

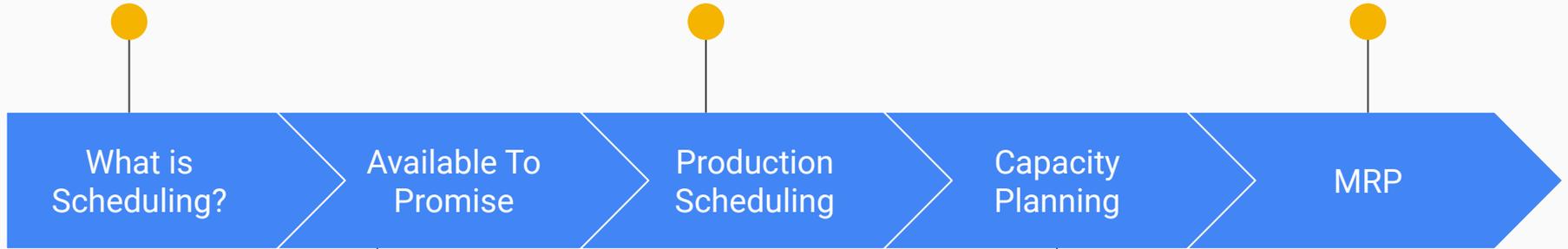
# Scheduling In ERP

October 17, 2019

Start with some ERP basics of supply/demand and order schedules

Walk through use cases of scheduling production on work orders in ERP

The checks and balances to your schedule provided by materials forecasting.



Estimating minimum ability to promise based on materials lead times

Track production demand against resource capacity (lite or advanced modes)



**Q&A**  
**(Time permitting)**

# Scheduling Orders in ERP

## There are four types of Dates

- Work Start Date (Demand)
- Ship Date (Demand)
- Dock Date (Demand)
- Dock Date (Supply)

# Scheduling Orders in ERP

## There are four types of Orders

- Customer Orders
  - Work Orders (Jobs)
  - Stock Orders (Parts / FG)
- Vendor Purchase Orders
  - Raw materials vendor POs
- Internal Orders
  - Work Orders (Build-to-stock or Subassemblies)

# Understanding The Waterfall Illustration

Left Side = Demand

- Work Start Dates from Customer Build Orders for raw/components
- Ship Dates from Customer Orders for finished products

Right Side = Supply

- Dock dates from Vendor POs for any product
- Ship dates from Internal Work Orders for Finished Product

## WATERFALL FOR LOCATION MN

Order	Customer	Qty Need	Piece	Picked	Entry Date	Work Start Date	Date	Projected QOH	PO	Supplier	Qty Gain	Piece
<b>Demand Signals</b>							Starting	0				
							2019-10-14	1.00	8.1-1	Metal Vendor (2)	+1	0
10.1-1	My Biggest Cust... (2)	1	0	0	2019-10-07	2019-10-16	2019-10-16	0.00				

**Supply Signals**

# Customer Order (Build / Job)

BUILD Order for **BOMPRODUCT** (with component **RAWMETAL**)

- Work Start Date = day to start work; day **RAWMETAL** is needed to be ontime to start work.
- Ship Date = day to finish work and ship your **BOMPRODUCT**
- Dock Date = day customer can expect the **BOMPRODUCT** at their dock.

On waterfall, component **RAWMETAL** inventory will be forecasted to be needed on the Work Start Date. See screenshots in next slide.

# Customer Order (Build / Job)

**FIRST QUOTE FOR CUSTOMER** Merge

<b>Customer</b>	My Biggest Customer (2) My Biggest Customer 1234 Street Austin, TX 78741		<b>Contact</b>		
<b>Cust PO #</b>	PO_new	<b>Owner</b>	techx	<b>Status</b>	Open
<b>Inside Sales</b>		<b>Outside Sales</b>			
<b>Loc</b>	Main ▾	<b>Prctpart (QOH:0)</b>	BOMPRODUCT 🔍	<b>Cust Part</b>	🔍
<b>Revision</b>	(unnamed) ▾ (new) BOM Data? No ▾	<b>Ship Date</b>	2019-10-31	<b>Ship Via</b>	N/A ▾
<b>Work Start Date</b>	2019-10-16 📅	<b>Dock Date</b>	2019-11-01		
<b>Trans Code</b>	Build ▾				

Qty	Cost ⓘ	Resale ⓘ	Lead Time	Notes	Primary	View Qty Breaks
1	\$0.00	\$200.00 \$0.00	0		⊕ ✖	Add

More Options ▾

**OK** **OK & Add** **Cancel**

# Customer Order (Build / Job)

## Part RAWMETAL

- VIEW
- EDIT
- BOM USE (1)
- PRICING
- QUOTES (0)
- ORDERS (1)
- SALES HIST (0)
- SHIP AND DEBITS
- PQUOTES (0)
- OPEN POS (0)
- WATERFALL
- PO HISTORY (0)

### WATERFALL FOR LOCATION MN

Order	Customer	Qty Need	Piece	Picked	Entry Date	Work Start Date	Date	Projected QOH	PO	Supplier	Qty Gain	Piece
							Starting	0				
10.1-1	My Biggest Cust... (2)	1	0	0	2019-10-07	2019-10-16	2019-10-16	-1.00				

Ship Date: 2019-10-31, Dock Date: 2019-11-01

Show Net Projected Qty:  [Go](#)

[Create PQuote](#)

# Customer Order (Stock / FG)

**STOCK** Order for **BOMPRODUCT** (component RAWMETAL *irrelevant*)

- Work Start Date = N/A (*irrelevant*)
- Ship Date = day to ship your BOMPRODUCT
- Dock Date = day customer can expect the BOMPRODUCT at their dock.

On waterfall, finished **BOMPRODUCT** inventory will be forecasted to be needed on the **Ship Date**. See screenshots in next slide.

# Customer Order (Stock / FG)

**FIRST QUOTE FOR CUSTOMER** Merge

**Customer** My Biggest Customer (2)  
My Biggest Customer 1234 Street Austin, TX 78741

**Contact**

**Cust PO #** PO\_new      **Owner** techx      **Status** Open

**Inside Sales**      **Outside Sales**

**EDIT LINE 1**

**Loc** Main ↓      **Prcpart (QOH:0)** **BOMPRODUCT**      **Cust Part**

**Revision** (unnamed) ↓ (new) BOM Data? No ↓      **Ship Via** N/A ↓

**Work Start Date** ~~2019-10-16~~        **Ship Date** 2019-10-31      **Dock Date** 2019-11-01

**Trans Code** Stock ↓

Qty	Cost ⓘ	Resale ⓘ	Lead Time	Notes	Primary	<a href="#">View Qty Breaks</a>
<input type="text" value="1"/>	<input type="text" value="\$0.00"/>	<input type="text" value="\$200.00"/> \$0.00	<input type="text" value="0"/>	<input type="text" value=""/>	<input checked="" type="radio"/> <input type="radio"/>	<a href="#">Add</a>

More Options ▾

[OK](#) [OK & Add](#) [Cancel](#)

# Customer Order (Stock / FG)

## Part BOMPRODUCT

- VIEW
- EDIT
- BOM OVERVIEW (1)
- EDIT BOM
- EXPORT BOM
- BUILD ESTIMATE
- BUILD W/ SUBS
- PRICING
- QUOTES (0)
- ORDERS (2)
- SALES HIST (0)
- SHIP AND DEBITS
- PQUOTES (0)
- OPEN POS (0)
- WATERFALL
- PO HISTORY (0)

### WATERFALL FOR LOCATION MN

Order	Customer	Qty Need	Piece	Picked	Entry Date	Demand Date	Date	Projected QOH	PO	Supplier	Qty Gain	Piece
							Starting	0				
11.1-1	My Biggest Cust... (2)	1	0	0	2019-10-07	2019-10-31	2019-10-31	-1.00				

Show Net Projected Qty:  [Go](#)

[Create PQuote](#)

# Vendor Purchase Order (Scheduled Supply)

Purchase Order for component **RAWMETAL** (which you need to build BOMPRODUCT)

- Dock Date = day YOU can expect to receive RAWMETAL at YOUR receiving dock.

On waterfall, raw component RAWMETAL inventory will be forecasted to be supplied on the **Dock Date**. See screenshots in next slide.

