Infor CloudSuite Industrial APS Configuration Guide

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About This Guide

This document provides a detailed guide to configuring APS by describing the fields in the Planning Parameters and APS Order Priority forms. This description includes referencing other parameters on other forms that are related to the fields on these forms. Other forms referenced in this document are Resources, Resource Groups, Items, Customer Orders, Current Materials, and Job Materials. In addition, a few parameters not available on Infor CloudSuite forms are described in this document. This document is not meant to describe all facets of APS, only those considered configuration fields. A discussion of the definition of each field is provided, along with the default setting with rationale for those defaults when appropriate. When a different default value is recommended for APS vs. Infinite APS, it is noted. There are only three parameters that fall into that category: Use Scheduled Times in Planning , Plan Materials At Operation Start, and Supply Usage Tolerance. In each case, the default is the Infinite APS value and you must manually change the value for the APS case.

Intended audience

This information is intended for advanced APS users.

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Chapter 1: Overview

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Advanced Planning System

The Advanced Planning System (APS) generates real-time projections of when you can complete orders by comparing all demands (such as customer orders) against a long-term plan. The system views the current status of inventory levels, forecasts, job schedules, PO due dates, customer orders, etc. and creates planned orders accordingly to satisfy the demands. You then "firm" the planned orders into purchase orders, purchase requisitions, job orders, production schedules, or transfer orders.

The long-term plan includes information such as:

- Demand orders that consume inventory and resource capacity.
- Supply orders that add to inventory.
- Each operation in the plan.
- Each item in the plan.
- The projected completion date for every planned order.
- Each resource allocated to a job.
- Scheduled operations (for work orders in which the resource usage is frozen).
- Every lateness cause for every demand in the plan.

Below is a discussion of infinite vs. finite resources and their affect on planning, the details of pull and push planning, and a description of the steps required to setup APS, with Step 2 being to Specify the Planning Parameters. That step is the focus of the remainder of the document, describing how to configure APS to obtain the maximum benefit from the system.

Infinite APS vs. APS Planning

You can run the planning system in Infinite APS mode or APS mode. The difference between these modes of planning is in the resource capacity the system considers when generating a plan. Infinite APS assumes infinite resource capacity, while APS constrains the plan realistically based on availability of resources.

- APS mode considers whether the crew and machines are on-shift and not busy working on another demand. In APS, resources are capable of working on a limited number of tasks while on shift. In APS mode, the Get CTP button is available on various forms such as Customer Order Lines and Job Orders.
- Infinite APS mode uses the sum of the Move, Queue, Setup, Run, and Finish times defined for the operations and assumes the resources are capable of working on an unlimited number of tasks while on shift. In Infinite APS mode, the Get ATP button is available rather than the Get CTP button. APS mode also uses Move, Setup, Run and Finish times but not Queue time.

About Infinite Resource Capacity

A resource (whether a crew person, machine, or fixture) with infinite capacity can work on an unlimited number of operations at the same time. The Infinite APS mode of planning assumes all resources to have infinite capacity always (when the resource is on a working shift).

In APS mode, resources have finite capacity (they can work on a limited number of operations). However, in some situations, you may want to designate particular resources as infinite.

You can specify that resources have infinite capacity in these multiples:

- All resources
- All resources in a resource group
- Single resource

Note: These values override the Infinite Resource Capacity After setting (defined globally on the APS Mode form or for a resource group on the Resource Groups form). For example, if the resource is an Infinite Planning resource, and is a member of a resource group that has Infinite Capacity After 999 hours, this resource is considered infinite.

All Resources

All resources in all resource groups have infinite capacity during all Infinite APS and APS planning activities when:

- The APS Mode is set to Infinite APS (see “Infinite APS vs. APS Planning” on page 11 for more information). All resources have infinite capacity while they are on a working shift.
- The Infinite Resource Capacity After field is in effect at the global level, set on the APS Mode form. This parameter applies only to APS (it is always in effect when the APS Mode is Infinite APS). Following are the details for setting this field.

To set the Infinite Resource Capacity After field:

1 Enter the number of hours after which the resource can work on an infinite number of operations simultaneously (while on a working shift period, and within the Plan Horizon, which is set on the Planning Parameters form). For example, if you enter 4, the resource has infinite capacity beginning four hours after the Planning run is started.

2 On the APS Mode form, you can define this value globally, for all resources.

3 Set the parameter to 0 to make the resource infinite -- that is, after zero hours -- over the entire Plan Horizon (see “Planning Window: Plan Horizon” on page 48 for more information). The default setting is 999999, which indicates the resource always has finite capacity.

You can change this field only when the planning mode is APS.

All Resources in a Resource Group

For APS planning you can specify that all resources in a particular resource group have infinite capacity.

Set the Infinite Resource Capacity After field that appears on the Resource Groups form. This resource group-level parameter overrides the same parameter defined on the APS Mode form. If the parameter on the APS Mode form is set to 4 hours, and on the Resource Group it is set to 2 hours, all resources in that resource group are infinite after 2 hours.

In Infinite APS mode, this field is disabled and set to 0 hours (that is, resources are always infinite). In APS mode, this field defaults to 999999 hours, and you can change it to another value if desired.

Single Resource

For APS planning, you can specify that a single resource has infinite capacity by selecting the Infinite Planning field on the Resources form. This value overrides the Infinite Resource Capacity After setting. For example, if the resource is an Infinite Planning resource, and is a member of a resource group that has Infinite Capacity After 999 hours, this resource is considered infinite even if 999 hours have not elapsed.

Pull and Push Planning

The APS planning process employs a strategy where the orders are all ranked by Order Priority (see “Order Priority” on page 95 for more information) and processed one-by-one through the algorithm. The system will pull plan the order first. As the order is being “pulled” through time, if the order crosses the “Current Time” threshold, the pull stops and a push pass ensues. After the push, the order is then pulled from the projected date to remove slack.

About Pull Planning

Pull planning is the process APS uses to backward plan a demand from its need date. Starting with the last operation in the end item's routing, the system searches for available supplies (such as purchase orders), inventory, and/or resources to complete the demand on time. The pull-planning process follows this sequence:

Note: These steps do not reflect every decision and assumption APS makes. These steps are intended to convey the general pull-planning process.

1 Search backward from the demand's due date to allocate planned supplies of the end item. If sufficient planned supplies are available to satisfy the demand quantity, the planning is complete.

2 For any unsatisfied demand quantity, search backward from the due date to allocate on-hand inventory. If sufficient inventory is on hand to satisfy the demand, the planning is complete.

Note: When APS allocates inventory to a demand, it considers the combined total of all inventory at all warehouses (at a given site) in which the Dedicated Inventory option is *not* selected.

3 If the previous two backward searches do not satisfy the demand quantity, search forward from the demand's due date plus the time defined by the Supply Usage Tolerance value (see “Supply Usage Tolerance” on page 44 for more information). In this situation, where the system must allocate planned supplies within tolerance, it allocates as much of these tolerance supplies as possible before allocating earlier, non-tolerance supplies or on-hand inventory.

4 For any unsatisfied demand quantity, create a planned order. See “Planned Order Creation” on page 16 for more information.

5 If, at any level of the BOM, the system cannot plan the operation with enough time remaining to plan all remaining previous operations, the pull-planning fails and the system instead push plans the entire demand.

6 If the item has a value specified in the Order Minimum field on the Items form, and the planned order quantity (the quantity the system plans to make or purchase) will satisfy the entire demand quantity, the system frees the supply and inventory already allocated.

About the Time Fence

If the item being planned has a Time Fence defined, the pull-planning process includes additional steps. See “How APS Planning Uses Time Fence” on page 62 for more information.

About Push Planning

If the system cannot find enough on-hand inventory, planned supplies, or resource capacity to pull plan, a demand within the time between the due date and the current date, it instead push plans the demand forward from the current date. The system push plans a demand according to this sequence:

1 Calculate the end-item quantity needed. Allocate on-hand inventory to satisfy the end-item demand quantity.

Note: When APS allocates inventory to a demand, it considers the combined total of all inventory at all warehouses (at a given site) in which the Dedicated Inventory option is *not* selected.

2 Pass any remaining end-item demand quantity to the component materials, down to the lowest levels in the bill of material. Allocate on-hand inventory to satisfy the demand quantity of the components.

3 Plan the component materials in the lowest levels of the bill of material. This step consists of planning steps in the routing for manufactured components or moving out to the lead time for purchased components. For manufactured components, each operation in the component's

routing is planned in forward sequence (starting with the first operation). The system checks several resource combinations to find the combination that can finish the work the fastest; the number of combinations to check is specified in the Push Iterations (see “Push Iterations” on page 69 for more information) planning parameter. The result is the component material's earliest-possible completion date, which sets the start date of its parent end-item's first operation.

4 Search for available planned supplies, starting with the current date and searching out to the date calculated in the previous step. Allocate supplies only if the entire demand quantity can be satisfied.

5 When forward planning is finished, the end-item completion date becomes the demand's Projected date.

6 The system may plan non-critical operations earlier than they are actually needed to meet the demand. To optimize the plan, the system runs a series of additional pull-planning iterations starting from the demand's new projected date.

   a Pull plan starting from the projected completion date. If this plan fails (that is, if it projects a start date in the past), the system then pull plans the demand from the end of the Plan Horizon (see “Planning Window: Plan Horizon” on page 48 for more information).

   b Incrementally pull plan between the projected completion date from the above push plan (or between the need date and the Plan Horizon, if the above push failed) and the demand's need date to find a feasible plan that is within Pull Tolerance (see “Planning Pull Tolerance (Days)” on page 60 and “ATP/CTP Pull Tolerance (Days)” on page 59 for more information) days of the optimal projected date. For example, the first iteration pulls from the midpoint between the projected date and the need date. If that pull plan succeeds, the next iteration pulls from the midpoint between that new projected date and the need date. The process incrementally moves closer to the need date until it finds a plan that doesn't calculate a start date in the past, and that has a projected completion date that is within the Pull Tolerance days of being the optimal date.

Note: If the system is unable to push plan a demand in the time between the current date and the end of the Plan Horizon, the demand is displayed as "blocked" on the planning output forms and reports and cannot be planned.

Stop After Push

To support “Why Late?” Analysis, Infor CloudSuite provides the APS Push Pass Setting form. This new form allows the user to designate select orders to stop after the push pass, so that the final Pull Pass will not be performed during planning. Sometimes this provides a clearer picture of how an order was planned and those items that are on the critical path, therefore contributing to the lateness of an order.

Planned Order Creation

The type of item determines how the planned order is created.

Infinite Items

The system plans the demand at the request date and assumes it to be satisfied. If the Infinite field is selected on the Items record, the item is not constrained by resource capacity or lead time, and is assumed to be available immediately.

Purchased Items

The system checks the item's lead time to determine whether you can obtain the item by the due date. If so, the system creates a planned purchase order and planning is complete.

Manufactured Items

Manufactured items are planned differently depending on whether the item has a routing and whether the Planning Mode is Infinite APS or APS:

Does item have a routing?	Infinite APS Behavior	APS Behavior
Yes	Infinite APS pull plans the operations through the item's routing, starting with the end item's last operation. It determines the operation start dates by summing the Move, Queue, Setup, Run, and Finish times defined for the operations and assumes infinite resource capacity. After pull-planning the item through its routing, Infinite APS pull-plans the item's components. The setting of the Plan Materials at Operation Start field (see "Plan Materials at Operation Start" on page 35 for more information) determines how the system sets the need date of a component requirement; if the parameter is selected, the need date of a component is the start date of the operation in which it is needed. If the parameter is cleared, the need date is the start date of the job.	APS plans the operations in the same manner as Infinite APS in almost all respects. The difference is that APS considers the finite availability of your resources. APS checks several combinations of resources to find the fastest combination. The Pull Iterations planning parameter determines how many combinations to check. This planning method is much more realistic in that the system does not over-promise an order during a period when there are actually no available resources to complete the order.
No	Infinite APS calculates the lead time for the end item. To determine the start date, Infinite APS plans backward, starting at the due date, to the lead time value. Resources have infinite capacity.	No difference from Infinite APS. When APS plans an item that does not have a routing, the item is treated as if the MRP Item option (on the Items record) has been selected for that item.

Transferred Items

APS Planning creates planned transfer orders, which must be firmed into actual transfer orders using the Planning Detail or Material Planner Workbench form. There are two ways transferred items are planned depending on the Global Planning Mode (see "Global Planning Mode" on page 79 for more information).

Global Planning

If Global Planning is selected, during global APS Planning, or during any incremental planning activity, if an item requires a component that is supplied by another site (that is, an "inter-site" transfer), the system plans transfer orders as follows:

1 Contact the supply site that produces the remote item (based on the Supply Site field on the item record).

2 Plan the item in a test copy of the supply site's planner database (also considering the transit time value defined on Inter-Site Parameters).

3 Plan the component in the supply site's production planner database and create a planned transfer demand order.

4 Create a corresponding planned transfer supply order at the site requiring the remote component.

Note: Due dates on planned transfer orders include transit time.

If APS Planning is unable to contact the supply site (due to the site's planner database being down, network problems, etc.), it uses the item's lead time and the transit time defined on Inter-Site Parameters to determine the projected availability of any remote components.

Transfer orders can automatically generate additional remote orders, depending on the component's requirements. For example, if site A needs a component that is produced at site B, and the component at site B requires a component produced at site C, the APS Planning plans the demand transfer order at site C automatically.

Note: The system does not globally plan intra-site transfers (that is, items where the Supply Site is set to the local site).

Once a transfer supply order is generated by a demand order, no other demand order can use inventory created by the transfer supply order. However, any excess inventory generated due to minimum lot sizes remains available at the supply site for other demands to allocate.

Multiple Site Planning

If Multiple Site Planning is selected, or if the supply site is not defined on the Planning Parameters: Sites form, set up replication rules to allow the supply site to see any demands coming from the site that initiated APS Planning. Whenever the APS planner encounters this situation a Transfer Order Demand is generated at the requesting Site and a corresponding Transfer Order Supply is sent to the supplying Site via Replication. See “Setting Up Planned Transfer Order Replication” on page 19 for more information.

Initial APS Setup Steps

Your system administrator or installation consultant may have already performed these initial setup steps. In some cases, these steps must be repeated periodically. See the *Infor CloudSuite Industrial Installation Guide* for more details.

1 Use the Planner Manager to start the planner Database Manager and create at least one planner database. To start the Planner Manager, select **Start>Programs>Infor>Planner Manager**. For instructions regarding creation of planner databases, see the Infor CloudSuite Industrial Installation Guide.

2 Specify the planning parameters for your APS system. Perform these steps:

   a Enter a Site record for the local site, with Alternative of 0 (required if you will be using APS or the Scheduler).

   b Enter a Site record for each of your supply (remote) sites, with Alternative of 0, that provide component parts to this site (required if you will be running APS Global Planning in either Global Planning or Multiple Site Planning mode).

   c Enter the above Site records for each Alternative number that you wish to execute.

   d Define options located on the General, APS, and Advanced APS tabs.

3 If you are not using global planning, to replicate transfer orders to your supply sites, set up transfer order replication. If you are using Multiple Site Global planning, or Global Planning, but some sites are not participating in global planning runs, set up transfer order replication for those sites. See “Setting Up Planned Transfer Order Replication” on page 19 for more information.

Planner Databases

Planner dataqbases are used by the APS Planning functions. The APS Planning activity and the Get ATP/CTP function run against a planner database. Planner databases reside in the server's memory, allowing the planning calculations to run faster. The application database updates the planner database automatically. You will have a separate planner database for each alternative (if you are using the Analyzer, you may have multiple alternatives).

Note: The planner database must be running before you can perform the Get ATP/CTP function or run the APS Planning activity. For information about creating and starting planner databases, see the Infor CloudSuite Industrial Installation Guide.

Setting Up Planned Transfer Order Replication

The APS system generates planned transfer supply orders (PLNs) for any components provided by remote supply sites. The due date on these PLNs will be based on each item's lead time and transit time. To generate the corresponding planned transfer demand, or TPLN, at the supply site (that is, for the supply site to "see" this demand), you must set up the system to replicate the planned transfer order to the supply site. How to set up the transfer order replication is shown below.

About the Replication Category

The Planning category is already set up for you on the Replication Categories form. You do not need to change the settings.

Defining Replication Rules for Transfer Orders

You must define the receiving site, supply site, and update frequency parameters for replicating the transfer orders. Follow these steps:

1 Navigate to the **Replication Rules** form.

2 Select **Actions>Filter>Cancel in Place**.

3 Select **Actions>New**.

4 In the **Source Site** field, select the ID of the receiving site (the site where the demand originates).

5 In the **To Site** field, select the ID of the supply site that produces the component. This should be the same site defined as the Supply Site on the item record. The planned transfer order will be replicated at this site.

6 In the **Category** field, select **Planning**.

7 In the **Interval Type** field, select the interval at which you want the transfer orders to be replicated to the target site.

8 See the help topics for the remaining fields on this form for additional options.

9 Select **Actions>Save** to save the record.

10 Repeat these steps to create replication rule records for every Source-Target site combination in which you want transfer orders to be replicated.

Note: Multiple planned transfer demands are consolidated before being replicated to the supply site.

Note: At the supply site, the planned transfer demand is incrementally planned as soon as it arrives (automatically). However, the resulting projected date for the order is not replicated back to the receiving site that generated the demand. At the receiving site, when you firm the planned transfer supply order into an actual transfer order, the system replicates that transfer order to the supply site and deletes the planned transfer demand (TPLN). Replication always keeps supply and demand transfer orders synchronized (but it does not do this for planned transfer orders).

Note: The due date on a planned transfer order reflects transit time.

Note: When running APS in “Global Planning” mode, DO NOT enable planning replication.

Compatibility of MRP and APS Sites

Sites running MRP Planning can replicate transfer orders to sites running APS Planning. Sites running APS Planning (in single-site mode or in Multiple Site Global Planning mode) can replicate transfer orders to sites running MRP Planning. However, sites running APS Planning in Global Planning mode cannot replicate transfer orders to MRP sites.

Chapter 2: Planning Parameters - General

2

The Planning Parameters form is used to enable features and options used throughout the APS planning function. Changing these parameters does not affect the plan until you run APS Planning. Parameters on the General tab are those associated with both APS and MRP planning.

Use Customer Order or Forecast

This option determines whether the system uses forecasts and/or customer orders to create independent requirements. Select one of the following options:

- Both - The system plans both customer orders and forecasts. Forecasts are planned using the Outstanding Requirement value as the demand quantity. Forecasts are shown as being consumed by customer orders on output forms and reports.
- CO - The system plans customer orders but does not plan forecasts.
- Forecast - The system plans forecasts but does not plan customer orders. The output forms and reports do not show the forecasts being allocated to customer orders. When this option is selected, the system uses the forecast's Original Quantity as the demand quantity instead of the Outstanding Requirement.

Default: Both

Forecast Look Ahead

The parameter lets you set the number of days into the future to look for forecasts to be consumed by customer orders during a run of APS Planning. When a customer order is entered in Order Entry, the system begins at the customer order item due date and looks this number of manufacturing days into the future for forecast orders to be consumed by the customer order.

