bits. The lists below define the status code, description and bit used for the 31 status bits.

Predefined status codes for regions include:

Status Code	Description	Bit Used
CTRLWTRK	Control with track	22
RCAPEXC	Capacity exceeded	21
REGHDVLD	Region head valid	23
REHOLD	External hold	17
RFULL	Region full	16
RINLOCK	Region in lock	18
RNORML	Normal	31
ROUTLOCK	Region out lock	19
ROUTSEQ	Out of sequence error	20
WAIT4DEC	Wait for decision	24

Predefined status codes for items include:

Status Code	Description	Bit Used
DELYD	Delayed	16
EHOLD	External hold	18
HOLD	Internal hold	17
INORML	Normal	31

Reserved status codes include:

Status Code	Description	Bit Used
DETAIN	Immediate move to repair	0
DLY_DTN	Delay move to repair	1
DLY_SCRP	Delay scrap	2
SCRAP	Immediate scrap	3

Option 6. Configure Status Codes:

1. Expand the PRT folder in the Tracker Configuration left pane.
2. Expand the Advanced folder.

3. Double-click Status Codes.

   A list box with predefined status codes displays in the right pane.

   Predefined Status Codes

New

Delete
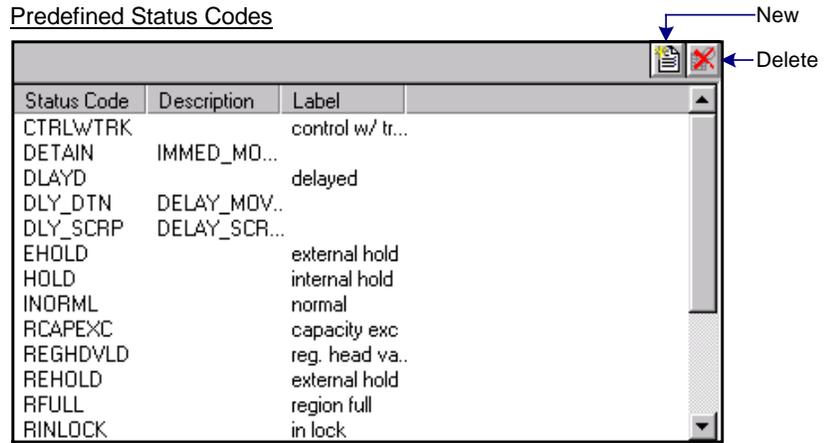
3. Click 📄 in the right pane.

   The Status Configuration dialog box opens.
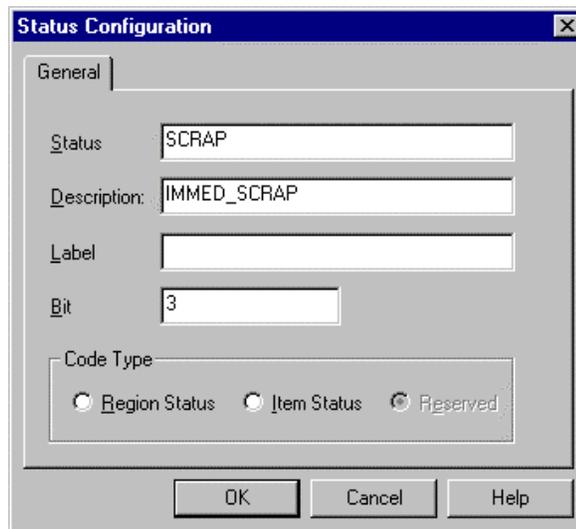
4. Enter a unique code, in the Status Code field, to identify the status of the region or item.

   The code can be no more than 16 characters.

5. Enter a brief Description for the status code.

6. Enter the label that will display for the user.

7. Enter the bit, in the Bit Set field, to be set by PRT to represent this status code.

8. Check either:

   ▪ Region Status, or

   ▪ Item Status.

9. Click **OK**.

Result: The status code configuration is added to your Tracking Model.

Option 7. Route Invalid Types

The Route Invalid Type Configuration is used to specify item types that are not valid in a particular region. Recall that when you configured your routes you had the option of validating all item types by placing an asterisk (*) in the Item Type ID field. In order to filter item types, you can configure invalid item types for a route and enable alarm generation so that operators can react promptly.

Option 7. Configure Route Invalid Types:

1. Expand the PRT folder in the Tracker Configuration left pane.

2. Expand the Advanced folder.

3. Double-click **Route Invalid Types**.

    A list box displays in the left pane.

3. Click 📄 in the right pane.

    The Route Invalid Types Configuration dialog box opens.
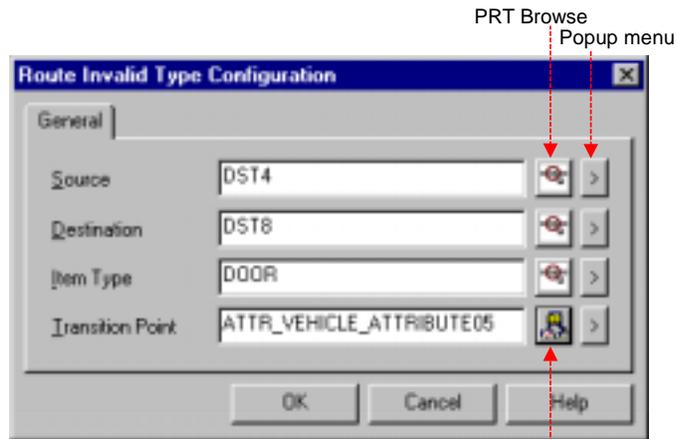
4. Enter the Source Region from which the item will exit.

5. Enter the Destination Region to which the item will travel.

6. Enter an Item Type ID that is invalid through this particular route.

7. Enter the Transition Point ID that will transition the item along the route.

8. Click **OK**.

Result: The route invalid type configuration is added to your Tracking Model.

Option 8. Region Item Associations

In order to support the parent-child association, you must identify a serialized and non-serialized item type for the region within the Tracking Model. If there will be one or more items processed in the region that do not require the parent-child association, you must identify each as a bystander using the Region Item Association dialog box.

Option 8. Configure Region Item Associations:

1. Expand the PRT folder in the Tracker Configuration left pane.

2. Expand the Advanced folder.

3. Double-click **Region Item Associations**.

    A list box displays in the left pane.

3. Click 📄 in the right pane.

    The Region Item Associations dialog box opens.
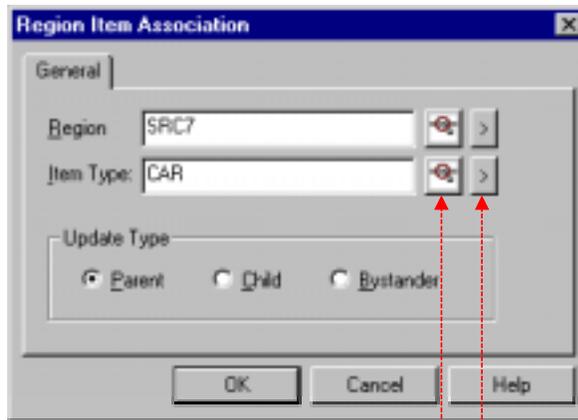
PRT Browse
Popup menu

4. Enter the Region ID in which the parent-child association must be made for tracking purposes.

    Guideline: The parent-child association involves a serialized and non-serialized item. When the two are associated in the Tracking system, they become linked through the rest of the production process. For example, if you have two items through which holes are drilled so that they can be attached and the items are separated in production for processing, applying the parent-child association ensures that they remain logically linked in the system.

5. Enter one of the following in the Item Type field:

Serialized item	Parent item in the association.
Non-Serialized item	Child item in the association.
Bystander	Item that will not participate in the parent-child association, but will go through this region to be processed.

6. Check one of the following in the Update Type group.

Check…	When the item type is…
Parent	Serialized.
Child	Non-serialized.

Bystander	Either serialized or non-serialized but is not participating in a parent-child association.

8. Click **OK**.

Result: The region item association configuration is added to your Tracking Model

Option 9. Interested Processes

In order to supply interested processes with regular updates from PRT Service, you must map the interested process to the PRT Service. An interested process receives data from PRT and is updated to provide operators and other users with runtime information. An example would be a graphical screen display, which would be "interested" in receiving data from PRT to display on screen for operators and other users.

To configure Interested Processes:

1. Expand the PRT folder in the Tracker Configuration left pane.

2. Expand the Advanced folder.

3. Double-click **Interested Processes**.

   A list box showing two pre-configured processes displays in the left pane. You may not be required to configure any other interested processes.

3. Click 📄 in the right pane.

   The Interested Processes Configuration dialog box opens.
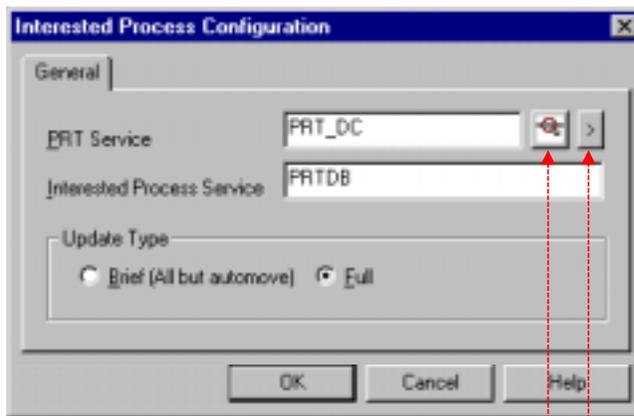
PRT Browse
Popup menu

4. Enter the service that will provide the interested process with updated information in the PRT Service field.

5. Enter the Interested Process Service in the field.

6. Check one if the following in the Update Type group.

Click…	When you want to be updated with…
Brief	all manual transactions. No automatic transactions made within Tracker will be reported.
Full	all manual and automatic transactions.

8. Click **OK**.

Result: The interested process configuration is added to your Tracking Model.

Option 10. Type Translations

Type Translations are configured when you have one or more routes with a Translation Type Code of Type Detector (internal code = 2). This means that when an item is moving along a route and is detected, the system will check the input code against the point value to determine if the item should be moved to the destination region. Translation types give you another method for maintaining control over the flow of items in your production facility.

Option 10. Configure Type Translations:

1. Expand the PRT folder in the Tracker Configuration left pane.

2. Expand the Advanced folder.

3. Double-click Type Translations.

   A list box displays in the left pane.

3. Click 📄 in the right pane.

   The PRT Type Translation Configuration dialog box opens.
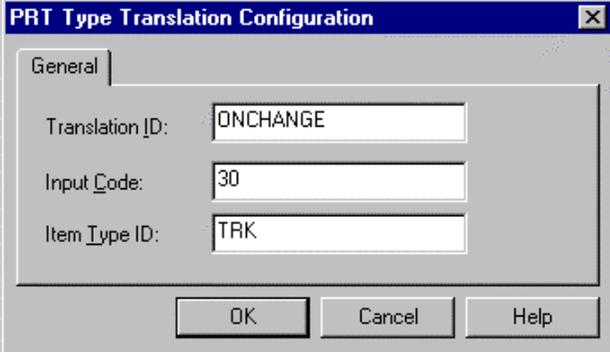
4. Enter a unique name, in the Translation ID field, for the item type translation.

5. Enter the value to be matched against the value received from the detection equipment signaling the item type in the Input Code field.

6. Enter the Item Type ID that is to be translated using the input code.

7. Click **OK**.

Result: The type translation configuration is added to your Tracking Model

Important: The PRT Type Translation Configuration is mapped to the PRT Route Configuration by the Translation ID field. The Translation ID tells PRT the record to look at when an item type is detected in the route.

