# VIEW YOUR MRP DATA EFFICIENTLY FOR GLOBAL MANUFACTURING PLANTS

## MEI DENG SMITH INTERNATIONAL, INC

#### Introduction

As globalization increases, the need to manage production and materials globally is imperative. The ability to view and analyze the results from multiple MRP plans is critical for the success of the business. This presentation will demonstrate the different ways we extract MRP data from different plants and configure it into a few web reports used by planners, buyers and customer services. Since the plants have internal sales relationships between them, the supply demand information between the plants is handled by MRP by the use of inter-organizational internal orders. The presentation will describe how the data are extracted and the effects these reports have on the related business functions such as scheduling, material control, shop floor management and customer service.

#### Background

Our business unit has 3 global manufacturing plants running Oracle Manufacturing with MRP nightly. Our MRP plans have soft pegging. Every day after the MRP runs, MRP planner workbench has all the necessary information for the planners to view the material and distribution requirements plans:

item and resources, supply demand, horizontal, material and capacity plan, summary of supply demand, review material and capacity exception, display resource requirements, as well as implement and maintain orders. You can also view the data on workbench by item category or other groups. However, the data retrieving time is long. There is a limit of number of records that can be selected before you can run the horizontal or enterprise views. The data retrieving process could potentially cause runaway session. In order to efficiently use the information provided by MRP, we face the challenge of how to retrieve the data properly and present them in a better format to help our business.

#### **MRP** Summary

The first question our users ask is what the big picture is. Management wants to know the overall demand and supply: how many sales orders and forecasts, how many planned work orders MRP proposed, and what are the scheduled hours on the resources. Using Microsoft Reporting Services, we extract MRP capacity data to web page for each plant so managers can view the information daily. Users can choose which organization they want to see the data. Our management uses this page every day to monitor the hours loaded to the different plants and balances the demand between them based on this information.

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## **Resource Horizontal Capacity Data**

From MRP Planners Workbench, we can choose a resource and see the required hours and hours available for the future time buckets as horizontal plan. This screen will also show us the net hours available for this resource and capacity overload. But we cannot find an Oracle report that reporting this information for all resources or a group of resources. Our users want to see this information in a spreadsheet format and want to be able to compare the load for all the resources in the same department or across the departments.

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After researching into Oracle form, we found that Oracle does not store this information directly in any table or view, but instead it dynamically populates a global temp table called crp\_capacity\_plans when the horizontal plan screen is launched. So every time a new horizontal plan window is open, the query is refreshed and the extract data is only visible to the user session. When the user logs out from Oracle application, the data in crp\_capacity\_plans is deleted. Using this mechanism we created a SQL script and registered it as a concurrent program to do the following:

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ncurrent-Program:Define fine concurrent program	Program Short Name Application Description Executable Name Method Request Type Incrementor MLS Function	MRP0002 - Extract CRP Capacity Plan MRP0002 MFG SII Reports MRP0002 - Extract CRP Capacity Plan MRP0002 SOL*Plus Program Parameters Program MRP0002 - Extract CRP C Application MFG SII Reports	ss Options Priority Output Format	✓ Enabled           Text           ✓ Saver (C)           ✓ Front	т Т Х П Х	
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- 1. Delete the snapshot data from our customized table.
- 2. Insert department, resource and organization\_id into mrp\_form\_query table. This is the resource we are pulling capacity load information.

```
insert into mrp_form_query
(query_id, last_update_date, last_updated_by,
creation_date, created_by, number1, number2,
number3)
values
(l_query_id, sysdate, -1, sysdate, -1,
&organization_id,
&department_id,
&resource_id);
```

3. Call procedure mrp\_crp\_horizontal\_plan.populate\_horizontal\_plan to populate crp\_capacity\_plans table for the resource in mrp\_form\_query table. After the call, all the capacity load information will be in this temp table for this session only.

```
l_return := mrp_crp_horizontal_plan.populate_horizontal_plan(
    p_item_list_id => l_query_id,
    p_planned_org => &organization_id,
    p_org_id => &organization_id,
    p_compile_designator => &compile_designator,
    p_bucket_type => 3, --1 daily, 2 weekly, 3 period
    p_cutoff_date => sysdate + 1080,
    p_current_data => 0); -- snapshot
```

4. Copy all the data in the global temp table mrp\_capacity\_plans table to our customized regular table.

INSERT INTO GDL.GDL\_CRP\_CAPACITY\_PLANS

```
SELECT *
FROM apps.crp_capacity_plans;
```

- 5. Delete the data from global temp table crp\_capacity\_plans so that we can loop back to step 1 for another resource.
- 6. Loop through all the active resources in the department passed by the parameter organization\_id.

After running the concurrent program for 3 plants after the MRP runs, we have the resource capacity data ready for reporting. We used Microsoft Reporting Services to build report based on these data, and they are easily downloaded to Excel spreadsheet. On the web report, we also add the total required hours and hours available for 6 months, 12 months and 18 months, so that we can see the overall load for the different time frame.