# Vendor Purchase Order (Scheduled Supply)



<b>Vendor</b>	Metal Vendor (2)	<b>Contact</b>	
<b>Status</b>	Open	<b>FOB</b>	S - Shipment
<b>Location</b>	MN	<b>Owner</b>	techx
<b>Created At</b>	10/07/19 4:44 PM	<b>Terms</b>	-
<b>PO Comment</b>		<b>Scheduled</b>	N
<b>PQuote Comment</b>		<b>Cost Center</b>	
<b>Vendor Phone Number</b>		<b>Vendor Min Order Amount</b>	\$0.0000

Add Line

Change All Lines

+/- Columns

#	Qty	Prcpart	Revision	Dock Date	Sched?	PPV	Ext. Cost	
1	<input type="text" value="1"/>	RAWMETAL <span>[+]</span>		<input type="text" value="2019-10-14"/>	Unsched.	\$2.0000	\$2.0000	   
new	<input type="text" value="1"/> <small>(part dr ↓)</small>	<input type="text"/>		<input type="text" value="2019-10-07"/>				<input type="button" value="Add"/>

# Vendor Purchase Order (Scheduled Supply)

## Part RAWMETAL

- VIEW
- EDIT
- BOM USE (1)
- PRICING
- QUOTES (0)
- ORDERS (1)
- SALES HIST (0)
- SHIP AND DEBITS
- PQUOTES (0)
- OPEN POS (1)
- WATERFALL
- PO HISTORY (0)
- NCRS (0)

### WATERFALL FOR LOCATION MN

Order	Customer	Qty Need	Piece	Picked	Entry Date	Work Start Date	Date	Projected QOH	PO	Supplier	Qty Gain	Piece
Starting								0				
							2019-10-14	1.00	8.1-1	Metal Vendor (2)	+1	0
10.1-1	My Biggest Cust... (2)	1	0	0	2019-10-07	2019-10-16	2019-10-16	0.00				

Show Net Projected Qty:  Go

Create PQuote

# Internal Work Order (Demand and Supply)

BUILD Order for BOMPRODUCT (with component RAWMETAL)

- Work Start Date = day to start work; day RAWMETAL is needed to be ontime to start work.
- Ship Date = day to finish work and **complete/receive** your BOMPRODUCT into finished product stock.
- Dock Date = N/A (*irrelevant, this gets set automatically == Ship Date*)

On waterfall, component RAWMETAL inventory will be forecasted to be needed (demand) on the **Work Start Date**, while simultaneously the finished BOMPRODUCT inventory will be forecasted to be completed (supplied) on the **Ship Date**. See screenshots in next slide.

# Internal Work Order (Demand and Supply)

 **Build And Add To Stock**  
Enter a Workorder to build product into stock.

Loc: Main ▾ Prcpart (QOH:0): BOMPRODUCT 🔍 Cust Part: 🔍

Revision: (unnamed) ▾ (new) BOM Data? No ▾ Ship Via: N/A ▾

Work Start Date: 2019-10-21  Ship Date: 2019-10-30  Dock Date: 2019-10-30 

Trans Code: Build ▾

Qty	Cost ⓘ	Resale ⓘ	Lead Time	Notes	Primary	<a href="#">View Qty Breaks</a>
1	\$0.00	\$0.00 \$0.00	0		 	<a href="#">Add</a>

More Options ▾

[OK](#) [OK & Add](#) [Cancel](#)



# Internal Work Order (Demand!)

## Part RAWMETAL

VIEW

EDIT

BOM USE (1)

PRICING

QUOTES (0)

ORDERS (1)

SALES HIST (0)

SHIP AND DEBITS

PQUOTES (0)

OPEN POS (0)

WATERFALL

PO HISTORY (0)

NCRS (0)

### WATERFALL FOR LOCATION MN

Order	Customer	Qty Need	Piece	Picked	Entry Date	Work Start Date	Date	Projected QOH	PO	Supplier	Qty Gain	Piece
							Starting	0				
12.1-1	Internal Accoun... (1)	1	0	0	2019-10-09	2019-10-21	2019-10-21	-1.00				

Show Net Projected Qty:  [Go](#)

[Create PQuote](#)

# Internal Work Order (Supply!)

## Part BOMPRODUCT

- VIEW
- EDIT
- BOM OVERVIEW (1)
- EDIT BOM
- EXPORT BOM
- BUILD ESTIMATE
- BUILD W/ SUBS
- PRICING
- QUOTES (0)
- ORDERS (1)
- SALES HIST (0)
- SHIP AND DEBITS
- PQUOTES (0)
- OPEN POS (1)
- WATERFALL
- PO HISTORY (0)

### WATERFALL FOR LOCATION MN

Order	Customer	Qty Need	Piece	Picked	Entry Date	Work Start Date	Date	Projected QOH	PO	Supplier	Qty Gain	Piece
						Starting		0				
						2019-10-30		1.00	12.1-1	Internal Account (1)	+ 1	0

Show Net Projected Qty:  [Go](#)

[Create PQuote](#)

# Available To Promise

## Available To Promise (Materials)

- Stock Check For Parts
  - Soonest Ship Date?
- Build Estimate For BOMs
  - Soonest Work Start Date?

# Material Availabilities & Lead Times

**To know the soonest possible date you can deliver to the customer, you need to know:**

1. Material availability (do you have what you need)
2. Material lead times (if you don't have what you need, how quickly could you get it)

# Material Availability

WAREHOUSE: MN - MAIN 

Warehouse Transfer Vendor Return

Avg Cost	\$2.00000		
Cost For Loc	\$2.00000	Resale For Loc	
QOH	→ 10	QR	→ 1 Qty Avail → 9
QOO	0	Total Backlog	0 MOQ (1)
Std Cost	\$2.00000	Std Package	Lead Time (in weeks)
Commodity Code		ABC Code	Country of Origin
Tariff (HTS)			
Last Updated	N/A	Last Counted	N/A ROP 0

Bin	Receipt	Date	Total Bin Qty	Date Code	Lot Code	Revision	Expand
NEW (History)	1-101019 (label) (Move)	2019-10-10	10	ABC123	HHH		Edit
			1	Picked on 12.1 Line Item: 1 - Unpick			

Bin Cost ⓘ \$2.00000 Actual Shelf Qty 9 (Reason Code) Reason Comments Set Qty/Cost

# How Is Material Flagged Unavailable?

1. Immediately at order entry: if material available when order entered, it's reserved
  - a. To enable, set "Reserve Inventory for All Orders" config or enter orders with type of Unscheduled.
2. Smart Mode: Flip material qty to reserved ONLY when threshold is crossed, i.e. when the part's lead time is such that you wouldn't be able to procure a replacement part in time for the order's ship date.
3. Only when picked to an order.
  - a. To enable, set "Reserve Quantity on Pick" config.

**Result: Sales can't "promise" material that appears to be in stock but is unavailable.**

# Material Lead Time

▼ WAREHOUSE: MN - MAIN 

[Warehouse Transfer](#) [Vendor Return](#)

Avg Cost	\$2.00000						
Cost For Loc	\$2.00000	Resale For Loc					
QOH	10	QR	1	Qty Avail		9	
QOO	0	Total Backlog	0	MOQ		(1)	
Std Cost	\$2.00000	Std Package		Lead Time (in days)		10	
Commodity Code		ABC Code		Country of Origin			
Tariff (HTS)							
Last Updated	2019-10-10	Last Counted	N/A	ROP		0 (EOQ0)	

Bin	Receipt	Date	Total Bin Qty	Date Code	Lot Code	Revision	Expand
NEW (History)	1-101019 (label) (Move)	2019-10-10	10	ABC123	HHH		Edit
			1	Picked on 12.1 Line Item: 1 - Unpick			

Bin Cost ⓘ \$2.00000      Actual Shelf Qty 9      (Reason Code) ⚡      Reason Comments      [Set Qty/Cost](#)

# Avail To Promise: Stock Check For Parts

I have an order for a part. When is the soonest date I could ship this part?

Sell Process 1 2 3 4 5  
2. Commit Order

POTENTIAL FIRST ORDER Merge

Customer My Biggest Customer (2)  
My Biggest Customer 1234 Street Austin, TX 78741 Contact

Cust PO # PO\_new Owner techx Status Open

Inside Sales Outside Sales

Add Line Change All Lines Show Open Lines Submit

+/- Columns

#	PRC	Part	Ship Date	Dock Date	Qty	Cost	Resale	Tax	Ext. Resale	
1	RAW	METAL NEW!	2019-10-31	2019-11-01	11	\$2.00	\$2.00	\$0.00	\$22.00	
		<input type="text"/>	<input type="text" value="2019-10-10"/>	<input type="text" value="2019-10-10"/>	<input type="text" value="1"/>	<input type="text" value="Cost"/>	<input type="text" value="Resale"/>			<input type="button" value="Add"/>



# Avail To Promise: Stock Check For Parts

I have an order for a part. When is the soonest date I could ship this part?