Note: The system uses the Forecast Look Ahead field on the Planning Parameters form only if this same field is not entered on the Product Codes. See “Forecasting Overview” on page 22 for a description of how this parameter affects the planning of forecasts.

Caution: If the Use CO or Forecast parameter is set to Both, and you change either this parameter or the Forecast Look Behind parameter values, the system may reevaluate forecast consumption for all items, and this process may take a long time.

Default: None, Dependent upon business practices

Forecast Look Behind

The parameter lets you set the number of days into the past to look for forecasts to be consumed by customer orders during a run of APS Planning. When a customer order is entered in Order Entry, the system looks this number of manufacturing days into the past (earlier than the customer line item due date) for forecast orders to be consumed by the customer order.

Note: The system uses the Forecast Look Behind field on the Planning Parameters form only if this same field is not entered on the Product Codes form. Set this parameter only as large as you need it; setting it too large has a tendency to carry forecast demand deep into the forecast period even when the likelihood of the orders coming in so late in the period is diminishing. See “Forecasting Overview” on page 22 for a description of how this parameter affects the planning of forecasts.

Caution: If the Use CO or Forecast parameter is set to Both, and you change either this parameter or the Look Ahead parameter values, the system may reevaluate forecast consumption for all items, and this process may take a long time.

Default: None, Dependent upon business practices

Forecasting Overview

Forecasting requires you to project the future requirements for an item based on your past usages of the item, sales predictions, etc. This topic describes how APS plans forecasts as independent requirements and how existing demands, such as customer orders, consume the forecasts.

Creating a Forecast

You create a forecast for a given item on the Forecast form. Enter the Original Quantity to specify the quantity you are forecasting a need for (the "demand quantity"). Enter the Forecast Date to represent the due date of the forecast.

How Forecasts are Planned

When you initially create the forecast, the value in the Outstanding Requirement field equals the value in the Original Quantity field. Existing demands (such as customer orders entered before you run the APS Planning activity) consume the forecast quantity from this Original Quantity value. The Outstanding Requirements value reflects the remaining forecast quantity that will drive independent requirements for APS planning. See “How Existing Demands Consume the Forecast” on page 24 for details about which demands can consume the forecast quantity.

APS plans forecasts according to this process:

1. Plans the forecast before or after planning other demands according to your APS Order Priority (see “Order Priority” on page 95 for more information).
2. Allocates any available on-hand inventory and planned supplies within Supply Usage Tolerance (see “Supply Usage Tolerance” on page 44 for more information), further reducing the forecast quantity to be planned. Keep in mind that other demands such as customer orders will probably have priority over forecasts for using on-hand inventory and planned supplies, depending on how your order priorities are set.
3. Explodes, as required, the net requirement from the planned order through the BOM for this demanded quantity of the item.
4. Generates planned orders at all levels needed to satisfy the remaining forecast quantity. The forecasted item's planned order's Projected Date indicates the availability date of the forecast supply.

New incoming demands can use this forecast's supply only after the planning run is complete, when you incrementally plan them during a save or Get ATP/CTP process.

Note: If a demand consumes a forecast, any subsequent Get ATP/CTP process you perform on that demand will consider this consumption of forecasted supply in the calculation of the Projected date.

EXAMPLE:

- On-hand inventory: 150
- Forecast-XYZ Original Quantity: 200
- Priority for customer orders on the APS Order Priority form is set so the system plans customer orders before it plans forecasts.

Enter a customer order for a quantity of 120. The customer order consumes the forecast, assuming the customer order is due within the Forecast Look Behind/Ahead window (see “Forecast Look Ahead” on page 21 and “Forecast Look Behind” on page 22 for more information). The forecast's Outstanding Requirement is reduced to 80.

You then run APS Planning. The system first plans the customer order demand. It allocates the on-hand inventory to the customer order, satisfying the order and leaving a remainder of 30 on hand. Then the system plans the forecast demand. It allocates the remaining 30 from inventory and generates a planned order for 50 to satisfy the remaining forecast demand.

How Existing Demands Consume the Forecast

The Forecast Look Behind (see “Forecast Look Behind” on page 22 for more information) and Forecast Look Ahead (see “Forecast Look Ahead” on page 21 for more information) parameters specified on the Product Codes form and/or on the Planning Parameters form set up a time window within which existing customer orders and other demands can consume a forecast. The system uses this window when searching for a forecast to place a customer order against. The search for a forecast works as follows:

1. The system tries to locate a forecast for the same date as the demand's due date. The system ignores old forecasts if the Forecast Date is more working days into the past than the current date + the Forecast Look Behind value.
2. If a forecast matching the demand's due date does not exist or is already consumed (an Outstanding Requirement equal to zero), the system starts at the demand's due date minus Forecast Look Behind and searches for a forecast up to the demand's due date plus Forecast Look Ahead.
3. If the system finds a matching forecast, it checks whether the forecast is already consumed. If the forecast has been consumed, the system locates the next valid forecast.
4. If the demand quantity is greater than the Outstanding Requirement, the system sets the Outstanding Requirement to zero, and applies the remaining demand quantity to the next valid forecast. If the system does not find a valid forecast, the demand does not consume any forecasts.

EXAMPLE:

For this example, assume these conditions:

Forecast Look Ahead: 7

Forecast Look Behind: 4

Forecasts for:
50, due 10/1
60, due 10/5
50, due 10/9
50, due 10/13

Customer orders (COs) for:
20, due 9/20
20, due 9/25
10, due 10/2
15, due 10/5
30, due 10/15
25, due 10/17

- For the CO on 9/20: there is no forecast for 9/20, so searching starts from 9/16 through 9/27. No forecast is found, so this CO does not consume a forecast.
- For the CO on 9/25: there is no forecast for 9/25, so searching starts from 9/21 through 10/2. There is a forecast for 10/1. The system subtracts 20 from Outstanding Requirement, leaving 30.

- For the CO on 10/5: there is a forecast for 10/5. The system subtracts 15 from Outstanding Requirement, leaving 45.
- For the CO on 10/15: there is no forecast for 10/15, so searching starts from 10/11 through 10/22. There is a forecast for 10/13. The system subtracts 30 from its Outstanding Requirement, leaving 20.
- For the CO on 10/17: there is no forecast for 10/17, so searching starts from 10/13 through 10/24. There is a forecast for 10/13. The system subtracts only 20 from the Outstanding Requirement because that is all that remains. The remaining five are subtracted from the next available forecast.

Note: If forecasts appear at multiple levels in a bill of material, a forecast for a parent material cannot consume the supply from the forecast for a child material (unless the child forecast generates excess quantity because of an “Order Minimum” specification on the Items form (see “Items - Order Minimum” on page 25 for more information) in which case the excess quantity can be used).

Items - Order Minimum

Enter the minimum amount of this item to produce. When the system creates a planned order for this item, it is for a quantity no less than the amount in this field. The system uses the Order Minimum in conjunction with the Order Multiple (see “Items - Order Multiple” on page 25 for more information) value. If the demand quantity is less than the order minimum, the system creates the planned order for the order minimum value. If the order minimum value is less than the demand quantity, the system adds order multiples to the order minimum value until the planned order quantity is greater than or equal to the demand quantity.

Items - Order Multiple

Enter the multiple in which quantities of this item should be planned. The system uses the Order Multiple in conjunction with the Order Minimum value (see “Items - Order Minimum” on page 25 for more information). If the demand quantity is less than the order minimum, the system creates the planned order for the order minimum value. If the order minimum value is less than the demand quantity, the system adds order multiples to the order minimum value until the planned order quantity is greater than or equal to the demand quantity.

Note: Other demands can use any leftover quantities created by Order Minimum/Order Multiple calculations.

Items - Order Maximum

Enter the maximum amount of this manufactured end item to build. When planning the end item, the system breaks the item quantity into multiple loads of the maximum size specified in this parameter. For example, if the item's Order Maximum is 50, and an order for 100 is entered, the system plans

two demands, each with a quantity of 50. If you are not using planned order consolidation (see “Planned Orders Consolidation: Manufactured Items” on page 53 and “Planned Orders Consolidation: Purchased/Transferred Items” on page 56 for more information), the system creates two planned orders, each for 50. Applying an Order Maximum value to an item allows you to load a demand across many resources to improve efficiency and speed.

The last load will contain the remainder of the original quantity, adjusted by any Order Minimum (see “Items - Order Minimum” on page 25 for more information) or Order Multiple (see “Items - Order Multiple” on page 25 for more information) calculations. For example, if the Order Maximum value is 1000, and the order is for a quantity of 100,002, the system plans the order as if it were for 100 line items of 1000 items each and one line item of 2 items.

The system applies Order Maximum before allocating planned supplies or on-hand inventory, and before applying the Shrink Factor (see “Items - Shrink Factor” on page 37 for more information), Order Minimum, and Order Multiple. If Order Maximum is less than the Order Minimum value, Order Maximum is ignored.

Reschedule Tolerances: PO - In/Out

Note: The values entered in these field are overridden by the values set in the Product Codes form. To retain the values that are set on this form, leave the field blank for these values on the Product Codes form.

In the In field, enter the number of days earlier than the current due date that the purchase order needs to be rescheduled before the system generates the Cross Reference Special Receipt: Reschedule 99/99/99 exception message.

In the Out field, enter the number of days later than the current due date the purchase order needs to be rescheduled before the system generates the Cross Reference Special Receipt: Reschedule 99/99/99 exception message.

Default: In/Out: None, Dependent upon business practices

Reschedule Tolerances: Job - In/Out

Note: The values entered in these field are overridden by the values set in the Product Codes form. To retain the values that are set on this form, leave the field blank for these values on the Product Codes form.

In the In field, enter the number of days earlier than the current due date that the job needs to be rescheduled before the system generates the Cross Reference Special Receipt: Reschedule 99/99/99 exception message.

In the Out field, enter the number of days later than the current due date the job needs to be rescheduled before the system generates the Cross Reference Special Receipt: Reschedule 99/99/99 exception message.

Default: In/Out: None, Dependent upon business practices

Number of Buckets for Report

The parameter maintains the number of buckets to display when directing output to a printer or file when printing the Planning Summary or Master Planning Reports.

Default: None, Dependent upon business practices

Fences: 30 Day Bucket Fence

Enter the number of days into the future that the system begins consolidating requirements into planned orders in 30-day buckets. Prior to the time fence, multiple requirements are consolidated into a single planned order, based on the Days Supply field on the Items form. After the time fence, the system looks 30 calendar days into the future, searching for requirements to include when consolidating the planned order quantity.

If the Days Supply field on the Items form for a given item is larger than 30 days, the Days Supply value is used instead of the 30-day bucket fence.

Leaving the 30 Day Bucket Fence field blank disables this feature.

Note: Consolidation of higher-level requirements into a single-planned order outside of this time fence will consolidate the resulting bill of material requirements of the planned order. This can ripple down the bill of material and affect lower-level requirements within their order lead time. Therefore, cumulative lead time should be considered when establishing this time fence (see “Consolidating Planned Orders” on page 53 for more information).

See “Consolidating Planned Orders” on page 53 for more information.

Default: None, Dependent upon business practices

Fences: 90 Day Bucket Fence

The field is identical to the 30 Day Bucket Fence field with the following exception: the system looks 90 days into the future when searching for requirements to consolidate. Typically, you will define this field with a larger value than the 30 Day Time Fence field; therefore, the system gives this field priority over the 30 Day Time Fence field.

See “Consolidating Planned Orders” on page 53 for more information.

Default: None, Dependent upon business practices

Fences: MPS Plan Fence

Enter the number of calendar days into the future (starting from today) that the MPS Processor can automatically create and maintain MPS receipts based on the outstanding demands for an item. This value is used when the MPS Processor is run.

When processing an MPS item, the system first determines which MPS Plan Fence setting to use, starting with the MPS Plan Fence defined on the Items record, then the Family Code level, and finally the Planning Parameters. At any point in this validation process, once the system determines an MPS Plan Fence value, it uses that setting for the item regardless of other settings defined at a higher level.

When the system processes receipts and demands that are due prior to the current date + the MPS Plan Fence, it generates exception messages as necessary. For example, it generates the exception "Add MPS Order" if there are more requirements than quantity on-hand + receipts. For requirements due after the current date + the MPS Plan Fence, the system automatically creates MPS receipts for the item to cover any unsatisfied demand quantities.

If the MPS Plan Fence is blank, the processor generates exception messages as needed.

On the Master Production Schedule form, the MPS Plan Fence displays from the Family Code, Items, or Planning Parameters form, depending on where the system obtained the value.

Default: Blank

Minimum Hours in Work Day

Enter the minimum number of hours in a work day. This number is used in calculating the internal manufacturing day (MDAY) calendar. The MDAY calendar is a list of valid manufacturing days between the MDAY Start and MDAY End date, using the default DSC scheduling shift (see discussion below) and Holiday definitions to generate the list. A manufacturing day is defined as those days set up in the MDAY Start and End range, greater than or equal to the hours in this field.

Example

if Minimum Hours in Work Day is set to 8 hours, and the total hours in the DSC scheduling shift for Monday is 7.5, Monday is not considered a valid manufacturing day.

Caution: If the Minimum Hours in Work Day field is updated, the system must recalculate all the days in the MDAY calendar. This process takes place when you save changes to the Planning Parameters.

The system also converts Fixed, Paper Work, and Dock-to-Stock lead times from days to calendar hours by multiplying them by the Minimum Hours in Work Day value.

Default: 8 hours

Scheduling Shifts form

Use this form to define the daily working hours. Each shift record spans a single week.

Each resource can reference a shift defined on this form. Multiple resources may reference the same shift record. For example, you can define a shift that contains five days, with each day starting at 8:00 a.m. and ending at 5:00 p.m., for your 1st shift, and specify that shift for all resources working 1st shift. A resource can reference up to four shifts.

You specify shifts by week. This weekly pattern repeats for all weeks within the Plan Horizon. A week starts Sunday morning at 00:00 and runs until Saturday at midnight (24:00). All periods within a week not specified with an interval period are assigned as not working, or down. Daily cycles do not automatically repeat. You must define each daily interval separately.

If you do not assign a shift to a resource, the resource is considered available 24 hours per day, 7 days per week.

Note: To define an off-period for all resources, use the Holidays form. To define overtime or off-time for individual resources, define a shift exception for the resource on the Resources form.

MDAY Start

Enter the start day of the MDAY calendar. When generating the MDAY calendar, the system creates a calendar day for all the valid days (that are specified on the default DSC scheduling shift) between the MDAY Start and MDAY End dates.

The MDAY calendar does not determine the planning horizon of the APS Planning activity. Define the APS horizon in the Plan Horizon (see “Planning Window: Plan Horizon” on page 48 for more information) field on the APS tab.

See “Defining the Work Week” on page 30 for a description of how the MDAY calendar is used.

Default: None, Dependent upon business practices

Defining the Work Week

About Shift Intervals

A shift specifies the set of time periods (called shift intervals) used to determine when resources on that shift are "up" or available to work on operations.

Define Shifts in a Weekly Pattern

You specify shifts by week. This weekly pattern repeats for all weeks within the Plan Horizon (see “Planning Window: Plan Horizon” on page 48 for more information). A week starts Sunday morning at 00:00:00 and runs until Saturday at midnight. All periods within a week not specified with an interval period are assigned as not working, or down. Daily cycles do not automatically repeat. You must define each daily interval separately.

Note: You should never cross Saturday at midnight within a shift interval. If you have a shift that must extend past midnight, you can allow it to do so on other days. But on Saturday, make that shift interval end at 24:00 and create another interval that starts at 00:00 on Sunday.

How Resources Use Shift Intervals

Resources may use more than one defined shift, and the shifts can overlap. The system considers the resource available during any of its shifts including an overlap period.

When a shift reaches the end of an up interval, resources on that shift become unavailable. By default, any resource currently processing stops processing when its shift goes down.

If an operation requires multiple resources that are on different shifts, the operation can only be in process when all its required resources are in an up interval. For example, suppose the operation requires three resources:

- Resource A: on-shift from 08:00 - 16:00
- Resource B: on-shift from 10:00 - 18:00
- Resource C: on-shift from 12:00 - 20:00

In this example, the operation could only be in process between 12:00 and 16:00.

About the DSC Shift and MDAY Calendar

By default, the DSC scheduling shift runs from Sunday to Saturday. Its primary purpose is to determine valid manufacturing or business days, which the system loads into an internal "MDAY calendar" that it reads when running these processes:

- Material Availability Report
- MPS Processor (to determine if a receipt is within the reschedule tolerance factors of a requirement so it can generate a Reschedule exception, and to calculate the date MPS records need to be released by in order to generate a Release Order (MPS Item) exception).
- Material Planner Workbench (when using safety stock or cross-reference method).
- The Forecast form (when calculating forecast consumption by customer orders).

When generating the MDAY calendar, the system reads the DSC shift to determine the valid manufacturing work days. Valid manufacturing days are those where the Minimum Hours in Work Day parameter (defined on the Planning Parameters form) is less than or equal to the total hours in the day on the DSC shift. It enters a day on the MDAY calendar for all of the valid manufacturing days between the MDAY Start and MDAY End dates (also defined on Planning Parameters). The hours specified for each day on the DSC shift determine the total available hours for each day in the MDAY calendar. The system updates the MDAY calendar any time you change the DSC shift or MDAY Start/End or Minimum Hours in Work Day parameters.

You cannot delete the DSC shift.

About the Lead Time PCAL Shift

By default, APS accumulates lead time for items based on a 24-hour day and 7-day week. If you want to exclude certain days (such as weekend days) from the lead time calculations, you must create a shift named "PCAL" and specify the "working" days. APS ignores days not specified in the PCAL shift when it performs lead time calculations (see “Defining Lead Time for APS Planning” on page 71 for more information).

Example Work Week

This example illustrates three typical 8-hour working shifts: 1st, 2nd, and 3rd shift. Each shift overlaps the previous shift by 30 minutes and contains a 30-minute lunch period:

- 1st Shift: 06:00-14:30 Mon-Fri
- 2nd Shift: 14:00-22:30 Mon-Fri
- 3rd Shift: 22:00-06:30 Sun-Thu (the third shift starts the week on Sunday night)

To represent this shift pattern on the Scheduling Shifts form, enter three sets of shift records.

1st Shift

The first shift starts each day at 6:00 a.m. and ends at 2:30 p.m. However, to account for the 30-minute lunch period, you define it on the form as an 8-hour period rather than 8.5 hours.

Starting Day	Starting Time	Ending Day	Ending Time	Must Complete	Allow Overrun
Monday	06:00	Monday	14:00	Yes	Yes
Tuesday	06:00	Tuesday	14:00	Yes	Yes
Wednesday	06:00	Wednesday	14:00	Yes	Yes
Thursday	06:00	Thursday	14:00	Yes	Yes
Friday	06:00	Friday	14:00	Yes	Yes

2nd Shift

The second shift starts at 2:00 p.m., 30 minutes before the first shift ends, and runs to 10:30 p.m. Again, you define the shift to end at 10:00 to account for the 30-minute lunch period.