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53 4817	7 Trepanning Collars Kellys	313	W/TRACER ATTACHMENT	Hours Available				4,953.60	10,252.00	15,667.20	460.90	663.20	902.
4017 64	7 Trepanning Collars Kellys	340	TREPAN LATHE (LABLOND)3773	Required Hours	14.68 %	7.53 %	4.93 %	363.59	306.07	386.07	55.02	61.92	90.
4817	7 Trepanning Collars Kellys	340	TREPAN LATHE (LABLOND)3773	Hours Available				2,476.80	5,126.40	7,833.60	230.40	441.60	451.
4817	7 Trepanning Collars Kellys	343	UNISIG AUTOMATED EJECTOR DRILL GE FANUC POWERMATE	Required Hours	134.13 %	56.96 %	56.91 %	4,152.59	5,572.35	5,572.35	513.05	766.78	698.
4817	7 Trepanning Collars Kellys	343	UNISIG AUTOMATED EJECTOR DRILL GE FANUC POWERMATE	Hours Available				3,096.00	6,408.00	9,792.00	208.00	552.00	564.
8 4817	7 Trepanning Collars Kellys	300	HARDBAND MACH	Required Hours	54.09 %	26.13 %	17.10 %	2,679.18	2,679.18	2,679.18	998.17	316.79	671.
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70 4817	7 Trepanning Collars Kellys	419	HRD BD CTR SECT HVW	Required Hours	53.43 %	33.17 %	21.71 %	7,030.45	9,034.79	9,034.79	1,613.95	1,317.81	908.
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2 4817	7 Trepanning Collars Kellys	477	INERTIA WELDER	Required Hours	72.61 %	52.52 %	34.37 %	3,821.81	5,721.50	5,721.50	891.29	601.00	631.
3 4817	7 Trepanning Collars Kellys	477	INERTIA WELDER	Hours Available	100 FO /			5,263.20	10,893.60	16,646.40	489.60	938.40	958.
4 4817	7 Trepanning Collars Kellys	641	HELI-MILL(D.C./KLYS)	Required Hours	106.58 %	89.06 %	45.19 %	5,279.67	7,080.11	7,080.11	1,054.76	1,110.65	649.
6 481	Trepanning Collars Kellys	641	HELI-MILL(D.C./KLYS)	Hours Available	Sec. en al	50 51 M	5-1 -1 - V	4,953.60	10,252.80	15,667.20	460.80	883.20	902.
0 481/	repanning Collars Kellys	551	MAZAK, SLANT TURN 40	Required Hours	15.68 %	50.31 %	32.93 %	11,247.36	15,475.80	15,475.80	1,946.49	2,080.87	1,788.
7 4817	Trepanning Collars Kellys	001	MAZAK, SLANT TURN 40	Hours Available	to an ar	5102.0	50.00 W	14,860.80	30,758.40	47,001.60	1,382.40	2,049.00	2,707.
78 4817	Trepanning Collars Kellys	034	INCLATHE(Was SUS RET/FIT)	Reduired Hours	03.25 %	54.93 %	22.85 %	0,205.93	7,153.61	7,153.51	1,238.04	1,124.19	1,226.
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#### **Resource Requirement Detail**

From MRP Planners Workbench, we can choose a resource and see the detail requirements on this resource. This screen is useful but our users want to see more information with the detail requirements: what is the current operation the work order is at, what is the assembly description, assembly product line, and operation description. They also want to save the data in Excel spreadsheet for further analysis.

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In Oracle, the key information for resource requirement details is stored in a view called mrpfv\_plan\_resource\_loads.

```
select *
From apps.mrpfv_plan_resource_loads a
where a.organization_code = 'SDC'
and a.plan_name = 'MRP-Prod'
and a.resource_code = '302'
and a.department_code = '4817'
```

From this view, we join with mrp\_recommendation table with transaction\_id to get the discrete job and planned order information. Once we have that, we can retrieve and display more critical information on discrete job site, like where the work order is at, and operation description etc.

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4817	302	999	1/24/2006	1/26/2008	28	40 EA	Discrete job	W0328769	400	100	09014401	SPIRAL DC 04.75X02.25X3) 38 88 80X UP NC 38 API RC DWN STD SLIP 03 IN HB 1* SLIP FLUSH 12 IN HB 36" F/ SHLDR FLUSH	LICO NC S PIN ABOVE (PIN	PL221
4817	302	999	1/24/2006	1/28/2008	63	45 EA	Discrete job	W0328770	400	10	09002288	SPIRAL DC 08.25X02.81X31 REG B8 BOX UP 6.6 REG AP PIN DWN STD ZIP	1.00 6.6 1 RG	PL221
4817	302	999	1/25/2008	1/26/2008	11.25	15 EA	Discrete job	W0328762	400	100	09014309	SPIRAL DC 09.50X03.00X31 REG BB BOX UP 7.6 REG AP PIN DWN STD SLIP 04 IN HI ABOVE SLIP FLUSH 10 IN H FROM PIN END FLUSH	1.00 7.6 1 RG 8 1" 8 36"	PL221
4817	302	999	1/25/2008	1/26/2008	12.60	18 EA	Discrete job	W0328765	400	100	09014310	SPIRAL DC 08.00X02.81X31 56 BB BOX UP NC 56 API RC DWN STD SLIP 04 IN HB 1° SLIP FLUSH 10 IN HB 36° FF PIN END FLUSH 10 IN HB 36° FF	LOO NC 3 PIN ABOVE ROM	PL221
4817	302	999	1/25/2000	1/29/2008	52.15	35 EA	Discrete job	W0328775	700	10	09000114	SPIRAL DC 04.75x02.25x3) 38 88 BOX UP NC 38 API RC DWN STD ZIP	LIOO NC G PIN	PL221
4017	302	999	1/26/2000	1/26/2008	4.50	15 EA	Discrete job	W0328762	500	100	09014309	SPIRAL DC 09-50X03-00X03 REG 88 BOX UP 7-6 REG AP PIN DWN STD SLIP 04 IN H ABOVE SLIP FLUSH 10 IN H FROM PIN END FLUSH	LOO 7.6 1 RG B 1" B 36"	PL221
4817	302	999	1/26/2008	1/26/2008	5.40	18 EA	Discrete job	W0328765	500	100	09014310	SPIRAL DC 08.00X02.81X30 56 BB DOX UP NC 56 API RX DWN STD SLIP 04 IN HB 1* SLIP FLUSH 10 IN HB 36* FF PIN END FLUSH	LIDO NC S PIN ABOVE ROM	PL221
4817	302	999	1/26/2008	8 1/26/2008	8	40 EA	Discrete job	W0328769	500	100	09014401	SPIRAL DC 04.75X02.25X31 36 88 80X UP NC 38 API R DWN STD SLIP 03 IN HB 11 SLIP FLUSH 12 IN HB 36" F/ SLIP FLUSH 12 IN HB 36" F/	LOO NC S PIN ABOVE /PIN	PL221

