User's Guide for ATP and CTP

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About this Guide

You can use the Enterprise Planning package of ERP LN to calculate Available to Promise (ATP) figures. An item's ATP is the quantity that is available for customers either immediately, or at a specific time in the future.

An item's Capable to Promise (CTP) quantity is the quantity that is available in addition to the ATP, based on the spare production capacity of your production facility.

This document describes how to use this functionality, the available options, and limitations.

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Chapter 1
Introduction

ERP LN provides extensive functionality to support order promising. The following concepts are central to order promising:

- An item's ATP is the quantity that is available for customers either immediately, or on a specific time in the future.

- An item's Capable to Promise (CTP) quantity, is the quantity that is available in addition to the ATP, based on the spare production capacity of your production facility.

Available to Promise (ATP) and Capable to Promise (CTP) support is important functionality for a reliable order acceptance procedure. To prevent over-promising of products to customers, the system may need to check on available inventory of finished goods, available sub-assemblies and components, and available production capacity.

You can use ATP checks in two ways:

- Online
  The sales employee performs an ATP check for one sales order during the sales-order-entry procedure or the sales-quotation-entry procedure.

- Offline
  The customer does not immediately receive a delivery date from the sales employee. Instead, you prioritize multiple orders and promise dates later.

To support both situations, you can use the ATP Handling (tdsls4899m000) session during sales order entry, and also offline as a separate session.

Parameters

The following parameters influence the way that ERP LN performs ATP checks and CTP checks. You can set these parameters in the EP Parameters (cprpd0100m000) session.

If the **Online ATP Update in EP** check box is selected, every time you save a sales order line, ERP LN immediately updates the sales-order reservations and CTP reservations in the Enterprise Planning package and recalculates the ATP quantities. This ensures that the next sales order line is checked against updated ATP quantities. This prevents the sales clerk from promising the same product ATP quantities to different customers.

If the **CTP Check for Sales** check box is selected, ERP LN responds in the following ways:

- If you insert the ordered quantity on a sales order line, ERP LN performs an automatic ATP check. If the sales order line quantity exceeds the cumulative ATP quantity, a screen appears that includes an **ATP-Handling** option.

- If you save a sales order line, and the ordered quantity exceeds the cumulative ATP, ERP LN blocks the sales order line. You cannot save the sales order line if the ordered quantity is too high.

Chapter 2
Types of ATP and CTP Checks

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This chapter contains a description of the types of ATP and CTP, and combinations thereof, and describes how to set up these checks.

The following types of ATP checks and CTP checks exist:

- Standard ATP check
- Component CTP check
- Capacity CTP check
- Family CTP check
- Channel ATP check

The Item – Planning (cprpd1100m000) session contains the relevant parameters for ATP checking on the **CTP** tab.

Standard ATP check

The most straightforward way to check ATP for an ordered item is a check on the expected free inventory of the item on the sales order line itself. ERP LN calculates a cumulative ATP quantity for the finished good that takes all future actual demand and (planned) supply transactions into account. This calculation is performed as follows:

The ATP check on date t is performed against the cumulative ATP on t. The cumulative ATP is the expected free stock. ERP LN calculates the cumulative ATP as follows:

Projected Inventory (t) =   Inventory + actual and planned supply until (t)
                                            – actual and planned demand (t)

Cumulative ATP (t) = The lowest value of:

▪   Projected Inventory (t), and

- Cumulative ATP (t + 1)

Note: (t + 1) indicates the day after day t

Cumulative ATP constantly increases: if the cumulative ATP on t is 10 pieces, the ATP will be 10 or more on t+1.

Non-consumed forecast demand is not part of cumulative ATP, therefore, ATP is built up by (planned) supply for non-consumed forecast demand.

The cumulative ATP quantity is displayed in the following sessions:

- Item Master Plan (cprmp2101m000)
  Only for items that have a master plan
- Item Order Plan (cprrp0520m000)
  For items without a master plan

To enable standard ATP checking

To enable standard ATP checking, you must set the system up as follows.

In the Items – Planning (cprpd1100m000) session:

1 Select the **Online ATP Update** check box to enable online updates after sales order entry.
2 Set the **CTP Horizon** field to a value greater than zero. ERP LN assumes that an infinite supply is available after the CTP horizon. As a result, only orders with a delivery date before the CTP horizon will be checked. Note that the CTP horizon is defined in working days.

Component and capacity CTP checks

If the standard ATP check shows that you cannot deliver the quantity that a customer requested, you can choose to look for possibilities to increase your production beyond the previously established production plan. This production increase is possible only when you have sufficient (spare) production capacity and materials.

This is where the CTP (Capable-to-Promise) check comes in action:

- The component CTP check checks the availability of critical subassemblies or components.
- The capacity CTP check checks the available production capacity.

Component CTP check

The component CTP represents what you have left in addition to the end item's ATP that is already included in the master plan of the component. In other words, what you can build on top of the end item's ATP. Component CTP and capacity CTP can be seen as Build to Promise.

Example

- A: End item
- B: Critical component)

Assume:

- ATP of A = 10
- ATP of B = 6
- Two pieces of B are required to produce a single piece of A

If you perform an ATP check and a component-CTP check for item A, the result is 13 (ATP of A + 0.5*[ATP of B]).

To enable component CTP checking

To enable component CTP checking, you must set the system up as follows.

Set up the end item as follows:

1 Start the Item – Planning (cprpd1100m000) session.

2 Select the **Component CTP** check box.

3 Specify the **CTP Time Fence.** Be sure to specify a value that is not too large.

4 Specify the **CTP Horizon**. Be sure to specify sufficient time.

The Enterprise Planning package performs the CTP check in the period between the CTP time fence and the CTP horizon. Beyond the CTP horizon the CTP is considered to be infinite. The CTP time fence is further described in Chapter 3, "Algorithms."

Set up the component items as follows:

1 Start the Item – Planning (cprpd1100m000) session.

2 Select the **Critical in CTP** check box.

You cannot define the CTP time fence for the component, because the component has no unique CTP check. In addition, ERP LN dynamically replaces the **CTP Horizon** field by the **ATP Horizon** for the same reason: for

this component, only the ATP is used in the CTP check of the ATP's parent item.

Capacity CTP check

The capacity CTP represents what you can produce, in addition to the standard ATP, taking the free capacity of critical work centers into account. Component CTP and capacity CTP can be seen as Build to Promise.

ERP LN calculates the CTP quantity from the free capacity of a work center and information about the number of hours required to manufacture one additional end item.

Example

A | WC-1

Assume:

1 ATP of A = 10

2 CTP of work center WC-1 = Three hours

3 0.5 hours of WC-1 is required to produce one piece of A.

If ERP LN performs an ATP check and a capacity-CTP check for item A, the result is 16 (ATP of A + additional CTP of WC-1).

To enable capacity CTP checking

To enable capacity CTP checking, you must set the system up as follows.

Set up the end item as follows:

1 Start the Item – Planning (cprpd1100m000) session.

2 Select the **Capacity CTP** check box.

Set up the resource (work center) as follows:

1 Start the Resource (cprpd2100m000) session.

2 Select the **Critical in CTP** check box.

3 Select the **Maintain Resource Master Plan** check box.

ERP LN uses the resource master plan to calculate the capacity CTP of a resource. Therefore, you must always select the **Maintain Resource Master Plan** check box when you define a resource as critical in CTP. Otherwise, ERP LN will not calculate the capacity CTP during CTP checks.

Combined component CTP and capacity CTP

Single level

If you use both component CTP and capacity CTP, the most restrictive one, available components or available capacity, is leading.