Tracker Configuration Tools

Once you configure all of your Tracking data, you can perform a number of functions within the Tracker Configuration User Interface. The menu options and toolbar buttons provide you with the flexibility to work with configuration data.

You can:

- Modify Tracker configuration data.
- Use the Browse function to search for configuration data.
- Delete Tracker configuration data.
- Export Tracker configuration to a file.
- Import a Tracker configuration file.

Modifying Tracker Configuration Data

All of the Tracker configuration data is eligible for modification. If you make changes in your production facility, or you have simply made a mistake, you have the option of modifying your configuration data in its dialog box.

To modify Tracker configuration data:

Method 1 – Menu option

1. Expand the Advanced folder in the Tracker Configuration UI directory.
2. Double-click the category that requires modification.

   A list box displays in the left pane.
3. Select the item in the list to be modified.
4. Click File on the menu bar.
5. Select Rename.

Method 2 – Popup menu

1. Expand the Advanced folder in the Tracker Configuration UI directory.
2. Double-click the category that requires modification.

   A list box displays in the left pane.
3. Right-click the item in the list to be modified.
4. Select Edit from the popup menu.

Method 2 – Quickest

1. Expand the Advanced folder in the Tracker Configuration UI directory.
2. Double-click the category that requires modification.

   A list box displays in the left pane.
3. Double-click the item in the list to be modified.

Result: Using any of the above methods, the dialog box for the item will open. Make modification as needed and click OK.

Configuration Modification Guidelines

If you change the configuration of one or more of the configuration files after you have already run Tracker, you will not be able to restart the PRT User Interface until you have deleted certain files called backing files. If you do not want to lose any of your item tracking data, you must first run the Export and Import programs. This will put all of your item tracking data into an output file that can be imported back once the backing files have been deleted. If, however, you do not need to maintain item tracking data, you can simply delete the backing files.

You must delete the backing files when you have made changes to any of the following:

- PRT Region Configuration
- PRT Group Configuration
- PRT Region Group Configuration
- PRT Service Configuration
- PRT Item Type Configuration

Select from one of the following two options:

Option 1.   Save Tracking Data and Delete Files

Option 2.   Delete Files.

Option 1. Save Tracking Data and Delete Files

In order to preserve tracking data, you must first run the Export and Import programs, and then delete backing files. This will enable you to run the PRT_UI and to maintain your tracking data.

See the <u>CIMPLICITY Tracker Production Tracking Operation Manual</u> (GFK-1216) for information on the Export and Import programs.

To save tracking data and delete backing files:

1. Run the Export program to save your tracking data to an output file.
2. Open the Tracker project in the Workbench.
3. Click Tools on the menu bar.
4. Select Command Prompt.

   An MS Dos window opens.
5. On the command line type `cd log`.
6. Press **Enter**.
7. Type `del *.*prt_dc`.
8. Press **Enter**.

   Backing files are deleted.
9. Run the Import program to preserve tracking data.

Result: Tracking data is preserved, backing files are deleted and the PRT_UI can be accessed to view tracking data.

<u>**Option 2. Delete Files**</u>

If you are not concerned with preserving the tracking data, you can simply delete the backing files and immediately begin using the PRT_UI to view runtime data.

To delete backing files:

1. Open the Tracker project in the Workbench.
2. Click Tools on the menu bar.
3. Select Command Prompt.

    An MS Dos window opens.
4. On the command line type `cd log`.
5. Press **Enter**.
6. Type `del *.*prt_dc`.
7. Press **Enter**.

Result: Previous tracking data is lost, backing files are deleted and the PRT_UI can be accessed to view tracking data.

Caution: If you choose to delete the backing files without running the Export and Import programs, you will lose all of your item tracking data.

Using the Browse Function to Search for Configuration Data

Use the Browse function to search for configuration data for a specific category in the Tracker Configuration User Interface. The Browse function is available from each of the configuration dialog boxes.

To browse for configuration data:

Method 1 – Popup menu

1. In the configuration dialog box, click [>] next to the field for which you want to browse for Tracker configuration data.

2. Select Browse from the popup menu.

   A Browse list box opens.

Method 2 – Quickest

In the configuration dialog box, click [...] next to the field for which you want to browse for Tracker configuration data.

A PRT Browse opens.
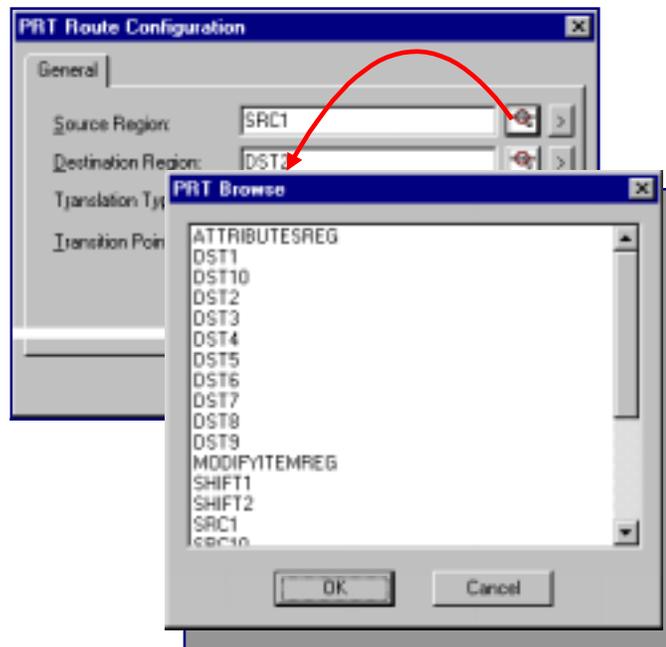
Continue from Methods 1 & 2

1. Select an item from the Browse list box.

2. Click **OK**.

Result: The ID for the selected item will display in the field, and/or the dialog box for the selected item will open.

Deleting Configuration Data

You have the option of deleting configuration data from the Tracker Configuration UI. Configuration data is not deleted until you save the configuration.

Caution: Use care when deleting configuration data. Once deleted this information is no longer available in the PRT UI.

To delete configuration data:

Method 1 – Menu option

1. Expand the Advanced folder in the Tracker Configuration UI directory.
2. Double-click the category that contains the item to be deleted.

   A list box displays in the left pane.
3. Select the item in the list to be deleted.
4. Click Edit on the menu bar.
5. Select Delete.

Method 2 – Popup menu

1. Expand the Advanced folder in the Tracker Configuration UI directory.
2. Double-click the category that contains the item to be deleted.

   A list box displays in the left pane.
3. Right-click the item in the list to be modified.
4. Select Delete from the popup menu.

Method 2 – Quickest

1. Expand the Advanced folder in the Tracker Configuration UI directory.
2. Double-click the category that contains the item to be deleted.

   A list box displays in the left pane.

3. Click ![X button].

<u>Delete a Source Region: Example</u>
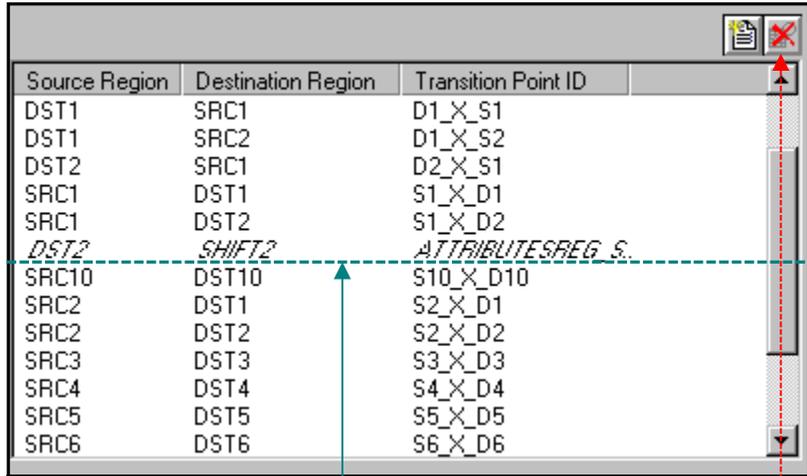
Source Region	Destination Region	Transition Point ID	
DST1	SRC1	D1_X_S1	
DST1	SRC2	D1_X_S2	
DST2	SRC1	D2_X_S1	
SRC1	DST1	S1_X_D1	
SRC1	DST2	S1_X_D2	
DST2	*SHIFT2*	*ATTRIBUTESREG_S.*	
SRC10	DST10	S10_X_D10	
SRC2	DST1	S2_X_D1	
SRC2	DST2	S2_X_D2	
SRC3	DST3	S3_X_D3	
SRC4	DST4	S4_X_D4	
SRC5	DST5	S5_X_D5	
SRC6	DST6	S6_X_D6	

Item to be deleted.

Select an item.
Click the Delete button.

Result: Using any of the above methods, the font will change for the deleted item in the list. Once you save the configuration the item is deleted from the list and the Tracking Model configuration.

Exporting Tracker Configuration to a File

You can export your Tracker configuration data to a file. This enables you to import the file to another project where you can use the configuration data. Not only does this save a tremendous amount of configuration time, but you can also import a file and modify it for another production facility that has a similar environment.

To export Tracker configuration data to a file:

Method 1 – Menu option

1.   Expand the PRT folder in the Tracker Configuration UI directory.
2.   Select the Advanced folder.
3.   Click File on the menu bar.
4.   Select Export.

     The Open dialog box opens.

Method 2 – Popup menu

1.   Expand the PRT folder in the Tracker Configuration UI directory.
2.   Right-click on the Advanced folder.
3.   Select Export from the popup menu.

     The Open dialog box opens.

Continue from Methods 1 & 2

1.   Navigate to the directory where the file is to be stored.
2.   Type a name for the file in the File name field. File must be of type .trk.
3.   Click **Open**.

Result: The Tracker configuration data is saved to a file in the specified directory.

Importing Tracker configuration to another project

You can import the Tracking configuration data from a file that has been exported from another project. You can import files of type .trk into any project that has the Tracker option.

To import a Tracker configuration file:

Method 1 – Menu option

1. Expand the PRT folder in the Tracker Configuration UI directory.
2. Select the Advanced folder.
3. Click File on the menu bar.
4. Select Import.

   The Open dialog box opens.

Method 2 – Popup menu

1. Expand the PRT folder in the Tracker Configuration UI directory.
2. Right-click on the Advanced folder.
3. Select Import from the popup menu.

   The Open dialog box opens.

Continue from Methods 1 & 2

1. Navigate to the directory where the Tracker configuration file is to stored.
2. Select the file.
3. Click **Open**.

   Result: The Tracker configuration data is imported to the project and can be viewed in the Tracker Configuration User Interface.

Running Tracker

Tracker Checklist

After you have designed your Tracking Model and configured the necessary files to run Tracker in your production facility, you are ready to execute Tracker and monitor the progress of your product.

Before you can run Tracker, you must:

- Ensure proper placement of devices at the entry and exit locations of your regions.
- Adjust your system to enable positive identification of serialized items.
- Create device and virtual points to collect the necessary data.
- Create CimView screens for display purposes.
- Perform a configuration update.

    See:

    - *CIMPLICITY Base System User's Manual, GFK-1180, for details about point configuration.*
    - *CIMPLICITY Device Communications Manual, GFK-1181, for details about setting up your devices.*
    - *CIMPLICITY CimEdit Operation Manual, GFK-1396, for details about configuring CimEdit.*

Running the Tracker Project

Once you have fine-tuned your Tracking Model and associated hardware, you can run your project.

To run your Tracker project:

1. Open the CIMPLICITY Workbench.

2. Open your project.

3. Click to perform a configuration update.

4. Click to run your project.

5. In the CIMPLICITY HMI workgroup, double-click the PRT_UI icon to open the PRT window.

Result: You can view runtime data for configured regions in the PRT Window. Also, CimView display screens will be updated with information from the Tracking Model.