## **MRP** Material Requirements Data

From Oracle MRP Planner Workbench, we can see material requirements on specific items on a horizontal basis, or see the summarized requirements for the whole time horizon on Enterprise view. Both forms work on single item query basis. If you wan to see multiple items or a group of items at the same time, it is hard to pull a lot of data back without causing run away process. So we looked into how Oracle extracts the material requirement data and came up with our own extraction concurrent program.



- 1. Delete the snapshot data from our customized MRP material requirement table.
- 2. Insert inventory\_item\_id with organization\_id and compile\_designator into mrp\_form\_query table. We group 100 items into one batch at one time for extraction for performance purpose. These items will be the source items that we are pulling MRP requirement data.

```
insert into mrp_form_query
  (query_id,
    last_update_date, last_updated_by,
    creation_date, created_by,
    number1, number2, char1)
select l_counter, sysdate, -1, sysdate, -1,
    inventory_item_id, organization_id, compile_designator
    from apps.mrp_system_items
    where organization_id = &organization_id
    and compile_designator = &compile_designator;
```

3. Call procedure mrp\_horizontal\_plan\_sc.populate\_horizontal\_plan to populate mrp\_material\_plans table for the items in mrp\_form\_query table. Since the parameter Enterprise\_view is True, it is extracting the enterprise view data. After the call, all the enterprise load information will be in this temp table for this session only.

```
mrp_horizontal_plan_sc.populate_horizontal_plan(
                                  => &query_id,
          item_list_id
         arg_plan_id => &unique_iu,
arg_organization_id => &corganization_id,
arg_compile_designator => &compile_designator,
arg_plan_organization_id => &corganization_id,
=> 3,
          arg_pian_or_some
arg_bucket_type
                                                                                     -- monthly
                                                   => sysdate + 1080,
          arg_cutoff_date
         arg_ourrent_data=> 0,arg_ind_demand_type=> NULL,arg_source_list_name=> NULL,enterprize_view=> TRUE,arg_res_level=> 1
          arg_current_data
                                                   => 0,
                                                                                    -- snapshot
                                                                                   -- enterprise view
          arg_res_level
          arg_resval1
                                                   => NULL,
          arg_resval2
                                                    => NULL);
```

If we call the same procedure with Enterprise\_view as False, the procedure is extracting the horizontal view data. After the call, all the horizontal material requirement information will be in this temp table for this session only.

```
mrp_horizontal_plan_sc.populate_horizontal_plan(
    item_list_id => &query_id,
    arg_plan_id => &unique_id,
    arg_organization_id => &corganization_id,
    arg_compile_designator => &compile_designator,
    arg_plan_organization_id => &corganization_id,
    arg_bucket_type => 3, -- monthly
    arg_cutoff_date => sysdate + 1080,
    arg_current_data => 0, -- snapshot
    arg_source_list_name => NULL,
    enterprize_view => FALSE, -- horizontal view
    arg_res_level => 1,
    arg_resval1 => NULL);
```

 Copy all the data in the global temp table mrp\_material\_plans table to our customized regular table for MRP Enterprise View or MRP Horizontal View depending on whether the extraction is for horizontal or enterprise view.

insert into GDL.GDL\_mrp\_mtl\_enterprise\_PLANS

**COLLABORATE 08** 

```
SELECT *
From apps.mrp_material_plans;
insert into GDL.GDL_mrp_mtl_horizontal_PLANS
SELECT *
From apps.mrp_material_plans;
```

- 5. Delete the data from global temp table mrp\_material\_plans so that we can loop back to step 1 for another group of items.
- 6. Loop through all the items planned by MRP in this organization.

After running the concurrent program for 3 plants after the MRP runs, we have the MRP material requirements data ready for reporting. We used Microsoft Reporting Services to build reports based on these data. The web reports follow the basic formats from Oracle form, but we have the search criteria customized to our business needs. We also added more fields to the reports to help user interpret the data efficiently: planning category, standard cost, planner, organization item attributes, onhand value, WIP value at standard cost. Our planners find these pages much easier to get to, and the information is ready for download to Excel.

