Introduction to Supply Chain Planning

Modern, customer-centric demand driven planning approaches allow companies to improve customer service levels while reducing costs and inventory levels, thus positively impacting growth and profitability. This session will focus on demand, inventory and supply planning and provide an overview of how Oracle’s Value Chain Planning Solutions support these processes.

Matt Tichon
Principal Solution Consultant
Value Chain Planning
August 21, 2014

matthew.tichon@oracle.com
Q: A Simple Eye Exam...
All Kidding Aside…

Q: If you have a car containing a Cleveland wide receiver, a Cleveland linebacker, and a Cleveland defensive back, who is driving the car?

A: The Police Officer

Q: How do the Lions spend the first week of training camp?

A: Studying the Miranda Rights
Introduction to Supply Chain Planning

Modern, customer-centric demand driven planning approaches allow companies to improve customer service levels while reducing costs and inventory levels, thus positively impacting growth and profitability. This session will focus on demand, inventory and supply planning and provide an overview of how Oracle’s Value Chain Planning Solutions support these processes.

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Oracle Value Chain Planning – COMPLETE
Focus on your most important problem first

- Common foundation
- Single source of truth
- Centralized services
- Start anywhere, redo nothing
- ERP agnostic
Oracle Value Chain Summit 2015

60% higher profits. 65% better earnings per share. 2-3x greater return on assets.*

Behind every successful Value Chain Innovation is a committed Agent of Change supporting new value chain opportunities and enabling positive business results.

Save the date: Jan 26 – 28, 2015

San Jose McEnery Convention Center

More Networking

✓ "Birds-of-a-Feather" forums geared toward specific value chain communities
✓ Customer Appreciation Event on Tuesday evening

More Thought-Leading Content

✓ 50 + speakers from top companies
✓ 100 exhibitors showcasing the latest supply chain solutions

www.oraclevaluechainsummit.com
Extensive pre-built integration

**Value Chain Planning**

- Constrained order forecast (DEM RTS&OP)
- Global and local demand schedules (DEM DM)
- Time phased safety stocks (IO)
- Firm planned work orders (PS)
- Sourcing rule assignment sets (SNO)
- Order reservations (GOP)
- Order forecasts and supply commits (CP)
- Plan archives and scenario assignments (APCC)

**Maintenance**

- Rotables component demand (CMRO)
- Non-standard work order requirements (EAM)

**ERP inputs for MRP**

- Bill of material headers, bom components, component substitutes, engineering change orders
- Calendars, calendar exceptions, work day patterns
- Categories, category sets; UOMs, UOM class conversions
- Demand classes, forecast demands, demand schedules
- Flow schedules, line rates
- Work order headers, components, operations
- Routings, operations, resources, resource instances, lines
- Forecast designators, demand schedule designators, plan order designators, sales channels
- Planners, unit of measures, UOM class conversions
- Items, item substitutes, co- and by-products
- Organizations, shipping networks, subinventories, location associations, shipping methods
- Project tasks, planning groups
- Items, item substitutes, co- and by-products, sourcing
- OSFM material requirements, operations resources, operations, operation networks
- Purchase order supplies, requisition supplies, supplier capacities, supplier flex fences, item suppliers
- Resource availability, resource requirements, resource groups, resource shifts, shift exceptions, shift times
- Safety stocks, sales order demands, reservations, on-hand, intransit supplies, work order supplies
- IRO Supplies, IRO Demands, ERO Supplies, ERO Demands (IRO = Internal Repair Order | ERO = External Repair Order)
Top objectives and challenges

• Plan safety stock for multi-echelon supply chain network
• Ensure adequate safety stock policies keeping in mind that the demand for some items are highly intermittent
• Ensure high supply chain responsiveness to service demand – Replace 3 disconnected instances of Servigistics

Solution and Products

• Items planned globally, daily; forecast and safety stock calculated weekly
• Integrated forward and service supply chain for more optimal component buys
• Replaced 3 separate instances of Servigistics with single VCP instance
• Demantra Demand Management, Sales and Operations Planning, Advanced Supply Chain Planning, Production Scheduling, Advanced Planning Command Center, Collaborative Planning, Inventory Optimization, Service Parts Planning