Appendix A – Configuration File Guide

About the Configuration Files

This section is devoted to providing our customers with information and detailed instructions for using the Configuration Files. Before the implementation of the Tracker Configuration User Interface, the Tracking Model was configured using ASCII-text files. The need for this has been eliminated; however, for the convenience of our customers who are accustomed to editing these files, all of the information you need is included herein.

After reading this chapter, you will know how to:

- Identify the configuration files.
- Use the IDTPOP utility.
- Use the SCPOP utility.
- Edit Configuration files based on provided definitions.

Acronyms

For your reference, here is a list of acronyms that are used in this chapter.

Acronym	Meaning
ISAM	Indexed Sequential Access Method
SCPOP	System Configuration Population
ASCII	American Standard Code for Information Interchange

Identify the Configuration Files

There are several required ISAM files to configure to run your tracking model, as well as several optional files for additional functionality. Tracker primarily uses binary coded files to run PRT. You can readily identify the files you want to work with by their **prt** prefix and .**dat** or **.cfg** extension.

Guidelines for Required Configuration Files

The required configuration files *must* be configured in order to run your tracking model. Each file is described in detail below.

File Name	File Definition	Description
prt_sysdef	PRT System Definitions	Sets the queue sizes for the ports used by the Data Collector, Data Service and Application Interface subsystems. Minimum recommended size is 10 for each port.
prt_service	PRT Service Record	Identifies each PRT Service in the tracking model.
prt_intproc	PRT Interested Process/Data Provider Mapping	Enables related processes to receive updates from the tracking model. Both prt_grd and prt_stnd require this file to be configured in order to function properly.
prt_group	PRT Group	Identifies the Groups in your tracking model. Because every region must belong to a group, this file must be configured.
prt_region	PRT Region	Identifies the regions in your tracking model, their primary and secondary types and other important information.
prt_grp_reg	PRT Group Tracking Region	Ties the tracking regions to their tracking groups.
prt_item_typ	PRT Item Type	Defines the item types, classes and parent-child relationships between items.
prt_route	PRT Route	Identifies routes between regions and associations with transfer points.
prt_attributes.cfg	PRT Attribute Labels	Configures a set of attributes for all items or for items in a specific class. This is not a required file, but is recommended.

Note: All of the above files have a **.dat** extension, with the exception of the last one, which has a **.cfg** extension. Files with a .dat extension are binary; files with a .cfg extension are in text format.

Guidelines for Optional Configuration Files

The optional configuration files are not required to run a basic tracking model. However the configuration of your tracking model may require some or all of these files in order to provide you with the kind of information you want to collect. Each file is described in detail below:

File Name	File Definition	Description
prt_type_trn	PRT Item Type Translation	Translates item type codes received from detection devices into item type IDs that can be recognized by Tracker. This file must be configured when the prt_route records have a translation type value of 2
prt_inv_type	PRT Route Invalid Type	Identifies an item type(s) that is invalid for a specified route.
prt_assoc	PRT Region Item Association	Defines the item type roles for parent/child associations, of which there is one record configured for each item type.
prt_status	PRT Status Code	Determines the status bits in the track model for both regions and items.
prt_disp_pt	PRT Region Item Type Display Point	Configures the item type quantity in a region that is to be displayed through a setpoint. **Note:** Must be configured when prt_grd is configured.
prt_att_pt	PRT Region Item Attribute Display Point	Identifies the setpoint ID that will link item attributes by region. **Note:** Must be configured when prt_grd is configured.
prt_reg_at	PRT Region Attribute Counter Definitions	Indicates the counters in item attributes. This will in turn trigger the action taken when an item containing the defined attribute enters the region.
prt_stnd.cfg	PRT Standby Process	Determines the PRT data collector that the standby process will monitor.
prt_window.cfg	PRT Field Labels	Defines the column names for the PRT_UI (PRT User Interface) in place of attribute names. A default record is provided with Tracker and must be present to run the PRT_UI.

Note: All of the above files have a **.dat** extension, with the exception of the last two, which have a **.cfg** extension. Files with a .dat extension are binary; files with a .cfg extension are in text format.

Use the IDTPOP Utility

In order to edit the binary-coded configuration files, they must be converted to a format that can be edited. The IDTPOP Utility enables you to convert the binary code to ASCII format and edit using the text editor of your choice.

To convert files to ASCII format using IDTPOP:

1. From the CIMPLICITY Workbench, click Tools on the menu bar.
2. Select Command Prompt to open a DOS window.
3. On the Command line, type **cd master**.
4. Press **ENTER** to switch to the Master directory.
5. Type idtpop <filename>, e.g. **idtpop prt_region**.
6. Press **ENTER**.

Result: An indication of the number of records processed will display, and the file will be converted to ASCII text.

Project Workbench

MS DOS Window
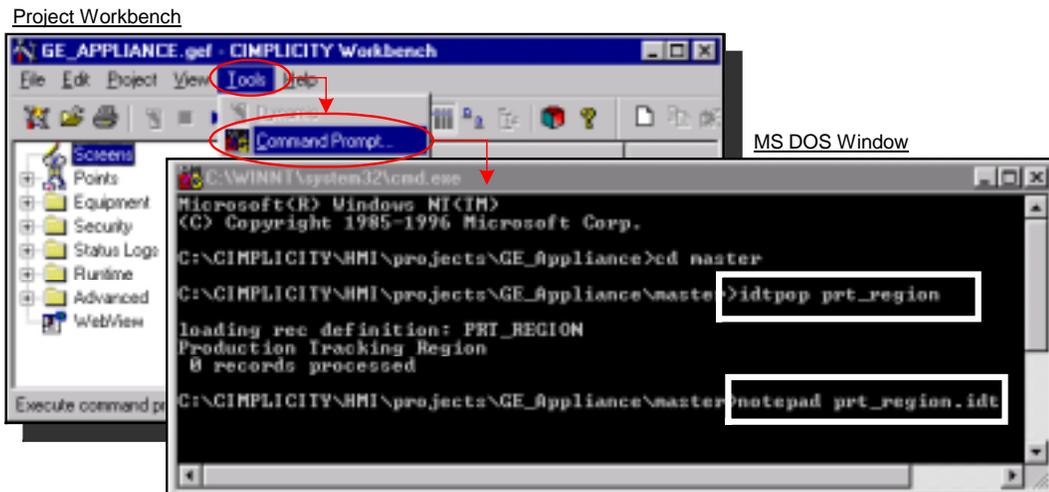
7. Type <text editor> <filename.idt>, e.g**. notepad prt_region.idt**.
8. Press **ENTER**.

Result: The text editor will open with the ASCII-text version of the file displayed.

IDT file displayed in text editor
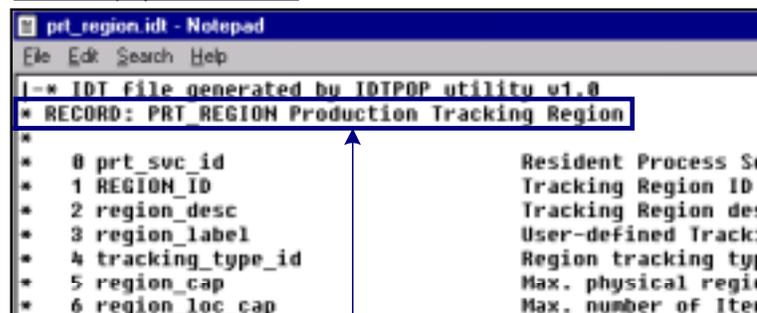
The text editor opens with the ASCII-text version of the configuration file displayed.

What You Need to Know about Configuration Files

Each configuration file has a set of reserved characters and restrictions that you must observe. Once you understand how the files are set up, you will have no trouble configuring your tracking model.

You will learn about:

- Reserved characters
- Restrictions
- Configuration file format

Reserved Characters

The first line in the **.idt** file must define three reserved characters. All other characters in the line are ignored. You may select characters other than the ones used here; however, avoid using characters that will be used in the data fields.

- The first character defines the **delimiter**. This character will be used to separate fields in the record. In the example below, the vertical bar (|) is used for a delimiter.
- The second character is used to show a **continuation** of a record. When a record exceeds the length of one line, this character is used to append the next line to the record. In the example below, the hyphen (-) is used for a continuation character.
- The third character identifies the **comment** character. When the comment character is used before text, it is not recognized as part of the record, but rather additional information for the user. In the example below, the asterisk (*) is used for a comment character.

Reserved characters: delimiter, continuation and comment.

Example of Delimiter, Continuation and Comment Characters:

IDT file in text editor

The asterisk (*) indicates that this text is comment only and not part of the record.

The vertical bars (|) delimit or separate the fields.

The hyphen (-) indicates a continuation of the record, and appends the next line to the record.

Restrictions

The following restrictions must be observed when editing the configuration files.

Delimiter	▪ All fields must be separated by a delimiter, which is the first character defined in the first line of the file.
Field length	▪ Must be less than or equal to its configured maximum.
Field Order	▪ The fields must be in the same order in the record as they appear in the input file.
Field Type	▪ Vary depending on the file being edited; enter values appropriate for the file.
Field Values	▪ Cannot exceed the specified size of the field.
	▪ Do not support embedded spaces; use underscore (_) character instead.
	Exception: Text or description fields support embedded spaces.
Fields	▪ Empty fields are supported, but must be delimited in the record.
Logical line length	▪ Must be less than or equal to 2000 characters.
	▪ Includes all continued lines in the record.
Padding	▪ Character fields are blank-padded automatically when the value is less than the field size.
	▪ Numeric fields are zero-filled automatically when the value is less than the field size.
Physical line length	▪ Must be less than or equal to 250 characters.

Configuration File Format

When the ASCII-text version of the file is viewed in a text editor, you will notice that they all have the same basic format. The example below provides a detailed look at the format of a configuration file.

Name of the record.

Reserved characters: delimiter, continuation & comment.

Comments that describe each field in sequential order in the record.

```
prt_item_typ.idt - Notepad
File  Edit  Search  Help
|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_ITEM_TYP Production Tracking Item Type
*
*    0 ITEM_TYPE_ID              Unique ID for Item Type
*    1 item_type_code            Unique code for Item Type used by PRT
*    2 item_type_desc            Item Type Description
*    3 item_tracking_type        Tracking type code (1=ser, 2=nonser)
*    4 item_class_id             Item Class Identifier
*
CAB|11||2|VEHICLE
CAR|10||2|VEHICLE
DOOR_LIMO|5||1|CARRIER
ELPO|1||1|CARRIER
GMT800_ELPO|8||1|CARRIER
GMT800_PAINT|9||1|CARRIER
HOOD_LIMO|6||1|CARRIER
PAINT|3||1|CARRIER
PARTS|4||1|VEHICLE
```

Expanded view of record.

CAB|11| |2|VEHICLE

Field 4: Item Class Identifier.

Field 3: Tracking Type Code.

Field 2: Blank.

Records with values in each field as they correspond to the above comments.

Field 1: Item Type Code.

Field 0: Item Type ID.

Configuration File Definitions

A definition is provided for each configuration file to include field name, description, data type and an entry example. Use the definitions to edit configuration files as needed for your Tracking Model.