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						Sales orders	35	20	5	0	0	1
						Forecast	0	0	0	0	0	1
						Dependent demand	0	0	0	0	0	1
						Other independent demand	0	0	0	C	0	I
						Gross requirements	35	20	5	0	0	1
						WIP+	21	6	5	0	0	1
						Purchase orders	0	0	0	U	0	1
						Requisitions	0	0	0	0	0	j i
						In Transit	0	0	0	0	0	
						In Receiving	0	0	0	0	0	1
						Planned orders	0	0	0	0	0	1
						Total supply	21	6	5	0	0	
						Beginning on hand	14	14	0	0	0	1
						Projected available balance	0	0	0	0	0	1
01-01	HSDB375791357 GT	HYDRAULIC HANGER, 07.00/32 06.00 SD X 09.63/58.4, 07.00/29 TS 3SB BOX UP X	EA	\$5,391.73	1							
						Sales orders	30	10	0	10	10	
						Forecast	0	0	0	0	0	
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UPS056031651         HYDRAULIC NONROTATINO POCKET SUP         201-01         Liner Hangers         EA         \$13,077,71         7         \$97,14399         7         0         0         0           SPS0604791053         HYDRAULIC NONROTATINO POCKET SUP         201-01         Liner Hangers         EA         \$14,663.95         15         560.99.27         15         0 <td>EXPJ373099003</td> <td>EXPANSION JOINT, THERMAL,</td> <td>201-01</td> <td>Liner Hangers</td> <td>EA</td> <td>\$7,168.87</td> <td>20</td> <td>\$143,377.46</td> <td>20</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	EXPJ373099003	EXPANSION JOINT, THERMAL,	201-01	Liner Hangers	EA	\$7,168.87	20	\$143,377.46	20	0	0	0	0
BPSB404791053         HYDRAULIC ROTATING POCKET SLIP         201-01         Liner Hangers         EA         \$4,663.95         15         \$69,959.27         15         0         0         0           NMPOG730W4003LE         WEIGHT SET PACKER, 063/43.5 X         201-01         Liner Hangers         EA         \$49,63.95         15         \$45,70.047         5         0 <td>IPS826691551</td> <td>HYDRAULIC NON-ROTATING POCKET SLIP</td> <td>201-01</td> <td>Liner Hangers</td> <td>EA</td> <td>\$13,877.71</td> <td>7</td> <td>\$97,143.99</td> <td>7</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	IPS826691551	HYDRAULIC NON-ROTATING POCKET SLIP	201-01	Liner Hangers	EA	\$13,877.71	7	\$97,143.99	7	0	0	0	0
WHIPG6736WH003LE         WEIGHT SET PACKER, 06 63/43 S X         201-01         Liner Hangers         EA         \$10,757.69         5         \$453,708.47         5         0         0         0           SBR06736WH003LE         EX MECHANICAL HANGER, 06 63/43.5 X         201-01         Liner Hangers         EA         \$10,757.69         5         \$459,208.47         5         0         0         0         0           BMP0759364267         WEIGHT SET PACKER, 07 00/20 60.00         201-01         Liner Hangers         EA         \$49,294.66         1         \$40,220.46         1         0	RPSB404791053	HYDRAULIC ROTATING POCKET SLIP	201-01	Liner Hangers	EA	\$4,663.95	15	\$69,959.27	15	0	0	0	0
IBBR/073530/1001LE         EX         ES/ MECHANICAL HANGER, 05 0343 5 X         201-01         Liner Hangers         EA         \$49,026.00         5         \$49,240.00         5         0         0         0           MPH/073594545FN         WEIGHT SET PACKER, 07 00/20.00         00.01         Liner Hangers         EA         \$40,220.46         1         \$40,220.46         1         0	VMP06736W4003LE	WEIGHT SET PACKER, 09.63/43.5 X	201-01	Liner Hangers	EA	\$10,757.69	5	\$53,788.47	5	0	0	0	0
MMPIG7586456FN         WEIGHT SET PACKER, 07 00/20 6, 00         201-01         Liner Hangers         EA         \$48,230.46         1         \$44,220.46         1         \$40,220.46         1         \$60,230.46         1         1         \$60,230.46         1         1         \$60,230.46         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	SBRD6736W1003LE	EZ MECHANICAL HANGER, 09 63/43.5 X	201-01	Liner Hangers	EA	\$9,849.60	5	\$49,248.00	5	0	0	0	0
UPS372621075LE         HYDRAULC ROTATING POCKET SUP         201-01         Liner Hangers         EA         \$55,994.50         8         \$47,196.21         8         0         0         0         0           ZRD163601044         EX MECHANICAL HANGER, 05.00/18 X         201-01         Liner Hangers         EA         \$52,632.72         9         \$32,694.62         9         0	MPH375594546FN	WEIGHT SET PACKER, 07.00/32 06.00	201-01	Liner Hangers	EA	\$48,228.46	1	\$48,228.46	1	0	0	0	0
EZROIGS01044         EZ MECHANICAL HANGER, 05 00/10 X         201-01         Line Hangers         EA         \$2,523,72         9         \$23,694,62         9         0         0         0         0           PSIR606094363         POCKET SUP HANGER ROTATING, INSIDE         201-01         Line Hangers         EA         \$2,111.23         11         \$23,693.65         11         0         0         0         0           PSIR606094363         POCKET SUP HANGER ROTATING, INSIDE         201-01         Line Hangers         EA         \$45,603.07         5         0	IPS373621075LE	HYDRAULIC ROTATING POCKET SLIP	201-01	Liner Hangers	EA	\$5,894.90	8	\$47,159.21	8	0	0	0	0