Starting Day	Starting Time	Ending Day	Ending Time	Must Complete	Allow Overrun
Monday	14:00	Monday	22:00	Yes	Yes
Tuesday	14:00	Tuesday	22:00	Yes	Yes
Wednesday	14:00	Wednesday	22:00	Yes	Yes
Thursday	14:00	Thursday	22:00	Yes	Yes
Friday	14:00	Friday	22:00	Yes	Yes

3rd Shift

The third shift starts at 10:00 p.m., 30 minutes before the second shift ends, and runs to 6:30 a.m. the next day. As with the first and second shifts, you define the shift to end 30 minutes earlier to account for the lunch period.

Starting Day	Starting Time	Ending Day	Ending Time	Must Complete	Allow Overrun
Sunday	22:00	Monday	06:00	Yes	Yes
Monday	22:00	Tuesday	06:00	Yes	Yes
Tuesday	22:00	Wednesday	06:00	Yes	Yes

Starting Day	Starting Time	Ending Day	Ending Time	Must Complete	Allow Overrun
Wednesday	22:00	Thursday	06:00	Yes	Yes
Thursday	22:00	Friday	06:00	Yes	Yes

MDAY End

Enter the end day of the MDAY calendar. When generating the MDAY calendar, the system creates a calendar day for all the valid days (that are specified on the default DSC scheduling shift) between the MDAY Start and MDAY End dates. See “Defining the Work Week” on page 30 for a description of how the MDAY calendar is used.

The MDAY calendar does not determine the planning horizon of the APS Planning activity. Define the APS horizon in the Plan Horizon field on the APS tab (see “Planning Window: Plan Horizon” on page 48 for more information).

Default: None, Dependent upon business practices

Check Purchase Order Requisitions

Select the box to include purchase order requisitions as supplies in APS calculations. This setting is used throughout the system and will cause PO requisitions with a status of Requested, Approved, or Stopped to be considered as supplies/receipts when you run APS Planning and for all planning forms and reports.

Note: If the field is not selected, and a requirement record is cross-referenced to a PO requisition, APS will treat this cross-reference like the others. It will validate the cross-reference information and no planned order will be created.

Default: None, Dependent upon business practices

Create Purchase Order Requisitions from PLN

Select the check box to create a purchase order requisition automatically when you firm a planned order (PLN) for a purchased item.

Note: If you select the Create PO Reqs from PLN check box and clear the Check PO Requisitions check box (see “Check Purchase Order Requisitions” on page 33 for more information), the system will firm planned orders for purchased items into PO requisitions. However, APS will not see those PO requisitions as receipts when you run the APS Planning activity.

Default: None, Dependent upon business practices

Plan Planned Production Schedules

Select this field to include production schedules with Planned status when you run the APS Planning activity.

The planning algorithm uses the production schedule's routing and bill of material if that production schedule item has a routing/bill of material defined; otherwise, it uses the item's current routing/bill of material.

The system displays the production schedule releases on the Planning Detail form and Master Planning Report as pending receipts.

Note: This parameter applies only to Planned production schedules. The system plans Released production schedules regardless of whether you select this parameter.

Default: Do Not Select

Use Scheduled Times in Planning

Usually, you run the Scheduling activity to update status and schedule jobs, and then run APS Planning to create planned orders to satisfy demands based on the current shop floor status and job schedules. When the Scheduling activity schedules jobs, it calculates start and end dates for each of the job's operations and then uses this information to calculate a scheduled completion date for the job, which is saved in the job's Projected Date field.

This field allows you to control whether APS generates the plan based on the jobs' current start and end dates or the Projected date calculated by the last run of the Scheduling activity.

- Select this field if you want APS to plan the due dates of other demands and delivery of supplies around a job's Projected date.
- Clear this field if you want APS to use the current start and end dates defined when the job was initially created or the dates you changed on the job.

Select this field if your scheduling personnel do not typically fix scheduling problems with jobs, such as scheduling a resource to work overtime or rerouting the job to another machine. This type of business process trusts that the Scheduling program has examined all possible methods for completing a job on time and that you will not manually intervene on the shop floor. In this situation,

you want APS to generate the plan based on the dates calculated by the Scheduling activity because you consider those dates to be realistic.

Do not select this field if your scheduling personnel usually make manual changes on the shop floor to ensure a job is completed on time. In this situation, you do not want APS to automatically accept the dates calculated by the Scheduling activity. Those scheduled dates might cause related demands and supplies to be late unnecessarily. Instead, you want APS to use the current job dates that assume on-time conditions. If you find that the late job cannot be moved up and made on-time, you should change the job's end date manually before running APS Planning so the planning calculations adjust related plans appropriately.

Note: When you change this field, the system resets the dates of all existing scheduled jobs in the existing plan. The next run of APS Planning will use the appropriate dates for all existing scheduled jobs and newly scheduled jobs.

Note: This field affects only the start and end dates for the scheduled job—not any other data associated with the job, such as operation start and end dates. Therefore, if you clear this parameter, the dates of detailed resource usage for a job considered by APS may not correspond exactly with that job's start and end dates. However, the overall resource load will be consistent and correct and will not affect the planning calculations.

Default (Infinite APS): Do Not Select – Job start and end dates are maintained due to the use of infinite resources, therefore start dates from the Scheduler are not required.

Recommended (APS): Select – The Scheduler creates realistic start and end dates, APS honors those recommendations, including appropriate operation start times.

Plan Materials at Operation Start

When the system is planning released jobs and production schedule releases, this field controls whether the materials for a job or production schedule release are required to be available at the operation's start date or at the job/PS release start date.

- Select this field to plan the materials to be due at the start of the operation in which the materials are used. This method of planning results in a just-in-time material plan. In most cases, you should select this field.
- Clear this field to plan the materials to be due at the start of the job/production schedule. Typically, you should clear this field only if these conditions are true:
    a. you want to have all materials ready before you release the job or PS release
    b. all of the materials are not specified on the first operation in the routing.

Note: Planned production schedule releases are only affected by this parameter if the planning parameter Plan Planned Production Schedules (see “Plan Planned Production Schedules” on page 34 for more information), on the General tab, is selected.

Note: This field also determines how requirements are displayed on the Time Phased Inventory Status form and on the Purchase Requirements Report.

If the job or production schedule is released but not scheduled, APS plans the materials based on the setting of the Plan Materials at Operation Start field.

1. When APS generates a PLN to satisfy a demand, it always plans the PLN's materials to be due at the start of the operation.
2. If you then firm the PLN into a job or production schedule and rerun APS Planning, it again plans the materials at the start of the operation.
3. Finally, when you release the job or production schedule and rerun APS Planning, the Plan Materials at Operation Start parameter determines whether the system plans the materials at the start of the operation or at the start of the job.

Note: These following bullet points apply if you are using APS:

- If this parameter is cleared, the material demands will be due earlier than they were due in previous runs of APS Planning, before the job/production schedule was released. If you are running in APS mode, this situation may cause problems with resource capacity. Select this parameter to avoid this issue.
- Items for which the MRP Item is selected are not affected by this parameter; they always require materials at the job/PS release start date (see “Items - MRP Item” on page 36 for more information).
- Planned orders (PLNs) are not affected by this parameter; required materials for a planned order are always planned at the start of the operation.
- Firm jobs are only affected by this parameter if the planning parameter Preserve Pre-Released Production Dates, on the APS tab, is selected. If Preserve Pre-Released Production Dates is cleared, the materials are planned at the start of the operation. See “Preserve Pre-Released Production Dates” on page 41 for more information.

Default (Infinite APS): Do Not Select – Dates are based on infinite resources, so the accuracy of planning materials to the job start time is sufficient

Recommended (APS): Select – The Scheduler creates realistic start and end dates, APS honors those recommendations , including use of material at the appropriate operation start times, supporting lean manufacturing.

Items - MRP Item

This field applies only to manufactured or transferred items.

Select this check box to indicate that the item is produced during standard lead time. When the system plans demand for this item, it assumes the resources have infinite capacity; no resources will be allocated. Any component items are assumed to be needed at the start of lead time.

If this item's routing and bill of material are not considered accurate, you should consider selecting this field so your planned orders for this item will be based solely on lead time.

Apply Shrink Factor

Select the field to apply the shrink factor as set up on the Items form. Otherwise, clear this field (see “Items - Shrink Factor” on page 37 for more information).

The shrink factor is a percentage factor that compensates for that expected loss prior to receipt to stockroom. The system compensates for the shrinkage by increasing the planned order quantity. The system then decreases the outstanding quantity for the planned order (viewable in the Outstanding Receipt field on the Planning Detail form) by the same amount.

Default: Select

Items - Shrink Factor

Enter the percentage factor by which you wish to increase the quantity of the planned job or order to compensate for expected loss prior to receiving an item to the stockroom. The system decreases the outstanding receipt of the planned job or order by the same amount.

Note: You can determine the appropriate shrink factor by evaluating historical records that show the amount of scrap reported at the job item level. Use the Job Transactions Report to show historical scrap reported against specific jobs.

You can enter a maximum factor of 0.9999.

Example

If you want this amount to be 10%, enter 0.1.

Apply Scrap Factor

Select the field to apply the scrap factor as set up in the Job Materials form. If the scrap factor is not to be applied, clear the field (see “Job Materials - Scrap Factor” on page 38 for more information).

The scrap factor is a percentage factor that compensates for the expected loss of this component during the manufacture of a job. The system compensates by increasing the gross requirements by the scrap factor.

Default: Select

Job Materials - Scrap Factor

Enter the percentage (in decimal form) of scrap expected when using this material for the operation. When a material is cross referenced, the system adjusts the quantity of the job or PO created by the scrap factor. You can also use this field with MRP or APS when planning the amount of this material that is required by the job.

The system applies the scrap factor only if the Apply Scrap Factor parameter is enabled on the Planning Parameters form.

Example:

From experience, you are aware that this material almost always has a scrap rate of 10% when used as a component of this job type. Enter 0.1 as the scrap factor. If the job requires 100 of these items without any scrap, a cross-referenced job would increase the quantity released to 100 / .9 = 111.

Chapter 3: Planning Parameters - APS

3

The Planning Parameters form is used to enable features and options used throughout the planning function. Changing these parameters does not affect the plan until you run APS Planning Parameters on the APS tab are those that are most often modified to reflect the nature of a specific application. These parameters are likely to be changed most often when setting up and maintaining the APS environment.

Move/Finish/Buffer Shift ID

Enter the shift schedule to use when planning the Move, Finish, and Buffer times. If left blank, the APS Planner processing will be calculated using 24x7 availability. If a shift schedule is specified the APS Planner (and Scheduler) will use the shift definition to determine the real-time needed to achieve the Move, Finish, and Buffer times.

Default: Blank

Use Planning Output for Scheduling

Select this field to specify that the system should copy the output from the APS Planning activity to the database tables used by the Scheduler output forms and reports. The system will copy this planning output to the scheduling tables each time you run APS Planning. Also, when this field is selected and you run APS Planning, the system copies the operation start and end dates calculated by APS to the Start Date and End Date fields on the operations forms.

You can also copy incremental planning output, such as from Get ATP/CTP activities, using the Update Schedule form (if you need to analyze the latest plan data between runs of APS Planning).

This option allows you to schedule your shop floor with information that closely matches the planning output. When this field is selected, the normal Scheduling activity does not function.

See “Using APS to Backward Schedule” on page 40 for a list of the scheduler forms and reports that display the planning output.

Default: Do Not Select

Using APS to Backward Schedule

The Scheduling activity generates an intelligent and accurate schedule that makes efficient use of your resources. The Scheduling activity schedules forward in time, simulating the load that actually flows through your shop floor.

To optimize the resource usage in this manner, the Scheduling activity must see all the simultaneous demands for the resources; therefore, you must run it independently of the APS Planning activity. As such, it does not support "real-time" scheduling of new demands.

If you are more interested in quick and more real-time scheduling than in resource optimization, you may consider using the backward scheduling capabilities of the APS Planning activity. APS produces a simple backward schedule to generate planned orders. With the Use Planning Output for Scheduling field (see “Use Planning Output for Scheduling” on page 39 for more information), you can use this planning data for your schedule. In this situation, scheduling is done simultaneously with planning and you can observe the real-time effects on the usual scheduling output forms and reports.

Note: Using this method to generate your schedule may leave your resources idle when there is work for them to perform. For the optimum utilization of your resources, we recommend you run the Scheduling activity instead of using this method.

Generating the Schedule

To generate the full schedule, run APS Planning. The planning results are loaded automatically into the database tables used by the Scheduling output forms and reports. In addition, the job operation start and end dates calculated by APS Planning are displayed on the Job Operations form.

To update the schedule for incremental changes to the plan (such as for the addition of new orders, jobs, and Get ATP/CTP plans), open the Update Schedule form. Click the Update Schedule button to load the incremental plan changes into the Scheduling output forms and reports.

Note: The system updates this incremental plan data in the Scheduling forms and reports automatically the next time you run APS Planning. Use the Update Schedule form only if you need to see this plan data between runs of APS Planning.

Viewing Scheduling Output

After running APS Planning, you can view scheduling output on several forms and reports, including: Resource/Resource Group Dispatch List reports, Resource Utilization, Resource Group Utilization, Resource Schedule, Resource Group Schedule, Resource Sequencing, Resource Group Sequencing, and Resource Gantt Chart – Scheduler forms.

Preserve Pre-Released Production Dates

Select this option to specify that APS should not move out a job or production schedule item's Projected date to account for changes in the availability of material components. In effect, selecting this field removes the internal requirement that a Firm job or Planned production schedule must have a material on a bill of material before it can be completed (which can push out the Projected date on the parent demand while the demand waits on the material). Therefore, when this field is selected, the Projected date remains the same as the job or production schedule's End/Due date.

Do not select this option to allow APS to recalculate a projected date that is later than the End/Due date, in the situation where the required material components become delayed. In this case, the system moves the demand's Projected date out to account for the delay.

You should consider selecting this field if you expect the dates on Firm jobs and Planned production schedules to remain fixed. However, be aware that when lateness occurs, instead of automatically moving out the dates, APS will generate an exception message; you will need to deal with the lateness manually.

See the table below for more information about how this field affects when the demand consumes material components and when the job supply will be available.

Status	Quantity	Material Components Consumed at...	Job Supply Available at...	Description
PLN	n/a	Job's projected start date. This date is controlled by APS and is not visible in Infor CloudSuite. This is the date the system "thinks" the job can start, based on the latest plan data. This date may change.	Job's projected end date (controlled by APS)	Planned orders display on the Planning Detail and Material Planner Workbench forms.
Firm, not scheduled AND Preserve Pre-Released Production Dates parameter not selected	Fixed	Job's projected start date (controlled by APS).	Projected date (displayed to the user in the Projected field)	The lack of a component or resource capacity on an operation may push the job start or end date out (the reason for this will not be evident on the Job Orders form, but may be visible in the Analyzer).
Firm, not scheduled AND Preserve Pre-Released Production Dates parameter selected	Fixed	Job's Start date (user-entered)	End date (calculated with lead time or by incremental planning)	APS plans the operations, and if they extend past the job End date, it generates an exception message. You can see planned operation dates in the Analyzer

Status	Quantity	Material Components Consumed at...	Job Supply Available at...	Description
Released, not scheduled AND Plan Materials at Operation Start parameter not selected	Fixed	Job's Start date (user-entered)	End date (calculated with lead time or by incremental planning)	APS plans the operations, and if they extend past the job End date, it generates an exception message. You can see planned operation dates in the Analyzer
Released, not scheduled AND Plan Materials at Operation Start parameter selected	Fixed	Job operation's Start date	End date (calculated with lead time or by incremental planning)	APS plans the operations, and if they extend past the job End date, it generates an exception message. You can see planned operation dates in the Analyzer
Scheduled (Firm or Released)	Fixed	Job operation's Start date or the Job Start date if the operation Start date is blank	End date (calculated with lead time or by incremental planning)	At this point, the Scheduler takes full control of the job.

Affect on Jobs and Production Schedules with No Routing and Alternates in the Bill of Material

For Firm jobs with no routing/BOM and Planned production schedule releases with no routing/BOM (whose PS item has no routing/BOM), this parameter affects whether the system considers any alternates present in the BOM (Preserve Pre-Released Production Dates=Not selected) or only uses the primary materials (Preserve Pre-Released Production Dates=Selected).

Default: Do Not Select

Consider Negative on Hand

This parameter controls how the system corrects a negative beginning on-hand balance:

- Select this field to account for a beginning negative balance by planning additional safety stock replenishment. When the APS Planning activity runs and the on-hand balance is negative, the system adjusts the item's safety stock value by this negative on-hand value. For example, if Safety Stock is 10, and the beginning on-hand is -10, the system plans as though the item's safety stock is 20 and generates a planned order for 20 (plus any adjustments for Order Minimum/Order Multiple settings) to replenish the safety stock (see “How APS Replenishes Safety Stock” on page 64 for more information). Keep in mind that if your negative on-hand value is caused by incorrect data entry, selecting this field could result in unwanted excess inventory.

- Clear this field to set the on-hand to zero when the beginning balance is negative and not generate any extra safety stock replenishment quantities to account for the negative on-hand value. For example, if your beginning on-hand is -10, the system does not adjust the safety stock value, but simply sets the on-hand to zero.

Note: This parameter is not the same as the Inventory parameter On Hand Negative Flag, which allows the inventory to be negative at any time.

Default: Do Not Select

Use Supply Usage Tolerance

Select the field to use the tolerance factor defined in the Supply Usage Tolerance field. You can define a default, global tolerance value in the Supply Usage Tolerance planning parameter or you can define an item-specific tolerance value in the same field on the Items form (see “Supply Usage Tolerance” on page 44 for more information). If the item-specific value is 0, the system uses the global tolerance value.

The system applies the tolerance factor only if there are insufficient planned supplies and inventory available to satisfy the demand. If this is the case, the system can allocate planned supplies that are available within the tolerance time window to satisfy any remaining demand quantity (see “Using Supply Usage Tolerance” on page 43 for more information).

Default: Select

Using Supply Usage Tolerance

When the system plans a demand, it begins by searching backward for supplies that are planned to be available between the demand's due date/time and the current date/time. If the supplies available during that time do not satisfy the demand quantity, the system searches for on-hand inventory. If the demand is still not satisfied, the system can then use the Supply Usage Tolerance to search for supplies that are planned to be available AFTER the demand's due date.

See “Supply Usage Tolerance” on page 44 for information about setting up supply usage tolerance on the Planning Parameters and Items forms.

Exception Messages

When a tolerance supply is used, the "Move In Receipt (Tolerance)" exception message displays for that supply on the Planning Detail form and on the Exceptions Report. You will need to move the supply to the date specified in this exception message.

General Notes

- The system applies supply usage tolerance only if there are insufficient planned supplies and inventory available to satisfy the demand.
- The system uses a 24-hour day, 7-day week calendar when applying these values.
- If the system must use tolerance supplies, it uses as much of the tolerance supplies as possible before it uses any inventory or supplies available before the demand's due date.