The following configuration file definitions are covered:

- PRT_Sysdef
- PRT_Service
- PRT_Intproc
- PRT_Group
- PRT_Region
- PRT_Grp_Reg
- PRT_Item_Typ
- PRT_Route
- PRT_Type_Trn

- PRT_Inv_Type
- PRT_Assoc
- PRT_Status
- PRT_Disp_Pt
- PRT_Att_Pt
- PRT_Reg_At
- PRT_Attributes.cfg
- PRT_Stnd.cfg
- PRT_Window.cfg

PRT_SYSDEF

The PRT System Definitions (`prt_sysdef`) configuration file is used to define the queue sizes for the ports used by the Data Collector, Data Server and Application Interface subsystems. Each of the fields is described below, complete with entry examples and a sample configuration file.

REQUIRED FILE

No.	Field Name	Description	Data Type	Entry Example
0	`api_req_port`	Sets the queue size for the Application Interface's request port. This is used to receive requests for item and item hold data from the PRT data collector(s).	Integer	**10**
1	`api_sync_port`	Sets the queue size for the Application Interface's synchronous port. This is used to send requests to PRT data collector(s), and to send requests and receive responses from the PRT data server(s).	Integer	**10**
2	`api_int_port`	Sets the queue size for the Application Interface's interested process port. This is used to receive interested process updates from the PRT data server(s).	Integer	**10**
3	`dc_main_port`	Sets the queue size for the data collector's main port.	Integer	**20**
4	`ds_main_port`	Sets the queue size for the data server's main port.	Integer	**20**
5	`ds_throttle_port`	Sets the queue size for the data server's throttle port.	Integer	**20**
6	`ds_int_port`	Sets the queue size for the data server's interested process port.	Integer	**50**
7	`dc_aux_port`	Sets the queue size for the data collector's auxiliary port.	Integer	**10**

Important: GE Fanuc recommends that the ports in this record be set to a minimum value of 10.

PRT_Sysdef Configuration File Example

```
pt_sysdef.idt - Notepad                                          _ □ X
File Edit Search Help
|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_SYSDEF Production Tracking System Definitions
*
*    0 API_REQ_PORT                     q. size for app. interface request port
*    1 api_sync_port                    queue size For api synchronous port
*    2 api_int_port                     q. size for api interested process port
*    3 dc_main_port                     queue size for Data Collector main port
*    4 ds_main_port                     queue size for Data Server main port
*    5 ds_throttle_port                 queue size for Data Server throttle port
*    6 ds_int_port                      q. size for DS interested process port
*    7 dc_aux_port                      queue size for Data Collector aux port
*
10|10|100|20|20|20|50|10
```

10|10|100|20|20|20|50|10

No delimiter character after last field in record.

Expanded view of new record.

PRT_SERVICE

The PRT Service (`prt_service`) configuration file is used to identify each Production Tracking Service. Each of the fields is described below, complete with entry examples and a sample configuration file.

REQUIRED FILE

No.	Field Name	Description	Data Type	Entry Example
0	`prt_svc_id`	Specifies the PRT Data Collector Resident Process Service ID. This must be identical to the ID in `service.dat`.	32 characters	**APRT_DC**
1	`prt_search_order`	Indicates the order in which this service will be searched for information relative to other configured PRT Services.	1 byte	**1**
2	`ext_item_svc_id`	Service ID of the external process providing item tracking data.	32 characters	**Blank**
3	`ext_hold_svc_id`	Service ID of the external process providing hold information	32 characters	**Blank**
4	`det_reg_alrmid`	Alarm ID for items placed in detainment region.	32 characters	**PRT_DET_ REF_FULL**
5	`region_lock_alrmid`	Alarm ID generated when an item enters IN-LOCKED region, or exit OUT-LOCKED region via a point-based move.	32 characters	**PRT_ITM_ THRU_LCK**

No.	Field Name	Description	Data Type	Entry Example
7	`loc_cap_alrmid`	Alarm ID when the maximum number of items at a single region location / item carrier have been exceeded.	32 characters	`PRT_REF_ LOC_CAP`
8	`seq_err_alrmid`	Alarm ID when an item is out of sequence at a region exit transition indicator.	32 characters	`PRT_REG_ OOS`
9	`item_hold_alrmid`	Alarm ID when an item arrives in a tracking region and is determined to have an item-hold specification.	32 characters	`PRT_ITM_ WITH_HLD`
10	`invalid_type_ alrmid`	Alarm ID when an invalid item type is detected.	32 characters	`PRT_INVALI D_TYPE`
11	`unknown_type_ alrmid`	Alarm ID when an unknown item type is detected.	32 characters	`PRT_ UNKNOWN_ TYPE`
12	`invalid_id_alrmid`	Alarm ID when a serialized item enters a region and information cannot be retrieved for that item.	32 characters	`PRT_INVALI D_ITEM`
13	`region_not_empty_ alrmid`	Alarm ID when all items have not left a disperse tracking region and new items have arrived in the region.	32 characters	`PRT_DSP_ NOT_MPTY`
14	`Batch_queue`	NOT USED	Not used	`Blank`

PRT_Service configuration file example

2 records created for each PRT Service.

Continuation character appends next line to record.

```
APRT_DC|1| | |PRT_DET_REG_FULL|PRT_ITM_THRU_LCK|PRT_REF_CAP|PRT_REG_LOC_CAP|-
PRT_REF_OOS|PRT_ITM_WITH_HLD|PRT_INVALID_TYPE|PRT_UNKNOWN_TYPE|-
PRT_INVALID_ITEM|PRT_DSP_NOT_MPTY|
```

Expanded view of the first record.

Last field blank, no delimiter needed after.

PRT_INTPROC

The PRT Interested Process / Data Provider Mapping (**prt_intproc**) configuration file is used to map interested processes to the PRT Services. This will serve to supply the interested processes with regular updates. Each of the fields is described below, complete with entry examples and a sample configuration file.

No.	Field Name	Description	Data Type	Entry Example
0	**prt_svc_id**	Unique identifier of a PRT service that will provide interested process updates.	32 characters	**APRT_DC**
1	**intprc_svc_id**	Unique identifier of an interested process service ID.	32 characters	**PRTGRD**
2	**update_mask**	Specifies the type of updates to be supplied to the interested process. Values are 1=Full; 0=Brief	Long word	**1**

PRT_Intproc configuration file example

4 records created.

APRT_DC|PRTGRD|1

Expanded view of first record.

No delimiter character after last field in record.
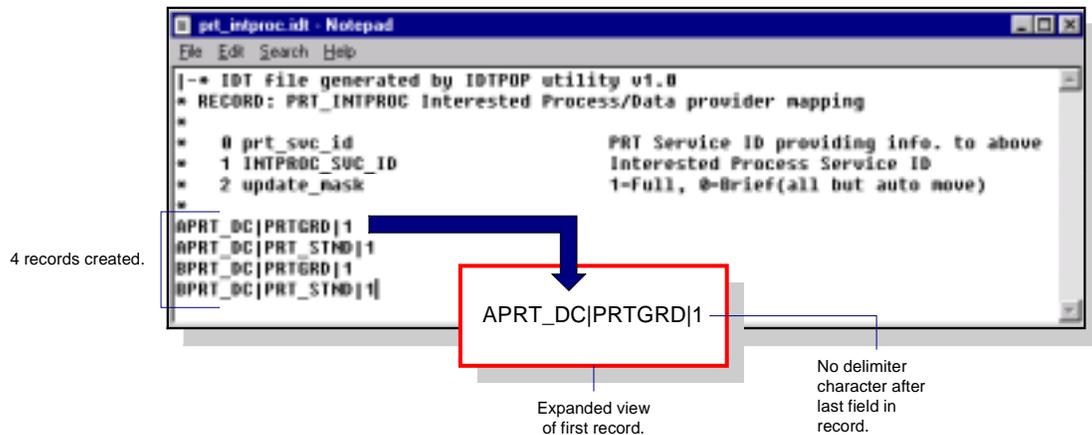
PRT_GROUP

The PRT Group (`prt_group`) configuration file is used to define each of the Tracking Groups. Every tracking region must belong to a Group. Each of the fields is described below, complete with entry examples and a sample configuration file.

REQUIRED FILE

No.	Field Name	Description	Data Type	Entry Example
0	`group_id`	Unique name for the tracking group.	16 characters	`EASTAREA_B`
1	`group_label`	Text to appear with the tracking region ID for user recognition.	16 characters	`EAST AREA B`
2	`Group_desc`	Description of the tracking group.	40 characters	`EAST AREA B Tracking`
3	`resource id`	Unique name of the resource for the group.	16 characters	`TRACKING`
4	`Log_grp_mod`	Flag for logging tracking group modifications, i.e. change of hold status on group.	One byte	`1`

PRT_Group configuration file example

5 records created.

```
|-* IDT File generated by IDTPOP utility v1.0
* RECORD: PRT_GROUP Production Tracking Group
*
*    0 GROUP_ID                    Unique ID For Tracking Group
*    1 group_label                 User-defined Tracking Group label
*    2 group_desc                  Tracking Group Description
*    3 resource_id                 Unique Resource ID For Tracking Group
*    4 log_grp_mod                 Flag For Logging Tracking Group Modifica
*
EASTAREA_B|EAST AREA B|East Area B Tracking|TRACKING|1
ENTAREA_A|ENTRY AREA A|Entry Area A Tracking|TRACKING|1
EXITAREA_E|EXIT AREA E|Pack Load Exit E Tracking|TRACKING|1
MIDAREA_C|MIDAREA C|Middle Section C Tracking|TRACKING|1
SCRAP_D|SCRAP D|Scrap Area D Tracking|TRACKING|1
```

EASTAREA_B|EAST AREA B|EAST AREA B Tracking|TRACKING|1

Expanded view of the first record.

No delimiter character after last field in record.

PRT_REGION

The PRT Region (`prt_region`) configuration file is used to define every region in the Tracking Model. Each of the fields is described below, complete with entry examples and a sample configuration file.

REQUIRED FILE

No.	Field Name	Description	Data Type	Entry Example
0	`prt_svc_id`	Specifies the PRT Data Collector Resident Process Service ID. This must be identical to the ID in `service.dat`.	32 characters	`APRT_DC`
1	`region_id`	Unique name for the tracking region.	16 characters	`ASMBLY LNE1_NOR`
2	`region_desc`	Textual description of the region.	40 characters	`Assembly Line 1 Normal Region`
3	`region_label`	Text to display with the region for user recognition.	16 characters	`AssmblyLne1 Nor`
4	`tracking_type_id`	Primary tracking region type: Pool, Sequential or Shifting.	16 characters	`SEQUENTIAL`
5	`region_cap`	Maximum number of available physical region locations.	Integer	`15`
6	`region_loc_cap`	Maximum number of items that can reside at a single region location. Be sure to include all serialized and non-serialized items.	Integer	`3`
7	`oos_cycle_count`	Number of items allowed to exit out of sequence from a tracking region.	Integer	`1`
8	`oos_error_code`	Indicates the action to be taken when an item does not arrive at the region exit transition indicator as expected. Use one of the following: ▪ **DETAIN** – Move to detainment region. ▪ **SCRAP** – Scrap (delete) item. ▪ **DLY_DTN** – Allow item to be out-of-sequence using the `oos_cycle_count` condition, then move to detainment region. ▪ **DLY_SCRP** – Allow item to be out-of-sequence using the `oos_cycle_count` condition, then scrap (delete).	8 characters	**DLY_DTN**