PSHREGG004553         POCKET SLIP HANGER ROTATING, INSIDE         201-01         Line Hangers         EA         \$2,141.23         11         \$23,663.65         11         0         0         0         0           ISDB135601356GT         HYDRAULIC HANGER, 04.50713.5 X 07 0029.2         201-01         Liner Hangers         EA         \$4,609.07         \$         \$23,049.34         \$         0	EZRD163601044	EZ MECHANICAL HANGER, 05.00/18 X	201-01	Liner Hangers	EA	\$2,632.72	9	\$23,694.52	9	0	0	0	0
HSDB136d01536GT         HYDRAULIC HANGER, 04.50/13.5 X 07 00/29.         201-01         Liner Hangers         EA         \$4,609.07         5         \$323,049.34         5         0         0         0           HSDB136d01536GT         HYDRAULIC HANGER, 04.50/13.5 X 07 00/29.         201-01         Liner Hangers         EA         \$3,570.51         6         \$21,423.04         6         0         0         0           PS1D137659542S         POCKET SLIP HANGER, 13,3866-72 OR         201-01         Liner Hangers         EA         \$37,70.77         2         \$19,477.53         2         0         0         0           HPS376521546FN         HYDRAULIC ROTATING POCKET SLIP         201-01         Liner Hangers         EA         \$17,430.17         1         \$17,430.17         1         0         0         0           BR0253601522SO         EZ MECHANICAL HANGER, 05.5020 X         201-01         Liner Hangers         EA         \$17,430.17         1         \$16,339.45         5         0         0         0	PSHR096094353	POCKET SLIP HANGER ROTATING, INSIDE	201-01	Liner Hangers	EA	\$2,141.23	11	\$23,553.55	11	0	0	0	0
HSDB374601003LE         HYDRAULC HANGER, 07.0023 X09 63/43.5-         201-01         Liner Hangers         EA         \$3570.51         6         \$21,423.04         6         0         0         0           PSTD1375642S         POCKET SUP HANGER, 07.0023 X09 63/43.5-         201-01         Liner Hangers         EA         \$37,670.77         2         \$19,497.53         2         0         0         0           PS3756375651266FN         HYDRAULC ROTATING POCKET SUP         201-01         Liner Hangers         EA         \$17,430.17         1         \$17,430.17         1         0         0         0           PBR025500152SO         EZ MECHANICAL HANGER, 05.6020 X         201-01         Liner Hangers         EA         \$32,670.99         5         \$15,339.45         5         0         0         0	ISDB135401536GT	HYDRAULIC HANGER, 04 50/13 5 X 07 00/29-	201-01	Liner Hangers	EA	\$4,609.87	5	\$23,049.34	5	0	0	0	0
PSTD13726542S         POCKET SLIP HANGER, 13.3866/72 OR         201-01         Liner Hangers         EA         \$9,760.77         2         \$19,497.53         2         0         0         0           HPS3765642S         POCKET SLIP HANGER, 13.3866/72 OR         201-01         Liner Hangers         EA         \$17,430.17         1         0         0         0           HPS3765612S50         EZ         MECHANICAL HANGER, 05.5020 X         201-01         Liner Hangers         EA         \$17,430.17         1         0         0         0           BR025560152S50         EZ         MECHANICAL HANGER, 05.5020 X         201-01         Liner Hangers         EA         \$3,267.09         5         \$16,339.45         5         0         0         0	HSDB374601003LE	HYDRAULIC HANGER, 07:00/29 X 09:63/43:5-	201-01	Liner Hangers	EA	\$3,570.51	6	\$21,423.04	6	0	0	0	0
IPS375521546FN HYDRAULIC ROTATING POCKET SLIP 201-01 Liner Hangers EA \$17,430.17 1 \$17,430.17 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PSTD133769542S	POCKET SLIP HANGER, 13.38/68-72 OR	201-01	Liner Hangers	EA	\$9,748.77	2	\$19,497.53	2	0	0	0	0
38RD253601522SQ EZ MECHANICAL HANGER, 05,50/20 X 201-01 Liner Hangers EA \$3,267,89 5 \$16,339.45 5 0 0 0	IPS375521646FN	HYDRAULIC ROTATING POCKET SLIP	201-01	Liner Hangers	EA	\$17,430.17	1	\$17,430.17	1	0	0	0	0
	SBRD253601522SQ	EZ MECHANICAL HANGER, 05.50/20 X	201-01	Liner Hangers	EA	\$3,267.09	5	\$16,339.45	5	0	0	0	0
RPSB404791900         HYDRAULIC ROTATING POCKET SLIP         201-01         Liner Hangers         EA         \$4,065.94         4         \$16,263.78         4         0         0         0	RPSB404791900	HYDRAULIC ROTATING POCKET SLIP	201-01	Liner Hangers	EA	\$4,065.94	4	\$16,263.78	4	0	0	0	0
PSHR13309P6172S POCKET SLIP HANGER, ROTATING, INSIDE 201-01 Liner Hangers EA \$4,771.58 3 \$14,314.73 3 0 0 0	PSHR13309P6172S	POCKET SLIP HANGER, ROTATING, INSIDE	201-01	Liner Hangers	EA	\$4,771.58	3	\$14,314.73	З	0	0	0	0
HPS823491056 HYDRAULIC NON-ROTATING POCKET SLIP 201-01 Liner Hansers EA \$13.377.66 1 \$13.377.66 1 0 0 0	HPS823491056	HYDRAULIC NON-ROTATING POCKET SLIP	201-01	Liner Hangers	EA	\$13.377.66	1	\$13.377.66	1	0	0	0	0