The following figure provides an example in which end item A is manufactured in work center WC-1 using component B:
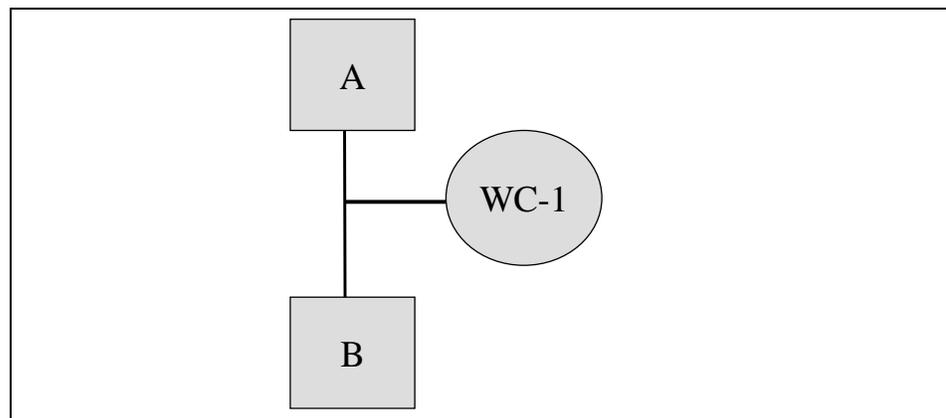
Figure 2-1 Single-level item structure

Assume:

- ATP of A = 10
- ATP of component B = Six pieces
- CTP of work center WC-1 = Seven hours
- One piece of component B and one hour of WC-1 is required to produce one piece of A

If ERP LN performs a component CTP check and a capacity CTP check for item A, the result is 16 (CTP of component B limits WC-1).

Multiple periods

If you combine component CTP and capacity CTP, ERP LN checks the components and capacity independently from each other, based on cumulative quantities. This implies that the critical capacity is not necessarily available at the same time as the critical component. The following example illustrates this limitation.

The situation is as follows:

- t is the time for which ERP LN performs a CTP check for end item A.

- The offset for the required component B and capacity WC-1 is three periods, therefore, the component and the capacity are required no later than time (t-3).

- The cumulative capacity CTP of work center WC-1 on t-3 is seven

- The free capacity of seven hours that creates the cumulative CTP is not on t-3, but earlier on t-4,

- Component B has cumulative ATP of six pieces on t-3 and zero pieces on t-4

- Component B is required to perform the operation on work center WC-1

In this situation, the CTP check reports that you can produce six pieces to be delivered on t, although the exact work center (t-4) and component (t-3) availability do not fall in the same period. In fact, ERP LN calculated the CTP with the cumulative CTP figures only (the cumulative capacity CTP and the cumulative ATP of the component). ERP LN does not take the relationship between the component and the capacity into account. In this case, ERP LN indicates that you can promise the sales order on time t. After you run the order planning, the work center WC-1 is overloaded on t-3, but the total capacity load over all periods matches the available capacity. This situation is the result of working with cumulated quantities over multiple periods.

This calculation method is considered correct, because Enterprise Planning is an infinite capacity planning tool. To perform order promising against finite capacity and consider all relationships between work centers and materials, you must use Infor Order Promising.

Multilevel

If you defined multiple critical components and capacities on various levels of a bill of material in the same branch, each level adds a particular quantity to the total quantity you can promise to the customer.

The following figure shows an example in which end item A is manufactured in work center WC-1, using component B. Component B, in turn, is manufactured in work center WC-2 using component C.
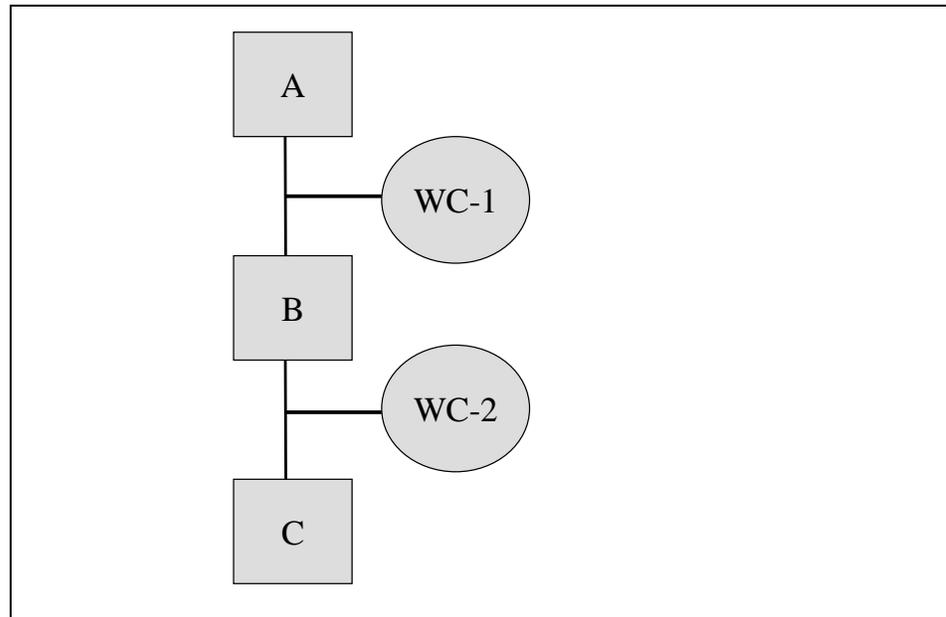
Figure 2-2 Multilevel item structure

Item B is a component, therefore, on the **CTP** tab of the Item – Planning (cprpd1100m000) session, you must select the **Critical in CTP** check box. At the same time, item B is also a product, therefore, you must also select the **Component CTP** check box and the **Capacity CTP** check box.

Assume:

- ATP of A = 10

- ATP of component B = Six pieces

- CTP of work center WC-1 = Seven hours

- ATP of component C = Four pieces

- CTP of work center WC-2 = Three hours

- On both levels, you need one piece of a component and one hour of work in a work center to produce a product.

If ERP LN performs a component CTP check and a capacity CTP check for item A, the result is:

Multilevel CTP calculation

Level	ATP
Level 0	10 (ATP of A)
Level 1	6 (CTP of component B limits WC-1)
Level 2	3 (CTP of WC-2 limits component C)
Total	19

Multiple branches in the BOM

If you check various branches in the bill of material, the most restrictive branch determines the available quantity. In this example, suppose you have a second component D on level 1, in addition to component B. Assume ATP of D is zero. In that case, the branch of D restricts the complete branch of B. The total available quantity, therefore, is 10 (ATP of A).

Family CTP check

A product family usually consists of similar end items that use the same critical components and capacities. Often, you do not know yet exactly which of these end items you will produce in the long-term future, because you only have master plans or order plans on product family level. In that case, you can check the requested quantities against the ATP on family level. The ATP on family level represents the total ATP of the end items that belong to that family.

To enable family CTP checking

To enable family CTP checking, you must set the system up as follows.

For each end item that belongs to the product family:

1 Start the Item – Planning (cprpd1100m000) session.

2 On the **CTP** tab, select the **Family CTP** check box.

3 Enter the company number of the product family to which the item belongs in the **Family Site** field. You can enter a logistical company that differs from your current company.

4 Enter the product family on which the CTP check is performed in the **Family Item** field.

5   Enter the number of days after which ERP LN must check the ATP of the product family instead of the end item's ATP in the **Start of Family CTP Horizon** field. This field is expressed in working days.

For the item that represents the product family:

1   Start the Item – Planning (cprpd1100m000) session.

2   On the **CTP** tab, enter an appropriate value in the **ATP Horizon** field.

Channel ATP check

You can use the channel concept to assign part of the total production volume and purchase volume to a group of customers. For example, you can designate all customers from a particular country to a channel code. In that case you can apply Channel ATP. If you enter a sales order line item for a customer (business partner) that belongs to a specific channel, ERP LN checks the channel ATP. To check the channel ATP, ERP LN uses the channel ATP quantity for the item in the Channel Master Plan (cpdsp5130m000) session instead of the ATP quantity for the item.

However, the quantity you can promise to a customer in a channel is restricted to a maximum, which is the item's CTP. In other words, the channel-ATP functionality imposes an additional restriction to the quantity that you can promise to a customer, in addition to the general CTP restriction.

To enable channel CTP checking

ERP LN stores the channel ATP in a channel master plan. If an item has no master plan, ERP LN cannot perform a channel ATP check for the item.

To enable channel CTP checking, you must set up the system as follows:

1   Start the Item – Planning (cprpd1100m000) session.

2   On the **Master Plan** tab, select the **Maintain Master Plan** check box.

3   On the **CTP** tab, select the **Channel ATP** check box.

Chapter 3
Algorithms

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ATP

Time-phased calculation

If you only want to check ATP for a plan item, without performing component CTP, capacity CTP, and channel ATP, the calculation is based on the order plan of the item. As a result, the detailed transactions of the plan item are used to see exactly when ATP is created. Therefore, this calculation is not a bucket-based calculation, but a time-phased calculation. The user receives the most detailed answer.