#	PRC	Part	Ship Date	Dock Date	Qty	Cost	Resale	Tax	Ext. Resale	
1	RAW	METAL NEW!	2019-10-31	2019-11-01	11	\$2.00	\$2.00	\$0.00	\$22.00	   

Inv BOM Use(1) Quotes(1) Orders(1) POs(1) **Waterfall** PQQuotes (0) Sales Hist (0) PO Hist (0) Tools Notes (0) Crosses (0)

### WATERFALL FOR LOCATION MN

Order	Customer	Qty Need	Piece	Picked	Entry Date	Work Start Date	Date	Projected QOH	PO	Supplier	Qty Gain	Piece
							Starting	10				
				1			Picked	1				
12.1-1	Internal Accoun... (1)	1	0	1	2019-10-09	2019-10-21	2019-10-21	9.00				
							2019-10-29	11.00	10.1-1	Metal Vendor (2)	+2	0

Answer:

2019-10-29

# Avail To Promise: Build Estimate For BOMs

I have an order for a BOM that my company builds. How soon could I start work on it?

EDIT LINE 1

Loc	Main ▾	Prcpart (QOH:0)	<b>BOMPRODUCT</b> 🔍	Cust Part	🔍
Revision	▾ (new)			Ship Via	N/A ▾
<b>Work Start Date</b>	<input type="text" value="31"/>	Ship Date	2019-10-31	Dock Date	2019-11-01
Trans Code	Build ▾				

Qty	Cost ⓘ	Resale ⓘ	Lead Time	Notes	Primary	View Qty Breaks
<input type="text" value="22"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="checkbox"/>	<input type="button" value="Add"/>

More Options ▾

# Avail To Promise: Build Estimate For BOMs

I have an order for a BOM that my company builds. How soon could I start work on it?

## Part BOMPRODUCT

- VIEW
- EDIT
- BOM OVERVIEW (1)
- EDIT BOM
- EXPORT BOM
- BUILD ESTIMATE
- BUILD W/ SUBS
- PRICING
- QUOTES (2)
- ORDERS (1)
- SALES HIST (0)
- SHIP AND DEBITS
- PQUOTES (0)
- OPEN POS (1)
- WATERFALL
- PO HISTORY (0)
- NCRS (0)

Main

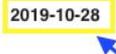
22

Can Build With Current Stock: 9

Qty 22 Work Start Date: 2019-10-28

Unique Parts On BOM (And Sub BOMs)

Component #	Prcpart	Qty Per Top	Lead Time	QOH	Avail	QOO	Need Qty	Delta
1	RAWMETAL	1	10	10	9	2	22	-13



# Avail To Promise: Build Estimate For BOMs

I have an order for a BOM that my company builds. How soon could I start work on it?

Loc	Main	Prcpart (QOH:0)	BOMPRODUCT	Cust Part		
Revision	(new)			Ship Via	N/A	
Work Start Date	2019-10-28	Ship Date	2019-10-31	Dock Date	2019-11-01	
Trans Code	Build					
Qty	Cost	Resale	Lead Time	Notes	Primary	View Qty Breaks
22	0					Add

**Build Estimate For BOMPRODUCT**

- Avail Date For Qty 22: 2019-10-28
- Qty That Can Be Built Now: 9
- Material Lead Time: 10 days

Answer:

2019-10-28

*FYI...*

To Do Production Scheduling —  
You have to enter the order.

# (Commit To Order...)

## Quote/Order Worksheet 15

Sales Editing: Cetec ERP Support Team ▼

VIEW & EDIT

SEND +

COMMIT TO ORDER

QUOTING TOOLS +

COMMISSION

DOCUMENTS (0)

NOTES (0)

PREPAY

CREATE PQUOTE

Build Process 1 2 3 4 5

2. Commit Order



Commit Order

Create Separate Order For Each Quote Line?

Intercompany Order, Set Internal Vendor

Internal Vendor

Receiving Location

Main

**Build And Add To Stock**

Enter a Workorder to build product into stock.

Check/Uncheck All Lines

Change All Lines

# Production Scheduling

## Production Scheduling

- Config settings to use for quick and easy scheduling
- Auto-set Work Start Dates; lock work start dates in with Ship Date movement
- BOM Labor Plans and Multipliers as Production Lead times (recurring vs setup, etc.)

# Production Scheduling - Case 1

BOMPRODUCT has no specified labor estimate. Min Prod Lead Time = 5 days.

## Config Settings

Name	<input type="text" value="ord_schedule_min"/>	Description	<input type="text"/>	Category	<input type="text" value="All"/>
------	---	-------------	----------------------	----------	----------------------------------

Name	Category	Description	Value	Updated By	Updated On
<b>ord_schedule_min_days_between_wip_and_promise</b>	Scheduling		<input type="text" value="5"/>	techx	2019-10-10 02:55:50 PM

Show  Rows (1 Total)

First Previous  Next Last

# Production Scheduling - Case 1

Ship Date is 2019-10-28. BOMPRODUCT Work Start Date is left **blank** to auto-schedule...

**EDIT LINE 1**

Loc	Main	Prcpart (QOH:0)	BOMPRODUCT	Cust Part	
Revision	(unnamed) (new)	BOM Data?	No	Ship Via	N/A
Work Start Date		Ship Date	2019-10-28	Dock Date	2019-10-28
Trans Code	Build				

Qty	Cost	Resale	Lead Time	Notes	Primary	View Qty Breaks
1	\$0.00	\$200.00 \$0.00	0			Add

More Options

# Production Scheduling - Case 1

(you might consider **hiding** the Work Start Date from Sales inside the quote line view...)

## Config Settings

Name	<input type="text" value="quote_show_wip"/>	Description	<input type="text"/>	Category	All
------	---	-------------	----------------------	----------	-----

Name	Category	Description	Value	Updated By	Updated On
quote_show_wip_date	Quote		<input type="text" value="0"/>	techx	2019-10-10 03:31:29 PM

Show 50 Rows (1 Total)

First Previous 1 Next Last Copy CSV Excel

# (Commit To Order...)

 **Commit Order**  Create Separate Order For Each Quote Line?

**Intercompany Order, Set Internal Vendor**

Internal Vendor 



# Production Scheduling - Case 1

Work Start Date is auto-set to five days before the Ship Date (to the nearest week day):

COMPLETE/RECEIVE  
 DELETE LINE/ALL  
 PDF (QUICK)  
 PRO FORMA PDF  
 COMMISSION  
 RELEASE TO WH  
 WORKORDER VIEW +  
 PREPAY  
 PACKING SLIP  
 PACKING LABEL  
 FULL ORDER PLATE  
 DOCUMENTS (0)  
 NOTES (0)  
 QUOTE 19  
 CREATE PQUOTE  
 CREATE WO  
 INTERNAL PO 14.1  
 OUTSOURCE POS (0)

<b>Customer</b>	Internal Account (1)	<b>Location</b>	MN	<b>Ordered On</b>	2019-10-10
<b>Buyer</b>		<b>P.O. Number</b>		<b>Assembly?</b>	Yes
<b>Ship Via</b>	UPS Ground	<b>Customer Email</b>			
<b>Tax Group</b>	(0%)	<b>Terms</b>		<b>FOB</b>	S - Shipment
<b>Order Type</b>	Scheduled	<b>Ship Type</b>	Partial	<b>Status</b>	New (0)
<b>Carrier Account #</b>					
<b>Inside Sales</b>		<b>Outside Sales</b>			
<b>Ship To</b>	Internal Customer ,				

+/- Columns

#	Qty	Code	Prcpart	Cost	Resale	Work Start Date	Ship Date	Dock Date	Tax	Ext. Resale
1	1	Build	BOMPRODUCT	\$0.00	\$0.00	2019-10-21	2019-10-28	2019-10-28	\$0.00	\$0.00

# Production Scheduling - Case 1

If the Ship Date changes, the Work Start follows in lock-step to how it was first auto-set.