## **MRP Pegging Information**

In our MRP plans for the 3 manufacturing plants, we are using soft pegging option. Every day Oracle pegs the supply and demand dynamically, and it is very critical for us to understand and utilize the pegging information to manage the shop floor, purchasing and customer services. In MRP Planners Workbench, pegging page is an object navigator. The detailed information is displayed on a separate panel. It is very difficult to download the data to Excel format. Our challenge is to extract the pegging information out to our customized table so that we can use it more efficiently to help our business needs.



The Oracle table that stores pegging information is called mrp\_full\_pegging. This table stores pegging relation at single level. With prev\_pegging\_id, we can join this table multiple times to get the full pegging tree. We created a concurrent program to do the join 9 times to get 9 level pegging for all items in each organization and store them in a customized table. We run this job nightly after the MRP runs. Based on this extract, we created a web report for sales order pegging, similar to what Oracle shows on the form, but with much easier access and more customized information. From this report, we can see the lower level supply to one customer order line in Excel format. The supply type, order and pegged quantity are clearly displayed. We can run this report by planning category, sales order or end item.

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LEVEL NO	END ORDER NUMBER	END ITEM	END DEMAND DATE	DEMAND	PEGGED	SUPPLY	ORDER NUM	SUPPLY TYPE	SUPPLY	ITEM	ITEM DESC	REFERI
1	724838	SBR0672101001L E	2/28/2008	5	5	5	W0320847	Unreleased WO	2/28/2008	SBR0672101001LE	EZ MECHANICAL HANGER, 09.63/36 NOMINAL X 13.38/54.5-68, BRD LTC BOX X PIN, SOLID BODY, DUAL CONE, RIGHT HAND, LBD	-999-999-99 957-956-10
2	724838	SBRD672101001L E	2/28/2008	30	30	79		On Hand		10020-079	SHORT SLIP ARM, EZ, 09.63 X 13.38	
2	724838	SBRD672101001L E	2/28/2008	30	30	210		On Hand		10040-026	BOW SPRING, EZ, 09.63 X 13.30	
2	724838	SBRD672101001L E	2/28/2008	5	1	0	W0331266	Released WO	2/27/2008	10047-104-ABBLE	BODY, SBRD, 09.63/32.3 OR 36 NOM X 13.38/54 60, LTC BOX X PIN, L80	-SEND 0A BORE/HOT (8.920 DIA) 908-938-93 930-956-24
2	724838	SBRD672101001L E	2/28/2008	5	4	5		On Hand		10047-104-ABBLE	BODY, SBRD, 09.63/32.3 OR 36 NOM X 13.38/54 68, LTC BOX X PIN, L60	
3	724838	SBRD672101001L	2/28/2008	9.25	9.25	1154.48		On Hand		83750L	TUBE RD 12.500x08.000 ALLOY-STL HT ES4 39162	
2	724838	SBRD672101001L E	2/28/2008	30	30	80	W0320820	Released WO	1/25/2008	10500-508	SUP, EZ, 09.63 X 13.38/48- 85	-428-956-24 L603-100
2	724838	SBR0672101001L E	2/28/2008	5	1	11	W0331268	Released WO	2/27/2008	10500-746	CAGE, EZ, 09.63 X 13.38	-999-428-90 222-956-10
2	724838	SBRD672101001L E	2/28/2008	5	4	10		On Hand		10500-746	CAGE, EZ, 09 63 X 13.38	
3	724838	SBRD672101001L E	2/28/2008	32.50	32.50	433		On Hand		83111	TUBE RD 10.750x09.500 1018-20 HR ES4.39152	
2	724838	SBRD672101001L E	2/28/2008	60	60	245		On Hand		39435-001	SCREW, BTN HD CAP .375-16NC X .37LG	
	724838	SBRD672101001L	2/28/2008	120	120	200	263872	Purchase Order	1/29/2008	39435-005	SCREW, BTN HD	CRAWFOR

### Sales order pick available page

One challenge of MRP planning is the communication between manufacturing and customer services. Some of our subassemblies have demand from sales orders as well as dependent demands from manufacturing orders. In the past, customer services have shipped the parts out that were supposed to be used for work orders, causing material shortage on shopfloor. Now that we have the pegging information extract ready to deploy, we created a web report for customer orders with the pegging information. In the page, you can see all the standard order management information, plus the pegging source order and pegged quantity.

One option to run this report is to show all pegged quantity. We use this option to track where the quantities are for the specific sales order. This information will enable us to have a clear picture on how we are meeting the demand date on the sales order and give us basis to estimate when the assemblies will be completed. We can also spot the bottle neck for the work that in the pipeline.