Whether the plan item has a master plan or not is irrelevant. In both situations, the previous detailed time-phased calculation is used, in the order horizon as well as in the planning horizon. Therefore, in this case, no difference exists between order-based and master-based checks.

To achieve this type of calculation, set up the item as follows:

1   Start the Item – Planning (cprpd1100m000) session.

2   On the **CTP** tab, select the **Online ATP Update** check box.

3   On the **CTP** tab, clear the **Component CTP** check box.

4   On the **CTP** tab, clear the **Capacity CTP** check box.

5   On the **CTP** tab, clear the **Channel ATP** check box.

Component CTP and capacity CTP

Bucket calculation

If you also use component CTP or capacity CTP for an end item, Enterprise Planning does not perform the detailed ATP calculation discussed previously. Instead, Enterprise Planning performs a bucket calculation based on the value of the **Component CTP Bucket** field in the EP Parameters (cprpd0100m000) session. Therefore, if the value of this parameter is one day, Enterprise Planning checks every subsequent working day to see whether ATP is present.

If the ATP of the end item in the first bucket is insufficient to cover the complete demand quantity, Enterprise Planning performs a component CTP check and a capacity CTP check (if both are selected) for that bucket.

Two methods are available in which the component CTP and the capacity CTP are calculated: order based and master based. The order horizon determines which method is used:

- In the order horizon of the end item, that is, in the near future, the calculation is order based.

- Between the order horizon and the planning horizon of the end item, the calculation is master based.

The following sections describe both methods in detail.

Note: The end item's horizons determine whether Enterprise Planning uses the order-based CTP check or the master-based CTP check for the entire product structure (end item and components). Part of the CTP check cannot be order based if another part is master based, even if, for example, one of the components has a shorter order horizon than the end item.

Order-based CTP check

Standard items

To calculate the date on which items are required, Infor ERP retrieves the lead-time offsets, as follows:

1 The bill of material defines the lead-time offset for the components. In addition to this lead-time offset value, the component is also offset with the inbound and outbound lead-time, the safety time, and the extra lead time.

2 Infor ERP multiplies the routing operation times and the required quantity to calculate the lead-time offset for the capacity.

When the required date is determined, the component CTP is online calculated for every bucket as indicated by means of the Component CTP bucket.

However, the capacity CTP is derived from the resource master plan that is based on the plan period buckets as defined in the Scenario – Periods (cprpd4120m000) session. As a result, the lead-time offset for capacity results in a required date that will fall in a resource master plan bucket after which the available capacity of that bucket is taken.

The following is an example of lead-time offset defined in the bill of material session:

You can determine the critical materials by means of the **Critical in CTP** check box in the Item-Planning (cprpd1100m000) session. In a multilevel bill of material, you can indicate that only the lowest level components are critical in CTP. The subassemblies do not have to be marked as critical. If you only mark the subassemblies to have component CTP in the Item-Planning session, the CTP check will not calculate their availability. Instead, the CTP checks only perform a lead-time offset for such items based on the information in the bill of material as depicted above. Next, the CTP check explodes through to the critical components and checks the availability of

components. This enables you to check only the critical materials in the entire product structure.

For capacities the same concept can be applied by means of the **Critical in CTP** check box in the Resource (cprpd2100m000) session in combination with the **Capacity CTP** check box in the Items-Planning session. Only if a resource is defined as critical and the item for which the resource is used has capacity CTP marked will the resource's availability be checked during CTP. This enables you to check only the critical resources in the entire product structure.

Generic items

In case of generic items, the correct materials and capacities must be checked based on the chosen options in the product variant. First, the user configures the product variant in, for example, the sales order. When the user enters the ordered quantity, the CTP for that specific configuration is checked.

The generic bill of material is therefore matched against the chosen options in order to find the appropriate materials and capacities. This action is performed online. The generic bill of material is exploded, taking into account all constraints, which is precisely the same action as when the customized product structure is created for the generic item. However, this explosion is merely a simulation to find the correct CTP figures. The result of the explosion is not stored.

The lead-time offset is determined in the same way as for standard items. However, instead of the bill of material lead-time offset (LTO), the generic bill of material LTO is used to determine the required date for the components. In addition to this LTO value, the component is also offset with the inbound and outbound lead-time, the safety time, and the extra lead-time.

Customized items

In case of customized items, the ATP and Component CTP are performed first for the customized items, and then for the derived-from item, as illustrated in the following figure:
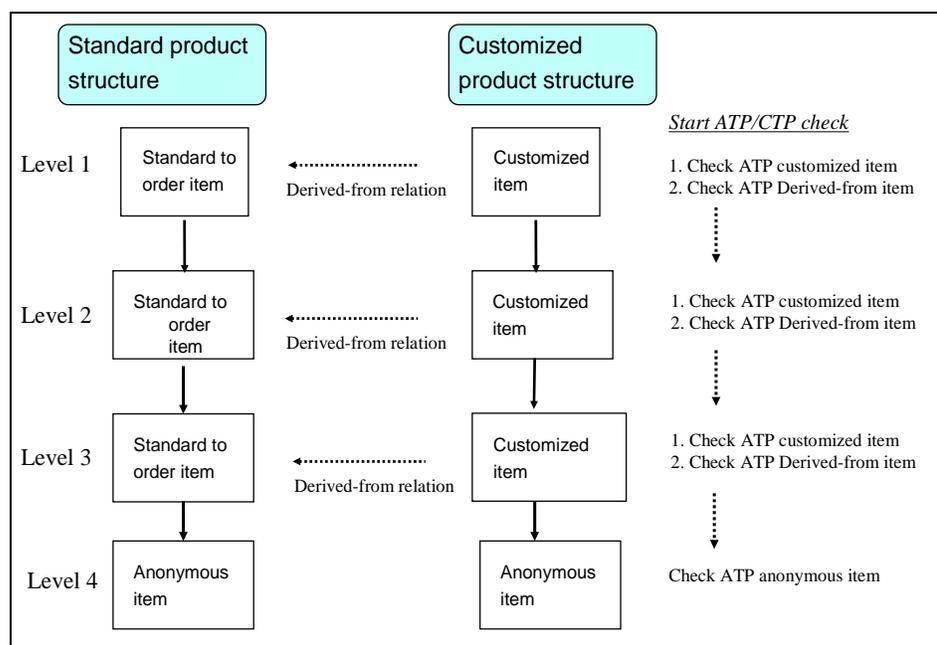
Figure 3-1: Customized items

The ATP of the standard-to-order items does not include the ATP of the related customized items. As a result, if a standard to order item A has a relation to five different customized items, the ATP of all these customized items is deducted from the ATP of item A.

This reaction is logical, because when the ATP is checked for one of the customized items, the ATP cannot, of course, consume ATP of any of the other customized items. ATP can only consume its own ATP and the ATP of the derived-from item.

The ATP of the derived-from item (A) is based on the item's own transactions and on-hand stock. The item order plan for this type of item enables you to toggle between the item's transactions and the transactions, including all customized items. Both options provide the ATP for the derived-from item that is checked for customized items. However, only for the **Item Only** option do the transactions match with the ATP quantities.

Note: This concept of checking ATP/CTP for customized items and the derived-from item is also valid for customized items that are derived from a generic item. In this case the **Toggle** button in the item order plan is available for the generic item.

The following figure provides an example of the **Toggle Item View** button, which toggles between item only and item + derived items:

Master-based CTP check

For the master-based CTP check, standard items and generic items do not differ from each other. Both items are performed in the same way.

The master-based components CTP check is performed between the order horizon and the planning horizon of the end item. The bill of critical materials is used to find components that are critical in CTP. Infor ERP takes the quantity required and the lead-time offset defined in the bill of critical materials (BCM) line into account when adding the component ATP to the end item's ATP. Note that the LTO value already includes inbound, outbound lead-time, safety time and extra lead-time. Therefore, unlike for the order-based offset, these lead-times are not separately added when offsetting the component in the master-based horizon.

The component CTP quantity is derived from the item master plan, so it is checked based on the plan period buckets as defined in the Scenario – Periods (cprpd4120m000) session. As a result, the cumulative component CTP of every subsequent plan period is taken during the check.