No.	Field Name	Description	Data Type	Entry Example
9	GEF_reserved_1	GE Fanuc Reserved.	8 characters	Blank
10	GEF_reserved_2	GE Fanuc Reserved.	8 characters	Blank
11	GEF_reserved_3	GE Fanuc Reserved.	8 characters	Blank
12	GEF_reserved_4	GE Fanuc Reserved.	8 characters	Blank
13	det_region_id	Unique name of the detainment region where items are sent when out of sequence.	16 characters	DETAINMNT _A
14	region_lockable	Enable/disable (1/0) locked region, i.e. region must be locked to make modifications or to move items into the region.	One byte	0
15	alarm_det_region	Enable/disable (1/0) alarm generation when items are moved to the detainment region.	One byte	1
16	alarm_region_not _empty	Enable/disable (1/0) alarm generation when a disperse tracking region is not empty and new items have arrived in the region.	One byte	0
17	alarm_region_lock	Enable/disable (1/0) alarm generation when an item enters an IN-LOCKED region or exits an OUT-LOCKED region.	One byte	0
18	alarm_loc_cap_excd	Enable/disable (1/0) alarm generation when the number of items at a single region location exceeds the configured maximum.	One byte	1
19	alarm_item_hold	Enable/disable (1/0) alarm generation when an item enters a region with an attribute that matches an item-hold specification.	One byte	1
20	alarm_unknown_item	Enable/disable (1/0) alarm generation when information cannot be retrieved for a serialized item.	One byte	1
21	enable_master _alarm_flag	Enable/disable (1/0) alarming for this tracking region regardless of alarming enabled elsewhere.	One byte	1
22	enable_master _log_flag	Enable/disable (1/0) logging for this tracking region regardless of logging events enabled elsewhere.	One byte	1

No.	Field Name	Description	Data Type	Entry Example
23	`log_det_region`	Enable/disable (1/0) logging when items are moved to the detainment region.	One byte	**1**
24	`log_region_not _empty`	Enable/disable (1/0) logging when a disperse tracking region is not empty and new items have arrived in the region.	One byte	**0**
25	`log_region_stat`	Enable/disable (1/0) logging when an item enters an IN-LOCKED region or exits an OUT-LOCKED region.	One byte	**0**
26	`log_loc_cap_excd`	Enable/disable (1/0) logging when the number of items at a single region location exceeds the configured maximum.	One byte	**1**
27	`log_item_hold`	Enable/disable (1/0) logging when an item enters a region with an attribute that matches an item-hold specification.	One byte	**1**
28	`log_unknown_item`	Enable/disable (1/0) logging when information cannot be retrieved for a serialized item.	One byte	**1**
29	`log_item_scrapped`	Enable/disable (1/0) logging when an item has been scrapped (deleted) from the tracking region's queue.	One byte	**1**
30	`log_item_entry`	Enable/disable (1/0) logging whenever an item is entered into queue.	One byte	**1**
31	`log_item_exit`	Enable/disable (1/0) logging whenever an item exits the tracking queue.	One byte	**1**
32	`log_item_mod`	Enable/disable (1/0) logging whenever an item's tracking data is modified.	One byte	**0**
33	`log_prod_start`	Enable/disable (1/0) logging when tracking of an item starts in this region.	One byte	**0**
34	`log_prod_stop`	Enable/disable (1/0) logging when tracking of an item stops after this region.	One byte	**0**
35	`item_qty_ptid`	Point ID that displays the total number of items contained in the region; must be of type INT or UINT.	55 characters	**ASMBLYLNE1 _TOTAL**
36	`stat_ptid`	Point ID that represents the region's status; must be of type DIUNT.	55 characters	**ASMBLYLNE1 _STAT**

No.	Field Name	Description	Data Type	Entry Example
37	`region_type`	Secondary tracking region type. Use the following codes: ▪ **1** = Normal ▪ **2** = Combine ▪ **3** = Disperse **Note:** If a Combine or Disperse region, `region_cap` field must be set to 1, and `region_loc_cap` must be greater than 1.	Integer	**1**
38	`auto_assoc_region`	Indicates if items are automatically associated in this region; must be of secondary region type Combine. Yes/No (1/0).	One byte	**0**
39	`resource_id`	Uniquely identifies the resource against which the alarm will be generated at the tracking region level. **Note:** If a resource is not designated here, the alarm will be generated against the default, "$SYSTEM."	16 characters	**OpWks_1**
40	`cfg_override`	GE Fanuc Reserved.	One byte	**Blank**
41	`alarm_oos_region`	Enable/disable (1/0) alarm generation when an "out-of-sequence" condition occurs.	One byte	**1**
42	`alarm_inval_type`	Enable/disable (1/0) alarm generation when an invalid item type enters the region.	One byte	**1**
43	`log_inval_type`	Enable/disable (1/0) logging when an invalid item type enters the region.	One byte	**1**
44	`alarm_unknown_type`	Enable/disable (1/0) alarm generation when an unknown item type enters the region.	One byte	**1**
45	`log_unknown_type`	Enable/disable (1/0) logging when an unknown item type enters the region.	One byte	**1**
46	`alarm_reg_cap`	Enable/disable (1/0) alarm generation when the region's configured capacity has been exceeded.	One byte	**0**

No.	Field Name	Description	Data Type	Entry Example
47	**log_reg_cap**	Enable/disable (1/0) logging when the region's configured capacity has been exceeded.	One byte	**0**
48	**auto_move_point**	Text Point ID that displays when an item moved into the region due to a "Point-based" move. The Point contains the item ID and optional information depending on the value of the **num_setpt_param** set in the global parameters files.	55 characters	**Blank**
49	**tran_region_id**	Indicates the transition region ID for a shifting region.	16 characters	**Blank**

PRT_Region configuration file example

2 records created.

Expanded view of the first record.

Last field blank, no delimiter needed after.

Continuation character appends next line to record.

PRT_GRP_REG

The PRT Group Tracking Region (`prt_grp_reg`) configuration file is used to tie Regions to Groups. Each of the fields is described below, complete with entry examples and a sample configuration file.

REQUIRED FILE

No.	Field Name	Description	Data Type	Entry Example
0	`group_id`	Unique name for the Group responsible for the corresponding region (see Field 1).	16 characters	`EntAreaA`
1	`region_id`	Unique name for the region in the Group.	16 characters	`AsmblyLne1`
2	`region_seq`	Sequence number of the region in this Group. Optionally, use this field to represent the physical order of the regions in a production line or in the group (used for display purposes only).	Integer	`1`

PRT_Grp_Reg configuration file example

14 Records created to tie Tracking Regions to Groups.

EntAreaA|AsmblyLne1|1

Expanded view of the first new record in the batch.

No delimiter after the last field in the record.

PRT_ITEM_TYP

The PRT Item Type (`prt_item_typ`) configuration file is used to define all of the item types that the Tracking Model is responsible for monitoring. Each of the fields is described below, complete with entry examples and a sample configuration file.

REQUIRED FILE

No.	Field Name	Description	Data Type	Entry Example
0	`item_type_id`	Unique name for the item type.	16 characters	`COMPRESS`
1	`item_type_code`	Unique code identifying the item type to be used internally by PRT.	Integer	`4`
2	`item_type_desc`	Textual description of the item type.	40 characters	`Compressor Item Type`
3	`item_tracking _type`	Code identifying the tracking type: 1 = Serialized; 2 = Non-Serialized.	One byte	`1`
4	`item_class_id`	Name of the item class to which this item type belongs. **Reminder:** Item Classes are not required but are recommended. Feel free to create one Item Class for all of your item types.	16 characters	`Refrig`

PRT_Item_Typ configuration file example

6 Records created to represent a sample of our Item Types.

Expanded view of the first new record in the batch.

No delimiter after the last field in the record.

PRT_ROUTE

The PRT Route (`prt_route`) configuration file is used to define all of the routes that exist between regions. This enables automatic transition of items based on changes in CIMPLICITY Point values. Each of the fields is described below, complete with entry examples and a sample configuration file.

REQUIRED FILE

No.	Field Name	Description	Data Type	Entry Example
0	`orig_region_id`	Name of the source region (where the item will exit).	16 characters	`ASMBLY LNE2_NOR`
1	`dest_region_id`	Name of the destination region (where the item will enter).	16 characters	`ROBOT1 _COM`
2	`item_type_id`	Unique name for the item type that may travel between the two regions. Use the wildcard character (*) to validate all item types through this route.	16 characters	`*`
3	`transition_ptid`	Point ID that represents the transition between the two regions.	55 characters	`AL2_RB1 _TRANS`
4	`set_ptid`	Point ID that will display when the item is transitioned. Must be of class, Text and should be no more than 36 characters. Data is displayed as follows: `16 characters` – Item Type ID. `20 characters` – Item ID when item type is serialized; otherwise, associated or parent item ID.	55 characters	`PRT_ OUTPUT`
5	`translation_id`	Depending on Field 6 (`translation_ type_code`), configure as follows: ■ **translation_type_code = 2:** translation to use to interpret this transition indicator. ■ **translation_type_code = 3, 4 or 5:** Up to 3 characters that will be attached as a prefix to the Point value prior to processing. This allows items with the same ID to be identified in different parts of the factory. ■ **translation_type_code = 1, 6 or 7:** NOT USED.	16 characters	`Blank`

No.	Field Name	Description	Data Type	Entry Example
6	**translation_type_ code**	Unique code to represent the tracking indicator type as follows: 1 = Limit switch 2 = Type detector (integer Point) 3 = Automatic Item ID displaying Item ID (Text Point) **4** = Automatic Item ID displaying Reference ID (Text Point) 5 = Associated Reference ID to Item (Text Point) 6 = Associated Item Type to Item (Integer Point) 7 = Positive Edge Trigger (transition occurs when value changes from zero to nonzero) 8 = Negative Edge Trigger (transition occurs when value changes from nonzero to zero)	One byte	**3**

PRT_Route configuration file example


```
prt_route.idt - Notepad
File  Edit  Search  Help
|-* IDT File generated by IDTPOP utility v1.0
* RECORD: PRT_ROUTE Production Tracking Route
*
*    0 orig_region_id           ID of region item exits
*    1 dest_region_id           ID of region item enters
*    2 item_type_id             ID of type traveling between regions
*    3 transition_ptid          ID of transition point between regions
*    4 set_ptid                 ID of point to be set on transition
*    5 translation_id           ID to interp type trans indicator
*    6 transition_type_code     transition indicator type code (1-8)
*
ASMBLYLNE2_NOR|ROBOT1_COM|*|AL2_RB1_TRANS|PRT_OUTPUT||3
ROBOT1_COM|PROCLNE1_NOR|*|RB1_PL1_TRANS|PRT_OUTPUT||3
PROCLNE1_NOR|RINSE1_NOR|*|PL1_RS1_TRANS|PRT_OUTPUT||1
```

3 records created.

ASMBLYLNE2_NOR|ROBOT1_COM|*|AL2_RB1_TRANS|PRT_OUTPUT| |3

Expanded view of the first record.

No delimiter after last field.

PRT_TYPE_TRN

The PRT Item Type Translation (**prt_type_trn**) configuration file is used to translate item type codes received from detection equipment into item type IDs. Once translated, Tracker recognizes the IDs via the PRT database. Configure this file when your **prt_route** records have a translation type code of 2. Each of the fields is described below, complete with entry examples and a sample configuration file.

OPTIONAL FILE

No.	Field Name	Description	Data Type	Entry Example
0	**translation_id**	Unique name of the item type translation.	16 characters	**NOCHANGE**
1	**input_code**	Unique code received from detection equipment signaling the item type.	Integer	**10**
2	**item_type_id**	Unique name of the item type that is to be translated using the input code from the detection equipment.	16 characters	**WSHR_ MOTOR**

PRT_Type_Trn configuration file example

3 records created.

Expanded view of the first record.