  EXAMPLE:

  Consider this demand and supplies:

  Demand A: Qty 75 due 3/24/2004 15:00

  On-hand inventory: Qty 25 available 3/22/2004 00:00

  PO A: Qty 25 available 3/23/2004 13:00

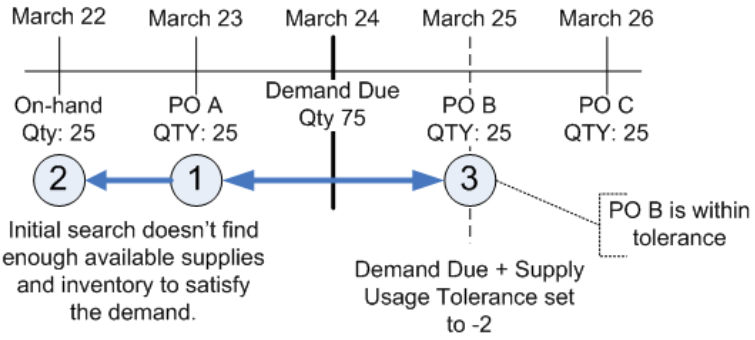
  PO B: Qty 25 available 3/25/2004 13:00

  PO C: Qty 25 available 3/26/2004 13:00

  Supply Usage Tolerance: -2

  When planning this demand, the system first searches backward from the due date and finds PO A. Then it finds the available quantity from on-hand inventory, for a total quantity of 50.

  Because the demand quantity of 75 is not satisfied, the system searches forward from the due date and applies the Supply Usage Tolerance factor (see “Supply Usage Tolerance” on page 44 for more information). Because Supply Usage Tolerance is -2, the system searches forward from the demand's due date at 00:00 to 48 hours after the due date. In this example, the -2 tolerance allows the system to find the quantity of 25 from PO B and satisfy the demand.



Note: If the Supply Usage Tolerance were -3, the system would have been able to use PO C. It would have used the 50 tolerance supplies from POs B and C plus the supplies from PO A to satisfy the demand (the on-hand inventory would not have been used).

Supply Usage Tolerance

This field allows you to configure the APS system to be able to use a supply (such as a purchase order line item) to satisfy a demand that is due earlier than the supply is due (see “Use Supply Usage Tolerance” on page 43). This field appears as an item-specific value on the Items form and as a global value on the Planning Parameters form.

You can define the tolerance time window in terms of hours or days, depending on whether you enter a positive or negative number in Supply Usage Tolerance:

- Positive number: the system searches for supplies starting from the demand's due date/time + the tolerance number of hours. For example, if the demand's due date is 3/5/2004 at 9:00, a value of 4 means the demand can use any supplies that are available between the current date/time and 3/5/2004 at 13:00.
- Negative number: the system searches for supplies starting from the demand's due date at 00:00 (midnight) + (24 hours * the positive tolerance value). For example, if the demand's due date is 3/5/2004 at 15:00, a value of -4 means the demand can use any supplies that are available up to 3/9/2004 at 00:00. In the same example, a value of -1 means the demand can use any supplies available up to 3/5/2004 at 24:00 (the same day).

The system uses this parameter only if the Use Supply Usage Tolerance option (see “Use Supply Usage Tolerance” on page 43) is selected on the Planning Parameters form.

Note: A value of 0 entered on the Items form bypasses the item-level tolerance; the system instead uses the global tolerance value.

Default (Infinite APS): -10, Launch control is the practice of creating or firming purchase orders and job orders when planning recommends. With Infinite APS planning, finite capacity is not considered so there is an increased chance that extra plans for job orders and purchase orders will be generated. This is because the actual need dates don’t match the dates of existing supplies. Therefore, a higher Supply Usage Tolerance is recommended.

Recommended (APS): -1, In a finite environment, launch control is practiced and capacity is taken into consideration, there is less chance to create extra plans for jobs and purchase orders because dates are more in line, thus making customer service a higher priority.

Calculate Job End Dates When Blank: For Firm Sub-Jobs

By default, Infor CloudSuite initializes sub-job start and end dates using a lead time offset, often using Lead Time Processor (see “The Lead Time Processor Algorithm” on page 46 for more information). By leaving the sub-job dates blank, the dates for firmed, and released, sub-jobs can be initialized by APS planning using backward planning from the need date. Setting these dates will occur during the next incremental or full APS planning run. The Job Orders form will only allow blank start and end dates for firm sub-jobs if this parameter is selected. In all instances where Infor CloudSuite would automatically populate start and end dates using lead time, the fields for firm sub-jobs will be left blank when this parameter is selected.

Default: Do Not Select

The Lead Time Processor Algorithm

The purpose of the Lead Time Processor utility is to calculate an item's fixed and variable lead times using the Duration of the operations that make up its current routing. The fixed lead time is expressed in days. The variable lead time is expressed in hours and is the run time for one piece. The basic algorithm follows.

Fixed Lead Time

Here's the algorithm the Lead Time Processor uses to calculate Fixed Lead Time.

1 Sums the setup, move, queue, and finish hours on all operations in the item's current routing.

2 Divides the total by the average hours in a day on the DSC shift (the "default" shift).

3 Rounds to the nearest whole number.

4 Posts the resulting number of days into the Fixed Lead Time field in the Item record.

Variable Lead Time

Here's the algorithm the Lead Time Processor uses to calculate Variable Lead Time.

1 Sums the run duration on all operations in the item's current routing.

2 Multiplies the total by 100 / the operation's Efficiency percentage.

3 Rounds to the nearest whole number.

4 Posts the resulting number of hours into the Variable Lead Time field in the Item record.

Fixed Schedule Hours

If an operation has a value in the Fixed Sched Hrs field, the Lead Time Processor adds that figure to the fixed lead time in place of using the move, queue, setup, run, and finish time.

Calculate Job End Dates When Blank: For Released Sub-Jobs

By default, Infor CloudSuite initializes sub-job start and end dates using a lead time offset, often using the Lead Time Processor (see “The Lead Time Processor Algorithm” on page 46 for more information). By leaving the sub-job dates blank, the dates for firmed, and released, sub-jobs can be initialized by APS planning using backward planning from the need date. Setting these dates will occur during the next incremental or full APS planning run. The Job Orders form will allow blank start and end dates for released sub-jobs if this parameter is selected. In all instances where Infor

CloudSuite would automatically populate start and end dates using lead time, the fields for released sub-jobs will be left blank when this parameter is selected. This parameter controls only released sub-job dates, and is only available if the Calculate Job End Dates When Blank: For Firm Sub-Jobs is selected (see “Calculate Job End Dates When Blank: For Firm Sub-Jobs” on page 45 for more information).

Default: Do Not Select

Planning Window: Use Start Date

Select this field to enable the Start Date field, which allows you to define the beginning of the planning horizon. If Use Start Date is not selected, the Current Date/Time is used as the Start Date.

Default: Do Not Select

Planning Window: Start Date

Use this field to define a specific date for the beginning of the planning horizon. If a start date is entered, all planner calculations will use this date as the current date, not only for the start of the planning horizon, but also for related calculations such as leadtime and safety stock.

Default: None

Planning Window: Start Date Offset

Specify a start date offset to shift the planning horizon into the past. The planning engine uses today’s date, unless the Start Date has been specified, for calculations requiring knowledge of the current date, but allows demands to be planned in the past according to the offset amount (see “Planning Window: Start Date” on page 47 for more information).

A positive number will shift the date into the past. Negative numbers are not allowed.

The concept of a phased implementation of APS can be used if you have an MRP mindset and aren’t concerned with capacity constraints. However, if you have capacity constraints and/or want to take a step towards becoming a world class manufacturing company, we recommend that you begin with APS mode, utilizing finite resources and not planning in the past.

A phased approach to implementing APS utilizes as a first step when implementing APS, “Single Pass” Infinite APS. To realize “Single Pass” Infinite APS, the Start Date Offset should be set large enough so that the initial Pull Plan never fails, making the Push Plan step unnecessary (see “Pull and Push Planning” on page 13 for more information). You should also set resources to infinite (see

“About Infinite Resource Capacity” on page 12 for more information). This implementation of APS most closely approximates MRP by planning in the past, while providing the benefits of APS.

Once comfortable with the process, the next phase of implementation is Multi-Pass Infinite APS, where the Start Date Offset is set to 0, while keeping resources infinite. This utilizes the APS concept of realistic start dates while affording as much flexibility as possible since the resources are infinite. Material and resource planning cannot go into the past, therefore providing realistic dates.

Finally, after becoming comfortable with Multi-Pass Infinite APS, the resources can be set to finite and you have achieved full-functioning APS. You will then realize the benefits of realistic plans based on simultaneous material and resource planning, utilizing finite resource capacity and material plans which are not in the past.

Default: 0

Planning Window: Plan Horizon

Enter the number of days into the future that APS can reserve capacity and resources. Setting a horizon allows you to increase performance by limiting the period of time the system examines when planning. You must enter a value greater than 0.

The Plan Horizon is used only when the initial pull plan projects a demand to be late (that is, it cannot be planned in the time between the due date and the current date) and the system must switch to push planning. During push planning, the system plans the demand forward from the current date out to an as-soon-as-possible date. If it does not find sufficient capacity and material to plan the demand between the current date and the end of the Plan Horizon, the demand is displayed as "blocked" and cannot be planned.

It is important to enter an appropriate Plan Horizon. Too small a setting could result in many blocked demands, while too large a setting could slow system performance. Also, reducing the Plan Horizon reduces the amount of memory the database server needs to run the planner database.

Note: This horizon is independent of the MDAY calendar defined on the General tab. The MPS Processor and forecast consumption use the MDAY calendar.

Relationship with the Scheduling Horizon

The Scheduler uses the Days to Schedule parameter, located on the Shop Floor Control Parameters form, to define the time horizon for scheduling demands. One or more of a scheduled job's operations may have dates that are beyond the Days to Schedule horizon. When you run the APS Planning activity, the generated plan will not include those unscheduled operations.

To avoid problems with these partially scheduled jobs, we suggest you set the Plan Horizon to the same time value as the Days to Schedule horizon.

Default: 183 days

Use Expedited Lead Time: For Planning, For ATP/CTP

This parameter controls whether APS will use expedited lead time when you run the APS Planning activity and/or when you perform a Get ATP or Get CTP operation.

- Select For Planning to use expedited lead time during a run of the APS Planning activity.
- Select For ATP/CTP to use expedited lead time during Get ATP/CTP operations.

When selected, these options allow the system to apply the expedited lead time reduction values (in the Fixed Lead Time Reduction and/or Variable Lead Time Reduction fields) or the expedited lead times specified on the Items form (see “Fixed Lead Time Reduction (Hours)” on page 70 and “Variable Lead Time Reduction (Hours)” on page 77 for more information).

If both expedited lead time reduction and expedited lead times are specified, the system uses the expedited lead times and ignores the expedited lead time reduction values.

Note: Clearing the Use Expedited Lead Time fields disables both the global lead time reduction values and all item-level expedited lead times; in this case, the system uses standard lead times.

The system only applies expedited lead time when the initial pull planning pass fails and the system push plans the demand.

If expedited lead time is used to allocate a supply to a demand, the Used Expedited Lead Time exception message appears for that supply on the Planning Detail form and on the Exceptions Report.

Default (Planning): Selected

Default (ATP/CTP): Not selected

Orders: Demand Time

Enter the hour and minute on which all demand orders and job/production schedule supply orders are due on the date they are due. The system does not track the time of day on dates associated with orders, but the APS planning functions plan at a detailed level of time. Therefore, you must specify the time so the planning functions have that information.

For example, if you enter 01:30, the system sees all customer orders at 01:30 on the date when they are entered. Enter the time in 24-hour format.

Note: The Supply Time field applies to supply orders such as job supplies, subcomponent demands, purchase requisitions, purchase orders, and transfer order supplies (see “Orders: Supply Time” on page 50 for more information). The Supply Time should always be earlier than the Demand Time. For efficiency, the Supply Time should be as close to the Demand Time as possible (the default Supply Time is 00:59, which is one minute before the default Demand Time). This way, the system enters supply orders into the plan before demand orders, which need to consume the supply.

For all demand order types, this parameter does not affect the order entry date. The system does not send a date or time for the order entry date. The APS function uses the current system date and time at the time they load the order. The exception is customer orders, for which the system sends the Order Date from the Customer Orders form, and the time you enter in the Demand Time parameter.

Default: 01:00

Orders: Supply Time

Enter the hour and the minute on which supply orders (such as job supplies, purchase requisitions, purchase orders, transfer order supplies, and subcomponent demands) are available for the APS planning functions to allocate to demands. The system does not track the time of day on dates associated with orders, but the APS functions plan at a detailed level of time. Therefore, you must specify the time so the planning functions have that information. For example, if you enter 01:00, the system "sees" all purchase orders at 01:00. Enter the time in 24-hour format.

Note: The Supply Time should always be earlier than the Demand Time. For efficiency, the Supply Time should be as close to the Demand Time as possible (the default Demand Time is 01:00, which is one minute later than the default Supply Time) - see “Orders: Demand Time” on page 49 for more information. This way, the system enters supply orders into the plan before demand orders (which need to consume the supply).

Note: For all supply order types, this parameter does not affect the order entry date. The APS functions use the current system date and time at the time they load the order.

Default: 00:59

Planning Analysis for Non-Scheduled Jobs: Use Job End Date, Use Projected Date

Select whether to use a Job's End date or Projected date (calculated by APS) to display planning information for jobs on output forms and reports such as the Planning Detail form and Order Action Report.

The output forms and reports use the job's Projected date or End date based on the setting of this parameter and also based on several other conditions, (see “About Job Dates” on page 51 for more information).

When to Use the End Date Method

Select the Use Job End Date option if your business process dictates that you will make whatever changes in the execution of your plan/schedule that are necessary to achieve a job's End date. This method interprets the End date of the planned job as the date its associated supplies will appear (along with an exception message stating that the job is expected to be late). In this mode, if a job is expected to be late, the lateness will not affect the job's supply usage by higher-level assemblies. This display presents an inventory view that assumes you will resolve the exception messages.

When to Use the Projected Date Method

Select the Use Projected Date method if you expect the system to do what is feasible to achieve a job's End date and you do not plan to improve the conditions significantly. Use this method if your business process captures accurate status and routing information and you want to rely more heavily on the system calculations. This display presents an inventory view that assumes you will NOT resolve the exception messages.

How the Output Information is Affected

This parameter affects the planning information that displays on the following forms: Planning Detail, Planning Summary, Master Planning Display, MPS Processor, Exceptions Report, Master Planning Report, Purchase Requirements Report, and Time Phased Inventory Status.

Note: This parameter impacts planning output forms and reports listed above only. It does not affect how APS plans orders.

Default: Use Job End Date

About Job Dates

You can create manufacturing job orders by creating them manually on the Job Orders form, by cross referencing from a customer order line, by firming a planned order, or by running the Copy Routing/BOM utility. A job order has a Start and End date that the system calculates or you enter manually depending how you create the job:

- When you create a job manually, you must enter either a Start or End date.
- When you firm a planned order into a job, the Start and End dates are determined by the completion date MRP or APS projected for the planned order.
- When you create sub-jobs automatically (by copying a current routing/BOM to a job or by firming a planned order and copying the indented BOM) their Start and End dates are populated based on the parent job's start date and lead times. If the Calculate Job End Dates When Blank parameter is selected, the APS Planner will set the start and end dates during the next incremental or full planning run (see “Calculate Job End Dates When Blank: For Firm Sub-Jobs” on page 45 and “Calculate Job End Dates When Blank: For Released Sub-Jobs” on page 46 for more information).

The Start and End dates may determine when the system plans the job's materials and are used as input values to the Scheduling activity's calculations.

The job also has a Projected date, which the APS Planning activity calculates based on the latest plan information. Depending on the setting of the “Planning Analysis for Non-Scheduled Jobs” parameter, you will use either the Start/End dates or the Projected date for your output analysis activities.

How Job Dates Are Set

The APS Planning activity calculates job dates as follows:

- For jobs with blank Start and End dates, APS populates the Start and End dates based on the current, latest plan data (unless you manually entered dates for the job on the Job Orders form).
- For any unscheduled jobs, APS populates or updates the Projected date based on the current, latest plan data.

The Scheduling activity populates or updates the Projected date, but never populates the Start and End dates.

The table below summarizes the conditions when APS Planning or the Scheduling activity updates the job dates.

Date	APS Planning	Scheduling
Start/End	Updates if dates are blank	Never updates (because the APS Planning activity will already have populated the Start and End dates)
Projected	Updates if job is not Scheduled	Updates

How Job Dates Are Presented on Output Forms and Reports

Either the job's Start and End dates or the Projected date may appear with the job on output forms (such as Planning Detail and Material Planner Workbench) and reports (such as the Order Action Report), depending on the following conditions:

- The Planning mode you are using (APS or MRP)
- Whether the job is scheduled
- The setting of the Planning Parameters, Use Scheduled Times in Planning and Planning Analysis for Non-Scheduled Jobs (see “Use Scheduled Times in Planning” on page 34 and “Planning Analysis for Non-Scheduled Jobs: Use Job End Date, Use Projected Date” on page 50 for more information).

The table below summarizes the conditions that determine how output forms and reports display job dates when you are using APS mode.

Job Scheduled	Use Scheduled Times in Planning	Planning Analysis for Non-Scheduled Jobs	Dates Used
No	No	Use Job End Date	Job Start/End
No	No	Use Projected Date	Projected Date
No	Yes	Use Job End Date	Job Start/End
No	Yes	Use Projected Date	Projected Date
Yes	No	Use Job End Date	Job Start/End
Yes	No	Use Projected Date	Projected Date
Yes	Yes	Use Job End Date	Projected Date
Yes	Yes	Use Projected Date	Projected Date

Planned Orders Consolidation: Manufactured Items

Use this parameter to consolidate demand orders generated by APS into a single planned order (PLN), based on the consolidation option you select. See “Consolidating Planned Orders” on page 53 for more information.

Default: Do Not Select

Consolidating Planned Orders

The APS system creates one planned order for each requirement that is not satisfied by existing on-hand inventory or other receipts. You can consolidate these planned orders into more manageable increments by specifying parameters on the Planning Parameters form and on the Items form.

The consolidation options allow you to generalize the planning detail progressively as the planned orders are due later. For example, you may want to plan carefully all requirements due within the week, but group everything due after that into larger groups that are easier to track.

The system follows these steps to determine how to combine the planned orders for a given item. In APS mode, the system performs these steps after the APS Planning activity has been run.

- If you are using APS, the system checks the setting of the Planned Orders Consolidation parameter (see “Planned Orders Consolidation: Manufactured Items” on page 53 and “Planned

Orders Consolidation: Purchased/Transferred Items” on page 56 for more information).