The screenshot displays a software interface for production scheduling. At the top, there are input fields for 'Ignore Credit Hold?' (with a checkbox), 'Notes', 'Carrier Account #', 'Resale Currency', and 'Order Name'. A 'Project' dropdown is set to '0'. A 'Place Hold' button is visible. Below these is a table with columns: '#', 'Trans Type', 'Qty Due', 'Prcpart', 'Revision', 'Prod Line', 'Cost', 'Resale', 'Work Start Date', and 'Lock Date'. The first row shows a 'Build' transaction with a quantity of 1, part 'BOMPRODUCT', revision 'N/A', cost '0.0000000', resale '0.00000000', and a 'Work Start Date' of '2019-11-01'. A calendar pop-up is open over the 'Work Start Date' field, showing 'November 2019' with the 8th highlighted. A red arrow points from the '2019-11-08' date in the calendar to the '2019-11-01' date in the table. Another red arrow points from the '2019-11-08' date in the calendar to the '2019-10-28' date in the 'Lock Date' column. A red text box with arrows pointing to these dates contains the text: '(Work Start Follows in Lock-Step)' and 'Ship Date Change!'. A 'Submit' button is located at the bottom right of the interface.

#	Trans Type	Qty Due	Prcpart	Revision	Prod Line	Cost	Resale	Work Start Date	Lock Date
1	Build	1	BOMPRODUCT		N/A	0.0000000	0.00000000	2019-11-01	2019-11-08

*FYI...*

If you manually set Work Start Date  
Then all bets are off (auto-setting behavior is severed)

# Production Scheduling - Case 2

**Case 1** assumed that BOMPRODUCT had no specified labor estimate, and relied instead on a min prod lead time (ord\_schedule\_min\_days\_between\_wip\_and\_promise) of five days.

**Case 2** will explore how to model the “**Labor Plan**” for BOMPRODUCT, so that the Work Start Date is set \_x\_ number of days before the target complete/ship date based on the amount of time estimated to build \_x\_ quantity of BOMPRODUCT.

# Production Scheduling - Case 2

## (Unnamed), Part BOMPRODUCT

[Back To Revisions](#)

[Use Fancy Work Instructions](#)

**Labor multiplier set to 1**

Order	Location	Group	Operations	Time Est	Setup	Recurring	Labor Rate	Labor Est	Overhead Rate	Overhead Est	Total	Remove
1	Doc Control (Unreleased Orders)		0	0s	0s	0s	\$25.00	\$0.00	\$5.00	\$0.00	\$0.00	<a href="#">Remove</a>
2	Warehouse		0	0s	0s	0s	\$25.00	\$0.00	\$5.00	\$0.00	\$0.00	<a href="#">Remove</a>
3	CNC Machine #2		2 ▾	10h 0s	2h 0s	8h 0s	\$10.00	\$100.00	\$5.00	\$50.00	\$150.00	<a href="#">Remove</a>

**Operation: 1**    1 Hour Op    Seconds Per: 3600    Times:     Total Seconds: 7200    Setup ⓘ    Yes ▾    [Set](#) Drop?     [move](#)

#    Instructions

(new)        Req'd     [Update](#)

**Operation: 2**    1 Hour Op    Seconds Per: 3600    Times:     Total Seconds: 28800    Setup ⓘ    No ▾    [Set](#) Drop?     [move](#)

#    Instructions

(new)        Req'd     [Update](#)

# Production Scheduling - Case 2

It is estimated to take 30 hours to build Qty 1 of BOMPRODUCT.

**(Unnamed), Part BOMPRODUCT** (To Build Qty 1 of BOM Product)

[Back To Revisions](#)

Labor multiplier set to 1

Use Fancy Work Instructions

Order	Location	Group	Operations	Time Est	Setup	Recurring	Labor Rate	Labor Est	Overhead Rate	Overhead Est	Total	Remove
1	Doc Control (Unreleased Orders)		0	0s	0s	0s	\$25.00	\$0.00	\$5.00	\$0.00	\$0.00	<a href="#">Remove</a>
2	Warehouse		0	0s	0s	0s	\$25.00	\$0.00	\$5.00	\$0.00	\$0.00	<a href="#">Remove</a>
3	CNC Machine #2		2	10h 0s	2h 0s	8h 0s	\$10.00	\$100.00	\$5.00	\$50.00	\$150.00	<a href="#">Remove</a>
4	Assembly Station		1	16h 0s	0s	16h 0s	\$10.00	\$160.00	\$5.00	\$80.00	\$240.00	<a href="#">Remove</a>
5	Inspection		1	4h 0s	0s	4h 0s	\$10.00	\$40.00	\$5.00	\$20.00	\$60.00	<a href="#">Remove</a>
6	Shipping		0	0s	0s	0s	\$10.00	\$0.00	\$5.00	\$0.00	\$0.00	<a href="#">Remove</a>
Unit Total Time (no lead time):				30 hours, 0 min	2 hours, 0 min	+ 28 hours, 0 min		\$300.00		\$150.00	\$450.00	

# Production Scheduling - Case 2

**amed), Part BOMPRODUCT**

(To Build Qty 4 Of BOM Product?) → **114 hrs**

Still just 2 hrs

28hrs x Qty 4 = 112 hrs

Multiplier set to 1

Location	Group	Operations	Time Est	Setup	Recurring
Doc Control (Unreleased Orders)		0	0s	0s	0s
Warehouse		0	0s	0s	0s
CNC Machine #2		2	10h 0s	2h 0s	8h 0s
Assembly Station		1	16h 0s	0s	16h 0s
Inspection		1	4h 0s	0s	4h 0s
Shipping		0	0s	0s	0s
Unit Total Time (no lead time):			30 hours, 0 min	2 hours, 0 min	28 hours, 0 min

tion)

LABOR ESTIMATE

The **BOMPRODUCT** labor estimate extends by the Qty of the BOMPRODUCT being built.

However, any estimated **setup** time does not extend.

Thus, the total estimated number of hours to build Qty 4 of BOMPRODUCT is **114 hrs**.

# Production Scheduling - Case 2

Est. hours translates to estimated **days** based on config setting “**hours\_per\_workday**”.  
If left blank, **Work Start Date** is set **\_x\_** number of days before the target complete/ship date based on the estimated number of days to build **\_x\_** quantity of BOMPRODUCT.

## Config Settings

Name	<input type="text" value="hours_per_workday"/>	Description	<input type="text"/>	Category	All <input type="button" value="v"/>
------	--	-------------	----------------------	----------	--------------------------------------

Name <input type="button" value="v"/>	Category <input type="button" value="v"/>	Description <input type="button" value="v"/>	Value <input type="button" value="v"/>	Updated By <input type="button" value="v"/>	Updated On <input type="button" value="v"/>
hours_per_workday			<input type="text" value="8"/> <input type="button" value="Set"/>		2019-10-10 11:31:25 AM <input type="button" value="X"/>

# Production Scheduling - Case 2

In **Case #2** (with `hours_per_workday = 8`), to build Qty 114 of BOMPRODUCT, it will take 114 hrs, or 14.25 days. Round up to **15 work days** (skips weekends).

Remember, this particular production lead time would be overridden if your `ord_schedule_min_days_between_wip_and_promise` config were *greater than* 14, or if your `ord_schedule_max_days_between_wip_and_promise` config were *less than* 14.

# Production Scheduling - Case 2

## Order 21.1

VIEW

EDIT

DETAILS/SERIALS

COMPLETE/RECEIVE

DELETE LINE/ALL

PDF (QUICK)

PRO FORMA PDF

COMMISSION

RELEASE TO WH

WORKORDER VIEW +

PREPAY

PACKING SLIP

PACKING LABEL

FULL ORDER PLATE

DOCUMENTS (0)

NOTES (0)

QUOTE 21

CREATE PQUOTE

CREATE WO

INTERNAL PO 16.1

OUTSOURCE POS (0)

Build Process 1 2 3 4 5

3. Pick Parts/Material Line 1

Customer	Internal Account (1)	Location	MN	Ordered On	2019-10-13
Buyer		P.O. Number		Assembly?	Yes
Ship Via	UPS Ground	Customer Email			
Tax Group	(0%)	Terms		FOB	S - Shipment
Order Type	Scheduled	Ship Type	Partial	Status	New (0)
Carrier Account #					
Inside Sales		Outside Sales			
Ship To	Internal Customer ,				

+/- Columns

#	Qty	Code	Prcpart	Cost	Resale	Work Start Date	Ship Date	Dock Date	Tax	Ext. Resale
1	4	Build	BOMPRODUCT	\$0.00	\$0.00	2019-10-28	15 work days 2019-11-15	2019-11-15	\$0.00	\$0.00
									A Tax ( 0%):	\$0.00

*FYI...*

We haven't talked about capacity.