No delimiter needed after last field.
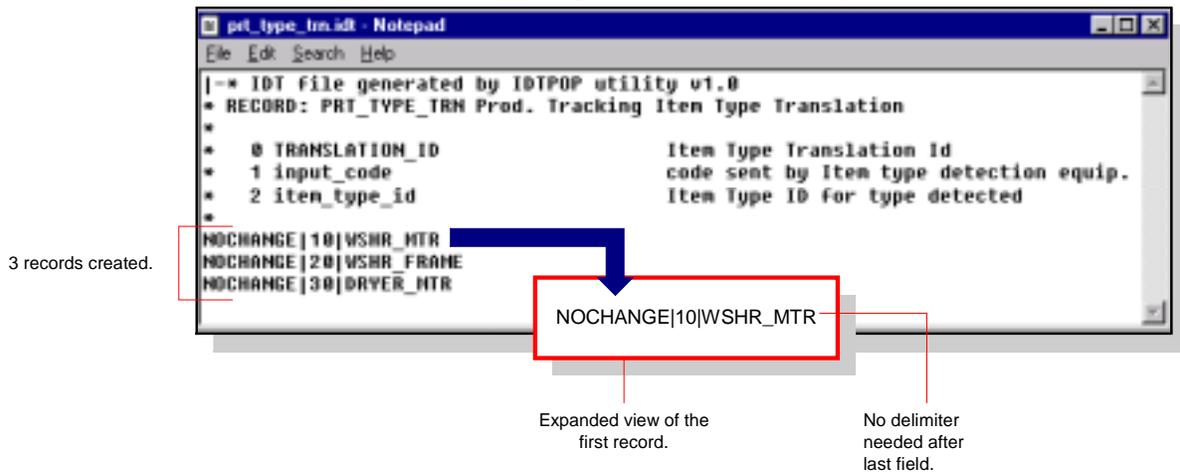
PRT_INV_TYPE

The PRT Invalid Type (`prt_inv_type`) configuration file is used to specify when a configured item type is not valid for a tracking route. Recall that you can use the wildcard character in the `prt_route` configuration file to identify the item types. When the wildcard character is used, you can use this file to eliminate the invalid item types from the route. Each of the fields is described below, complete with entry examples and a sample configuration file.

OPTIONAL FILE

No.	Field Name	Description	Data Type	Entry Example
0	`orig_region_id`	Unique name of the region from which the item type will exit.	16 characters	`PROCLNE1 _NOR`
1	`dest_region_id`	Unique name of the region where the item type may enter.	16 characters	`RINSE1_NOR`
2	`item_type_id`	Unique name of the item type that is not allowed to travel between the regions; in other words, the invalid item type.	16 characters	`WSH_MTR`
3	`transition_ptid`	Point ID that represents the transition between the two regions.	55 characters	`PL1_RS1 _TRANS`

PRT_Inv_Type configuration file example

2 records created.

Expanded view of first record.

No delimiter needed after last field.
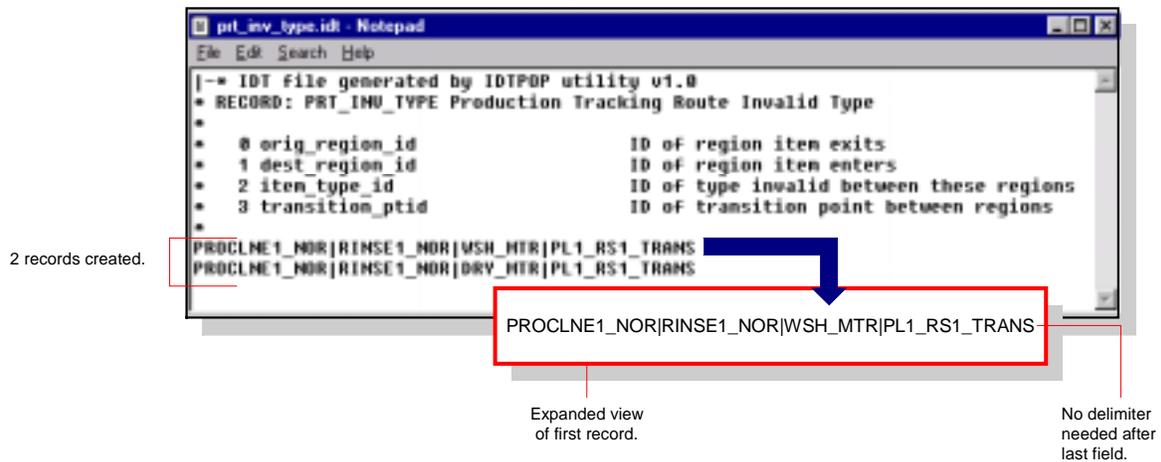
PRT_ASSOC

The PRT Item Association (`prt_assoc`) configuration file is used to define a parent-child association between a serialized and non-serialized item. Configure one record for every parent-child association to be made during production. Each of the fields is described below, complete with entry examples and a sample configuration file.

OPTIONAL FILE

No.	Field Name	Description	Data Type	Entry Example
0	`region_id`	Name of the region in which the parent-child association will take place.	16 characters	`PROCLNE2 _COM`
1	`item_type_id`	Unique name of the item type that will enter the above region (can be serialized or non-serialized).	16 characters	`WSHR_FRAME`
2	`role-code`	Code indicating the role of the item type as follows: 1 = Parent item (serialized) 2 = Child item (non-serialized item), 3 = Bystander (no association will take place)	One byte	`1`

PRT_Assoc configuration file example

3 records created.

Expanded view of the first record.

No delimter after last field.

PROCLNE2_COM|WSHR_FRAME|1
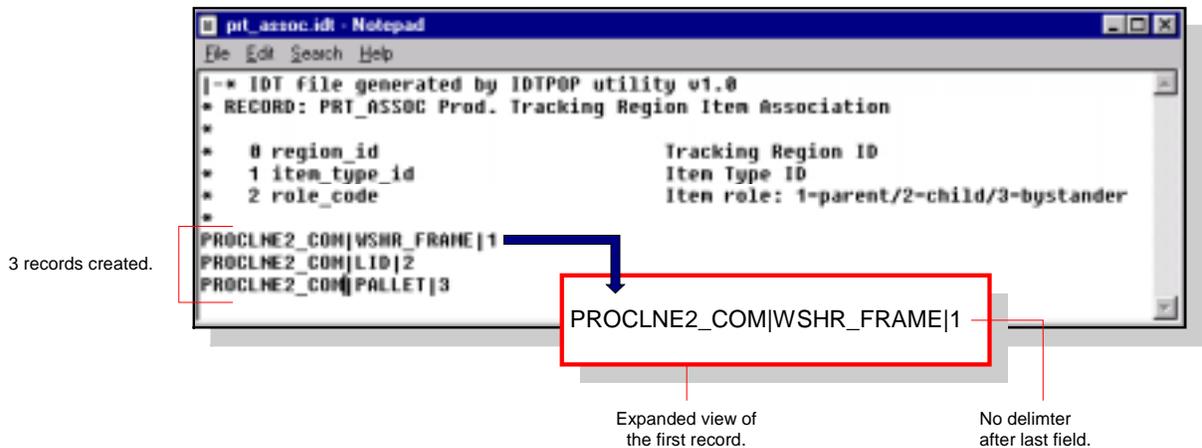
PRT_STATUS

The PRT Status (`prt_status`) configuration file is used to assign a status code for each valid region status; for example, capacity, sequential error, invalid or unknown type, etc. Similarly, a record is configured for each valid item status; for example, hold, no-hold, delayed, etc. A number of statuses have predefined records, and you may configure additional records to define other status types. Each of the fields is described below, complete with entry examples and a sample configuration file.

OPTIONAL FILE

No.	Field Name	Description	Data Type	Entry Example
0	`status_code`	Unique code to identify the status of the region or item.	8 characters	`CTRLWTRK`
1	`code_type`	Unique code representing what you are defining a status code for, as follows: 0 = Region Status Code 1 = Item Status Code 2 = Reserved	One byte	`0`
2	`code_desc`	Textual description of the status code.	40 characters	`Blank`
3	`code_label`	Text to display with the status code for user recognition. Must be unique.	16 characters	`Control w/track`
4	`bit_set`	Bit to be set by PRT that will represent this status code.	Long word	`22`

PRT_Status configuration file example

Predefined records for region and item statuses.

Expanded view of the first record.
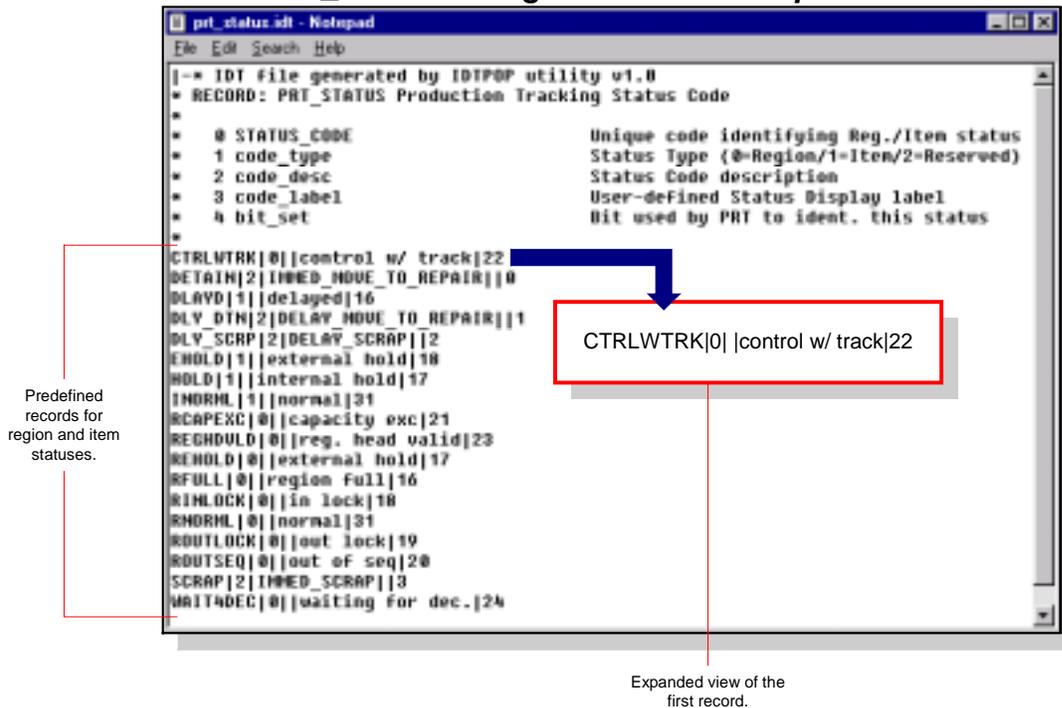
PRT_DISP_PT

The PRT Display Point (`prt_disp_pt`) configuration file is used to define the Item Type quantity in a region to be displayed through a setpoint. This file must be configured when `prt_grd` is configured. Each of the fields is described below, complete with entry examples and a sample configuration file.

OPTIONAL FILE

No.	Field Name	Description	Data Type	Entry Example
0	`region_id`	Unique name for the tracking region.	16 characters	`RINSE1_NOR`
1	`item_type_id`	Unique name for the item type.	16 characters	`WSH_FRAME`
2	`qty_ptid`	Unique name for the setpoint to display the item type quantity in the region.	55 characters	`R1_CTQ`

PRT_Disp_Pt configuration file example

2 records created.

RINSE1_NOR|WSH_FRAME|R1_CTQ

Expanded view of the first record.