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16170	21	201	573900002 DA4403336066R	PRE 04 250 D X 05 12 CD X	4	3/9/2007	5/18/2007	1/28/2008	1/20/2000	\$21 588 20	\$21 488 20	\$1.00	\$1.00	1150	Excelement IAP	VU0310555	0	1
46178	3.1	201	X0N3362292425	CR0550VER, 05 12/22 00 HD-	1	3/9/2007	5/18/2007	1/28/2008	1/28/2008	\$3,132.91	\$3,132.91	\$1.00	\$1.00	1156	Released WO	W0319550	0	1
			R	L PIN X 04.00/13.4 03.250														
46178	4.1	201	FPLC229899014	FLOAT POPPET LANDING COLLAR, 04 00/13 4, SINGLE	1	3/9/2007	5/18/2007	1/28/2008		\$4,786.65	\$4,786.65	\$1,972.44	\$1,972.44	1156	On Hand		्त	1
46178	5.1	201	F522989801450	FLOAT SHOE, 04.00/13.4,	1	3/9/2007	5/18/2007	1/28/2008		\$5,016.23	\$5,016.23	\$1,999.47	\$1,999.47	1156	On Hand		1	1
46178	6.1	201	LWPC19003V	LINER WIPER PLUG,	1	3/9/2007	5/18/2007	1/20/2008	1/20/2000	\$745.10	\$745.10	\$1.00	\$1.00	1156	Uhreleased WO	W0319548	U	1
16178	7.5	201	PDPC355093V	PUMP DOWN PLUG,	1	3/9/2007	5/18/2007	1/28/2008		\$294.87	\$294.87	\$270.81	\$270.81	1156	On Hand		1	1
46178	8.1	201	LOC2232299014 R	LOCATOR COLPLING, 05.00 OD. 04.00/11.0 TC-4S BOX X	1	4/10/2007	5/18/2007	1/28/2008	1/28/2008	\$2,570.45	\$2,570.45	\$1.00	\$1.00	1156	Released WO	W0319543	0	1
46178	9,1	201	L052290281342	SPACER, TSA, 04.00/13.4 03.250 SPECIAL DRIET, TC.45	1	4/10/2007	5/18/2007	1/28/2008	1/28/2008	\$1,854.80	\$1,854.80	\$1.00	\$1.00	1156	Released WO	W0319541	0	1
46178	10.1	201	T425229028053	DEBRIS BARRIER ASSY,	1	4/10/2007	5/18/2007	1/28/2008	1/28/2008	\$3,165.94	\$3,165.94	\$2,824.34	\$2,824.34	1156	Unreleased WO	W0319517	0	1
46178	11.1	201	R L052293811053	04 25 00, 2 SETS DEBRIS SPACER, TSA, 04 00/13 4	1	4/10/2007	5/18/2007	1/28/2008	1/28/2008	\$1,454.80	\$1,454.80	\$1.00	\$1.00	1156	Released WO	W0319542	0	1
	124	201	R	03 250 SD, STL PIN X PIN,		1000000		1000000							10			
46178	12.1	201	R	OD, 6 SETS HI-TEMP/HI-		4/10/2007	5/18/2007	1/28/2008	1/28/2008	\$6,893.00	\$6,893.00	\$1.00	\$1.00	1156	Unreleased WO	100319545	0	1
46178	13.1	201	10090-915-0-R	CROSSOVER CPLG,	1	4/10/2007	5/18/2007	1/28/2008	1/20/2000	\$1,526.83	\$1,526.03	\$1.00	\$1.00	1156	Released WO	W0319549	0	1
46170	14.1	201	10255-057	PLUG, SEAL TEST FIXTURE,	1	4/10/2007	5/18/2007	1/28/2008		\$196.40	\$196.40	\$1.00	\$1.00	1156	On Hand		1	1
46178	15.1	201	50203-344	O-RING 2-344 NITRILE90	4	4/10/2007	5/18/2007	1/28/2008		\$0.68	\$2.72	\$0.68	\$2.72	1156	On Hand		26	4
46178	16.1	201	373980003	INSP-REQUIREMENTS REVIEW	1	4/27/2007	5/18/2007	1/28/2008	1/28/2008			\$1.00	\$1.00	1156	Planned Order		0	1
46178	17.1	201	373980004	INSP-SPECIFIC CUSTOMER	1	4/27/2007	5/18/2007	1/28/2008	1/28/2008			\$1.00	\$1.00	1156	Planned Order		0	1
46170	18,1	201	373900005	INSP-WITNESS BY THIRD	1	4/27/2007	5/18/2007	1/28/2008	1/20/2008			\$1.00	\$1.00	1156	Planned Order		0	1
46178	27.1	201	373980022	INSP-FINAL INSPECTION	1	4/27/2007	5/18/2007	1/28/2008	1/28/2008			\$1,00	\$1.00	1156	Planned Order		0	1
46178	28.1	201	373980023	INSP-DOCUMENT REVIEW	1	4/27/2007	5/18/2007	1/28/2008	1/28/2008			\$1.00	\$1.00	1155	Planned Order		0	1
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Another option to run this report is to show only onhand quantity. Customer Service department is more interested in the sales order that are pegged to onhand quantity so that they can ship them out without disrupting the supply to the manufacturing plant.