Component CTP increases the ATP with the quantity you can produce on date t, based on component ATP:
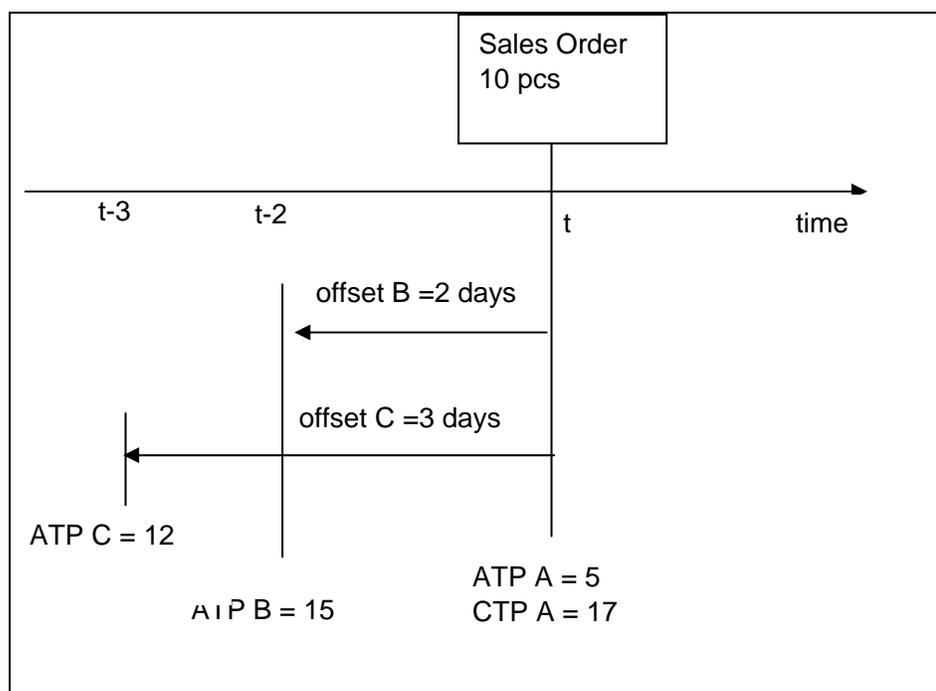
Consider, for example, the acceptance of a sales order for item A on date t.

Item A has a critical material B and C. A production order takes three days and requires C at the start. Material B is required one day later, so the BCM has a two-day offset for material B, and three days for C.

The sales order is for 10 pieces, ATP of item A on date t is five. Because this amount is insufficient, component CTP is checked. ATP for C on t-3 is 12, and ATP for B on t-2 is 15, therefore, you can produce 12 extra. As a result, CTP is 5 + 12 = 17, and the order can be accepted.

The master-based capacity CTP is checking the work center availability between the order horizon and the planning horizon. The bill of critical capacities is used to find capacities that are critical in CTP.

The capacity CTP value is derived from the resource master plan, therefore, the capacity is checked based on the plan period buckets as defined in the Scenario – Periods (cprpd4120m000) session. As a result, Infor ERP takes the cumulative capacity CTP of every subsequent plan period during the check.

The cumulative capacity CTP for a resource appears in the Resource Master Plan (cprmp3501m000) session and is expressed in hours. Using the **Capacity Required**, **Lead Time Offset**, and **Lead Time** fields in the Bill of Critical Capacities, this capacity is translated into an additional cumulative ATP quantity for the finished good that can be promised. For example, if the **Cumulative Cap CTP** is four hours and the **Capacity Required** is 0.5 hours,

the cumulative ATP quantity of the finished good increases by eight pieces. For the correct timing of these quantities, the lead-time offset is taken into account. This calculation is performed as follows:

Using the same sales order example, with critical work center WC.
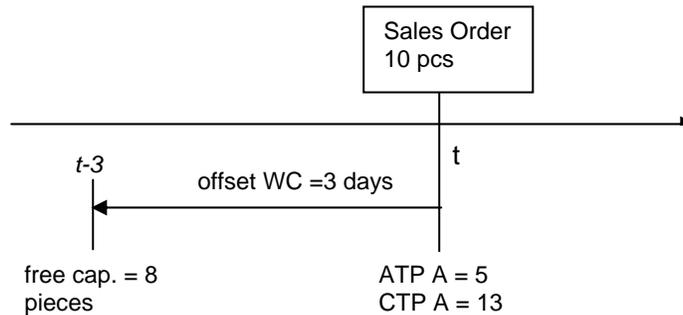
The bill of critical capacities (BCC) has three-day offset for WC, and one piece requires 0.5 hour capacity.

Free capacity for WC on $t-3$ is four hours, thus eight pieces. CTP, therefore, is 5+8.

CTP reservations

To prevent the user from promising the same components or capacities multiple times, Infor ERP can make CTP reservations. This step is required because, when you save a sales order, only a planned issue exists for the end item, and not for the components and capacities. Therefore, at that moment, the ATP of the component and the capacity is not yet decreased, although a part has already been promised.

A planned issue for components is only made when you run the order-based planning engine. Only then will the sales order demand of the end item will be exploded through the bill of material and place dependent demand on the components or required capacity on the work center.

Therefore, to overcome the time gap between sales order entry and running the order planning, CTP reservations will decrease the ATP of the components/capacities immediately when the order is entered. The same is valid for master-based planning. Only at the moment the master-based planning engine is run are planned issues made on components and capacities by exploding the BCM/BCC.

CTP reservations are created for the actual scenario only, not for simulation scenarios.

Creating CTP reservations requires performance. For items with a master plan, the recalculation of ATP figures based on these reservations also requires performance. Therefore, a performance parameter is available to indicate if CTP reservations must be created and if ATP must be recalculated online when saving orders. This parameter is the **Online ATP Update** field in the EP Parameters session.

- If you select the **Online ATP Update** check box is selected in the EP Parameters session, CTP reservations for components and capacities are made when you save the original demand to the planned inventory transactions, as shown in the Planned Inventory Transactions (whinp1500m000) session. The original demand can be a sales order, or a sales quotation that exceeds the success percentage. However, for manually entered SFC production orders, CTP reservations are also made for lower level materials. In that case, the SFC order creates the original demand.

- If the **Online ATP Update** check box is cleared in the EP Parameters session, no CTP reservations are made.

Component CTP reservations

Assume the following multi-level bill of material for end item JOSUEF11:
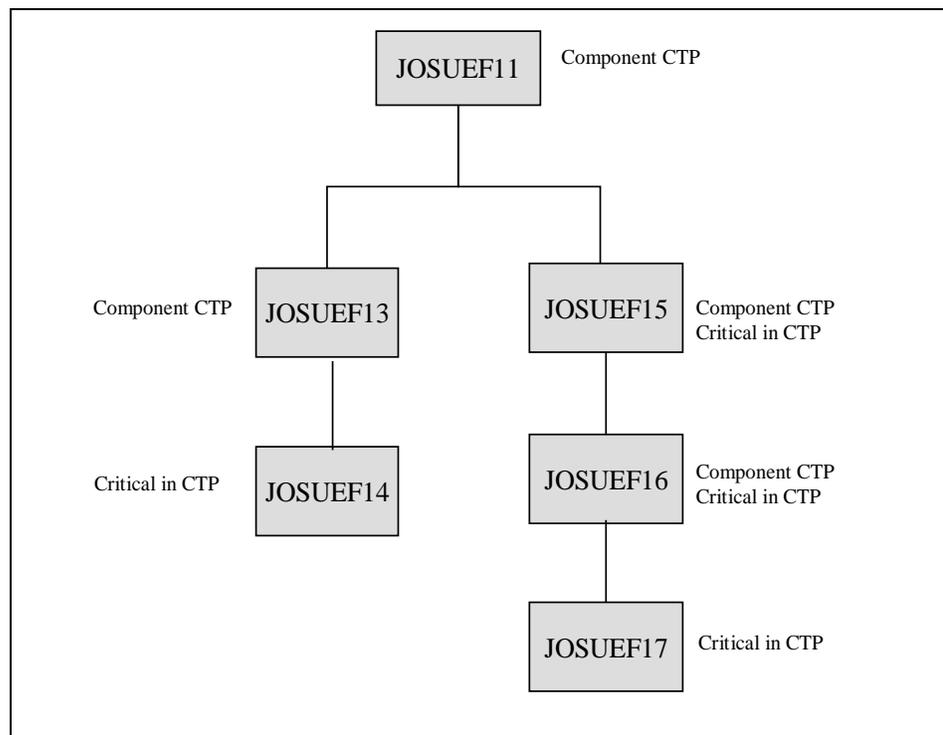
Figure 3-2 Component CTP reservations

If you enter and save an order for JOSUEF11, CTP reservations are placed on the components based on the same logic as used for the CTP check. The CTP reservation is stored in the CTP reservations session, and aggregated to the item master plan in case the component has one.