No delimiter needed after last field.
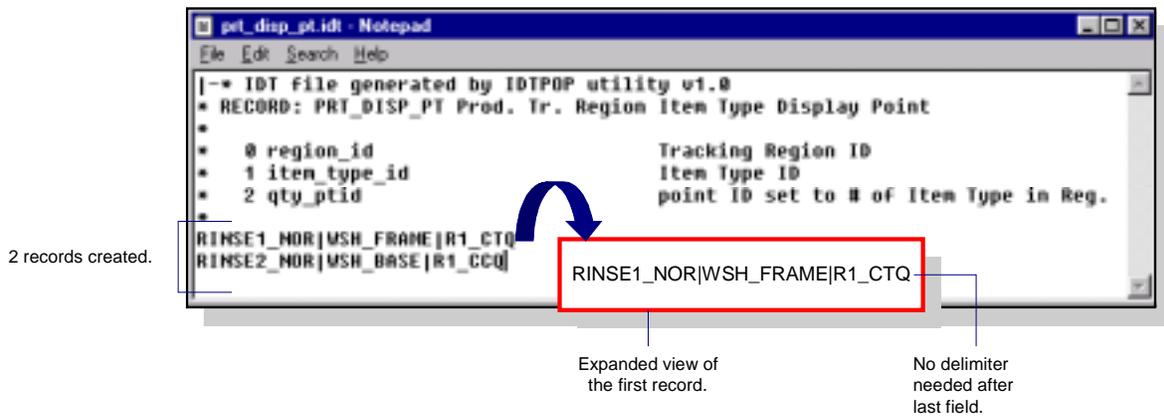
PRT_ATT_PT

The PRT Region Item Attribute Display Point (**prt_att_pt**) configuration file is used to define the setpoint ID that will hold the value for an item attribute in a region location. This file must be configured when **prt_grd** is configured. Each of the fields is described below, complete with entry examples and a sample configuration file.

OPTIONAL FILE

No.	Field Name	Description	Data Type	Entry Example
0	gd_service_id	Unique name of the Process Service ID.	32 characters	PRTGRD
1	region_id	Unique name for the region.	16 characters	OVEN1
2	item_att_name	Textual description of the item attribute, as follows: PRT_ITEM_ID PRT_REFERENCE_ID PRT_ITEM_TYPE_ID PRT_ITEM_STATUS PRT_ASSOC_ITEM **Note:** When using **prt_item_status** in this field, the values in **att_start_loc** and **att_end_loc** must both be 0.	16 characters	ITEM_ID
3	display_ptid	Unique name of the array point. The definition of the point depends on the **item_att_name** field, as follows: **PRT_ITEM_ID** – Point class must be Text; Point type must define a text size of at least 20. **PRT_REFERENCE_ID** – Point class must be Text; Point type must define a text size of at least 20. **PRT_ITEM_TYPE_ID** – Point class must be Text; Point type must define a text size of at least 20. **PRT_ITEM_STATUS** – Point class must be Analog; Point type must be ANALOG_U32. **PRT_ASSOC** – Point class must be Text; Point type must define a text size of at least 20. **User defined** – Point class must be Text. The number of region locations covered by the Point determines the number of elements needed. Use this formula to calculate the number of elements: $(end\_loc) - (start\_loc) + 1$	55 characters	OVEN1_ INDEX

No.	Field Name	Description	Data Type	Entry Example
4	start_loc	First location in the region covered by this Point. If this value is '-2', then the Point displays data from the last \<n\> items in the region, where \<n\> is the number of elements in the Point.	Integer	1
5	end_loc	Last location in the region covered by this Point. Due to a restriction on Point size, one Point may not be able to cover an entire region; in which case, the region must be broken into subsets. Each subset as defined by a starting and ending location, is covered by a single Point.	Integer	25
6	att_start_loc	First location in the attribute to parse when setting value of display_ptid. The default value is 0. *See Note.*	Integer	0
7	att_end_loc	Last location in the attribute to parse when setting value of display_ptid. The default value is 0. *See Note.*	Integer	0
8	item_class_id	Name of the item class that can provide values for this Point. If a class is not specified, any item type will provide data. If more than one item matches the item filtering, the value of the Point is indeterminate.	16 characters	DRYER

Note: The value of (att_end_loc – att_start_loc + 1) can be no greater than the data length of display_ptid.

When using the default value (0) in either the att_end_loc or the att_start_loc field, the entire attribute will be transferred to display_ptid and no parsing will take place.

PRT_Att_Pt configuration file example

```
pt_att_pt.idt - Notepad
File  Edit  Search  Help

|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_ATT_PT Pr. Tr. Region Item Attr. Display Point
*
*    0 GD_SERVICE_ID                 Unique ID for Graphic Display process
*    1 region_id                     Tracking Region ID
*    2 item_att_name                 Item Attribute Name
*    3 display_ptid                  Array Point ID for displaying attributes
*    4 start_loc                     First location covered by this point
*    5 end_loc                       Last location covered by this point
*    6 att_start_loc                 First location in the point for this att
*    7 att_end_loc                   Last location in the point for this attr
*    8 item_class_id                 Item Class Identifier
*
PRTGRD|OVEN1|ITEM_ID|OVEN1_INDEX|1|25|0|0|DRYER
PRTGRD|PACKING1|ITEM_ID|PACKING1_INDEX|1|100|0|0|  ||
```

2 records created.

PRTGRD|OVEN1|ITEM_ID|OVEN1_INDEX|1|25|0|0|DRYER

Expanded view of
the first record.

No delimiter needed
after last field.

PRT_REG_AT

The PRT Region Attribute Counter Definitions (`prt_reg_at`) configuration file is used to define counters in item attributes. This will in turn trigger the action taken when an item containing the defined attribute enters the region. Each of the fields is described below, complete with entry examples and a sample configuration file.

OPTIONAL FILE

No.	Field Name	Description	Data Type	Entry Example
0	region	Name of the region where the operation will take place	16 characters	OVEN1
1	reserved_fld	GE Fanuc Reserved.	16 characters	Blank
2	att_name	Name of the attribute containing the counter.	16 characters	ITEM_COUNT
3	start_byte	Index of the first character of the count within the attribute, i.e. 1-16. A value of 0 indicates use of the entire attribute.	Long word	0
4	end_byte	Index of the last character of the count within the attribute, i.e. 1-16.	Long word	3
5	op_code	Operation type code that is to impact the counter, as follows: I = Increment D = Decrease P = Preset	One character	I
6	alarm_value	Enter the value that will generate an alarm based on the **op_code** field, as follows: I (Increment) = over value will generate alarm. D (Decrease) = under value will generate alarm. P (Preset) = value is equal to the preset value.	Long word	4

PRT_Reg_At configuration file example

```
prt_reg_at.idt - Notepad
File  Edit  Search  Help

|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_REG_AT Attributes of PRT regions
*
*    0 REGION                          PRT Region
*    1 reserved_fld                    GEFanuc RESERVED
*    2 att_name                        Attribute Value
*    3 start_byte                      Start byte of counter
*    4 end_byte                        End byte of counter
*    5 op_code                         I(INC), D(DEC), P(SET)
*    6 alarm_value                     Alarm Value or preset value
*
OVEN1|  |ITEM_COUNT|0|3|I|4
QUALCK1|  |ITEM_COUNT|0|5|P|0
```

2 records created.

OVEN1| |ITEM_COUNT|0|3|I|4

Expanded view of
the first record.

No delimiter needed
after last field .

PRT_ATTRIBUTES.CFG

The PRT Attribute Labels (`prt_attributes.cfg`) configuration file is used to assign attributes to your items. Attributes can be assigned to all item types or can be assigned to a specific item class. When assigning attributes to an item class, use the keyword ITEMCLASS. For each PRT Service that you have designated in your Tracking Model, you will need a separate configuration file named for the Service.

This file can be viewed and edited without the IDTPOP Utility. Simply type **notepad prt_attributes.cfg** (where **Notepad** is the text editor) on the Command line in the MSDos prompt window. This file is not required to configure your Tracking Model, but is recommended in order to gather comprehensive data on the items tracked through production.

OPTIONAL FILE

To assign attributes:

1. Assign Attributes for all items as follows:

    Type attributes that you want to assign for all of your items in a single record. Be sure to use the delimiter character to separate attributes.

2. Assign Attributes for an item class(es) as follows:

    A. Start a new record.
    B. Type the keyword ITEMCLASS.
    C. Type the delimiter character.
    D. Type the name of the Item Class.
    E. Press **ENTER**.
    F. Type the attributes that you want to assign for the Item Class in a single record. Be sure to use the delimiter character to separate attributes.

3. Once you have assigned attributes for your items, click File on the menu bar, and proceed as follows:

Do…	When…
▪ Select Save.	The PRT_UI is configured to view all PRT Services.
▪ Select Save As. ▪ In the File Name field, type **aprt_attributes .cfg** (where **aprt** is the name of the PRT Service). ▪ Click **Save**.	The PRT_UI is configured to view a specific service.

4. Close the text editor.

PRT_Attributes.cfg configuration file example

Expanded view of first record. **All items** will have these attributes.

```
prt_attributes.cfg - Notepad

File  Edit  Search  Help

|-*
*
* List all attribute names in a single record (separated by a '|')
*
ID#|SERIAL#
*
ITEMCLASS|REFRIG
COLOR,WHITE|MODEL,7525|STYLE,TOP
*
ITEMCLASS|DRYER
COLOR,BISCUIT|MODEL,8325|STYLE,SIDE_DOOR
*
ITEMCLASS|WSHR
COLOR,WHITE|MODEL,9625|STYLE,TOP
```

ID#|SERIAL#

Keyword **ITEMCLASS** assigns attributes to the named Item Class.

ITEMCLASS|WSHR
COLOR,WHITE|MODEL,9625|STYLE,TOP

Expanded view of the fourth record. These attributes apply to the **Wshr Item Class** only.

PRT_STND.CFG

The PRT Standby Process (`prt_stnd.cfg`) configuration file is used to assign a PRT Server to the PRT Standby Process. The PRT Standby Process will produce a PRT import file in the local log directory that contains all the contents of the PRT Server when contact was lost. This file is not provided with Tracker and must be manually configured. Proceed as directed.

OPTIONAL FILE

To configure the prt_stnd.cfg file:

1. From the CIMPLICITY Workbench, click Tools on the menu bar.

2. Select Command Prompt to open a DOS window.

3. On the Command Line type **cd master**.

4. Press **ENTER** to switch to the Master directory.

5. Type **notepad prt_stnd.cfg** (where **Notepad** is the text editor).

6. Press **ENTER** (a message box will display).

7. Click **Yes** in the message box.

   Result: A blank file will display in Notepad called prt_stnd.cfg.
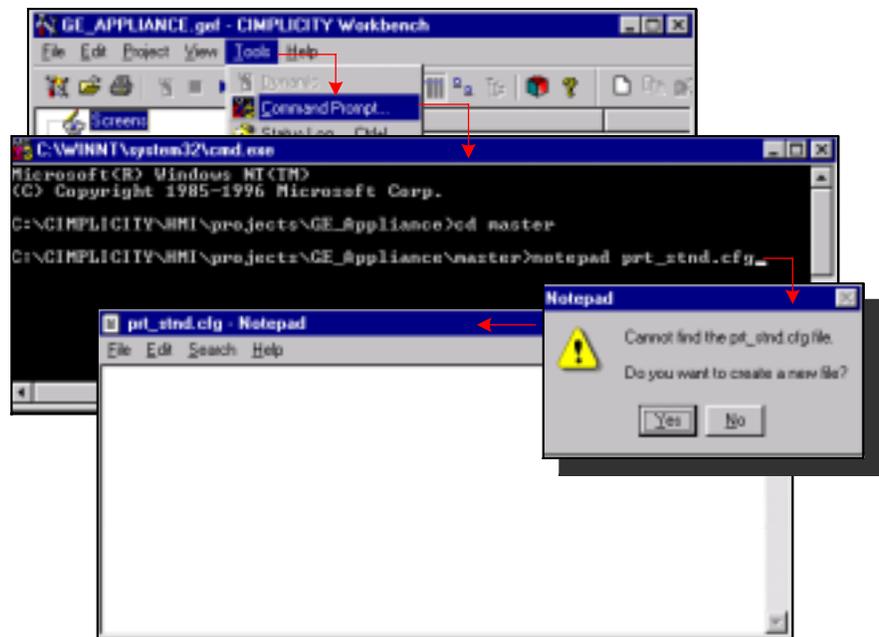
8. On the first line in Notepad, type the reserved characters, i.e. delimiter, continuation and comment (| - *).