Setting	Description
None (default)	The system does not consolidate the planned orders. There will be one planned order for each unsatisfied requirement for the item.
One Day	The system consolidates all planned orders due on the same day into a single planned order. There will be one planned order for each day's requirements for the item.
Days Supply	The system consolidates all planned orders due within the item's Days Supply (see “Items - Days Supply” on page 55 for more information) number of days into a single planned order. For example, suppose an item with Days Supply = 5 has four planned orders: PLN01 due October 10, Qty=500 PLN02 due October 13, Qty=100 PLN03 due October 17, Qty=500 PLN04 due October 22, Qty=50 The system consolidates PLN01 and PLN02 into one planned order for quantity of 600 due October 10. PLN03 and PLN04 are consolidated into a single planned order for quantity of 550 due October 17. The due date of the earliest requirement is used as the due date of the consolidated planned order. Use the Days Supply option with caution. It is designed for use with Purchased/Transferred items. Problems may occur when consolidating the PPLNs (parent planned orders); this situation may cause material not to be ordered on time for a given order

- The system checks the 30-day Bucket Fence parameter (applies to all items and item types). When this number of calendar days is reached, the system ignores the Planned Orders Consolidation parameter and combines the planned orders into 30-day increments.

  EXAMPLE: Suppose the current date is October 10, and the 30-day Bucket Fence is set to 50 days. In addition to earlier planned orders for a given item, there are several planned orders for it that are due much later:

  PLN10 due December 20, Qty=100

  PLN11 due December 23, Qty=50

  PLN12 due January 6, Qty=200

  PLN13 due January 10, Qty=100

  PLN14 due January 31, Qty=100

  All of these planned orders are due within the same 30-day period. The system combines these orders into a single planned order for 550, due December 20.
- The system checks the 90-day Bucket Fence parameter (applies to all items and item types). When this number of days is reached, the system begins grouping all requirements due within the 90-day period into a single planned order. Usually, you will set this parameter to a larger number of days than the 30-day Bucket Fence, to create a logical progression of detail in your planned orders.

Items - Days Supply

Enter the number of manufacturing days the system looks into the future for consolidating planned orders.

If you are using APS, the system consolidates planned orders by this value only if the Planned Orders Consolidation field on the Planning Parameters form is set to Days Supply.

When the system creates planned orders, it decides which planned orders to consolidate based on Days Supply increments. The release date and due date of the consolidated planned order will be the release date and due date of the earliest planned order to be consolidated.

For example, suppose the system creates planned orders for FA-10000 as shown below.

Planned order number	Due Date of planned order	Quantity
1	5/1/2007	10
2	5/1/2007	15
3	5/2/2007	7
4	5/5/2007	20
5	5/9/2007	15
6	5/10/2007	5

If Days Supply = 5, the system combines all the planned orders for FA-10000 in 5-day increments, generating two planned orders:

Combine planned orders between these dates...	Into one order with a quantity of...	And a due date of...
5/1/2007 - 5/5/2007	52	5/1/2007
5/6/2007 - 5/10/2007	20	5/9/2007

The system applies this Days Supply consolidation scheme until the 30-day Bucket Fence value is reached, after which it ignores Days Supply and begins consolidating the planned orders for the next 30 days into a single planned order (see “Consolidating Planned Orders” on page 53 for more information).

If you are using the APS planning mode, we recommend you do not use Days Supply for manufactured items because the capacity representation may become inaccurate. (In Infinite APS mode, Days Supply is fine for manufactured items and purchased items.)

Disabling Consolidation for Specific Items (APS only)

If you are using APS, you can disable consolidation for a specific item while using consolidation for the rest of your items. Enter 0 in the Days Supply field on the Items form for the item for which you

want to disable consolidation. Planned orders for this item will not be consolidated (however, consolidation happens as specified for all other items). If you are using MRP, the system always consolidates with Days Supply of at least 1.

Planned Orders Consolidation: Purchased/ Transferred Items

Use this parameter to consolidate demand orders generated by APS into a single planned order (PLN), based on the consolidation option you select. See “Consolidating Planned Orders” on page 53 for more information.

Default: Days Supply

Chapter 4: Planning Parameters - Advanced APS

4

The Planning Parameters form is used to enable features and options used throughout the APS planning function. Changing these parameters does not affect the plan until you run APS Planning. Parameters on the Advanced APS tab are those that are either not modified after the initial setup of APS or advanced capabilities that a typical user should not be modifying without guidance from an APS expert.

Maximum What-If Databases

Enter the number of temporary copies of the planner database that can exist in the server's memory at the same time for APS planning functions. When you use the Get ATP or Get CTP functions, the system creates a temporary copy of the planner database in memory, on which it runs the calculations to determine the projected date for the order or line item. If multiple workstations run the Get ATP/CTP function simultaneously, the available memory on the server may be exceeded. Use this field to limit the number of concurrent database copies to within your server's memory capacity.

The Availability Results dialog, which displays during a Get ATP/CTP process for a line item, includes a Quantities button, which displays the quantity of the line item that can be completed by the request date. Clicking the Quantities button creates two additional copies of the planner database in memory. These copies remain in memory until the Get ATP/CTP dialog is closed. Therefore, if all your users are likely to use the Quantities button, multiply your base Max What-If Databases figure by three.

> **EXAMPLE**: Suppose you have 10 client machines that will potentially use the Get ATP/CTP feature, and all of those machines will likely use the Quantities button on the Get ATP/CTP dialog. Your worst-case requirement for what-if databases would be 10, plus an additional 20 for clients using the Quantities button, for a total of 30. If you do not anticipate all 10 clients using the Get ATP/CTP feature simultaneously, adjust the figure appropriately.

Default: 5

Infinite Purchased Items After (Hours)

Enter the number of hours (in the Plan Horizon) after which the system sets all purchased items as non-constraining (see “Planning Window: Plan Horizon” on page 48 for more information). When this number of hours passes, no operation is delayed due to lack of a purchased item. However, the system still tracks material inventories.

If you set this parameter to zero, the system ignores any constraints created by purchased items (both on-hand quantity and lead time constraints) during the entire Plan Horizon. The default setting is 999999, which indicates that all purchased items are constraining within lead time for the entire Plan Horizon.

If the Infinite field is set for a particular Item, that Item will be considered an unconstrained item for the entire Plan Horizon.

Default: 999,999 hours

Items - Infinite

This field applies to APS when running in APS mode, and applies only to purchased items.

Select the field to specify that this purchased item is unconstrained, with a lead time of zero (that is, it can be obtained immediately). Screws, brackets, and nails are common examples of unconstrained items.

Resource Group Buffer Scale

During planning, the system multiplies this value by the Buffer In and Buffer Out values defined on every resource group. Increasing or decreasing the buffer times through this global parameter will allow you to uniformly adjust the slack in the plan without manually adjusting the buffer times on individual operations (resource group buffer time is added to the operation's Finish and Move hours). A value of 1.0 indicates no buffer scale.

For example, suppose a resource group's Buffer In is 1.0 hours and Buffer Out is 2.0 hours. If you enter 2.0 in the Resource Group Buffer Scale field, the Buffer In becomes 2 hours and the Buffer Out value becomes 4 hours.

Default: 1

Resource Groups - Buffer-in Time

Enter the number of hours to delay the start of the operation (this value is added to the Move hours specified on the operation). A job cannot begin processing any operation requiring this resource

group until after this buffer time + the move hours value has elapsed. Delay of the job begins when it completes the previous operation. The delayed job does not utilize resources in this resource group or the resources used at the previous operation.

To determine the total buffer time between two operations, the system:

1 Finds the largest Buffer Out value from all of the first operation's specified resource groups (if it specifies more than one).

2 Finds the largest Buffer In value from all of the second operation's specified resource groups.

3 Adds the two values to the sum of the first operation's Finish hours and the second operation's Move hours.

Note: If the Infinite Resource Capacity After field is set to 0 on each of the operation's resource groups, the operation's Queue hours are also added to the total buffer time between the two operations (see “About Infinite Resource Capacity” on page 12 for more information).

Resource Groups - Buffer-Out Time

Enter the number of hours for a post-operation delay, such as cooling time (to be added to the Finish hours specified on the operation). This delay must occur after a job completes processing any operation requiring this resource group. The job must undergo the delay before it can start processing at the next operation. During the buffer-out time, the delayed job does not use resources in this resource group.

To determine the total buffer time between two operations, the system:

1 Finds the largest Buffer Out value from all of the first operation's specified resource groups (if the operation specifies more than one).

2 Finds the largest Buffer In value from all of the second operation's specified resource groups.

3 Adds the two values to the sum of the first operation's Finish hours and the second operation's Move hours.

Note: If the Infinite Resource Capacity After field is set to 0 on each of the operation's resource groups, the operation's Queue hours are also added to the total buffer time between the two operations (see “About Infinite Resource Capacity” on page 12 for more information).

ATP/CTP Pull Tolerance (Days)

During the Get ATP or Get CTP process, after the system push plans a demand to be late, it performs a final series of pull-planning iterations within a time window (bound by the demand's due date and the Projected date) to optimize the plan. This process divides the time window in half with each iteration until a feasible plan is found that is within the ATP/CTP Pull Tolerance number of days of the original Due date.

In the ATP/CTP Pull Tolerance field, enter the number of days to use as the system's limit of how close to the Due date to attempt to plan the demand when planning with the Get ATP or Get CTP functions.

- A smaller number may result in an earlier Projected date, but the system may need to perform many iterations to arrive at the date, which slows the Get ATP/Get CTP process.
- A larger number will allow the Get ATP/Get CTP process to complete faster, but may produce a Projected date that is not as early as your facility could accomplish in reality.

Default: 7 days

Planning Pull Tolerance (Days)

During a run of the APS Planning activity, after push planning a demand, the system performs a final series of pull-planning iterations within a time window (bound by the demand's due date and the Projected date) to optimize the plan. This process divides the time window in half with each iteration until a feasible plan is found that is within the Planning Pull Tolerance number of days of the original Due date.

In the Planning Pull Tolerance field, enter the number of days to use as the APS Planning activity's limit of how close to the Due date to attempt to plan the demand.

- A smaller number may result in an earlier Projected date, but the system may need to perform many iterations to arrive at the date, which slows the APS Planning activity.
- A larger number will allow the APS Planning activity to complete faster, but may produce a Projected date that is not as early as your facility could accomplish in reality.

Default: 7 days

Preservation Level Multiplier

With the Time Fence feature (see “Items - Time Fence Rule” on page 61 and “Items - Time Fence Value” on page 62 for more information), you can specify a quantity of inventory and planned supply that is reserved for demands due within a defined period of time. The system does not allow any demands due later than this time fence to deplete available inventory or supplies below the "preservation level." This level is equal to the item's Safety Stock value multiplied by the Preservation Level Multiplier field.

For example, suppose the demand's due date is later than the item's defined Time Fence, and the demand quantity is 100 (see “Items - Time Fence Rule” on page 61 for more information). On-hand inventory and planned supplies total 100, and the safety stock is 50. Preservation Level Multiplier is set to 0.5. The quantity the system preserves is half the safety stock (0.5 * 50 = 25). So, the demand can only allocate 75 of the available inventory and supplies.

If either the Safety Stock or Preservation Level Multiplier value is zero, the entire quantity of inventory and supplies is preserved inside the time fence (see “Items - Safety Stock” on page 67 for more information).

Default: 1

Items - Time Fence Rule

Select a rule to control when demands for this item can use available supplies or inventory. This control allows you to preserve a quantity for use by shorter-term demands. Demands due later than the time fence cannot consume available inventory and supplies to the point where the on-hand and supply quantities drop below a certain "preservation level" (which is based on the item's Safety Stock level) - see “Items - Safety Stock” on page 67 for more information). You can adjust the preservation level using the Preservation Level Multiplier field (see “Preservation Level Multiplier” on page 60 for more information).

Note: If either the Safety Stock or Preservation Level Multiplier value is zero, the entire quantity of inventory and supplies is preserved inside the time fence. That is, demands due later than the time fence cannot consume any inventory or supplies inside the time fence.

The time fence time you define should represent the amount of time that is typically needed to replenish this item's quantity up to the (Safety Stock * Preservation Level Multiplier) value.

Available rules are:

- No time fence: the time fence function is disabled.
- Lead Time: the length of the time fence is defined by the end item's lead time (Fixed Lead Time + [Variable Lead Time * order quantity]). If a PCAL shift is defined, the system calculates lead time according to that shift. Otherwise, it calculates lead time using 24 hours x 7 days a week. Select this option if the time to replenish this item's quantity should be represented only by the end item lead time.
- Accumulated Lead Time: the length of the time fence is defined by the accumulated lead time for the end item + the lead times for all of its component items (see “Defining Lead Time for APS Planning” on page 71 for more information). If a PCAL shift is defined, the system calculates lead time according to that shift. Otherwise, it calculates lead time using 24 hours x 7 days a week. Select this option if the time to replenish this item's quantity should include the lead times of all the components (that is, the components may not typically be available).
- Specific Value: the length of the time fence is defined by the value in the Time Fence Value field (in days). The system calculates lead time using 24 hours x 7 days a week (see “How APS Planning Uses Time Fence” on page 62 for more information).

Note: The Manufacturing Safety Stock logic uses only Lead Time or Accumulated Lead Time rules (see “How APS Replenishes Safety Stock” on page 64 for more information). Therefore, caution should be used when choosing the Specific Value for Time Fence Rule.

Items - Time Fence Value

If the Time Fence Rules is set to Specific Value, enter the number of days for the duration of the time fence (see “Items - Time Fence Rule” on page 61 for more information).

How APS Planning Uses Time Fence

The system applies the time fence only during the pull-planning phase of APS Planning. If the system fails to plan the demand using pull planning, and must switch to push planning, it ignores the time fence and uses whatever inventory and supplies are necessary to satisfy the demand as soon as possible.

Note: Planned orders that the system generates to replenish safety stock will ignore the time fence.

During the planning process, the system may use or ignore the time fence, depending on the current conditions. The table below shows each of the planning iterations the system may perform and the corresponding treatment of the time fence.

Planning Pass	
A	Pull plan from the demand's Due date and use Time Fence. If the demand is a pull-up order, pull plan from the Request date. If pass A is successful, plan the next demand. If pass A fails, perform pass B.
B	Pull plan from the demand's Due date and ignore Time Fence. If the demand is a pull-up order, pull plan from the Request date. If pass B is successful, plan the next item. If pass B fails and demand is a pull-up order, perform pass C. If pass B fails and demand is not a pull-up order, perform pass E.
C	(Pull-up orders only.) Pull plan from the Due date and use Time Fence. If pass C is successful, perform additional pull-planning iterations between the Due date and Request date to try to project a date that is closer to the Request date. If pass C fails, perform pass D
D	(Pull-up orders only.) Pull plan from the Due date and ignore Time Fence. If pass D is successful, perform additional pull-planning iterations between the Due date and Request date to try to project a date that is closer to the Request date. If pass D fails, perform pass E.
E	Push plan from the current date (Time Fence is ignored during a push). If pass E is successful (that is, if the system was able to plan a projected completion date within the Plan Horizon, perform pass F. If pass E fails, perform pass G.

Planning Pass	
F	Pull plan again from the projected date calculated by the push plan and use Time Fence. If pass F is successful, perform iterative pull-planning using the projected date from the push as the end of the iterations time window. If pass F fails, perform pass G.
G	Pull plan from the end of the Plan Horizon and ignore Time Fence. If pass G is successful, perform iterative pull-planning using the end of the Plan Horizon as the end of the iterations time window. If pass G fails, mark the item as "Blocked" and begin planning the next item
Iterative pull planning	Perform one or more pull-planning iterations within a defined time window, dividing the window in half with each iteration until a feasible plan is found that is within the Planning Pull Tolerance or ATP/CTP Pull Tolerance number of days of the need date. The beginning of the time window is always the demand's need date (see “ATP/CTP Pull Tolerance (Days)” on page 59 and “Planning Pull Tolerance (Days)” on page 60 for more information). The end of the time window will be either the projected completion date from pass E or the end of the Plan Horizon. For example, the first iteration pulls from the midpoint between the projected date and the need date. If that pull succeeds, the next iteration pulls from the midpoint between that new projected date and the need date. The process incrementally moves closer to the need date until it finds a plan that works (that is, doesn't calculate a start date in the past) and has a projected completion date that is within the Pull Tolerance days of the need date.

Note: Passes B and D will be run only if there are items in the BOM with the Time Fence defined. Time fences are ignored in passes B and D for Manufactured items only.

Enforcing the Time Fence at the Expense of the Due Date

If you are more concerned with preserving inventory and supply than with meeting the due date, you can disable pass B so APS always uses the Time Fence. To disable this pass, select the Suspend Time Fence (Second Pull) (see “Suspend Time Fence (Second Pull)” on page 82 for more information) planning parameter. Only manufactured items can suspend the time fence

Customer Orders - Pull Up Order

Select this field to specify that, during a Get ATP/CTP process or during a run of the APS Planning activity, the system should attempt to plan the order line to meet its Request Date, (that is, it pull plans from the Request Date) (see “About Pull Planning” on page 13 for more information). If that plan is not successful, the system attempts to meet the order line's Due Date. If it can achieve the Due Date, the system incrementally attempts to improve the plan between the Request Date and Due Date. If the system cannot plan the order line at least by the Due Date, it push plans (See “About Push Planning” on page 14 for more information) the line item from the current date out to the as-soon-as-possible date.

This field affects all order lines on the order. To force a particular order line to ignore this field, set the order line's Due Date equal to its Request Date. If the Pull Up Orders field on the Customers form is selected for this customer, the Pull Up Order field for this order will be selected automatically.

Note: The Pull Up Order option does not override the normal order priority hierarchy defined on the APS Order Priority form (see “Order Priority” on page 95 for more information). That is, this order line will not be pulled up at the expense of higher-priority demands.

How APS Replenishes Safety Stock

APS handles replenishment of safety stock differently based on whether the item is manufactured, purchased, or transferred (as defined in the Source field on the Items form).

Safety Stock for Manufactured Items

When you run APS Planning, the system plans safety stock replenishment for manufactured items according to one of two processes: Post Process or Dynamic. Depending on the setting for Safety Stock Multiplier (see “Safety Stock Multiplier” on page 91 for more information), the software will automatically select which of the two behaviors to use for an item based upon the relationship between Order Minimum (see “Items - Order Minimum” on page 25 for more information) or Order Multiple (see “Items - Order Multiple” on page 25 for more information) and Safety Stock Level (see “Items - Safety Stock” on page 67 for more information). For those Items whose maximum of Order Minimum and Order Multiple is greater than Safety Stock (times a Multiplier), “Dynamic” behavior is used, while if the maximum of Order Minimum and Order Multiple is less than or equal to Safety Stock (times a Multiplier), “Post Process” behavior is used. The default Multiplier is 1.0. The user also has the option to specify the behavior for an individual item. A description of the behaviors follows.

Post Process Safety Stock Behavior

1 After all other demands (or orders) are planned, the system plans safety stock for each item in order by Low Level Code (Low to High).

2 For each item, if the inventory falls at or below Safety Stock level outside of Time Fence will create a Safety Stock plan at the point in time with a quantity equal to the difference between the safety stock level and the lowest projected inventory level outside of Time Fence

Dynamic Safety Stock Behavior

1 During the APS planning run, as each demand is planned, the Item’s safety stock level is evaluated.

2 If a demand causes safety stock to dip below the safety stock level:

   a A Safety Stock Order is planned for that Item.

   b Part of the order minimum/order multiple is reserved for safety stock. The remainder is available to other demands during the planning run.

c Depending upon the current inventory level, safety stock can sometimes be planned immediately. So, as opposed to Post Process logic you can have safety stock plans inside of the Item's Time Fence.