Figure 3-3: CTP Reservation (cprrp0111m000)

The timing of the component reservations is based on the lead-time offset logic that is also used during the CTP check; in other words, in the order horizon by means the LTO on the BOM line and the inbound and outbound lead-time, and the safety time and extra lead-time. The timing of the planned issue that is created after running the order planning can, therefore, differ slightly from the CTP reservation, because timing of the planned issue is determined on a more detailed backward planning logic.

The meaning of the quantity fields is as follows:

- Allocated quantity = ATP quantity of the component that is allocated by means of the CTP reservation to fulfill all or part of the demand.

- Needed quantity = The required quantity passed from the parent of this component.

- CTP quantity = The quantity that is passed to the child of this component.

Rule: Needed Quantity – Allocated Quantity = CTP Quantity.

Example

Sales order demand for JOSUEF11 = 100 pieces. The following CTP reservations are created for the right side branch of the BOM. The ATP column states the ATP quantities that are available during the CTP check.

If you save the sales order line, the other columns are updated in the CTP reservations session.

CTP reservations

Item	ATP	Allocated	Needed	CTP
JOSUEF11	40	0	60	60
JOSUEF15	0	0	60	60
JOSUEF16	20	20	60	40
JOSUEF17	40	40	40	0

The calculation proceeds as follows:

1   Because the sales order for JOSUEF11 already created, a planned issue for this item, no allocation of the ATP is made on this level. A total of 60 pieces is required (100 – 40).

2   JOSUEF15 has no availability, therefore, the same quantities again pass to the next component level.

3   JOSUEF16 has an ATP of 20, so this quantity is allocated to fulfill part of the needed quantity. Still to build are 40 pieces, therefore, CTP quantity changes to 40.

4   JOSUEF17 has ATP of 40, so this quantity is allocated to fulfill the remaining needed quantity. To build is changed to zero, because the entire demand is fulfilled.

Note: Even if for the JOSUEF15 and JOSUEF16 items the **Critical in CTP** check box is cleared, records are created in the CTP reservations sessions. This step is required to pass the Needed Quantity and CTP Quantity through the BOM. However, the Allocated quantity will always be zero for non-critical items, even if ATP is present for this type of item.

Pegged Order Number field and Originating Plan Item field

In the previous example, the CTP reservation of the component JOSUEF17 is made for the sales order for end item JOSUEF11. However, the originating plan item is the direct parent, JOSUEF16. The reason for this is because the quantities that you see in the figure are passed by means of this item, as described previously.

Capacity CTP reservations

As described, capacity CTP depends on the presence of a resource master plan. Therefore, capacity CTP is plan-period based. The CTP reservation is stored in both the resource master plan and the capacity CTP reservations session. CTP reservations are only created for resources that are Critical in CTP and have a resource master plan.

CTP time fence

A CTP time fence for component and capacity CTP can be defined in the Item-Planning session. In the CTP time fence, the availability of components and capacities will not be checked. This concept is introduced to prevent situations in which deliveries to customers are promised although this is not realistic because no time is available anymore to build extra quantities.

In fact, the CTP time fence usually equals the item's production time fence (frozen period for planning). The production time fence, also defined in the Item-Planning sessions, is used during order planning. The planned production order will be placed outside this time fence, although the demand may originate from within the time fence. This will create lateness. To assure that demand is not promised too early, only ATP can be promised inside the CTP time fence and not CTP. To give the user flexibility and to make it more explicit, a separate CTP time fence is introduced instead of using the production time fence.

Family ATP

The ATP algorithm makes no distinction between the plan item types. As a result, the ATP for a plan item of type Family is calculated in the same way as a plan item of type Item. If for the family item itself the component CTP, capacity CTP, and channel ATP are not enabled, the order plan calculation is used. If one of these check boxes is selected, the bucket calculation is used for the family.

Channel ATP

A plan item that is associated with channels has a mandatory master plan. The channel ATP is therefore always checked according the master plan buckets. Therefore, the channel ATP is always stored in accordance with the scenario plan period definition. For these plan items, the **Component CTP bucket** field in the EP Parameters (cprpd0100m000) session is ignored.

Channel ATP is calculated for each master plan bucket in the following way based on the settings in the Plan Item – Channels (cpdsp5100m000) session:
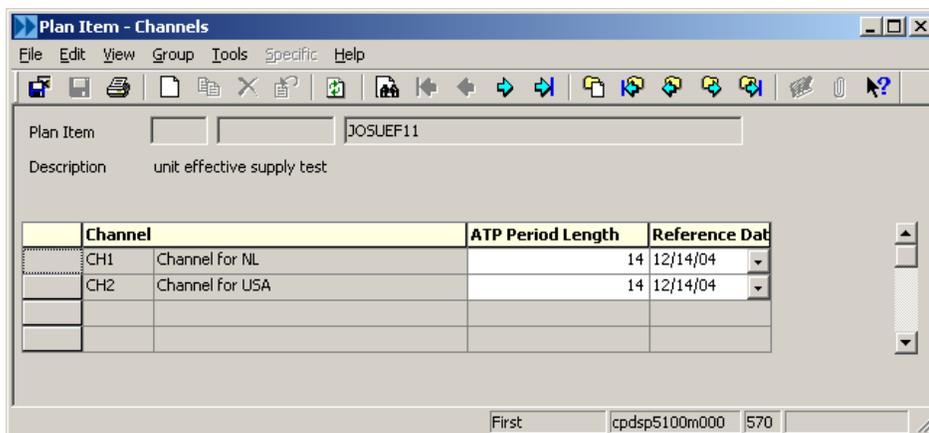
First, the actual reference date is determined in case the reference date of the Plan Item-Channels session falls before the scenario start date. This can happen when the scenario has been rolled.

In that case, the ATP period length, for example, 14 days, is added to the reference date until the date passes the scenario start date. This date can still be in the past.

After you determine the new reference date in Step 1, the first channel date is determined. This date is the first calculated date in the present, based on the new reference date + the ATP channel period.

The channel date can fall in the middle of a channel master plan period. In that case, the channel date is rounded to the start of that plan period. This procedure will continue for each subsequent ATP channel period.
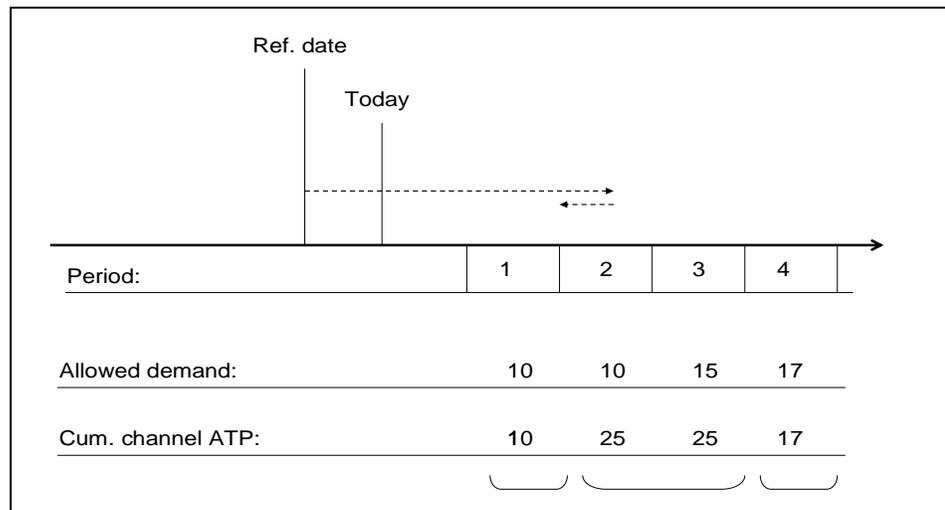
Figure 3-4 Cumulative channel CTP

The cumulative channel ATP only applies in each ATP period length, starting with zero. The calculation is:

Channel ATP = Demand (sales orders) + Receipts (Allowed demand) – Deliveries (sales deliveries).

As a result, a sales order only consumes the cumulative channel ATP in the ATP period length in which the sales order falls. Other periods are not impacted. This procedure is carried out because the cumulative channel ATP is reset to zero at the start of each ATP period, therefore, the cumulative channel ATP of previous periods is not included and can still be promised.