Results

• 300+ inventory orgs planned for safety stock
• 24% reduction in freight and warehouse cost
• 17% reduction in product lead time
• Holistic view of global parts visibility across forward and reverse supply chain
• Operate a managed Sales and Operations Planning process

Deployment location

• Worldwide

Industry

• Software and Hardware

Products and services

• Software solutions, computer systems, consulting services

Supply chain

• Manufacturing in US; Distribution centers WW;
• Service centers WW

Revenue

• USD 37.2Bn (2012)

>50%

• Reduction in parts inventory

$20M

• Reduction in service parts safety stock

$100M

• reduction in manufacturing WIP

>63%

• Reduction in E&O

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### Proven Solution – Sample Customers

<table>
<thead>
<tr>
<th>Agilent Technologies</th>
<th>ALCOA</th>
<th>EMERSON</th>
<th>CISCO</th>
<th>GE Healthcare</th>
<th>Stryker</th>
<th>IRVING</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConAgra Foods</td>
<td>CGI</td>
<td>HUAWEI</td>
<td>BOEING</td>
<td>NAVISTAR</td>
<td>QUALCOMM</td>
<td>Panasonic</td>
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<td>KRAFT</td>
<td>SONY</td>
<td>GE Appliances</td>
<td>UNITED STATES POSTAL SERVICE</td>
<td>USARMY.com</td>
<td>GE Aviation</td>
<td>SANMINA-SCI</td>
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<tr>
<td>TEVA</td>
<td>EATON</td>
<td>ZTE</td>
<td>Hormel</td>
<td>MOTOROLA SOLUTIONS</td>
<td>ORGANIC VALLEY</td>
<td>Quilmes</td>
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<td>Logitech</td>
<td>Vtech</td>
<td>EA</td>
<td>Sun</td>
<td>ACTIVISION</td>
<td>FUJI XEROX</td>
<td>Tootsie</td>
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<td>Fellowes</td>
<td>Canon</td>
<td>orbotech</td>
<td>CLOROX</td>
<td>McCain</td>
<td>GILDAN</td>
<td>LEAD PROS</td>
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<tr>
<td>USF</td>
<td>20</td>
<td>Smiths Medical</td>
<td>Welch's</td>
<td>LAB BOY</td>
<td>DAIRY CREST</td>
<td>MOTOROLA MOBILITY</td>
</tr>
<tr>
<td>IKON</td>
<td>MUNDIAL</td>
<td>PPG</td>
<td>Comex Group</td>
<td>BAE SYSTEMS</td>
<td>NCR</td>
<td>AMERICAN Fire Contractors</td>
</tr>
<tr>
<td>Char</td>
<td>Google</td>
<td>Donaldson</td>
<td>Johnson &amp; Johnson</td>
<td>PERNOD</td>
<td>GILEAD</td>
<td>And more ...</td>
</tr>
</tbody>
</table>

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Impacts of Forecast Accuracy

Business Value is Achieved with more Accurate Forecasting

Impacts of Under Forecasting

- Lost Revenue
- Lost Companion Item Sales
- Lower Customer Satisfaction
- Higher Production Cost
- More Expediting

Impacts of Over Forecasting

- Optimal Forecast
- Under Forecast
- Over Forecast

Impacts of Over Forecasting

- Reduced Margin
- Trans-Ship Cost
- Inventory Holding Cost
- Excess Inventory
- Obsolescence

Best Practice

Business Value is Achieved with more Accurate Forecasting
Variability, Complexity and Visibility  
Dominant Obstacles to Achieving SCM Goals: AMR Research