3 Once safety stock is planned for an item using dynamic behavior, the Time Fence is turned off. Time Fence is no longer needed since the Safety Stock Order protects the safety stock quantity.

For manufactured items, it is possible that in some situations (when you have demands due far into the future that use up your near-term supplies), the system may generate a safety stock planned order that is due much earlier than the demands need it, leaving you with a large quantity of unnecessary supplies.

To avoid this problem, we require you set the Time Fence Rule (see "Items - Time Fence Rule" on page 61 for more information) to "Lead Time" (if you can assume that all components would be readily available) or "Accumulated Lead Time" for the item on the Items form if you are using Safety Stock. By setting this Time Fence Rule, the later demands will not use the near-term supplies and the system will create planned orders due closer to when the demands are actually due.

Safety Stock for Purchased Items

After the system finishes planning all the demands normally, according to order priority, it performs a second, time-phased planning run (see "Purchased Supply Switching" on page 94 for more information). At the current date and at every date where there is a demand for the item, the system compares the on-hand quantity with the safety stock value:

1 If on-hand is not below safety stock, the system continues planning normally according to the Purchased Supply Switching/Generate Purchase Order Exceptions (see "Purchased Supply Switching" on page 94 for more information) functionality.

2 If on-hand is below safety stock, the system searches for existing planned supplies to satisfy the demand.

3 If sufficient planned supplies are available to satisfy the entire demand quantity, the system allocates the supplies to the demand instead of allocating on-hand inventory. Safety stock is preserved without requiring a safety stock planned order.

4 If sufficient supplies are NOT available, the system generates a new planned order at the earliest possible date to cover the safety stock shortage and the demand quantity. The system also generates the "On Hand Below Safety Stock" exception message. The due date of the planned order is set to the current date + standard lead time. The planned order quantity is set to the difference between safety stock and the projected on-hand at the current date + lead time.

Once the level is at or above safety stock, demands due later than the current date + standard lead time cannot reduce the level back below safety stock.

Note: The system generates only a single safety stock planned order for a given item (it does not generate a planned order for each instance where the on-hand level drops below safety stock).

Safety Stock for Transferred Items

The system plans safety stock for transferred items like it does for purchased items.

Parameters Related to Safety Stock Replenishment

The following parameters appear on either the Planning Parameters form (and affect ALL items) or on the Items form. They either affect the way the system generates planned orders to replenish safety stock or the system uses them along with the safety stock value to calculate a value used for another feature.

Parameter	Appears on...
Consider Negative On Hand (see “Consider Negative on Hand” on page 42 for more information)	Planning Parameters
Purchased Supply Switching (see “Purchased Supply Switching” on page 94 for more information)	N/A
Generate Purchase Order Exceptions (see “Generate Purchase Order Exceptions” on page 95 for more information)	N/A
Preservation Level Multiplier (see “Preservation Level Multiplier” on page 60 for more information)	Planning Parameters
Suspend Time Fence (Second Pull) (see “Suspend Time Fence (Second Pull)” on page 82 for more information)	Planning Parameters
Order Minimum (see “Items - Order Minimum” on page 25 for more information)	Items
Order Multiple (see “Items - Order Multiple” on page 25 for more information)	Items
Time Fence Rule (see “Items - Time Fence Rule” on page 61 for more information)	Items
Time Fence Value (see “Items - Time Fence Value” on page 62 for more information)	Items
Safety Stock Multiplier (see “Safety Stock Multiplier” on page 91 for more information)	Text file: mfgssmult.txt

Items - Safety Stock

On the Item/Warehouse form, enter the quantity of this item always to have on hand in inventory. For example, enter 20 to ensure that a quantity of 20 is always on hand. This field is displayed only on the Items form.

APS handles replenishment of safety stock differently depending on the type of item you are planning and also based on the setting of certain planning parameters (see “How APS Replenishes Safety Stock” on page 64 for more information).

This field is also used on the Purchase Requirements Report. This report only displays those items that have a projected on-hand below zero or below the safety stock amount.

Items - Use Reorder Point

This field applies only to purchased items that are neither MPS items (see “Items - MPS Flag” on page 85 for more information) nor Phantom items (see “Items - Phantom Flag” on page 85 for more information).

Reorder point items are usually inexpensive, high-output items (such as nails, bolts, etc.) that you want to track and maintain differently than normal items. Select this field to specify that the system will replenish this item's inventory when on-hand inventory + on-order (such as from purchase orders) quantity drops below the level specified in the Reorder Point field (see “Items - Reorder Point” on page 68 for more information). The system generates a planned order for the quantity specified in the Fixed Order Qty field (see “Items - Fixed Order Quantity” on page 69 for more information).

Irrelevant Planning Parameters

Tracking reorder point items is a straightforward replenishment strategy for which many of the other planning parameters are not needed. When you select the Use Reorder Point field, the following fields on the Items form have no use and are disabled for this field.

- Days Supply (see “Items - Days Supply” on page 55 for more information)
- Phantom Flag (see “Items - Phantom Flag” on page 85 for more information)
- MPS Flag (see “Items - MPS Flag” on page 85 for more information)
- MPS Plan Fence (see “Fences: MPS Plan Fence” on page 28 for more information)
- Expedited Fixed Lead Time (see “Items - Expedited Fixed Lead Time” on page 76 for more information)
- Expedited Variable Lead Time (see “Items - Expedited Variable Lead Time” on page 78 for more information)
- MRP Item (see “Items - MRP Item” on page 36 for more information)
- Infinite (see “Infinite Purchased Items After (Hours)” on page 58 for more information)
- Accept Requirements (see “Items - Accept Requirements” on page 84 for more information)
- Pass Requirements (see “Items - Pass Requirements” on page 84 for more information)
- Supply Usage Tolerance (see “Supply Usage Tolerance” on page 44 for more information)

- Time Fence Rule (see “Items - Time Fence Rule” on page 61 for more information)
- Time Fence Value (see “Items - Time Fence Value” on page 62 for more information)

Caution: When you select the Use Reorder Point field, the form sets the above fields to zero, if they contain a value, or clears them if they are selected. The Accept Requirements, however, is selected automatically (see “Items - Pass Requirements” on page 84 for more information).

Output Analysis

On the Planning Detail and Planning Summary forms and on the Exceptions Report, this field displays as a reference.

Items - Reorder Point

This field applies only to purchased items that are neither MPS items nor Phantom items.

Reorder point items are usually inexpensive, high-volume items (such as nails, bolts, etc.) that you want to track and maintain differently than normal items.

If the Use Reorder Point field (see “Items - Use Reorder Point” on page 67 for more information) is selected, specify the inventory level that controls the point at which the system generates a planned order to replenish this item's on-hand inventory. When the on-hand level + the on-order quantity (total quantity from POs) drops to this reorder point level or below it, the system generates a planned order for the quantity specified in the Fixed Order Qty field (see “Items - Fixed Order Quantity” on page 69 for more information). If that planned order quantity is not greater than the reorder point, the system uses the Order Multiple value (see “Items - Order Multiple” on page 25 for more information) to increase the planned order quantity until it is greater than the reorder point. If the Order Multiple value is zero, the Fixed Order Qty is used as the multiple to increase the planned order quantity. The system creates the reorder point planned order to be due at the current date + the item's lead time.

EXAMPLE: Consider the values below.

- Beginning On Hand: 28
- Order Multiple: 5
- Fixed Order Qty: 10
- Reorder Point: 30
- When you run the APS Planning activity, the system generates a planned order for 10.
- When the system calculates the on-hand level, it does not include quantity in any warehouses specified as Dedicated Inventory warehouses.
- During a given planning run, the system creates a single planned order for each reorder point item, due at the current date + lead time.
- The system does not consider any demands for the reorder point item when calculating the planned order quantity for reorder point replenishment.
- The system does not generate planned orders to replenish safety stock for reorder point items; however, "On Hand Below Safety Stock" exception messages are still generated.

- The reorder point planned order appears with a reference of "Reorder Point" on the planning output analysis forms such as Planning Detail and Demand Summary APS.
- The system does not apply the Purchased Supply Switching (see “Purchased Supply Switching” on page 94 for more information) function to reorder point items.

Output Analysis

On the Planning Detail and Planning Summary forms and on the Exceptions Report, this field displays as a display-only reference. On planned orders for reorder point items, the Reference field displays "ROP" as a prefix to the PLN number and the Parent Reference field displays "Reorder Point."

Items - Fixed Order Quantity

Enter the replenishment quantity for this reorder point item. When the system generates a planned order to replenish the reorder point item's on-hand inventory, it uses this quantity value. See “Items - Reorder Point” on page 68 for more information about reorder points.

Output Analysis

On the Planning Detail and Planning Summary forms and on the Exceptions Report, this field displays the fixed order quantity as a reference. The Parent Reference field displays "Reorder Point" for reorder point items.

Push Iterations

Enter the maximum number of resource combinations the system will consider when push planning (see “About Push Planning” on page 14 for more information) a single operation. We suggest you leave this field set to 0, to allow the system to find the fastest combination of resources to complete the operation earliest. When this field is 0, the system checks ALL combinations of resources in every resource group the operation requires. However, if you are concerned about system performance, you can limit the system from checking all combinations by entering a maximum value.

Note: You should consider using this parameter only if you have operations that specify resource groups with large numbers of member resources, and you have considered the situation carefully. If you use a Push Iterations value that is too small, the planning function may not plan an order to be available as fast as it could have been available in reality.

Example: if an operation specifies 2 resource groups, and each resource group has 100 resource members, the planning function will check 10,000 combinations to find the fastest combination of resources. This process may slow system performance. If you specified 100 push iterations, the planning function would only check the first 100 resource combinations.

Default: 0

Pull Iterations

Enter the maximum number of resource combinations the system will check while trying to pull plan (see “About Pull Planning” on page 13 for more information) a single operation. This parameter works like the Push Iterations parameter, except during pull-planning passes. We recommend you leave this parameter set to 0 to allow the system to find the fastest resource combination.

For example, an operation specifies 2 resource groups, each with 25 member resources. If the Pull Iteration is set to 10, the system considers only the first 10 combinations of resources when trying to pull plan the operation. If it doesn't find a combination that leaves enough time to finish the remaining operations in the routing, the pull-planning pass fails and the system push plans the operation. See “Use Latest Pull” on page 94 for additional information.

Default: 0

New Order Start Delay

Enter the number of hours to delay the start of "new" incoming customer order lines, blanket releases, or estimate lines. "New" lines are those for which you have run the Get ATP/CTP process for the first time (and you haven't saved the record) or have been saved but the Order Date is still the current date.

When the system plans the order line during the Get ATP/CTP process, it does not allow any processing until after this delay. This delay accounts for required activities that may need to take place before any processing can begin for the new line, such as job paperwork, purchasing/lead time, etc.

Default: 0 hours

Fixed Lead Time Reduction (Hours)

Enter the number of hours that an item's standard Fixed Lead Time (see “Items - Fixed Lead Time” on page 75 for more information) will be reduced in the APS plan. This parameter applies to all items.

Note: The standard Fixed Lead Time value is expressed in days on the item record. The APS planning functions interpret lead time in hours. So, if the Fixed Lead Time on the item record is 3 days (72 hours), and you want to reduce it to 1 day, enter a value of 48 in the Fixed Lead Time Reduction field to reduce the value by 2 days. When you run the APS Planning activity, the system interprets the fixed lead time value as 24 hours when calculating the release date of the planned order.

The system applies this value only if the appropriate Use Expedited Lead Time parameter is enabled (see “Use Expedited Lead Time: For Planning, For ATP/CTP” on page 49 for more information).

Default: 0 hours

Defining Lead Time for APS Planning

In certain planning situations, the system may use lead time to approximate the time needed to acquire, make, or receive an item. In all cases, lead time is defined in the following fields on the Items form:

- Fixed Lead Time (see “Items - Fixed Lead Time” on page 75 for more information)
- Variable Lead Time (see “Variable Lead Time Reduction (Hours)” on page 77 for more information)
- Expedited Fixed Lead Time (see “Items - Expedited Fixed Lead Time” on page 76 for more information)
- Expedited Variable Lead Time (see “Items - Expedited Variable Lead Time” on page 78 for more information)
- Paper Work Lead Time (see “Items - Paper Work Lead Time” on page 75 for more information)
- Dock-to-Stock Lead Time (see “Items - Dock-to-Stock Lead Time” on page 76 for more information)

Note: Paper Work Lead Time and Dock-to-Stock Lead Time are also used by the MPS Processor, Material Planner Workbench Generation, and on the Order Action Report.

This topic describes how lead time applies to purchased items, manufactured items, and transferred items. It also describes how to use the Expedited Lead Time functionality.

Where Purchased Item Lead Time is Used

For purchased items, you must enter the lead time values manually in the lead time fields. The system uses purchased item lead time to perform the following functions:

- To calculate the release date of a purchase order when you firm a planned order. The system deducts the item's dock-to-stock lead time from the operation's start date, if not blank, or the job's start date if the operation's start date is blank.
- When you cross-reference and create a purchase order from a job material. The system deducts the item's dock-to-stock lead time from the operation's start date, if not blank, or the job's start date if the operation's start date is blank.
- When you manually create a purchase order line or purchase order requisition line and an item/vendor cross reference record exists for the item and the PO vendor. The system calculates the default due date by adding the item vendor record's lead time to the appropriate date:

    d PO line: adds item vendor lead time to PO order date.

    e Blanket PO release: adds item vendor lead time to the release date you entered.

    f PO requisition line: adds item vendor lead time to the requisition date.

- To calculate the due date of safety stock planned orders (current date/time + lead time).

Where Manufactured Item Lead Time is Used

For manufactured items, you can enter the lead times manually or use the Lead Time Processor (see “The Lead Time Processor Algorithm” on page 46 for more information) to generate the lead times from the current routing's operation times. The system uses lead time to plan manufactured items in these situations.

- To plan the start date of a job when any of these conditions are true:
  - g The item has no routing.
  - h The MRP Item field (see “Items - MRP Item” on page 36 for more information) is selected for the item on the Items form.
- To calculate the due date of safety stock planned orders (current date/time + lead time).
- To determine which routing and BOM to use when planning a requirement for an item. The system decides which routings and BOMs to use through the indented bill of manufacturing by using lead time to estimate when they will be used, and then comparing those times to the effective dates for the possible routings and BOMs.

Note: For manufactured items that are not specified as MRP Items, lead time is not used when the system passes parent item requirements down to components. Component due dates are based on the start date of the operation where the component is used (or the start date of the job, depending on the setting of the Plan Materials at Operation Start (see “Plan Materials at Operation Start” on page 35 for more information) planning parameter.

Where Transferred Item Lead Time is Used

The system uses lead time to plan transfer orders if:

- You are running APS Planning (in single-site mode) and the demand is for an item with a remote Supply Site. Planned transfer demand is replicated to the Supply Site. See “Setting Up Planned Transfer Order Replication” on page 19 for more information.
- You are running APS Planning (in global mode), the demand is for an item with a remote Supply Site, and the system cannot contact the remote site to plan the transfer order. The transfer supply is planned at the local site using lead time.

The system calculates lead time for transferred items in the same manner as purchased and manufactured items, except it adds the transit time (defined on Inter-Site Parameters) to the total lead time. For example, if an item's lead time from the FLT + (VLT * Qty) calculation is 1 day, and it takes 3 days to ship to the receiving site, the total lead time is 4 days.

Release Date Calculation

APS uses this formula to calculate the planned order release date:

Start/Release Date = PLN Due Date - (FLT + DSLT + PWLT + (VLT * Quantity Required))

where:

FLT = Fixed Lead Time

VLT = Variable (per-piece) Lead Time

DSLT = Dock-to-Stock Lead Time

PWLT = Paperwork Lead Time

EXAMPLE: For this example purchase order, assume the following conditions:

- Current date/time = 5/16/2002 (Thursday) at 08:00.
- Planned purchase order due date = 5/30/2002 at 08:00.
- Quantity = 10

Purchased item's lead times are:

- FLT = 1 day
- VLT = 0.5 hour (although purchased items usually have a VLT of 0, a non-zero value is used here for illustration purposes)
- DSLT = 1 day
- PWLT = 0.5 day

The system calculates the release date of the purchase order by performing this calculation:

i 1) Sums the FLT, DSLT, and PWLT lead time values for a result of 2.5 days.

j 2) Multiplies the VLT value of 0.5 by the quantity of 10 for a result of 5 hours.

k 3) Adds 5 hours to (2.5 days * 24 hours) for a result of 65 hours total lead time.

l 4) Starting at the due date (5/30/2002 at 08:00), the system counts backward 65 hours. By default, it accumulates lead time 24 hours per day, 7 days per week.

m 5) The resulting release date is 5/27/2002 at 14:00.

Hours vs. Days

The lead time values expressed in days on system forms are converted to hours during these calculations.

24-hour Calendar

For all calculations involving lead time, the system assumes a 24-hour day X 7-day week by default. If you are using APS, you can configure it to use a defined range of business days by creating a shift named “PCAL” on the Scheduling Shifts form (see “About the Lead Time PCAL Shift” on page 31 for more information).

Using Expedited Lead Times

For special cases where you need to reduce the normal lead time, you can use the expedited lead time features. APS uses expedited lead time when the initial pull planning (see “About Pull Planning”

on page 13 for more information) using standard lead time projects a date in the past. You can apply lead time reduction for specific items or apply it to all items.

Note: When you use mass cross-referencing through the Material Planner Workbench Generation form, expedited lead time is not used.

The Use Expedited Lead Time parameter (see “Use Expedited Lead Time: For Planning, For ATP/CTP” on page 49 for more information) on the Planning Parameters form enables or disables the application of expedited lead times at the item level and global lead time reduction. You can enable or disable expedited lead time usage for runs of APS Planning (select For Planning) and/or for Get ATP/CTP operations (select For ATP/CTP).

Expedited Lead Time for Specific Items

If you specify a value for the Expedited Fixed Lead Time or Expedited Variable Lead Time (see “Items - Expedited Fixed Lead Time” on page 76 or “Items - Expedited Variable Lead Time” on page 78 for more information) values on an item, the lead time calculations use the expedited values INSTEAD of the item's normal Fixed Lead Time (see “Items - Fixed Lead Time” on page 75) and Variable Lead Time values (see “Items - Variable Lead Time” on page 78 for more information). For example, if Expedited Fixed Lead Time contains a value, the lead time calculation is:

Start/Release Date = Due Date - EFLT + (VLT * Quantity)

Global Lead Time Reduction

You can also reduce lead time for all items using the Fixed and Variable Lead Time Reduction (see “Items - Fixed Lead Time” on page 75 and “Items - Variable Lead Time” on page 78 for more information) parameters on the Planning Parameters form. These options reduce the standard fixed and/or variable lead time by the specified value for all items.