Note: The cumulative channel ATP is always limited by the plan item's central CTP. This additional check is performed because the channel ATP can be increased by means of the allowed demand manually. The ATP period length can also be set extremely wide, and a channel might not consume its channel ATP for a long time. As a result, when the channel ATP becomes greater than the item's central CTP, the user cannot promise more than this CTP quantity.

Chapter 4
ATP Handling

<div style="text-align: right">4</div>

You can use the ATP Handling (tdsls4899m000) session to check ATP and CTP for different dates and different warehouses. You can start the session either dependently (online) or independently (offline) from a sales order line or a quotation line.

This chapter describes the ATP Handling session. First, this chapter describes the various fields and buttons in this session, for example, what exactly the functionality is behind the buttons in this session in various situations and how are the checks performed? Subsequently, this chapter describes offline and online ATP handling.

The following is an example of the ATP Handling session:

The following sections describe the functionality behind the buttons on the right side of the session, namely:

1 Where Available

2 Fixed Date Check

3 Fixed Warehouse Check

4 Accept Check

The subsequent section describes in detail the use of the **Show CTP Details** check box.

Where Available

The **Where Available** button results in an ATP Overview report. The ATP check is performed on a specific date across multiple clusters. The algorithm looks at the ATP of the (clustered) plan item, which means that the check is performed on cluster level and not on individual warehouse level.

Each plan item has a default warehouse, which will be the warehouse printed on the ATP Overview report, but the availability will always be checked for all warehouses together within the cluster. Note that CTP cannot be checked during a Where Available. Only an ATP check is permitted.

Which items/clusters are taken into account?

Two situations can be distinguished:

- Ignore Supplying Relations check box cleared
- Ignore Supplying Relations check box selected

If the **Ignore Supplying Relations** check box is cleared, the **Where Available** command checks on the ATP of the item defined on the required date and for the ATP of all supplying items, multisite. This ATP check includes all the warehouses of the cluster from which the demand originates, plus all warehouses of the clusters that are linked to that cluster by means of a supplying relation. The supply lead-time offset is also taken into account: planned delivery date versus planned receipt date.

Example

The following supplying relationships are set up for item X_ in the empty cluster (default warehouse WH1). The item also exists in a location (cluster 3) for which no supplying relationship is defined.
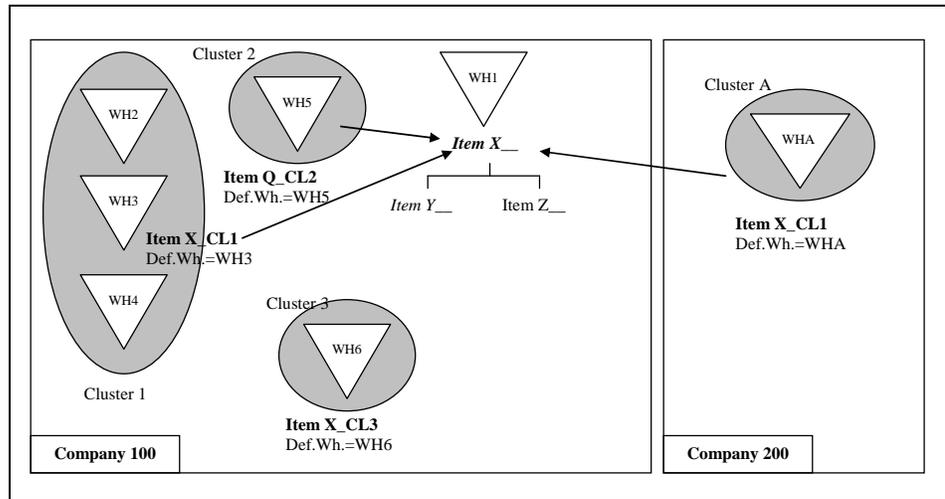
Figure 4-1 Where-available example

When you perform the where-available check for item X__ in on 25/4, the result is as follows:

Availability

Company	Warehouse	Available	Date
100	WH1	20	25/4
100	WH3	15	25/4
100	WH5	10	25/4
200	WHA	40	25/4

The following clusters and items are checked:
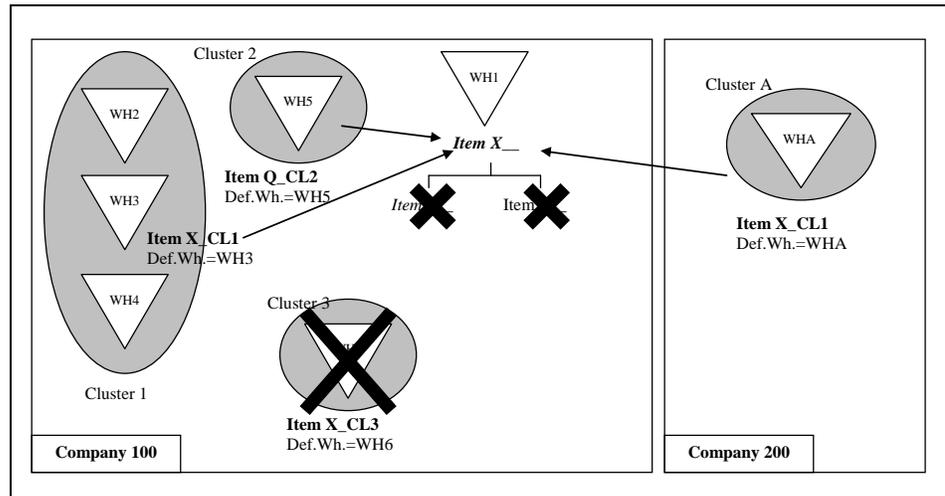
Figure 4-2 Example

Note that the ATP of item X_CL3 is not part of the where available because the ATP does not have a supplying relation to X__.

The ATP of item Q_CL2 is included in the where-available check, although the item code differs. If you do not ignore the supplying relationships, all of these items are checked, independent from the item code.

The two components of item X__ are not included because (component) CTP is not permitted.

The problem in each of these situations is that a supplying relationship must be defined to retrieve the goods from another cluster. In some cases, however, you might not want that because you only want to check the ATP and then deliver directly to the customer from the goods' location. Therefore, if the **Ignore Supplying Relations** check box is selected, the **Where Available** command checks on the ATP of the item defined on the defined date and for the ATP of all items with the same (general) item code, but *not* multisite. This check is carried out based on the item code. Therefore, all X_… items are included.

Example

Where available for item X__ in on 25/4:

| Availability			
Company	Warehouse	Available	Date
100	WH1	20	25/4
100	WH3	15	25/4
100	WH6	**25**	25/4

The following clusters/items are checked:
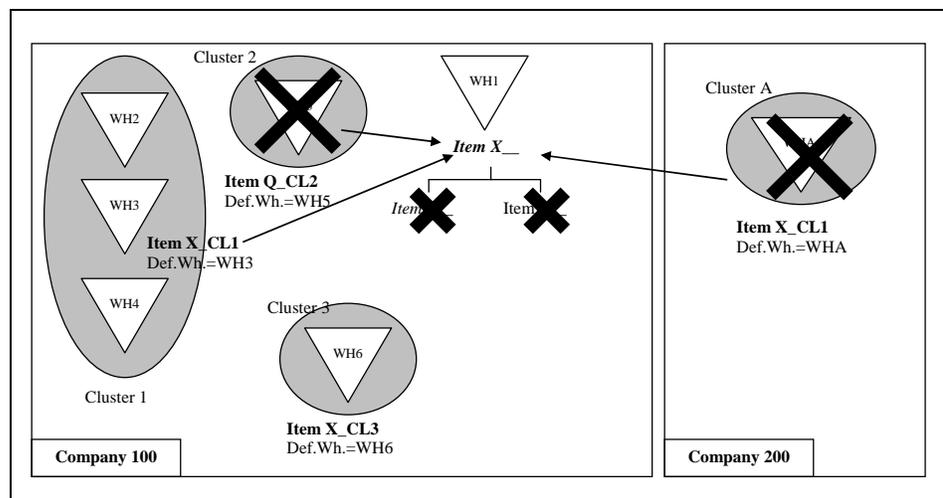
Figure 4-3 Example

Notice that the ATP of item Q_CL2 is not part of the where-available function because the system does not recognize that item Q_CL2 is a supplying item for X_. The check is carried out on the item code X_.