- Forecast accuracy, "demand variability" 58.53%
- Supply chain network complexity 41.76%
- Lack of internal cross functional collaboration and visibility 38.53%
- Inability to coordinate and synchronize end-to-end supply chain processes 28.53%
- Cost and length of time to deploy applications 28.24%
- Volatile and uncontrollable supply chain costs 25.29%
- Supplier performance, "supply variability" 22.94%
- Lack of external cross functional collaboration and visibility 17.94%
- Transportation and Logistics Performance 11.76%
- Moving from domestic to global supply chain 9.41%
- Supply chain risk 8.53%
- Other 3.24%
- Compliance with government mandates 2.94%
Oracle Demantra
Demand Management, Advanced Forecasting, Sales & Operations Planning

• Sales & Operations Planning
• Consensus Planning
• Demand Sensing
• New Product Forecasting
• Sales Planning and Tracking
• Trade Promotions Planning & Optimization
• Combination Statistical Forecasting
Impact of Forecast Accuracy on Inventory & Service Level

Traditionally, companies manage the tradeoff between service & inventory by moving along this curve.

Improving forecast accuracy allows you to shift the curve. 5% accuracy equates to ~ 4 days in inventory.
Oracle Inventory Optimization
Time Phased Inventory Levels, Service Levels and Postponement Strategy

- Safety Stock Planning
- Cycle Stock Planning
- Warehouse Capacity Planning
- Inventory Postponement
- Budget Constraint Simulations
- Service Level Scenario Planning
Oracle Supply Planning
You Have Options How to Best Leverage SCM Assets

• Various supply planning functionality that can be deployed either alone or in a layered structure
• Constraint-based supply planning on real-world constraints
• Scenario management capabilities
Variability, Complexity and Visibility: Dominant Obstacles to Achieving SCM Goals: AMR Research

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Oracle Network Optimization
Supply Chain Design, Strategic Supply and Complex Optimization

• Supply chain network design
• Rationalize existing or future assets
• Complex supply constraints
• Profitability optimization
• Product mix optimization
• Strategic and risk planning
• Scenario planning
Oracle Advanced Supply Chain Planning
Constraint Based Supply & Distribution Planning (MRP, DRP, MPS, CRP – in one tool)

- Material Requirements Planning
- Master Production Planning
- Distribution Requirements Planning
- Manufacturing Capacity Planning
- Supplier Capacity Planning
- Constraint Based Optimization
Oracle Rapid Planning
Supply Chain Event Simulations

- Fast event-based simulations
- Plans net change to entire supply chain in minutes
- Plans impact to order changes
- Plans impact to BOM changes
- Easy to compare plan changes
Sample customers – Rapid Planning

**Plantronics [High Technology]**
- Reduced planning cycle from 21 days to less than 1 day
- Improved inventory turns from 2.9 to 5.4
- Improved supplier on-time delivery from 65% to 92%
- Full visibility, better control of demand/supply across supply chain

**Shin Zu Shing [High Technology]**
- Computer parts, 4-5 BOM levels, large amount of engineering changes
- Reduced obsolescence and improved order fill-rate
- From weekly planning to planning in minutes, globally
- Customer service team has visibility to orders, delayed demand and causes

**Sanmina [High Technology]**
- Overall planning cycle time reduced from 3 hours to 30 min
- Planner productivity improved by 25%
- Substitutes and effective use up of old version parts helped reduce inventory costs by ~5%
- Able to handle huge volumes of open ECOs and substitutes
- Push the planning decisions to EBS execution system

**Onyx EMS [High Technology]**
- Vastly improved customer commitment process, eliminated MRP
- Ability to quickly respond to customer order changes and related supplier communications via what-if and clear-to-build analysis
- Accurate confirmation of existing and potential customer orders on demand
Oracle Production Scheduling
Finite Shop Floor Manufacturing Scheduling

• Shop Floor Order Sequencing
• Detailed Resource Calendars
• Changeover and Setups
• Schedule Scenario Analysis
• Campaign Run Optimization
• Labor Requirements Planning
Oracle Order Promising
Provide Promise Dates for the Order in Real-Time

- Multi-level Bill Of Materials
- Delivery Lead Times: Internal Inter-Organizational Delivery Lead Times
- Resource and Material Constraints
- Supplier Constraints
- Multiple Sourcing Options
- Substitute Products
Oracle Advanced Planning Command Center
Dashboards for S&OP, Supply Chain Analyst, Risk Management