Everything so far has assumed infinite capacity. (Let's keep going)

# Capacity Planning **LITE**

## Scheduling Production Lines

- What is a Production Line?
- Setup for Production Lines
- Using the Production Line Scheduler and Production Line Capacity Planner Tool

# Capacity Planning LITE

## What is a Production Line?

The “line” of production required to take a particular good from its initial state to its finished state, i.e. from raw components >> finished sub-good or final good.

Production Lines are assigned per discrete BOM. Thus, one work order has **one** production line to take it from start to finish.

# Capacity Planning LITE

## **What is the goal of scheduling by Production Line?**

- 1- To let you see which work orders are scheduled to occupy which Production Lines and on what dates (based on orders' Work Start Dates thru Ship (complete) Dates);
- 2- Manage your company's capacity at each Production Line per work day that is available to meet production demand on the schedule;
- 3- Highlight capacity overages at any Production Line resulting from Work Order demand at that Production Line scheduled on those dates (and respond accordingly).

# Capacity Planning LITE

**Setup** - add ProductionLines in Admin > Maintenance > Workcenters

USERS ▾ CONFIG SETTINGS ▾ MAINTENANCE ▾ LOGS ▾ DOCS ▾ SITE MAP DASHBOARDS ▾ CETEC.ERP ▾

## Data Maintenance For Workcenter

[Back To All](#)  
Warning: Removing/Changing data may have repercussions on other related data sets.  
If you want to modify a row that has been added already, we strongly recommend that you rename the row rather than delete the row - deleting the row could orphan off any related data.

Displaying 1 - 1 of 1 Export +/- Columns

Id	Workcenter ⓘ	Description ⓘ	Capacity Minutes Per Day ⓘ	Delete
1	<input type="text" value="1"/>	<input type="text" value="Production"/>	<input type="text" value="480"/>	<input type="checkbox"/>

Displaying 1 - 1 of 1 Export +/- Columns

# Capacity Planning LITE

## Part BOMPRODUCT

VIEW  
EDIT  
BOM OVERVIEW (1)  
EDIT BOM  
EXPORT BOM  
BUILD ESTIMATE  
BUILD W/ SUBS  
PRICING  
QUOTES (3)  
ORDERS (5)  
SALES HIST (0)  
SHIP AND DEBITS  
PQUOTES (0)  
OPEN POS (5)  
WATERFALL  
PO HISTORY (0)  
NCRS (0)  
ECOS (0)  
RMAS (0)  
ORDERS W/ NEED (YES)  
PART REQS (0)  
TOOLS  
HISTORY  
CROSSES (0)  
MAINT +

Default Suborder  
(follow global default)

Production Line  
(unset)  
✓ 1 - Production

COC Comments

RoHS Comments

Reach Comments

Update

Build Path For This Part When Used As Component

Order	Location	Group	Operations	Time Est	Setup	Recurring	Labor Rate	Labor Est	Overh
-------	----------	-------	------------	----------	-------	-----------	------------	-----------	-------

BUILD DEFAULTS  
TAX DEFAULTS

## Setup

Assign a Production Line to a part number you will build.

Go to the Part > Maint [+ ] > Build Defaults.

# Capacity Planning LITE

**named), Part BOMPRODUCT**

(To Build Qty 4 Of BOM Product?) → **114 hrs**

Still just 2 hrs

28hrs x Qty 4 = 112 hrs

Multiplier set to 1

Location	Group	Operations	Time Est	Setup	Recurring
Doc Control (Unreleased Orders)		0	0s	0s	0s
Warehouse		0	0s	0s	0s
CNC Machine #2		2	10h 0s	2h 0s	8h 0s
Assembly Station		1	16h 0s	0s	16h 0s
Inspection		1	4h 0s	0s	4h 0s
Shipping		0	0s	0s	0s
Unit Total Time (no lead time):			30 hours, 0 min	2 hours, 0 min	28 hours, 0 min

tion)

ABOR ESTIMATE

## Recall

The est. number of hours to build Qty 4 of BOMPRODUCT is **114 hrs**, or 14.25 days.

Recall the work order scheduled to ship/complete 2019-11-15, and therefore to start work 14.25 work days previous on 2019-10-28.

# Capacity Planning LITE

**Recall** - the work order scheduled to ship/complete 2019-11-15, and therefore to start work 14.25 work days previous on **2019-10-28**.

## Order 22.1

VIEW

EDIT

DETAILS/SERIALS

COMPLETE/RECEIVE

DELETE LINE/ALL

PDF (QUICK)

PRO FORMA PDF

COMMISSION

RELEASE TO WH

WORKORDER VIEW +

PREPAY

PACKING SLIP

PACKING LABEL

FULL ORDER PLATE

DOCUMENTS (0)

NOTES (0)

QUOTE 22

CREATE PQQUOTE

CREATE WO

INTERNAL PO 17.1

OUTSOURCE POS (0)

Build Process 1 2 **3** 4 5  
 3. Pick Parts/Material **Line 1**

<b>Customer</b> Internal Account (1)	<b>Location</b> MN	<b>Ordered On</b> 2019-10-13
<b>Buyer</b>	<b>P.O. Number</b>	<b>Assembly?</b> Yes
<b>Ship Via</b> UPS Ground	<b>Customer Email</b>	
<b>Tax Group</b> (0%)	<b>Terms</b>	<b>FOB</b> S - Shipment
<b>Order Type</b> Scheduled	<b>Ship Type</b> Partial	<b>Status</b> New (0)
<b>Carrier Account #</b>		
<b>Inside Sales</b>		<b>Outside Sales</b>
<b>Ship To</b> Internal Customer ,		

+/- Columns

#	Qty	Code	Prcpart	Cost	Resale	Work Start Date	Ship Date	Dock Date	Tax	Ext. Resale	
1	4	Build	BOMPRODUCT	\$0.00	\$0.00	2019-10-28	2019-11-15	2019-11-15	\$0.00	\$0.00	
									<b>A Tax ( 0%):</b>	\$0.00	
									<b>Freight:</b>	\$0.00	\$0.00



# Capacity Planning LITE

Using The Schedule By Production Line Tool - what capacity do I have for work orders?

## Schedule By Production Line

Work Start Date: 2019-10-27 - 2019-10-28

Order Location: Assembly Station  
Big Saw  
CNC Machine #2  
Doc Control (Unreleased Orders)  
Finished Goods

Production Line: Production

Search

[Find Earliest Start Date](#)  
[Add Placeholders](#)  
[View Placeholders](#)

Displaying 1 - 1 of 1 [Export](#) +/- Columns

Work Start Date	Production Line	Total Estimated Labor	Estimated Labor For Date	Previously Incomplete Labor	Total Capacity Labor	Remaining Capacity	Remaining Capacity %	Placeholder Labor	Edit Capacity
2019-10-28	Production	6840	6840	0	480	-6,360	-1325%	0	480 Set

# Capacity Planning LITE

What if I have another work order starting on 2019-10-28? Est. labor and capacity aggregates

## Schedule By Production Line

Work Start Date: 2019-10-27 - 2019-10-28

Order Location: Assembly Station, Big Saw, CNC Machine #2, Doc Control (Unreleased Orders), Finished Goods

Production Line: Production

Search

[Find Earliest Start Date](#)  
[Add Placeholders](#)  
[View Placeholders](#)

Displaying 1 - 1 of 1 Export +/- Columns

Work Start Date	Production Line	Total Estimated Labor	Estimated Labor For Date	Previously Incomplete Labor	Total Capacity Labor	Remaining Capacity	Remaining Capacity %	Placeholder Labor	Edit Capacity
2019-10-28	Production	13680	13680	0	480	-13,200	-2750%	0	480 Set

# Capacity Planning LITE

Drill down to see which work orders (and respective labor estimates) are starting 2019-10-28