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Sales Or	der: 2	16178		Customer: SII - CASPER						112442							_	
Order	Line		Rem	Item Description	aly	Entered DI	Request	Sched Dt	Supply DL	Unit Cost	Ext Cost	Unit Price	Ext Price	Dist	Source	Src Ord	OH	Peg
246178	4.1	201	FPLC229899014	FLOAT POPPET LANDING	1	3/9/2007	5/18/2007	1/28/2008		\$4,786.65	\$4,788.65	\$1,972.44	\$1,972.44	1156	On Hand		1	1
246178	51	201	5% F\$229B9801450	FLOAT SHOE 04 00/13 4	1	3/9/2007	5/18/2007	1/28/2008		\$5.016.23	35.016.23	\$1 999 47	\$1 999 47	1158	On Hand	-	1	1
246178	71	201	PDPC355003V	PLMP DOWN PLUG	1	30/2007	5/18/2007	1/28/2008		\$294.87	\$294.87	\$270.81	\$270.81	1158	On Hand	-	1	1
246178	14.1	201	10255-057	PLUG, SEAL TEST FIXTURE.	1	4/10/2007	5/18/2007	1/28/2008		\$196.40	\$196.40	\$1.00	\$1.00	1156	On Hand		1	1
246178	15.1	201	50203-344	O-RING 2-344 NITRILE90	4	4/10/2007	5/18/2007	1/28/2009		\$0.68	\$2.72	\$0.60	\$2.72	1156	On Hand	<u> </u>	26	4
Sales Or	der: 2	17864		Customer: TUCKER ENE	RGYS	ERVICES												3
Order	Line	PL	Rem	Item Description	Qty	Entered DL	Request Dt	Sched Dt	Supply Dt	Unit Cost	Ext Cost	Unit Price	Ext Price	Dist	Source	Src Ord	OH	Peg
247864	10.1	201	61986-016	BALL 2.25 BRONZE	2	7/17/2007	1/10/2008	1/10/2008		\$75.00	\$150.00	\$51.00	\$102.00	2872	On Hand		45	2
247864	12.1	201	61986-006	BALL 1 75 BRONZE	2	7/17/2007	1/10/2008	1/10/2008		\$24.00	\$48.00	\$24.00	\$48.00	2872	On Hand		326	2
Sales Or	der: 2	17870		Customer: SII - HEADOU	ARTE	RS												
Order	Line	PL	Eem	Item Description	City	Entered Dt	Request DI	Sched Dt	Supply Dt	Unit Cost	Ext Cost	Unit Price	Ext Price	Dist	Source	Src Ord	OH	Peg
247870	22.1	201	50201-250	O-RING 2-250 VITON90	30	7/13/2007	12/21/2007	12/21/2007		\$3.05	\$91.50	\$3.05	\$91.50	4884	On Hand		150	30
247870	49.1	201	50201-225	O-RING 2-225 VITON90	50	7/16/2007	12/21/2007	12/21/2007		\$0.76	\$38.00	\$0.76	\$30.00	4004	On Hand		104	50
247870	50.1	201	50201-229	O-RING 2-229 VITON90	50	7/16/2007	12/21/2007	12/21/2007		\$1.35	\$67.50	\$1.35	\$67.50	4884	On Hand		100	50
247870	51.1	201	B50201-234	0-RING 2-234 VITON90	50	7/16/2007	12/21/2007	12/21/2007		\$1.35	\$87.50	\$1.17	\$58.50	4884	On Hand		54	50
247870	52.1	201	50201-239	O-RING 2-239 VITON90	50	7/16/2007	12/21/2007	12/21/2007		\$1.50	\$75.00	\$1.50	\$75.00	4884	On Hand		457	50
247870	53.1	201	50201-241	O-RING 2-241 VITON90	50	7/16/2007	12/21/2007	12/21/2007		\$2.00	\$100.00	\$2.00	\$100.00	4884	On Hand		85	50
247870	56.1	201	61986-001	BALL 1.25" BRONZE	8	7/16/2007	12/21/2007	12/21/2007		\$22.88	\$182.88	\$8.00	\$64.00	4884	On Hand		28	8
247870	57.1	201	61986-014	BALL 1.43 BRONZE	8	7/16/2007	12/21/2007	12/21/2007		\$14.30	\$114.40	\$14.30	\$114,40	4884	On Hand		17	8
247870	58.1	201	61986-010	BALL 1 50 BRONZE	8	7/16/2007	12/21/2007	12/21/2007		\$32.14	\$257.12	\$19.00	\$152.00	4884	On Hand		290	8
247070	59.1	201	61906-006	BALL 1.75 BRONZE	0	7/16/2007	12/21/2007	12/21/2007		\$24.00	\$192.00	\$24.00	\$192.00	4884	On Hand		326	8
247070	00.1	201	01906-016	BALL 2 25 DRONZE	0	7/16/2007	12/21/2007	12/21/2007		\$75.00	\$600.00	\$51.00	\$400.00	4004	On Hand		45	U
243970	1 821	1 201	1 306019-023	INCOMPANISCO: SET 375-	1 100	1 7/16/0007	112/21/2007	110/01/0007		\$0.11	\$11.00	30.11	\$11.00	42984	On Hand		1 201298	100.1

## Conclusion

Our business is growing rapidly. Everyday we face different challenges from different areas: customer order priority, supplier material shortage, and resource capacity issue, just to name a few. It is critical to understand the data from multiple MRP plans timely to react to the rapidly changing environment. With the MRP data extraction and web presentation of data, we have achieved the following goals we set to help our business:

- 1. Manufacturing to monitor the capacity load on the resources
- 2. Purchasing to spot material supply problem
- 3. Pegging is critical to help Planning, Customer Services and Manufacturing to work together to meet the customer demand date
- 4. Combine OM with Pegging to help Customer Services decide what to ship

Currently our business unit is implementing Advanced Supply Chain Planning module. With the success from MRP data extract project, we are working toward extracting the similar sets of data from ASCP module and present them efficiently from the web to serve our different business functions.