In addition, item X__CL1 is also not included because this item resides in another company, and this check is only performed on a single site.

Fixed Date Check

The **Fixed Date Check** command offers the same ATP overview report as the **Where Available** command. The **Fixed Date Check** command displays the availability on a specific date across multiple warehouses.

The fixed-date check is specially designed for sales order entry. Where the where-available view shows the entire availability across multiple sites, the fixed date check provides a view of only those default warehouses required to deliver the complete sales order line quantity. The where-available view and the fixed date check differ in no other way. The algorithm is precisely the same for the rest. In addition, in this case, you cannot perform component CTP checks or capacity CTP checks.

If a sales order line entry is blocked by the ATP of the item, you can zoom to the ATP Handling session and request a fixed date check. This check can result in a transfer between warehouses or a direct delivery to the customer. For a direct delivery from the warehouse where ATP is found, select the **Change Warehouse** check box. For warehouse transfers from the warehouse where the ATP is found to the asking warehouse, Infor ERP takes the supply time into account.

For the fixed date check, three situations can apply in cases in which the required quantity is greater than the ATP for a plan item in a specific cluster:

- The demand is less than the sum of the ATP for all related (clustered) items

- The demand is equal to the sum of the ATP for all related (clustered) items

- The demand is greater than the sum of the ATP for all related (clustered) items

If the demand is less than sum of the ATP for all related (clustered) items, the ATP does not have to be consumed entirely to meet with the demand.

A decision has to be made which warehouse will handle the supply. The item and warehouse that will deliver the supply first is based on the supply priorities as defined in the supplying relationships session.

If the demand is equal to the sum of the ATP for all related (clustered) items, the entire ATP will be consumed.

If the demand is greater than the sum of the ATP for all related (clustered) items, the same applies as in the previous situation. The demand which is not met simply disappears. The sales order line quantity, therefore, is smaller than the originally ordered quantity.

Accept Fixed Date Check

After the user performs a fixed-date check, the button to accept this check becomes available. This button is not available after a where-available check.

However, this only happens when you have accessed the ATP Handling session by means of a sales order or sales quotation.

The **Accept Check** button automatically generates separate sales order deliveries for one sales order line. The deliveries are based on the lines displayed in the fixed date check.

If the **Change Warehouse** check box is selected, the check results in deliveries for a sales order line that cover direct deliveries from various warehouses to the customer. Each sales order delivery represents a direct delivery from one warehouse to the customer.

If the **Change Warehouse** check box is cleared, the check results in deliveries for a sales order line, as well. However, for each delivery, a warehouse order of type Transfer is generated to transfer the goods from the warehouse where ATP was found to the warehouse where the required quantity was ordered.

Note: You cannot create separate sales order deliveries for sales order lines on which the **Make Customized** check box is selected. The reason is because you cannot customize sales delivery lines by means of the Generate Project Structure session. If you try to accept a fixed date check that will result in sales deliveries, Infor ERP displays a blocking message.

If the fixed date check will not result in sales deliveries, for example, if the entire quantity is located in a single warehouse, the **Accept Check** command is available, because only the existing sales order line will be changed (a warehouse change). This arrangement will not cause problems for the generation of the project structure.

Fixed-warehouse check

The fixed-warehouse check is performed in a time-phased way on a specific cluster. In this case, the ATP Overview report represents a time-phased overview of delivery capability. The check is performed for the item defined in the ATP handling screen. The system displays the default warehouse of this plan item, as defined in the Item-Planning (cprpd1100m000) session, as the supplying warehouse.

A fixed-warehouse check does not take the supplying relations into account. The check only checks on the time-phased availability of the item in the cluster. The appropriate cluster is determined by means of the warehouse that requires the goods. In addition, the availability of capacities (capacity CTP check) and components (component CTP check) can be considered for this type of check.

Example: Fixed warehouse check for X__ with a component CTP check

Availability			
Company	**Warehouse**	**Available**	**Date**
100	WH1	40	25/4
100	WH1	10	31/5

The fixed-warehouse check looks at the following clusters/items:
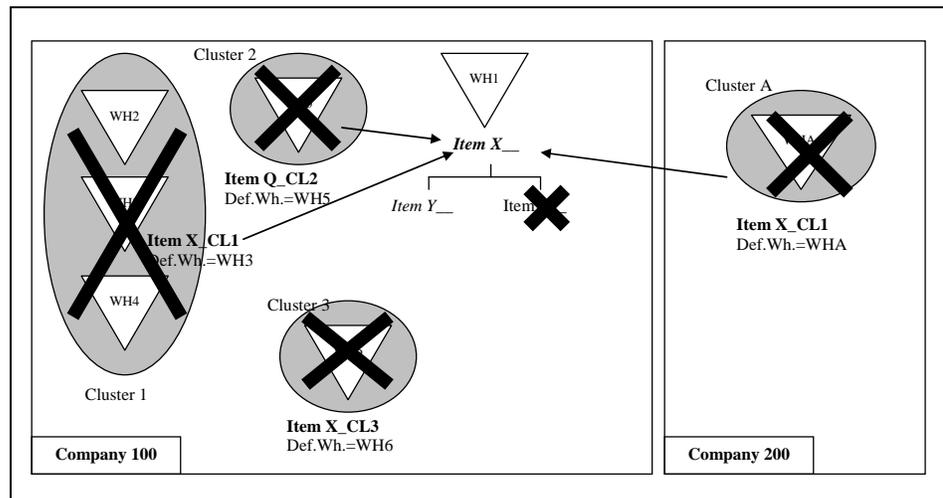
Figure 4-4 Example

Accept fixed warehouse check

After the user performs a fixed-warehouse check, the **Accept Fixed Warehouse Check** button becomes available. However, this only happens if you accessed the ATP Handling session by means of a sales order or sales quotation. The **Accept Check** button automatically generates separate sales order deliveries for one sales order line. The deliveries are based on the lines that appear in the fixed warehouse check. Infor ERP creates a delivery in sales for each line on the fixed warehouse check report. The only difference between the deliveries is the delivery date. The warehouse is always the same.

Note: You cannot create separate sales order deliveries for sales order lines on which the **Make Customized** check box is selected. The reason for this is because you cannot customize sales delivery lines by means of the Generate Project Structure session. If you try to accept a fixed-date check that will result in sales deliveries, Infor ERP displays a blocking message.

If the fixed-warehouse check will not result in sales deliveries, for example, if the entire quantity is located on one specific date, the **Accept Check** command becomes available, because only the existing sales order line will be changed (a planned delivery date change). This setup will not cause problems for generation of the project structure.

Show CTP details

If you select the **Show CTP Details** check box, a graphical browser called Capable to Promise Overview is generated, in addition to the ATP Overview report. The overview provides detailed information below each delivery line about the component and capacity constraints that were encountered during the CTP check. This Capable to Promise overview, therefore, only provides additional information on top of the ATP overview when component or capacity CTP is applied. Otherwise, both reports return the same result.

Example of capable to promise overview:

Suppose a quantity of 247 pieces of end item JOSUEF11 is required. This item has the following multilevel bill of material:
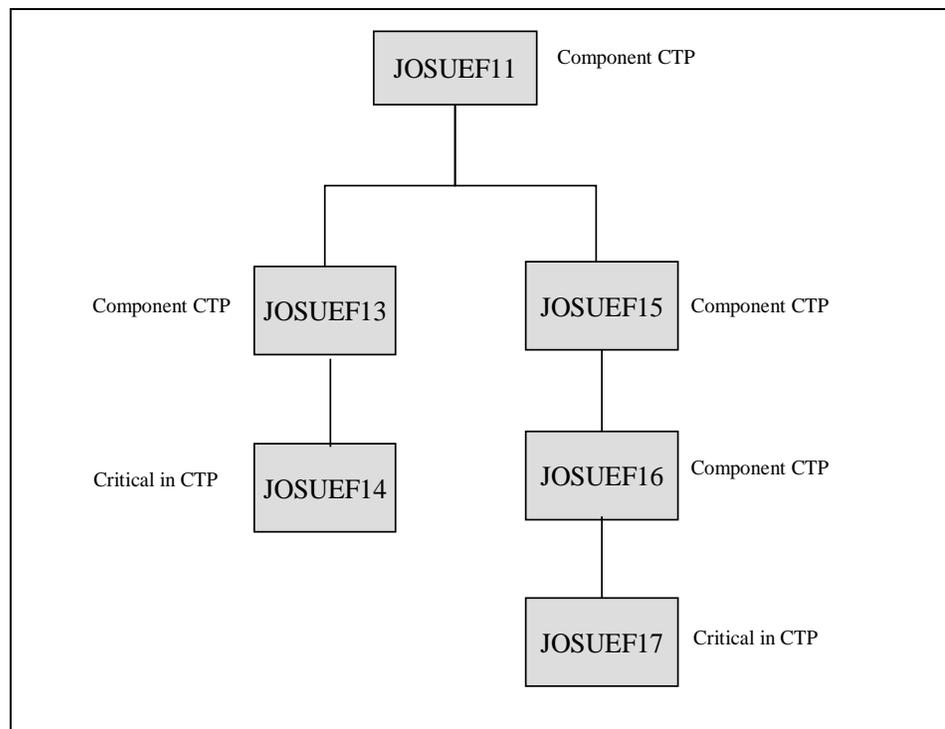