- Dashboards & Reports for S&OP, Supply Chain Planner and Risk Management
- Scenario and Plan Comparison
- Exceptions for Demand, Supply and Inventory
- Financial, Capacity, Inventory and Service Levels Metrics
- 100’s of Pre-Defined KPI’s and Measures
- Supports and enables the S&OP Process
### Demand Summary

<table>
<thead>
<tr>
<th>Measure</th>
<th>Current</th>
<th>Previous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipment History Year Ago</td>
<td>570,326</td>
<td>529,126</td>
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<tr>
<td>Shipment History</td>
<td>565,230</td>
<td>563,240</td>
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<tr>
<td>Booking History</td>
<td>545,140</td>
<td>555,140</td>
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<tr>
<td>Actual Billing</td>
<td>49,875</td>
<td>48,875</td>
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<tr>
<td>Shipment Forecast</td>
<td>1,322,741</td>
<td>1,322,741</td>
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<tr>
<td>Consensus Forecast</td>
<td>1,308,548</td>
<td>1,220,682</td>
</tr>
<tr>
<td>Shipment History - Value (USD)</td>
<td>155,318,438</td>
<td>155,318,438</td>
</tr>
<tr>
<td>Operating Plan - Value (USD)</td>
<td>333,555,773</td>
<td>358,685,953</td>
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<tr>
<td>Consensus Forecast - Value (USD)</td>
<td>352,057,518</td>
<td>350,047,569</td>
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<tr>
<td>Hyperion Budget (USD)</td>
<td>347,182,545</td>
<td>347,182,545</td>
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<tr>
<td>Hyperion Financial Forecast - Value (USD)</td>
<td>252,692,725</td>
<td>252,692,725</td>
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<tr>
<td>Difference % - Operating Plan and Financial Forecast</td>
<td>-5</td>
<td>-10</td>
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</table>
Sales And Operations Demo - Demand Review

Demand Summary

<table>
<thead>
<tr>
<th>Measure</th>
<th>Current</th>
<th>Previous</th>
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<tbody>
<tr>
<td>Shipment History Year Ago</td>
<td>529,026</td>
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<td>Shipment History</td>
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<tr>
<td>Booking History</td>
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<td>295,140</td>
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<tr>
<td>Actual Backlog</td>
<td>26,875</td>
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<tr>
<td>Shipment Forecast</td>
<td>1,222,741</td>
<td>1,222,741</td>
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<tr>
<td>Consensus Forecast</td>
<td>1,296,548</td>
<td>1,229,082</td>
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<tr>
<td>Shipment History - Value (USD)</td>
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<td>155,316,436</td>
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<tr>
<td>Operating Plan - Value (USD)</td>
<td>335,533,770</td>
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<td>HYPERION Budget (USD)</td>
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<td>HYPERION Financial Forecast - Value (USD)</td>
<td>352,680,756</td>
<td>352,680,756</td>
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<tr>
<td>Difference % - Operating Plan and Financial Forecast</td>
<td>-5%</td>
<td>-10%</td>
</tr>
</tbody>
</table>

Forecast Comparison - Baseline Previous

Forecast - Scenario Comparison

View: Demand in Units (Chart)

Top Abe Diff - Consensus and Financial Forecast by Category - Baseline Previous

View: Chart
## TSTD1 Singapore Distribution Center - Computer Service and Rentals - Desktops

<table>
<thead>
<tr>
<th>Series</th>
<th>Ctrl</th>
<th>History</th>
<th>Adjusted History</th>
<th>Final Forecast</th>
<th>Sales Forecast</th>
<th>Marketing Forecast</th>
<th>Consensus Forecast</th>
<th>Financial Forecast</th>
<th>Budget Value</th>
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### Time
- 01/16/13
- 02/18/13
- 03/16/13
- 04/16/13
- 05/16/13
- 06/13/13
- 07/18/13
- 08/05/13
- 09/22/13
- 10/23/13
- 11/21/13
- 12/23/13