During planning, the system calculates the total lead time with this formula:

Start/Release Date = Due Date - (FLT - FLTR) + ([VLT - VLTR] * Quantity)

where:

EFLT = Expedited Fixed Lead Time

FLTR = Fixed Lead Time Reduction

EFLT = Expedited Variable (per-piece) Lead Time

VLTR = Variable Lead Time Reduction

Depending on the combination of selected options and values, there may be other combinations of the lead time formula, such as:

Start/Release Date = Due Date - (FLT - FLTR) + (VLTR * Quantity)

or

Start/Release Date = Due Date - EFLT + ([VLT - VLTR] * Quantity)

Notice that the Fixed/Variable Lead Time Reduction values reduce the standard lead times, while the Expedited Fixed/Variable Lead Time values specified on the Items form actually replace the standard lead times.

Indication of Expedited Lead Time on Output Forms and Reports

On the Purchase Order Lines, Purchase Order Blanket Releases, and Purchase Order Requisitions Lines forms, the Expedited field indicates when the system used expedited lead time to plan a line item.

On the Purchase Order Report, Change Order Report, PO Requisition Report, and the Change Order Detail Report, a note indicates when the system used expedited lead time to plan a line item.

On the Planning Detail form, Exceptions Report, or Material Planner Workbench form, the "Used Expedited Lead Time" exception message appears for a supply record if the system used expedited lead time to allocate that supply to a demand.

Handling Temporary Vendor Lead Time Problems

Your vendors may have temporary problems meeting their lead times for certain items. To ensure that APS creates the planned order for a purchased item with the appropriate lead time in this situation, enter the **Earliest Planned Purchase Receipt** date on the Items form.

This date temporarily overrides the item's standard and expedited lead times. When APS creates a planned order for this item, it determines that the item can be received either by the current date + lead time or by this Earliest Planned Purchase Receipt (see “Items - Earliest Planned Purchase Receipt” on page 77 for more information) date, whichever is later.

Items - Paper Work Lead Time

Enter the number of days it takes to fill out the necessary forms before a job or purchase order can be started (the time required to convert a planned order into a Released PO or Released Job).

The system sums the Paper Work Lead Time (see “Items - Paper Work Lead Time” on page 75 for more information) with the Fixed Lead Time (see “Items - Fixed Lead Time” on page 75 for more information) and Dock-to-Stock Lead Time (see “Items - Dock-to-Stock Lead Time” on page 76 for more information) and APS Planning uses this lead time when calculating the planned order release dates.

Items - Fixed Lead Time

For manufactured items, the system calculates the lead time using the Lead Time Processor (see “The Lead Time Processor Algorithm” on page 46 for more information). The lead time equals the total move, queue, and setup times of each operation in the current standard routing for the item

(rounded to the nearest day). If you do not use the Lead Time Processor, and you leave the Variable Lead Time (see “Items - Variable Lead Time” on page 78 for more information) field blank, you should enter the lead time as the total move, queue, setup, and run times of each operation in the current standard routing of the item.

For a purchased item, the Fixed Lead Time field should contain the number of days from the time the item is ordered until it is received. The lead time displays on the Purchase Requirements report.

On the Material Planner Workbench form, the fixed lead time from the Items form displays for the selected record.

See “Defining Lead Time for APS Planning” on page 71 for more information.

Items - Expedited Fixed Lead Time

Enter the fixed expedited lead time (in days) for this item. When you run the APS Planning activity, if the initial pull-planning pass using standard lead time projects a date in the past, the Expedited Fixed Lead Time will be used.

Keep in mind that the Expedited lead time values on the Items form replace the standard lead time values, while the Expedited lead time reduction fields (see on the Planning Parameters form REDUCE the standard lead time values. This item-level value overrides the global reduction value if both are specified.

The system applies this value only if the appropriate Use Expedited Lead Time (see “Use Expedited Lead Time: For Planning, For ATP/CTP” on page 49 for more information) parameter (For Planning and/or For ATP/CTP) is enabled.

See “Defining Lead Time for APS Planning” on page 71 for more information.

Items - Dock-to-Stock Lead Time

Enter the number of days it takes to get the item into stock after the purchased material is received on the dock. Receiving inspection activity is the usual reason for dock-to-stock planning.

When you run APS Planning, Infor CloudSuite sums the Fixed Lead Time (see “Items - Fixed Lead Time” on page 75 for more information) and Dock-to-Stock Lead Time (see “Items - Dock-to-Stock Lead Time” on page 76 for more information) and uses that value to calculate the release date of the planned order, factoring in the variable lead time and quantity required.

APS subtracts this lead time from the required date when recommending a revised due date on an existing purchase order or purchase requisition.

The MPS Processor uses this lead time when creating the exception message "Release order (MPS Item)." The Material Planner Workbench Generation uses this lead time when determining the planned order release dates on the Material Planner Workbench form. The Order Action Report uses this lead time when calculating planned order release dates.

Note: Use of this lead time is not recommended for manufactured items because the Scheduler does not consider dock-to-stock lead time.

See “Defining Lead Time for APS Planning” on page 71 for more information.

Items - Earliest Planned Purchase Receipt

This field is used only for Purchased items.

Your vendors may have temporary problems meeting their lead times for certain items. To ensure that APS creates the planned order for this item with the appropriate lead time in this situation, enter the earliest date by which purchases of this item can arrive. All planned orders the system creates for this item will have due dates no earlier than this date. If the date is in the past, this field is ignored.

This date temporarily overrides the item's standard and expedited lead times (see “Defining Lead Time for APS Planning” on page 71 for more information). When APS creates a planned order for this item, it determines that the item can be received either by the current date + lead time or by this Earliest Planned Purchase Receipt date, whichever is later. This date overrides lead times as follows:

- Standard lead time: overrides standard lead time only until the time between the current date and the Earliest Planned Purchase Receipt date is within lead time (after which normal lead time planning resumes).
- Expedited lead time: if the Earliest Planned Purchase Receipt date is between the standard lead time and the expedited lead time, it overrides the expedited lead time and becomes the "effective" expedited receipt date. After the earliest receipt date is within the expedited lead time, the normal expedited lead time will be used.
    - The system uses this date at the appropriate time (when a vendor lead time problem occurs); you do not need to "reset" the date when the lead time situation returns to normal.
    - This option does not affect normal purchase orders already in the system.
    - If you leave this field blank, the system assumes it is a date far in the past and ignores it.
    - The time value used in this date comes from the Supply Time (see “Orders: Supply Time” on page 50 for more information) planning parameter.

Variable Lead Time Reduction (Hours)

Enter the number of hours that an item's Variable Lead Time (see “Items - Variable Lead Time” on page 78 for more information) will be reduced in the APS plan. This parameter applies to all items.

For example, if the Variable Lead Time of item XYZ is 4 hours, and you want to reduce it to 2 hours, enter 2 in the Variable Lead Time Reduction field. When you run the APS Planning activity, the system interprets the variable lead time value as 2 hours when calculating the release date of the planned order.

The system applies this value only if the appropriate Use Expedited Lead Time (see “Use Expedited Lead Time: For Planning, For ATP/CTP” on page 49 for more information) parameter (For Planning and/or For ATP/CTP) is enabled.

See “Defining Lead Time for APS Planning” on page 71 for more information.

Default: 0 hours

Items - Variable Lead Time

The total of run times from each operation in the item's current routing displays. The Lead Time Processor (see “The Lead Time Processor Algorithm” on page 46 for more information) calculates this field for manufactured items only. When you run the APS Planning activity, the Variable Lead Time is multiplied by the quantity manufactured to determine the total variable lead time.

The system stores the Variable Lead Time as hours per piece. However, if you do not use the Lead Time Processor and you do not enter the Variable Lead Time, you should enter the Fixed Lead Time (see “Items - Fixed Lead Time” on page 75 for more information) field as the total move, queue, setup, and run times of each operation in the item's current routing.

See “Defining Lead Time for APS Planning” on page 71 for more information.

Items - Expedited Variable Lead Time

Enter the variable (per-piece) expedited lead time (in hours) for this item. When you run the APS Planning activity, if the initial pull-planning (see “Pull and Push Planning” on page 13 for more information) pass using standard lead time projects a date in the past, the Expedited Variable Lead Time will be used.

Keep in mind that the Expedited lead time values on the Items form replace the standard lead time values (see “Fixed Lead Time Reduction (Hours)” on page 70 and “Variable Lead Time Reduction (Hours)” on page 77 for more information), while the lead time reduction fields on the Planning Parameters form REDUCE the standard lead time values. This item-level value overrides the global reduction value if both are specified.

The system applies this value only if the appropriate Use Expedited Lead Time parameter (see “Use Expedited Lead Time: For Planning, For ATP/CTP” on page 49 for more information) is enabled.

See “Defining Lead Time for APS Planning” on page 71 for more information.

Planner Trace Level

Specify the level of trace messages to be written while the APS Planner is executing. The table below shows the four trace levels available along with the trace flags that are enabled at each level: Minimal, Limited, Extensive, and Full.

Trace Level	Trace Flags
Minimal	Startup + Warnings
Limited	Startup + Warnings + Order + BOM + Item + Supply Switching
Extensive	Startup + Warnings + Order + BOM + Item + Event + Supply Switching
Full	Startup + Warnings + Order + BOM + Item + Operation + Final Resource + Event + Supply Switching + Time Fence

Note: Increasing the trace level from Minimal may cause the APS Planner run time to increase, and should only be done based on a recommendation from Infor.

Default: Minimal

Global Planning Mode

In single-site mode, APS Planning regenerates the plan only at the local site. In global mode, APS Planning regenerates all plans, transfer supply orders, and transfer demand orders at all sites defined on the Sites tab on the Planning Parameters form. The sequence in which each site is planned is determined by the site priority defined at the local site where you run APS Planning.

In “Global Planning” mode, each site will be planned in priority order. Demands for transferred items are planned at the supplying site when encountered at the appropriate point in the planning process.

In “Multiple Site Planning” mode, each site will be planned in priority order. Demands for transferred items are planned using leadtime, with planned transfer orders replicated to the supplying site during planner post-processing. After all sites have been planned, the replicated transfer orders are planned incrementally.

Note: When running APS in “Global Planning” mode, do not enable planning replication.

Default: Multiple Site Planning

Use Latest Pull for Alternate Items

The system uses this field during the pull planning (see “Pull and Push Planning” on page 13 for more information) phase of the APS Planning activity. It affects how the system plans an operation's materials that are members of an alternate materials group. Alternate materials are materials that have the same Alt Group ID (see “Current Materials - Alternate Group” on page 81 for more information) in the operation's Current Materials record.

During a run of the APS Planning activity, when this field is cleared, the system plans the materials like this:

1 It first attempts to satisfy the demand quantity from on-hand inventory and/or planned supplies of the primary material (the material with an Alt Group Rank of 0) (see “Current Materials - Alternate Group Rank” on page 81 for more information).

2 For the remaining quantity not satisfied from inventory/supplies, the system then attempts to pull plan the primary material.

3 If it cannot pull plan the primary material in the time between the due date and the current date, the system clears its allocation of inventory/supplies of the primary material.

4 It then attempts to satisfy the demand quantity from on-hand inventory and planned supplies of the alternate material that has an Alt Group Rank of 1.

5 For the remaining quantity not satisfied from inventory/supplies, the system attempts to pull plan the alternate material.

Note: The system does not split the demand quantity between multiple alternate materials. For example, suppose you need 100 of Part123 on a BOM. Part 123 has alternate material Part 123-A. Because of capacity limitations, the system is only able to plan 50 of Part 123, so it selects the alternate material to satisfy the entire 100 demand quantity. It does not plan 50 of Part 123 and 50 of Part 123-A.

6 If the first alternate material cannot be pull planned in time, the system attempts to pull plan the next-highest-ranking alternate material from on-hand inventory and planned supplies. This process continues until the system finds an alternate material that can be successfully planned.

7 If none of the alternate materials can be successfully pull planned, the pull-planning phase fails and the system attempts to push plan the demand (the Use Latest Pull for Alternate Items field is not used during the push-planning phase).

When this field is selected, the system plans the materials like this:

1 If any material in the alternate group (including the primary material) is available in on-hand inventory or planned supplies, the system satisfies the demand quantity with that material.

2 If more than one material is on hand, the system uses the material with the lower Alt Group Rank value (see “Current Materials - Alternate Group Rank” on page 81 for more information).

3 If none of the materials is on hand, the system "test" pull plans all materials in the alternate group (including the primary material). It examines the projected start or order dates of all materials in the alternate group and plans the material that can be ordered or started the latest.

Note: The latest order or start date results in the fastest material plan because this parameter is applied during the pull-planning phase of the APS Planning activity.

4 If more than one material has the same start or order date, the system uses the material with the lower Alt Group Rank value.

5 If none of the materials can be successfully pull planned, the pull-planning phase fails and the system attempts to push plan the demand.

This field is applied only during the first pull-planning phase that occurs if the demand will be on time. If the demand is projected to be late and the system switches to push planning, it always uses the fastest alternate material. During push planning, "fastest" means the material that can be ordered or started the earliest. The pull-planning pass that occurs after a push plan (to remove slack from the push) also uses the fastest alternate material.

Default: Do Not Select

Current Materials - Alternate Group

You can set up an operation in an item's current routing to be able to pick from a group of alternate materials when the APS Planning activity projects the primary material to be late. When APS plans a demand and the primary material is late, the system substitutes an alternate material from the alternate group you defined for the operation. See Use Latest Pull for Alternate (see “Use Latest Pull for Alternate Items” on page 80 for more information) Items for details about how the system plans alternate materials.

Use the Alt Group field to define a group of alternate materials for an operation. Items with the same Alt Group that are listed on the same operation are considered to be a set of alternate items. An operation can have more than one alternate group. An item is not an alternate material if the Alt Group Rank (see “Current Materials - Alternate Group Rank” on page 81 for more information) is 0.

The Alt Group field defaults to the number in the material's Seq field. You can change this field only when you are adding the material to the operation.

Note: Items with the Configuration Flag selected on the Items form cannot have alternate materials. Also, items in an alternate group must be defined on the Items form (they must be inventoried items).

Current Materials - Alternate Group Rank

This field identifies the priority value for this alternate material within the alternate group of which it is a member. For the first material you add to an alternate group, the Alt Group Rank is automatically set to 0. A rank of 0 identifies this item as the primary material for this operation. The system plans alternate materials in sequence of Alt Group Rank. By default, it attempts to plan the primary material first (see “Use Latest Pull for Alternate Items” on page 80 for information about how you can change the default planning behavior of alternate materials). You cannot change this Rank value after you save the record, so make sure this is the item you want as the primary item.

Apply Order Maximum Through BOM

Select this field to apply order maximums to sub-levels of the BOM. Clear this field to restrict order maximums to the end item of a demand.

> EXAMPLE: A wheel is made up of one hub (plus other items). The maximum order size for hubs is 5. A job is created for 10 wheels. If this field is selected, the production of hubs is planned in two blocks of 5 each. If this field is not selected, the entire production of hubs is planned in one block of 10, despite the order maximum.

Default: Do Not Select

Suspend Time Fence (Second Pull)

When the system plans an item that has a Time Fence defined (see “Items - Time Fence Rule” on page 61 for more information), and a demand for that item is projected to be late, the system plans the demand with the Time Fence disabled to attempt to plan it by the Due date.

If you are more concerned with preserving inventory and supply than with meeting the due date, you can force the system always to run with the Time Fence enabled. To do this, select the Suspend Time Fence (Second Pull) parameter.

Only manufactured items can suspend the time fence.

Default: Do Not Select

Job & PS Supply Switching

This parameter applies only to manufactured items.

Select this field to allow the system to reallocate on-hand inventory and job/production schedule supplies to short-term demands that, during the APS Planning run, may have been satisfied by later job orders and production schedule releases. The system runs this process after each APS Planning run, in a push planning mode (see “About Push Planning” on page 14 for more information), starting from the current date/time.

Consider using this option if you typically create jobs or production schedule releases earlier than they are needed, and you are not concerned about reserving supply for new short-term demands using Get ATP/CTP. Instead, you want to allocate the job/production schedule supplies with the earliest due dates to satisfy the demands with the earliest due dates.

Note: If you continue to use Get ATP/CTP when this parameter is selected, the Projected dates generated by Get ATP/CTP may be significantly later than expected, because more on-hand inventory and short-term supply will have been consumed by the longer-term demands.

If this parameter is selected, the system follows this process after the APS Planning activity runs:

1 Reads the output data and makes a list of the following "events" that occurred in the APS plan, sorted by the date/time in which they occurred:

- Each demand's usage of inventory
- Each demand's usage of a job or PS supply (MPS and transfer order supply usages are not included)
- Each job or PS supply

2 For each supply-usage and inventory-usage event, the system:

- Calculates on-hand inventory remaining after satisfying earlier demands.
- Calculates Job/PS supplies available before the date/time of the usage event.
- Calculates Job/PS supplies available after the date/time of the usage event that can be moved in.
- Uses on-hand inventory to satisfy the demand.
- For any unsatisfied demand quantity, allocates the job/PS supplies that are due before the demand due date. These are the supplies remaining after satisfying earlier demands.
- If any demand quantity remains unsatisfied, allocates the job/PS supplies that are due after the demand due date. Generates a "Move In Receipt" exception message for the supplies used.

3 Checks for any jobs or PS releases that have not been used and generates "Receipt Not Needed" exception messages for them.

Default: Do Not Select

Restrictions on the Job & PS Supply Switching:

- Does not affect how the system generates planned orders (PLNs).
- Does not consider supplies from safety stock replenishment orders.
- Does not reallocate cross-referenced jobs or production schedules.
- Does not consider items with the MPS Flag (see “Items - MPS Flag” on page 85 for more information) field selected.
- Does not consider items with the Phantom Flag (see “Items - Phantom Flag” on page 85 for more information) selected.
- Does not consider items with the Accept Requirements (see “Items - Accept Requirements” on page 84 for more information) field cleared.
- Considers Supply Usage Tolerance (see “Supply Usage Tolerance” on page 44 for more information) settings (if enabled), with a minimum tolerance of 1 day.
- Considers Time Fences (see “Items - Time Fence Rule” on page 61 for more information) (if enabled). Keep in mind the Time Fence parameter is designed to preserve inventory for short-term demands. Selecting the Job and PS Supply Switching (see “Job & PS Supply Switching” on page 82 for more information) parameter may undo the inventory preservation accomplished by the Time Fence.

Items - Accept Requirements

Select this field to have the system calculate APS requirements (also called demands) for this item from its parent item in the bill of material. You should select this field for most items.

If no requirements are passed down to this item, you can clear this field. Typically, you should clear this field for high-quantity, low-cost materials, such as screws and bolts. Reducing tracking on these items improves the performance of the system.

Items - Pass Requirements

Select this field to have the system calculate MRP or APS requirements (also called demands) for this item's component materials in the bill of material. If you clear the box, no requirements will be passed down to any of this item's component materials. Typically, you will select this field for manufactured items and clear this field for purchased items that have a bill of material.