## Production Order List

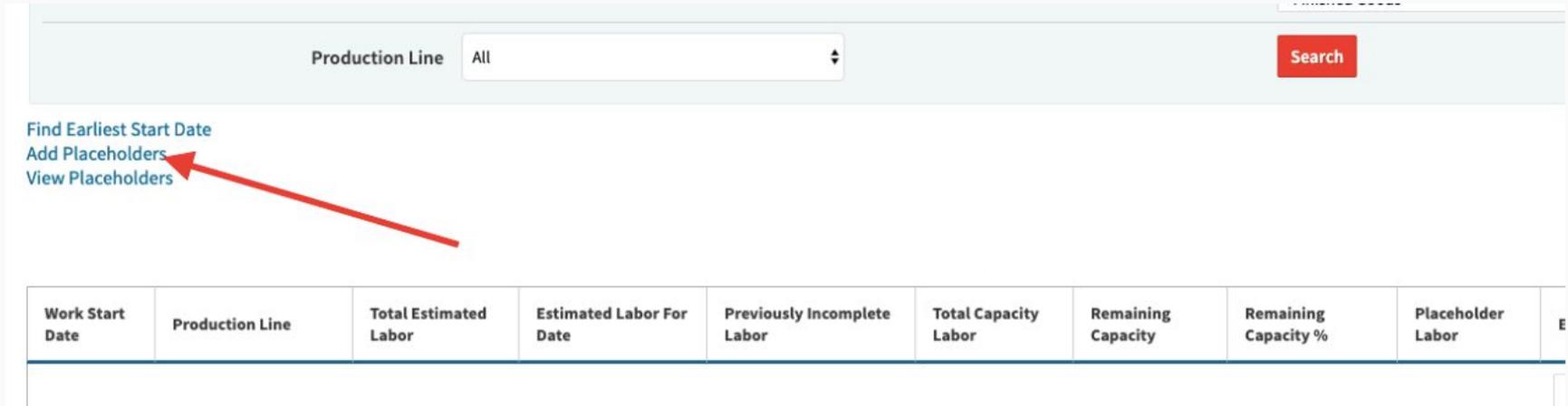
Order #	<input type="text"/>	Part #	<input type="text" value="(comma separated)"/>	Warehouse	<input type="text" value="All"/>
Revision	<input type="text"/>	Date	<input type="text" value="2019-10-28"/> - <input type="text" value="2019-10-28"/>	Date Type	<input type="text" value="Work Start Date"/>
Transcode / Status	<input type="text" value="Open Build Orders"/>	First Article?	<input type="text" value="All"/>	Shipped Today?	<input type="checkbox"/>
More Options ▾					<input type="button" value="Submit"/>

Displaying 1 - 2 of 2 [Export](#) [+/- Columns](#)

Prod Notes	Order	Qty	Prcpart	Work Start Date	Ship Date	Est. Labor	Trans Code	Production Line
→	22.1	4	BOMPRODUCT	2019-10-28	2019-11-15	6840.00	Build	1 - Production
→	23.1	4	BOMPRODUCT	2019-10-28	2019-11-15	6840.00	Build	1 - Production

# Capacity Planning LITE

If you don't yet have an actual work order entered/scheduled in the system, but you do want to block out demand against your Production Line availability on a certain date, you may want to add a placeholder!



The screenshot shows the Capacity Planning LITE interface. At the top, there is a search bar with the text "Production Line" and a dropdown menu set to "All". To the right of the dropdown is a red "Search" button. Below the search bar, there are three links: "Find Earliest Start Date", "Add Placeholders", and "View Placeholders". A red arrow points to the "Add Placeholders" link. Below the links is a table with the following columns: "Work Start Date", "Production Line", "Total Estimated Labor", "Estimated Labor For Date", "Previously Incomplete Labor", "Total Capacity Labor", "Remaining Capacity", "Remaining Capacity %", "Placeholder Labor", and "E".

Work Start Date	Production Line	Total Estimated Labor	Estimated Labor For Date	Previously Incomplete Labor	Total Capacity Labor	Remaining Capacity	Remaining Capacity %	Placeholder Labor	E
-----------------	-----------------	-----------------------	--------------------------	-----------------------------	----------------------	--------------------	----------------------	-------------------	---

# Capacity Planning LITE

If you don't yet have an actual work order entered/scheduled in the system, but you do want to book out demand against your Production Line availability on a certain date, you may want to add a placeholder!

## Production Line Placeholders

[Back To Production Line Schedule](#)  
[Add Placeholders](#)

Work Start Date	(from) - (to)	Production Line	Production	<input type="button" value="Search"/>
-----------------	------------------	-----------------	------------	---------------------------------------

Date	Name / Comments	Labor	Ordline	Production Line	Update/Delete
2019-10-29T	i know production will be busy on this date...	4000		1	<input type="button" value="Update"/> <input type="button" value="Delete"/>



# Capacity Planning LITE

Placeholder labor will appear in the far right placeholder labor column of the Production Line Schedule.

## Schedule By Production Line

Work Start Date: 2019-10-29 - 2019-10-29

Order Location: Assembly Station, Big Saw, CNC Machine #2, Doc Control (Unreleased Orders), Finished Goods

Production Line: Production

Search

[Find Earliest Start Date](#)  
[Add Placeholders](#)  
[View Placeholders](#)

Displaying 1 - 1 of 1    Export    +/- Columns

Work Start Date	Production Line	Total Estimated Labor	Estimated Labor For Date	Previously Incomplete Labor	Total Capacity Labor	Remaining Capacity	Remaining Capacity %	Placeholder Labor	Edit Capacity
2019-10-29	Production	0	0	0	480	-3,520	-733%	4000	480 Set

# Benefit of Capacity Planning **LITE**

If your manufacturing environment is highly dynamic...

If there are numerous “human factors” influencing production schedule outcomes...

Then, LITE production scheduling might be optimal for you.

**LITE Production Scheduling helps automate sane boundaries to your schedule, without requiring overkill management of ever changing capacities producing marginal management benefit.**

# Capacity Planning **ADVANCED**

## Scheduling Through Finite Capacity

- Work location capacities
  - Allow parallel work
  - Super high capacity number for infinite
- Forward / Backward Schedule
- Gantt Chart
  - Possible Responses To Red Flags

# Capacity Planning **ADVANCED**

**amed), Part BOMPRODUCT**

(To Build Qty 4 Of BOM Product?) → **114 hrs**

Still just 2 hrs

28hrs x Qty 4 = 112 hrs

Multiplier set to 1

Location	Group	Operations	Time Est	Setup	Recurring
Doc Control (Unreleased Orders)		0	0s	0s	0s
Warehouse		0	0s	0s	0s
CNC Machine #2		2	10h 0s	2h 0s	8h 0s
Assembly Station		1	16h 0s	0s	16h 0s
Inspection		1	4h 0s	0s	4h 0s
Shipping		0	0s	0s	0s
Unit Total Time (no lead time):			30 hours, 0 min	2 hours, 0 min	28 hours, 0 min

tion)

**LABOR ESTIMATE**

Recall the **BOMPRODUCT** labor plan. “ADVANCED” means we’re scheduling through those work locations against day-to-day finite capacities specified at those work locations.

We’ll proceed with the example of scheduling a work order to build Qty 4 of **BOMPRODUCT** *through* the capacities available at **CNC Machine #2**, the **Assembly Station**, and **Inspection**.

# Capacity Planning **ADVANCED**

**Setup** - define default daily capacities in Admin > Maintenance >> OrdlineStatus

## Data Maintenance For OrdlineStatus

[Back To All](#)

Warning: Removing/Changing data may have repercussions on other related data sets.

If you want to modify a row that has been added already, we strongly recommend that you rename the row rather than delete the row - deleting the row could orphan off any related data.

Displaying 1 - 9 of 9 [Export](#) [+/- Columns](#)

Id	Description ⓘ	Labor Rate ⓘ	Capacity Minutes Per Day ⓘ	Allow Parallel Work ⓘ	Delete
14	Shipping	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
12	Finished Goods	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
11	Inspection	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
10	Assembly Station	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
7	Lathe #3	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
6	CNC Machine #2	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>

Help

# Capacity Planning **ADVANCED**

**Setup** - use “Allow Parallel Work” to divide labor est. by number of users assigned.

## Data Maintenance For OrdlineStatus

[Back To All](#)

Warning: Removing/Changing data may have repercussions on other related data sets.

If you want to modify a row that has been added already, we strongly recommend that you rename the row rather than delete the row - deleting the row could orphan off any related data.

Displaying 1 - 9 of 9 [Export](#) [+/- Columns](#)

Id	Description ⓘ	Labor Rate ⓘ	Capacity Minutes Per Day ⓘ	Allow Parallel Work ⓘ	Delete
14	Shipping	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
12	Finished Goods	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
11	Inspection	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
10	Assembly Station	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
7	Lathe #3	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>
6	CNC Machine #2	10.00000000	480	<input type="checkbox"/>	<input type="checkbox"/>

Help



# Capacity Planning **ADVANCED**

**Setup** - use super high capacities to model infinite capacity (helpful for staging/queues)

## Data Maintenance For OrdlineStatus

[Back To All](#)

Warning: Removing/Changing data may have repercussions on other related data sets.