Figure 4-5 Example

The components JOSUEF14 and JOSUEF17 are the only components in this product structure that are critical in CTP. The other items in the bill of material all have the **Component CTP** check box selected in the Item-Planning session. Capacity is excluded from this example.

The ATP Handling (tdsls4899m000) session shows the following settings:

Note: The **Component** check box is selected as the type of check. The **Show CTP Details** check box is also selected, which indicates that a separate capable to promise overview will be generated in addition to the ATP overview report.

The fixed-warehouse-check report that results is as follows:

The capable to promise overview for this fixed warehouse check is as follows:

Both reports show that the required quantity of 247 pieces can be delivered in three parts:

- 101 pieces on December 17

- 83 pieces on December 21

- 63 remaining pieces on December 30

As you see, the main lines of the report and the graphical browser are identical. However, where the ATP overview report stops at this point, the capable-to-promise overview shows which components or capacities were restrictive for delivering the entire quantity.

This overview can be read as follows:

- The material for which sufficient availability has been found in a branch of the product structure is marked black. The underlying branch of such a component (if present) is no longer depicted because the information is considered irrelevant for this overview. This overview concentrates on the restrictive components and capacities only.

- An example in the previous picture is item JOSUEF15, where 247 pieces can be built based on the availability of its critical component JOSUEF17. In addition, the last main line for JOSUEF11 is marked black because sufficient ATP for this item is found on December 30 to cover the remaining 63 pieces of the demand. Therefore, you will not encounter problems in terms of availability for the black lines. You can also see this by the fact that the available quantity is equal to the required quantity.

- The branch for which insufficient availability is found is marked red. The first main line is expanded for the entire branch in the example above. Because insufficient availability for JOSUEF14 has been found and this is the lowest component in this branch, the entire branch is red. In addition, the second main line is marked red, but is not yet expanded.

You determine the dates as follows:

- The CTP of JOSUEF11, the end item, is checked every period based on the EP parameter **Component CTP Bucket**. If the value of this parameter is set, for example, to **1** hour, every subsequent hour, the CTP is calculated. When calculating this CTP, the lead-time offset is used to determine the required date for each component. This offset is visible in the previous picture in the branch of the first main line. JOSUEF14 is required earlier than JOSUEF13, and so on.

The available quantity is determined as follows:

- The main lines, which are end items for which the CTP is calculated, always depict the additional available quantity compared to the previous main line. However, the component lines always depict cumulative quantities. Therefore, each subsequent component line increases the available quantity compared to the previous component line.

Example: If 300 pieces of JOSUEF11 are required:
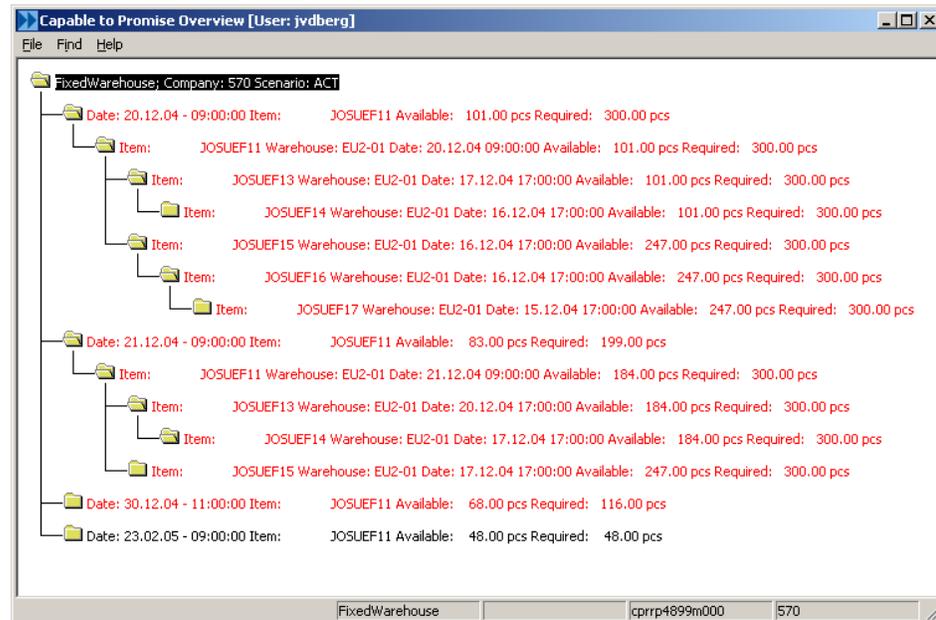
The main lines for JOSUEF11 show 101 pieces availability on December 20, and an additional 83 pieces on December 21.

The component lines for JOSUEF14 show 101 pieces availability on December 16 (lead-time offset applied) and 184 pieces on December 17. As a result, the available quantity of 184 is a cumulated quantity of 101 + 83 pieces.

Although this method of showing the available quantity might be less transparent, this method is shows extensive additional quantities for the components, rather than the cumulated quantities. From the main line, you can always still see the amount of the additional quantity.

ATP handling offline

If you access the ATP Handling session directly, and not from a sales order entry, you can access all fields, but the button to accept the fixed date check or fixed warehouse check is unavailable. You can only access this button during sales order/quotation entry.

Ordering Data

- **Site**
  Company number in which customers/prospects order a particular quantity

- **Warehouse**
  Warehouse ID of the default warehouse for this item from where you want to deliver to the customers

- **Quantity**
  Quantity for which the ATP/CTP must be checked for one or multiple requirements, for example, sales orders/quotations

- **Delivery Date**
  The date for which the ATP/CTP must be checked

- **Change Warehouse check box**
  This check box is only applicable if you access the ATP-handling session from the sales order line.

Supplying data

- Site
  Company number of the company from which the quantity is delivered to the customer/prospect. This number can be the same as the company number in the ordering data. This number is also the company number that will be defaulted. You can adjust this setting for a fixed date check or fixed warehouse check, but only to a company number for which a supplying relationship exists for this item.

- Warehouse
  Warehouse ID of the warehouse from which you want to deliver the customer/prospect. This can be the same as the warehouse in the ordering data. This ID is also the warehouse ID that will be defaulted. You can adjust this ID for a fixed date or fixed warehouse check, for example, if you want to check ATP/CTP for the item on a warehouse nearby the customer's site.

The fixed date or fixed warehouse check both check the company number and warehouse ID in the supplying data first, because these checks overrule the company number and warehouse ID in the ordering data.

The fixed warehouse check must then check ATP only on the supplying company number and warehouse ID. The ATP Overview report must also only give the ATP on this company number and warehouse ID.

The fixed date check must first check ATP on the supplying company number and warehouse ID. If the required quantity is not met, the check continues on the other warehouses available for the item. The report states the supplying company number and warehouse ID first, and then the other company/warehouse combination.

If the warehouse ID in the supplying data is empty, the company number and warehouse ID from the ordering data are taken for the ATP check.

Type of Check:

The type of checks are enabled and defaulted from the Items – Planning (cprpd1100m000) session. You can overrule the default setting.

ATP Handling from a sales order line

If you access the ATP Handling session from a sales order, several fields cannot be modified.

ATP Handling from a sales quotation line

If you access the ATP Handling session from a sales quotation, the **Accept Check** button is unavailable, because you cannot create deliveries or warehouse transfer orders for a sales quotation line.