### Mix Analysis

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<thead>
<tr>
<th>Series</th>
<th>Ctrl</th>
<th>Final Forecast</th>
<th>Abs % Error</th>
<th>Sales Forecast</th>
<th>Sales % Error</th>
<th>Marketing Forecast</th>
<th>Marketing % Error</th>
<th>Final Forecast %</th>
<th>Weighted Forecast %</th>
<th>Consensus Approved</th>
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</thead>
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</table>

### Sales
- 03/16/13
- 04/16/13
- 05/16/13
- 06/13/13
- 07/18/13
- 08/05/13
- 09/22/13
- 10/23/13
- 11/21/13
- 12/23/13

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### Vision OEM Forecast Product Family

<table>
<thead>
<tr>
<th>Time</th>
<th>06/19/13</th>
<th>06/20/13</th>
<th>06/21/13</th>
<th>06/22/13</th>
<th>06/23/13</th>
<th>06/24/13</th>
<th>06/25/13</th>
<th>06/26/13</th>
<th>06/27/13</th>
<th>06/28/13</th>
<th>06/29/13</th>
<th>06/30/13</th>
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<tbody>
<tr>
<td>OEM Data</td>
<td>4,200</td>
<td>4,200</td>
<td>4,200</td>
<td>4,200</td>
<td>4,200</td>
<td>4,200</td>
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<td>4,200</td>
<td>4,200</td>
<td>4,200</td>
<td>4,200</td>
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<tr>
<td>OEM Peg</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>2</td>
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<tr>
<td>OEM Share</td>
<td>75%</td>
<td>75%</td>
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<td>75%</td>
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<td>75%</td>
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<tr>
<td>OEM Vol</td>
<td>6,300</td>
<td>6,300</td>
<td>6,300</td>
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#### TST Vision Operations - Vision Pads - Advanced

**SM2 Resource Rough Cut Capacity**

**SM1 Supply Plan**

### Capacity Adjustment

<table>
<thead>
<tr>
<th>Time</th>
<th>Baseline</th>
<th>Operating Unit</th>
<th>TST Vision Operations</th>
<th>Organization</th>
<th>TSTM1 Seattle Manufacturing</th>
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</thead>
<tbody>
<tr>
<td>06/13</td>
<td>156</td>
<td>300</td>
<td>226</td>
<td>41%</td>
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<tr>
<td>07/13</td>
<td>232</td>
<td>300</td>
<td>58</td>
<td>73%</td>
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<td>08/13</td>
<td>200</td>
<td>320</td>
<td>90</td>
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<tr>
<td>09/13</td>
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<td>400</td>
<td>36</td>
<td>9%</td>
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<tr>
<td>10/13</td>
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<td>320</td>
<td>316</td>
<td>1%</td>
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<tr>
<td>11/13</td>
<td>47</td>
<td>320</td>
<td>375</td>
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<td>12/13</td>
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<td>245</td>
<td>39%</td>
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<td>01/14</td>
<td>117</td>
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<td>203</td>
<td>36%</td>
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<tr>
<td>02/14</td>
<td>183</td>
<td>600</td>
<td>340</td>
<td>43%</td>
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<tr>
<td>03/14</td>
<td>119</td>
<td>600</td>
<td>340</td>
<td>43%</td>
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</tr>
</tbody>
</table>

### Capacity Graph

**TST Vision Operations - Baseline** vs **TSTM1 Seattle Manufacturing - FINAL ASSM**

- **Required Capacity**
- **Available Standard Capacity**

**Time**:
- 06/03/13
- 07/03/13
- 08/03/13
- 09/03/13
- 10/03/13
- 11/03/13
- 12/03/13
- 01/04/13
- 02/04/13
- 03/04/13
- 04/04/13
### Bottom - Demand Fill % by Product Category