If you want to modify a row that has been added already, we strongly recommend that you rename the row rather than delete the row - deleting the row could orphan off any related data.

Displaying 1 - 9 of 9 [Export](#) [+/- Columns](#)

Id	Description <a href="#">i</a>	Labor Rate <a href="#">i</a>	Capacity Minutes Per Day <a href="#">i</a>	Allow Parallel Work <a href="#">i</a>
14	Shipping	10.00000000	480	<input type="checkbox"/>
12	Finished Goods	10.00000000	480	<input type="checkbox"/>
11	Inspection Staging	10.00000000	999999999 	<input type="checkbox"/>
10	Assembly Station	10.00000000	480	<input type="checkbox"/>

# Capacity Planning **ADVANCED**

**Setup** - “work\_start\_hour” and “work\_end\_hour” determine the hours within the day that work orders may be scheduled (boundaries for the finite-capacity-based Gantt Chart).

## Config Settings

Name	<input type="text" value="work_%_hour"/>	Description	<input type="text"/>	Category	All
------	--	-------------	----------------------	----------	-----

Name	Category	Description	Value	Updated By	Updated On	
<input type="text" value="work_end_hour"/>	Scheduling	Hour of day to start work (default 16, or 4pm)	<input type="text" value="16"/>	<input type="button" value="Set"/>	techx	2017-08-21 11:24:35 AM
<input type="text" value="work_start_hour"/>	Scheduling	Hour of day to start work (default 8)	<input type="text" value="8"/>	<input type="button" value="Set"/>	techx	2017-08-21 11:24:27 AM

# Capacity Planning **ADVANCED**

**Setup** - make sure you **don't** have the "finite\_schedule\_disabled" config setting turned on!

## Config Settings

Name  Description  Category

Name	Category	Description	Value	Updated By	Updated On	
finite_schedule_disabled			<input type="text" value="0"/>	techx	2017-08-14 11:49:25 AM	✖

Show  Rows (1 Total) First Previous **1** Next Last Copy CSV Excel

# (Commit To Order...)

 **Commit Order**  Create Separate Order For Each Quote Line?

**Intercompany Order, Set Internal Vendor**

Internal Vendor 



# Capacity Planning **ADVANCED**

**Forward Scheduling:** set Work Start Date, schedule forwards to determine target Ship Date.

Production Scheduling

Prcpart BOMPRODUCT Revision n/a Qty 4

Work Start Date 2019-10-28 Ship Date

Scheduled Start 2019-10-28 Scheduled Finish 2019-11-15

[Reschedule Forwards](#) [Reschedule Backwards](#) [Set Dates](#) [Config Settings](#)

CNC Machine #2									
Assembly Station									
Inspection									
	26	1	6	11	16	21	26		
	October 2019	November 2019							

# Capacity Planning **ADVANCED**

**Backward Scheduling:** set Ship Date, schedule backwards to determine target Work Start.

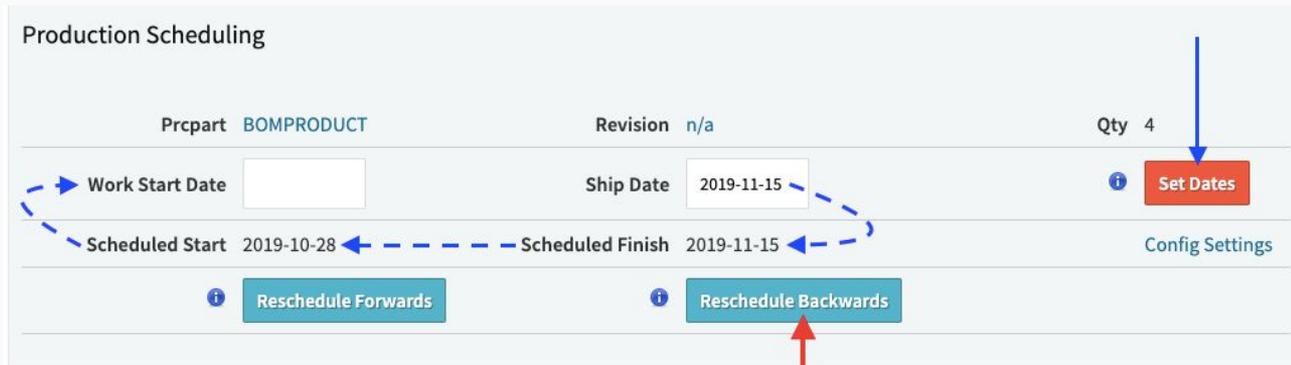
Production Scheduling

Prcpart BOMPRODUCT Revision n/a Qty 4

Work Start Date  Ship Date 2019-11-15

Scheduled Start 2019-10-28 Scheduled Finish 2019-11-15

[Reschedule Forwards](#) [Reschedule Backwards](#) [Set Dates](#) [Config Settings](#)

The screenshot shows a 'Production Scheduling' interface. At the top, it displays 'Prcpart BOMPRODUCT', 'Revision n/a', and 'Qty 4'. Below this, there are input fields for 'Work Start Date' (empty) and 'Ship Date' (2019-11-15). A dashed blue arrow points from the 'Ship Date' field to the 'Work Start Date' field, indicating backward scheduling. Below the date fields, there are 'Scheduled Start' (2019-10-28) and 'Scheduled Finish' (2019-11-15) fields. At the bottom of the form, there are three buttons: 'Reschedule Forwards', 'Reschedule Backwards', and 'Set Dates'. A red arrow points to the 'Reschedule Backwards' button, and a blue arrow points to the 'Set Dates' button. There is also a 'Config Settings' link.

CNC Machine #2																				
Assembly Station																				
Inspection																				
	21	26	1	6	11	16	21	26												
	October 2019		November 2019																	

The Gantt chart displays resource usage for three categories: CNC Machine #2, Assembly Station, and Inspection. The x-axis represents time, with dates 21 October 2019, 26 October 2019, 1 November 2019, 6 November 2019, 11 November 2019, 16 November 2019, 21 November 2019, and 26 November 2019. CNC Machine #2 usage is shown as red bars from Oct 21 to Oct 26 and Nov 1. Assembly Station usage is shown as orange bars from Nov 1 to Nov 11. Inspection usage is shown as yellow bars from Nov 11 to Nov 16.

# Capacity Planning ADVANCED

**(named), Part BOMPRODUCT**

(To Build Qty 4 Of BOM Product?) → **114 hrs**

Still just 2 hrs

28hrs x Qty 4 = 112 hrs

Multiplier set to 1

34 hrs at CNC Machine

Location	Group	Operations	Time Est	Setup	Recurring
Doc Control (Unreleased Orders)	0		0s	0s	0s
Warehouse	0		0s	0s	0s
<b>CNC Machine #2</b>	<b>2</b>		<b>10h 0s</b>	<b>2h 0s</b>	<b>8h 0s</b>
Assembly Station	1		16h 0s	0s	16h 0s
Inspection	1		4h 0s	0s	4h 0s
Shipping	0		0s	0s	0s
<b>Unit Total Time (no lead time):</b>			<b>30 hours, 0 min</b>	<b>2 hours, 0 min</b>	<b>28 hours, 0 min</b>