9. Press **ENTER** to go to the next line.

10. Type *** RECORD: PRT_STND.CFG.**

11. Press **ENTER**.

12. Type ***** and press **ENTER**.

13. Create your record using the field descriptions as follows—see the Configuration File Example.

No.	Field Name	Description	Data Type	Entry Example
0	server_name	Base name for the PRT Server that the standby process will support.	16 characters	PRT
1	project_name	Name of the project that contains the PRT Server.	32 characters	GE_APP_TKR
2	reconnect_time	The time in seconds between the failure of the PRT Server and the attempt to reconnect.	Integer	30
3	resource_name	Resource name that will be used by the standy process to generate alarms.	16 characters	$SYSTEM

14. Click File on the menu bar.

15. Select Save.

Result: The prt_stnd.cfg file is manually configured and saved to the Master directory.

PRT_Stand.cfg configuration file example

The reserved characters must be defined as part of the file.

1 record created.

PRT|GE_APP_TKR|30|$SYSTEM

Expanded view of the record.

No delimiter needed after last field.
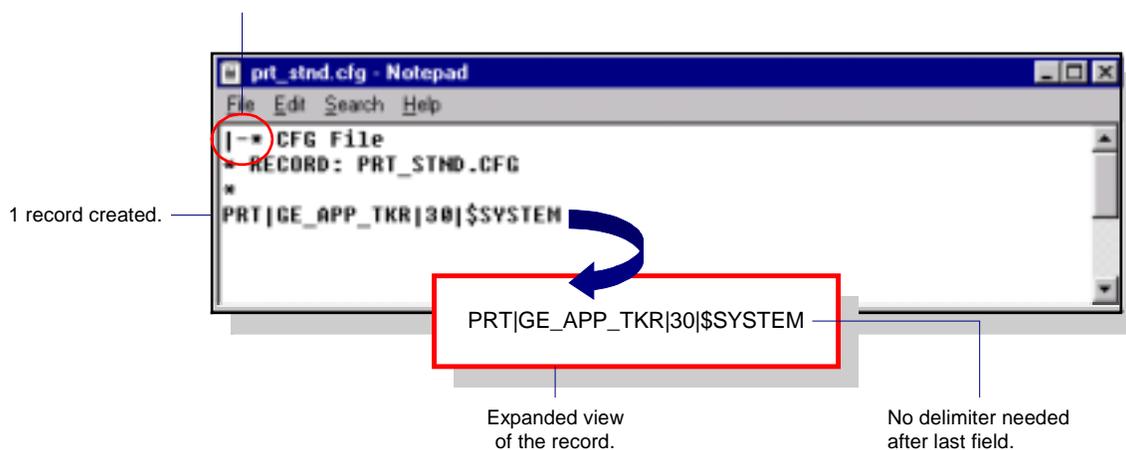
PRT_WINDOW.CFG

The PRT Window (Field Labels) (`prt_window.cfg`) configuration file is used to customize the columns and their order in the PRT User Interface (PRT_UI). This file has a DEFAULT record already configured. If you want to rearrange or limit the information on screen, you can do so by View or by Region. This feature comes in handy for printing reports and for customizing a screen to display only the information needed by a technician.

Further, this file can be used to configure different views for each of your designated PRT Services, or views to run across all PRT Services.

OPTIONAL FILE

A View record:

- Is common to all regions.
- Specifies what information displays.
- Arranges information in the display.
- Customizes labels (column headings).
- Uses the keyword DEFAULT in the first line.

A Region View record:

- Impacts a specific region.
- Specifies what information displays.
- Arranges information in the display.
- Customizes labels (column headings).
- Overrides other views.
- Uses the keyword REGION in the first line.

To configure the prt_window.cfg file:

1. From the CIMPLICITY Workbench, click Tools on the menu bar.

2. Select Command Prompt to open a DOS window.

3. On the Command Line type **cd master**.

4. Press **ENTER** to switch to the Master directory.

5. Type **notepad prt_window.cfg** (where **Notepad** is the text editor).

6. Press **ENTER**.

   The default record for prt_window.cfg will display in the text editor— see figure.

7. Do one or the other:

   Method 1

   A. To create a common view for all of your regions, type DEFAULT.

   B. Type the delimiter, e.g. |.

   C. Type a name for the view, e.g. VIEW1.

   Method 2

   A. To create a view for a specific region, type REGION.

   B. Type the delimiter, e.g. |.

   C. Type the name of the region, e.g. ROBOT1.

8. Press **ENTER**.

9. Create your record(s) using the field descriptions as follows:

No.	Field Name	Description	Data Type
0	**field_type**	Code defining the field type as follows: 0 = Internal 1 = Attribute 2 = Status	One character
1	**prt_field**	PRT field for which the modified label will be used. Use the following keywords: **PRT_ASSOC_ITEM** **PRT_EXT_HOLD** **PRT_GROUP_ID** **PRT_INT_HOLD** **PRT_ITEM_ID** **PRT_ITEM_CLASS_ID** **PRT_ITEM_TYPE** **PRT_REFERENCE_ID** **PRT_REGION_ID**	16 characters
2	**prt_label**	Label or column head to be alternately used in the PRT window. Recommend title case for alternate labels.	16 characters
3	**field_size**	Width of the field by number of characters.	Integer

10. Once you have created all of your views, click File on the menu bar, and proceed as follows:

Do…	When…
▪ Select Save.	The PRT_UI is configured to view all PRT Services.
▪ Select Save As.	The PRT_UI is configured to view a specific service.
▪ In the File Name field, type **aprt_window.cfg** (where **aprt** is the name of the PRT Service).	
▪ Click **Save**.	

11. Close the text editor.

Result: The records created in the prt_window.cfg file will impact the type and arrangement of the information displayed in the PRT window by PRT Service, by common view and by region.

PRT_Window configuration file example

Default view already configured.

Common view record created.

Region view record created.

DEFAULT|VIEW1
0|PRT_ITEM_TYPE|Type of Item|12
0|PRT_REFERENCE_ID|Reference|6
0|PRT_GROUP|Group ID|12

Expanded view of the Common view record. This view can be selected in the PRT window in the View drop-down list.

REGION|ROBOT1
0|PRT_ITEM_ID|Appliance ID|12
0|PRT_ITEM_TYPE|Applicance Type|12

Expanded view of the Region view record. This view will impact the ROBOT1 region only.

PRT Client – Routing Items across Project Boundaries

The PRT Client application allows Tracking items to be routed across project boundaries, in the same manner in which items are routed between regions within the same project. In order to facilitate routing across project boundaries, you must configure both the **PRT_ROUTE** and **PRT_INV_TYPE** configuration files. The **dest_region_id** field must fully qualify (spell out) the project and region name, and be less than 16 characters in keeping with the standard for the field. Note that the PRT Client process will ignore the record if the **dest_region_id** field is not fully qualified.

A sample of the configuration needed to run the PRT Client process is detailed using both the **PRT_ROUTE** and **PRT_INV_TYPE** configuration files.

See "Tracking Route – PRT_ROUTE" and "Tracking Route Invalid Type – PRT_INV_TYPE" sections for further details on the fields in these configuration files.

PRT_Route Configuration for PRT Client

PRT_ROUTE Configured to run PRT Client Process

```
prt_route.idt - Notepad
File  Edit  Search  Help

|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_ROUTE Production Tracking Route
*
*    0 orig_region_id          ID of region item exits
*    1 dest_region_id          ID of region item enters
*    2 item_type_id            ID of type traveling between regions
*    3 transition_ptid         ID of transition point between regions
*    4 set_ptid                ID of point to be set on transition
*    5 translation_id          ID to interp type trans indicator
*    6 transition_type_code    transition indicator type code (1-8)
*
REG1|\\PROJ\RTE_TST1|ELPO|ASSOC_REFID_TRANSPT|SETPOINT| |5|
```

REG1|\\\PROJ\RTE_TST1|ELPO|ASSOC_REFID_TRANSPT|SETPOINT| |5

a.   b.   c.   d.   e. f. g.

PRT_ROUTE Configured to run PRT Client Process

```
prt_route.idt - Notepad
File  Edit  Search  Help

|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_ROUTE Production Tracking Route
*
*    0 orig_region_id          ID of region item exits
*    1 dest_region_id          ID of region item enters
*    2 item_type_id            ID of type traveling between regions
*    3 transition_ptid         ID of transition point between regions
*    4 set_ptid                ID of point to be set on transition
*    5 translation_id          ID to interp type trans indicator
*    6 transition_type_code    transition indicator type code (1-8)
*
REG1|\\PROJ\RTE_TST1|ELPO|ASSOC_REFID_TRANSPT|SETPOINT| |5|
```

REG1|\\\PROJ\RTE_TST1|ELPO|ASSOC_REFID_TRANSPT|SETPOINT| |5

a.   b.   c.   d.   e. f. g.

Field Desciptions

A. Source region from which the item will exit.

B. Fully qualified path to the project and destination region to which the item will enter.

C. Item type ID that will be traveling this route; can be left blank if numerous types will be traveling this route.

D. Transition Point ID between the two regions.

E. Point ID to be set when items transition from the source region to the destination region.

F. Translation ID to interpret the type transition indicator; field left blank in example.

G. Transition type code *(see "Tracking Route – PRT_ROUTE" for details)*.

PRT_Inv_Type Configuration for PRT Client

PRT_INV_TYPE Configured to run PRT Client Process


```
prt_inv_type.idt - Notepad
File Edit Search Help
|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_INV_TYPE Production Tracking Route Invalid Type
*
*    0 orig_region_id          ID of region item exits
*    1 dest_region_id          ID of region item enters
*    2 item_type_id            ID of type invalid between these regions
*    3 transition_ptid         ID of transition point between regions

REG1|\\PROJ1\RTE_TST1|GMT800_ELPO|ASSOC_REFID_TRANSPT
```

REG1|\\PROJ1\RTE_TST1|GMT800_ELPO|ASSOC_REFID_TRANSPT

     a.   **b.**   **c.**   **d.**

PRT_INV_TYPE Configured to run PRT Client Process


```
prt_inv_type.idt - Notepad
File Edit Search Help
|-* IDT file generated by IDTPOP utility v1.0
* RECORD: PRT_INV_TYPE Production Tracking Route Invalid Type
*
*    0 orig_region_id          ID of region item exits
x    1 dest_region_id          ID of region item enters
*    2 item_type_id            ID of type invalid between these regions
*    3 transition_ptid         ID of transition point between regions
*
REG1|\\PROJ1\RTE_TST1|GMT800_ELPO|ASSOC_REFID_TRANSPT
```

REG1|\\PROJ1\RTE_TST1|GMT800_ELPO|ASSOC_REFID_TRANSPT

     a.   **b.**   **c.**   **d.**

Field Desciptions

A. Source region from which the item will exit.

B. Fully qualified path to the project and destination region to which the item will enter.

C. Item type ID that is not allowed to travel this route, or the invalid item type ID. Note that if you left this field blank or used the wildcard character in the **PRT_Route** record, you may need more than one record to indentify the invalid item types.

D. Transition Point ID between the two regions.

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