The Accept/Pass Requirements fields work in conjunction with the Phantom Flag (see “Items - Phantom Flag” on page 85 for more information). The item is planned based on the settings of these options:

Accept Requirements?	Pass Requirements?	Phantom Flag?	APS Planning Bhevaior
Yes	Yes	No	Plan this item based on its parent item's demand, and also plan its components.
Yes	No	No	Plan this item based on its parent item's demand, but do not plan its components.
No	Yes	No	Do not plan this item, but plan its components.
No	No	No	Do not plan this item or its components.
Yes	Yes	Yes	Plan this item only if it is an end item, and also plan its components.
No	Yes	Yes	Plan this item only if it is an end item, and also plan its components.
Yes	No	Yes	Plan this item only if it is an end item, and do not plan its components.
No	No	Yes	Plan this item only if it is an end item, and do not plan its components.

Note: The system considers the Pass Requirements parameter only when processing planned orders or MPS receipts.

Note: The system does not consider the Pass Requirements parameter for items that have the Phantom Flag (see “Items - Phantom Flag” on page 85 for more information) selected. If a parent item that has Pass Requirements selected also has a phantom subassembly in its current bill of material,

the system passes that parent item's planned orders or MPS receipts through to the phantom item's components without looking at the phantom item's Pass Requirements setting.

Note: The Phantom Flag is located on the Items form and applies only to items for which the field is selected.

Items - Phantom Flag

Select the check box to designate this item as a Phantom.

When you run the APS Planning activity, the system bypasses the phantom item and creates planned orders only for the material components in the phantom item's current bill of material.

The system plans items differently based on the combination of how you set the Phantom Flag, Accept Requirements, and Pass Requirements fields on the Planning Parameters form.

See “Items - Accept Requirements” on page 84 and “Items - Pass Requirements” on page 84 for more information about the relationship between these fields.

Items - MPS Flag

On the Items form, select the box to indicate that this is a master production schedule (MPS) item or accept the default if cleared. If the item is a master production scheduled item, you are responsible for maintaining the master production schedule information prior to the MPS Plan (planning fence) date displayed on the Master Production Schedule form.

Use MPS items to control production of key items to help you protect your schedule from fluctuations in order-based demand (forecasts, customer orders, parent job orders, etc.). A master production schedule is a manually created, anticipated build schedule for these MPS items.

Note: When you select the MPS Flag, the system deletes all planned orders that may exist for this item, including PLNs for the item and PPLN requirements for the item's current materials. When you clear the MPS Flag (on an item where the flag had been selected), the system deletes all MPS receipts that may exist for the item as well as any PMPS requirements for the item's current materials.

On the Master Planning Display, Planning Detail Display, Planning Summary Display forms, this field indicates that this is a master production schedule (MPS) item.

Running APS Planning does not generate planned jobs or purchase orders for MPS items, or give you an exception message about rescheduling a job or purchase order (however, APS plans components of MPS items).

Planned Mfg Supply Switching

This parameter applies only to planned orders (PLNs) for manufactured items. The Planned Mfg Supply Switching parameter appears on the Planning Parameters form and on the Items form. For the system to apply the switching, you must enable the parameter on the Planning Parameters form AND on each Items record you want to affect. Clearing the parameter on the Planning Parameters form disables it for all items.

Caution: This parameter slows the performance of the APS Planning activity; therefore, in most cases you should NOT select it. It is designed to address a specific problem: when the parent item in a bill of material is defined with an Order Maximum (see “Items - Order Maximum” on page 25 for more information) value, and its component items are defined with Order Minimum (see “Items - Order Minimum” on page 25 for more information) values, the system may create excess planned orders. You can enable Planned Mfg Supply Switching to allow the system to reallocate the excess supplies appropriately for these items.

Note: If a supply is cross-referenced to a demand, it will not be affected by the Planned Manufactured Supply Switching parameter.

Default: Do Not Select

Chapter 5: APS Sites and Alternative Management

5

This form specifies the network settings that allow APS to resynchronize the plan across multiple supply sites when you run APS Planning in Global (see “Global Planning Mode” on page 79 for more information) mode. The Scheduler program also needs the Planning Host and Planning Port information in order to run. You must define at least one local site record on this form, regardless of whether you are using APS in Global mode.

This form also allows you to create alternatives and attach them to existing planner databases. You must use the APS Planner Manager program to create a planner database to attach to the alternative.

Note: The APS Planning activity uses only alternative 0. You must have an alternative 0 record for each site that will be included in global Planning activities or Get ATP/CTP processes. Alternatives other than "0" are used for what-if planning and output analysis. If you are planning to use replication (see “Setting Up Planned Transfer Order Replication” on page 19 for more information) to replicate transfer orders to your supply sites, you only need to define a single local site record on this tab, in addition to any additional alternatives needed for what-if planning and output analysis.

Alternative Number

Enter the identifier of the alternative to associate with the planner database that is running on the port number specified in the Port Number field. This association means that any APS action you take using this alternative will use the data contained in the referenced planner database.

Planning Site

Select the site location you are defining for Global APS Planning (see “Global Planning Mode” on page 79 for more information). The list of sites comes from those sites defined on the Sites/Entities form. The system uses this information to transfer data between the SQL Server database and the planner database in your environment. Each site in your environment must have at least one site

record defined (the local site, which is the site at which you are currently defining parameters and that is defined as "Local" in the Type parameter - see “Type” on page 89 for more information).

The local site can contact one or more remote sites during a global run of the Planning activity or during an incremental plan that involves a component supplied by a remote site. Any site that will run the APS Planning activity in global mode must define site records for ALL sites that you want to be included in the global plan. In addition, at each of the other sites, you must define site records for every remote site that supplies a component to that local site and every remote site that will request a component from that local site.

Example: Suppose you have an end-item "A" at the local site OHIO that requires a component "B," which is produced at remote site NEWYORK. Component B requires component "C," which is produced at remote site INDIANA. To support this bill of material in a global plan, your local site's planning parameters must include three site records:

Site Records Defined at Site OHIO:

"Site: OHIO (Type=Local)

"Site: NEWYORK (Type=Remote)

"Site: INDIANA (Type=Remote)

Site Records Defined at Site NEWYORK:

"Site: NEWYORK (Type=Local)

"Site: OHIO (Type=Remote)

"Site: INDIANA (Type=Remote)

Site Records Defined at Site INDIANA:

"Site: INDIANA (Type=Local)

"Site: NEWYORK (Type=Remote)

Note: If a site that supplies a component is not defined in the local site's planning parameters, the system uses the item's lead time and transit time to plan any demands for that item.

Priority

Enter the priority code for resynchronizing sites during a global run of the APS Planning activity. In sequence of site priority (priority 0 is first, followed by 1, and so on), the APS Planning activity contacts each site and regenerates the local plan. All remote sites must be defined on the Sites tab of the Planning Parameters form at this (local) site. The APS Planning activity removes and recalculates all planning information, creating or updating transfer supply and demand orders at each site. The local order priorities (see “Order Priority” on page 95 for more information) defined at each site determine how demands are satisfied at that site.

Type

For the site record you are defining, this field defines the site as either a local or remote planning site. Select Local if you are defining site information for the site of the database you are currently logged into (the local site). Select Remote if this site is one of the other sites in your APS multi-site environment. For example, if there are three sites in your environment, you will define three site records--a Local site for the database you are working in and two Remote sites.

APS Server Service Host Name

Enter the name of the machine where the APS Planning and Scheduling Service is running for the site. This is typically the Utility server. See the *Infor CloudSuite Industrial Installation Guide* for information on installing and starting the APS Planning and Scheduling Service.

APS Server Service Port

Enter the port number on which the APS Planning and Scheduling Service is running for the site. The number must be a different port than the one you specify for the planner Port, and it must be a number from 5000-65000. You specified this port number when you installed and started the Planning and Scheduling Service. See the *Infor CloudSuite Industrial Installation Guide* for information on installing and starting the APS Planning and Scheduling Service.

If you are not sure of the port number on which you installed this service, open the Windows Services application (**Start>Programs>Administrative Tools>Services**) on the Infor CloudSuite Utility server and look for "Infor APS Server." The port number will be listed with the service name as shown below:

Infor APS Server (servername app_db 6000)

Planner Database Host Name

Enter the name of the machine on which the planner database is running. See the *Infor CloudSuite Industrial Installation Guide* for information about creating and starting planner databases.

When you run the APS Planning activity in a multi-site environment, Infor CloudSuite uses this name and the planner database Port to connect to the site when processing transfer orders.

Planner Database Port

Enter the port number (between 5000 and 65000) to associate with the alternative specified in the Alternative field. This is the port number you specified when you started the planner database using the Planner Manager.

The association defined here means that any APS action you take using this alternative at this site will use the data contained in this planner database.

Infor CloudSuite also uses the ERDB Host Name and the ERDB Port to connect to the site when processing transfer orders.

SQL Host Name

Enter the name of the server on which the application database is installed.

Note: If you have multiple instance installations of SQL Server on this server, enter the SQL Host Name as servername\instancename, where instancename is the SQL Server instance that contains the application database. For example, MYSERVER\MYINSTANCE.

SQL Database Name

Enter the name of the application database used for this site. This field is case-sensitive (for example, if the SQL database is named "MYDATABASE," you must enter it in all caps in this parameter field).

Timeout

APS uses this value when planning transfer orders during a global run of the APS Planning activity. Enter the number of seconds for the system to wait for a response from a remote site. If the system cannot connect to the remote site before this amount of time, it will use the item's lead time and transit time to plan the order.

Make sure the Timeout value is sufficient--we recommend at least 60 seconds. At the start of a global run of the APS Planning activity, the system checks the connection at all sites to verify they are ready; if the Timeout value is reached before a connection is made, the APS Planning activity will fail.

Chapter 6: APS Behavior

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APS Behavior Not Controlled by Planning Parameters

Some APS behavior is controlled outside of the Planning Parameters settings. These capabilities have been added to address specific needs and have not yet been added to the Planning Parameters form. Each behavior is controlled by a text file(s) placed on the APS server in the "…\Program Files\Infor\Planner\Projects\{database name}\ol_dba\ol_cfg" directory.

Safety Stock Multiplier

These parameters determine Safety Stock behavior.

There is a parameter file called "mfgssmult.txt" which contains a floating point value. Let's call this value "P" (Safety Stock Multiplier). The APS Planner determines how it will process the safety stock for each manufactured item based on this value.

Let's call the safety stock level "SS" and the maximum of the Item's Order Minimum (see "Items - Order Minimum" on page 25 for more information) and Order Multiple (see "Items - Order Multiple" on page 25 for more information) "OM". For each item, if OM >= P * SS, then the "dynamic" safety stock behavior (see "How APS Replenishes Safety Stock" on page 64 for more information) applies. Otherwise, if OM < P * SS, then the "post-process" safety stock behavior applies.

Note: If P=0, then all safety stock planning is “dynamic”; and if P is very large, then all safety stock planning is “post-process”.

Safety Stock Behavior	Description
Dynamic	The safety stock need is calculated each time a demand is processed. If the resulting level (inventory + supply - demand_quantity) is < SS, or if the current level inside the Time Fence is < SS, the safety stock order is processed after the current demand. After this point in the planning run, the safety stock quantity is fully protected from use by other demands. This behavior is best when order minimum is greater than safety stock. It is generally preferred at upper levels of the BOM when there are multiple levels of manufactured components.
Post-process	The safety stock need is calculated at the end of the planning run (after all demands have been processed). The safety stock order quantity will be exactly what is needed. This behavior is best when order minimum is zero and the item is at the lowest level of manufactured items in the BOM.

In addition, you can specify dynamic or post-processed logic on an item basis. To accomplish this, add lines for each item for which you want to specify the logic, to the mfgssmult.txt file. Start the line with a "D" (for Dynamic) or a "P" (for Post-process), followed by a space and then the item ID. Note that case (upper/lower) is significant. The multiplier value must still be the first line in the file.

Items not specified will use the multiplier value and follow the existing safety stock logic, as described above. The file settings will be echoed to the ol_sched.txt file, so that you can check that the “mfgssmult.txt” file is formatted correctly.

Example: mfgssmult.txt file

```
1.0
D FA-10000
P SP-11000.
```

Default (no .txt file): P = 1.0, with no items specified.

Job Priorities

These parameters alter the sequence in which demands are planned. If you want released job components or firm job (top level and components) to be planned at the same priority as customer orders, use these parameters. This capability addresses the problem of jobs in the future pegging to inventory today and not allowing earlier demands to consume the inventory.

If you want firm jobs (top level and components) to be planned at the same priority as customer orders, create a file named “firmjob.txt”. This file contains the order category number to use for planning firm jobs. The number should match the APS Order Priorities for Order Entry demands (see “Order Priority” on page 95 for more information).

If you want released job components to be planned at the same priority as customer orders, create a file named “reljob.txt”. This file contains the order category number to use for planning released job components. The number should match the APS Order Priorities for Order Entry demands.

How firmjob.txt works

Whenever the planning sequence queue is built, if the “firmjob.txt” file exists, any order with a category of -20 will be considered to have the order category specified in the file.

Example: firmjob.txt file

20

How reljob.txt works

At the point in the planning process where released job components would normally be planned, the sequence queue will be rebuilt. Any orders with a -40 category will be considered to be in the category listed in “reljob.txt”. Firm jobs will be handled as described above. Any orders with a category of less than -10 will be left out of the sequence queue, since they should have already been planned. Firm jobs should not have been planned yet, since they were in the sequence queue at the priority specified in “firmjob.txt”.

When processing the sequence queue, if a released job is detected with the order priority specified in “reljob.txt”, only the job components will be planned. If a released job is detected with some other order priority, only the end item route will be planned.

Example: reljob.txt file

20

Default (no .txt file): Jobs are planned in the normal sequence.

Prevent Recursive Backflow Transfer Demands from Eroding Safety Stock

This behavior protects Safety Stock at sites which have been previously planned during a Multiple Site Planning (see “Global Planning Mode” on page 79 for more information) run. Safety stock (see “How APS Replenishes Safety Stock” on page 64 for more information) is planned at each site during global planning. When the n^{th} site is planned and generates a demand back to a site that has already been planned, then safety stock can be consumed. Creating the file “protectss.txt” will prevent the erosion of safety stock due to backflow transfer demands. The file contents are irrelevant, file existence is the trigger.

Default (no .txt file): Backflow transfer demands are allowed to erode Safety Stock.

Standard Behavior

Some standard APS behavior is fixed and cannot be changed. Four areas that fall into that category are discussed below.

Plan Granularity

Granularity is the smallest unit of time for APS to plan (in minutes). The APS planner has been optimized over time to use a granularity of 1 minute. This unit is the smallest "bucket" of time that can be reserved in the plan. A resource will be either idle or busy for this unit of time. If a particular job takes less time than the granularity setting, the system plans 1 unit of granularity anyway.

For example, if the Plan Granularity is 1 minute, and the operation takes 30 seconds, the system plans the resource as being busy for 1 minute. Or, if the operation takes 12.5 minutes, the system plans 13 minutes.

Note: Operations that have a combined setup and run time of 0 are planned with a length equal to the Plan Granularity value of 1 minute. The system rounds up all other operation durations, whether fixed or per piece basis, to the next granularity unit.

Use Latest Pull

The APS planning system attempts to find the resource combination that finishes the operation the latest, meaning closest to the operation's need date. The system attempts to plan the operation and leave the most available time that can be used by the remaining previous operations in the routing. If this process were not employed, the system would use the first resource combination from the resource groups specified on the operation that would leave enough time to plan all previous operations in the routing. This process could lead to less than desired resource allocation and cause orders planned later in the process to have a higher chance of being late.

The Use Latest Pull capability works with the Pull Iterations (see “Pull Iterations” on page 70 for more information) field. The system checks as many resource combinations as specified in the Pull Iterations field to find the best combination. If it doesn't find a resource combination that leaves enough time to plan all remaining operations, the pull-planning attempt fails and the system push plans the demand.

Purchased Supply Switching

The Purchase Supply Switching and Generate Purchase Order Exceptions (see “Generate Purchase Order Exceptions” on page 95 for more information) processes are key components in planning of inventory and supplies. The functions they perform do not greatly impact the system's performance and you will receive better results from your planning activities due to these capabilities.

APS allocates supplies and inventory to fulfill demands based on order categories and priorities. If your items have complex bills of material and routings, allocations can result in a higher priority order reserving supply and inventory before a lower priority order, even if the lower priority order needs the quantity sooner. If the lower priority order cannot satisfy the demand from supplies and inventory, the system creates the planned purchase order for the unsatisfied quantity (earlier than you really need it).

Purchased Supply Switching allows the system to allocate supply and inventory (for purchased items) according to the date they are needed. After the system completes its initial planning, it performs an additional process that ignores order priorities and reallocates supplies and inventory according to the demand due dates:

1 When planning a demand, the system checks for existing supply and inventory that is allocated to a demand that is due later. If any exist, the system reallocates that supply or inventory to the earlier demand and creates a planned purchase order to satisfy the later demand.

2 Because the Generate Purchase Order Exceptions processing is enabled, a Move In Receipt exception message is generated to alert you that the existing purchase order was consumed and that you should adjust its Due Date accordingly.

Note: This process affects how the system creates planned orders for safety stock replenishment of purchased items (see “How APS Replenishes Safety Stock” on page 64 for more information).

Note: If a supply is cross-referenced to a demand, it will not be affected by the Purchased Supply Switching process.

Note: This process does not apply to Reorder Point (see “Items - Reorder Point” on page 68 for more information) items.

Generate Purchase Order Exceptions

Generate Purchase Order Exceptions allows the system to generate the Move In and Move Out exceptions messages when the applicable conditions occur. This capability works with Purchased Supply Switching (see “Purchased Supply Switching” on page 94 for more information). The functions they perform do not greatly impact the system's performance and you will receive better results from your planning activities.

Note: This setting affects how the system creates planned orders for safety stock replenishment of purchased items. See Safety Stock (see “How APS Replenishes Safety Stock” on page 64 for more information) for more information.

Order Priority

APS plans one order at a time, reserving necessary planned supplies, on-hand inventory, and resource capacity for that order. The order is planned through its entire routing/bill of material before

the next order is considered. The system must plan the next order using materials and resources that remain unreserved.

Use this form to specify the sequence with which the system allocates material and capacity to satisfy various types of demands. During a run of APS Planning, the system satisfies orders with the lowest priority level numbers first.

If two demands with the same order type request resources at the same time, the system allocates the capacity to the demand with the earliest due date first.

Fixed and User Defined Order Priorities

The system requires some order types to be planned in a specific sequence (depending on the order's type, status, and whether it has been scheduled in the Scheduler). Such orders are given a negative priority; you cannot change the priority of those orders. Orders with negative priorities are all job orders, purchase orders, and purchase requisitions.

The table below lists the various order types with their priorities. "User defined" means you can control the order priority on the APS Order Priority form.

Infor CloudSuite Order	Internal ID	Priority
Customer order (EDI)	EDI	User defined
Customer order (via the web)	EC	User defined
Customer order (Infor CloudSuite)	COD	User defined
Forecast	FRD	User defined
Job/PS order (firm)	JOB	-20
Job/PS order (released	JOB	-40
Master Production Schedule	MPD	User defined
PO	POS	-30
PO Requisition	PRS	-30
Project	PJD	User defined
Safety Stock	SSD	User defined *
Transfer Order	TRD	User defined

* Although the Safety Stock type appears as a user-defined type on the form, the system ignores the value you define for it. The system always plans safety stock demand after it processes all other demand types.

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