ion)    Add    Add All Default Locations    Remove All Loc

**Gantt Chart:** recall our BOMPRODUCT labor estimate; recall 480 minutes capacity per day.

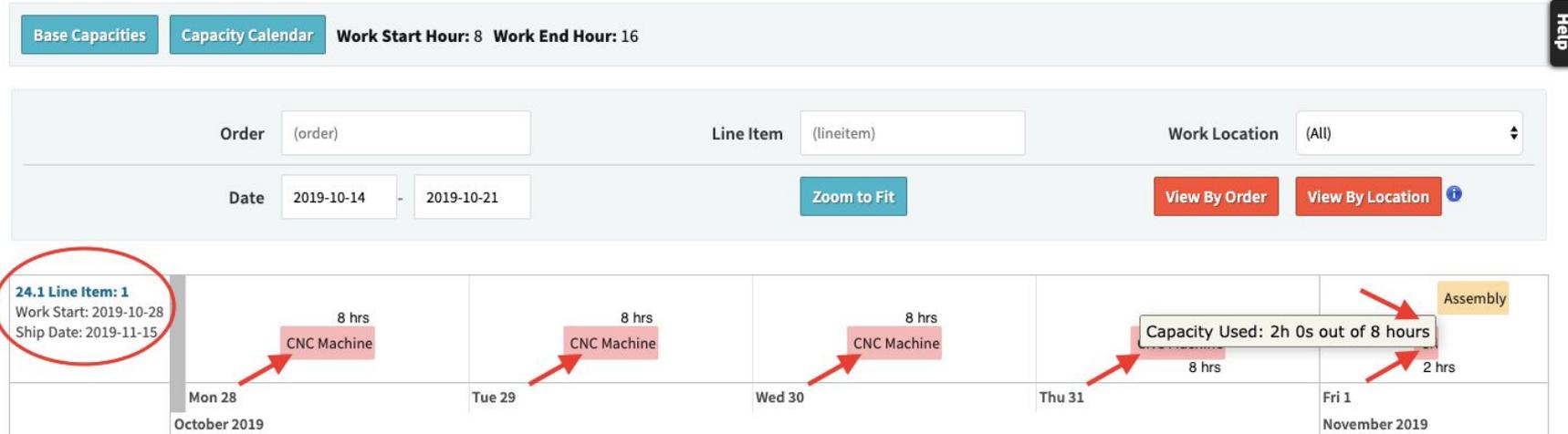
displaying 1 - 9 of 9    Export    +/- Columns

Id	Description ①	Labor Rate ①	Capacity Minutes Per Day ①
14	Shipping	10.00000000	480
12	Finished Goods	10.00000000	480
11	Inspection	10.00000000	480
10	Assembly Station	10.00000000	480
7	Lathe #3	10.00000000	480
6	CNC Machine #2	10.00000000	480
4	Big Saw	10.00000000	480

# Capacity Planning ADVANCED

**Gantt Chart:** daily capacity is consumed by labor scheduled.  $8+8+8+8+2 = 34$  hours at CNC.

## Production Scheduling Gantt Chart



# Capacity Planning **ADVANCED**

**Gantt Chart:** Use mouse scroll function to zoom in/out (or click “Zoom to Fit”).

Order

(order)

Line Item

(lineitem)

Work Location

(All)

Date

2019-10-14

-

2019-10-21

Zoom to Fit

View By Order

View By Location



**24.1 Line Item: 1**

Work Start: 2019-10-28

Ship Date: 2019-11-15

6

11

16

21

26

1

6

11

16

21

26

1

6

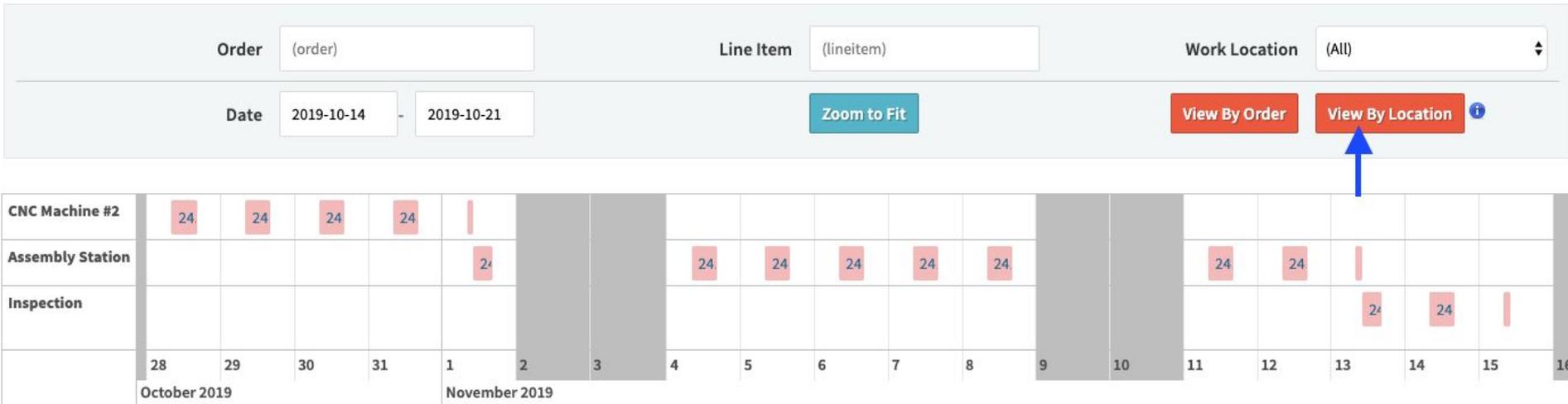
October 2019

November 2019

December 2019

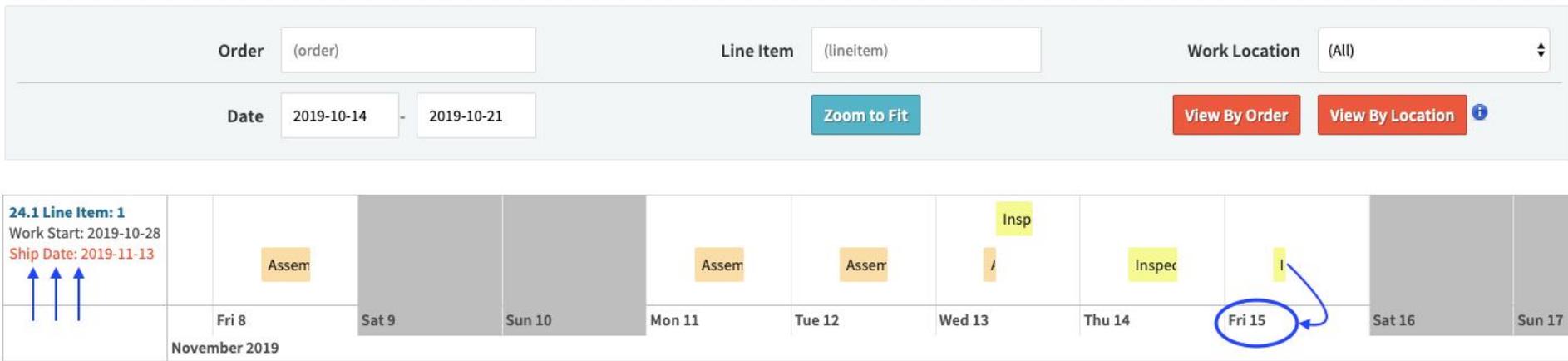
# Capacity Planning **ADVANCED**

**Gantt Chart:** View schedule by work location instead of by job.



# Capacity Planning **ADVANCED**

**Gantt Chart:** Look for red flags! E.g. what if your order Ship Date is before the scheduled finish?



The Gantt Chart helps you stay on top of ERP order dates and related impact (checks/balances)

# Capacity Planning **ADVANCED**

## Edit Capacity For 2019-10-30

Location	Capacity Minutes	# Users	Notes
Assembly Station	<input type="text" value="480"/>	<input type="text" value="1"/>	<input type="text"/>
Big Saw	<input type="text" value="480"/>	<input type="text" value="1"/>	<input type="text"/>
CNC Machine #2	<input type="text" value=""/>	<input type="text" value="1"/>	<input type="text"/>
Doc Control (Unreleased Orders)	<input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text"/>
Finished Goods	<input type="text" value="480"/>	<input type="text" value="1"/>	<input type="text"/>
Inspection	<input type="text" value="480"/>	<input type="text" value="1"/>	<input type="text"/>
Lathe #3	<input type="text" value="480"/>	<input type="text" value="1"/>	<input type="text"/>
Shipping	<input type="text" value="480"/>	<input type="text" value="1"/>	<input type="text"/>

**Gantt Chart:** Red flags could mean you need to update the Work Start Date or Ship Date, communicate any date changes to customers impacted or internal impact.

You could also **increase capacity** in order to accelerate production and bring Scheduled Finish up closer to your ERP Order Ship Date, i.e. to stay on time per your commitment.

# Capacity Planning **ADVANCED**

**Gantt Chart:** Additional orders scheduled must bubble around existing scheduled capacity.



# Integration To MRP

- Why is this an important aspect of Scheduling?
  - What good is perfectly planned schedule at optimal capacities if you 1- don't have the materials you need to do production; 2- don't execute the production release?
- Work Start / Ship Dates Directly Impact
  - MRP
  - Order Material Report
  - Execution (Order Release)

# Questions & Answers

# Notes

Cetec ERP Notes From Audience Comments:

Cetec ERP Notes From Audience Comments:

Thank you!