**Customer is equal to / is in Business World**

**and Scenario is equal to / is in Current**

**and Category Description (ACSP Item Category) is equal to / is in Vision Pad Elite**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Category Description (ACSP Item Category)</th>
<th>Item</th>
<th>Consensus Forecast</th>
<th>Shipment-History</th>
<th>Constrained Forecast</th>
<th>Demand Fill %</th>
<th>Projected Demand Fill %</th>
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</thead>
<tbody>
<tr>
<td>Current</td>
<td>Vision Pad Elite</td>
<td>A566311</td>
<td>104,417</td>
<td>85,113</td>
<td>114,178</td>
<td>29</td>
<td>99</td>
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<td></td>
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<td>A566312</td>
<td>229,223</td>
<td>84,435</td>
<td>34,899</td>
<td>57</td>
<td>41</td>
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<td></td>
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<td>A566313</td>
<td>220,558</td>
<td>83,577</td>
<td>77,408</td>
<td>28</td>
<td>100</td>
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<tr>
<td>Date</td>
<td>TST1M2</td>
<td>Required hours</td>
<td>Available hours</td>
<td>Capacity load ratio</td>
<td>Planned orders</td>
<td>Total resource cost</td>
<td>Cumulative hours available</td>
</tr>
<tr>
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<td>--------------------------</td>
</tr>
<tr>
<td>7/21/13</td>
<td>SURF MOUNT</td>
<td>0</td>
<td>80</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>7/22/13</td>
<td>CHIPS MOUNT</td>
<td>0</td>
<td>80</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>TST1M2</th>
<th>Required hours</th>
<th>Available hours</th>
<th>Capacity load ratio</th>
<th>Planned orders</th>
<th>Total resource cost</th>
<th>Cumulative hours available</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/21/13</td>
<td>SURF MOUNT</td>
<td>0</td>
<td>80</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
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</tr>
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<td>7/22/13</td>
<td>CHIPS MOUNT</td>
<td>0</td>
<td>80</td>
<td>0.00</td>
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<td>0.00</td>
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</table>
### Supply Summary

<table>
<thead>
<tr>
<th>Metric</th>
<th>AddCap</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Demand</td>
<td>4,478,673</td>
<td>3,873,015</td>
</tr>
<tr>
<td>Total Supply</td>
<td>4,573,067</td>
<td>3,928,255</td>
</tr>
<tr>
<td>On-Hand</td>
<td>505,986</td>
<td>543,334</td>
</tr>
<tr>
<td>Off-Hand</td>
<td>17,374</td>
<td>15,652</td>
</tr>
<tr>
<td>WP Start Quantity</td>
<td>44</td>
<td>31</td>
</tr>
<tr>
<td>Projected Demand Fill %</td>
<td>99</td>
<td>91</td>
</tr>
<tr>
<td>Constraint Forecast - Value (USD)</td>
<td>197,946,920</td>
<td>180,235,336</td>
</tr>
<tr>
<td>Operating Plan - Value (USD)</td>
<td>335,365,238</td>
<td>335,353,773</td>
</tr>
<tr>
<td>Constraint Forecast Value Difference</td>
<td>5</td>
<td>-17,711,489</td>
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<tr>
<td>Total Supply % Difference</td>
<td>0</td>
<td>-14</td>
</tr>
</tbody>
</table>

### Bottom Demand Fill % by Customer - Baseline AddCap

- **Business World**: 100%
- **Computer Services and Sales**
- **Human and Associates**
- **Silicon City**

### Consolidated Analysis Monthly - Baseline AddCap

#### Graph View
- **Total Demand**
- **Total Supply**
- **Safety Stock**
- **PAB - Units**

#### Fiscal Period
- **Jan-13**
- **Feb-13**
- **Mar-13**
- **Apr-13**
- **May-13**
- **Jun-13**

### Demand Fill Monthly

#### Graph View
- **AddCap, Demand Fill %**
- **Current, Demand Fill %**
- **Current, Projected Demand Fill %**

#### Fiscal Period
- **Jan-13**
- **Feb-13**
- **Mar-13**
- **Apr-13**
- **May-13**
- **Jun-13**
Companies that get it right...

• Business benefits realized by 40 OW clients
  – 18-25% increase in forecast accuracy
  – 10-15% increase in sales revenue
  – 10-50% increase in on-time delivery
  – 30-45% increase in productivity...

• Organizational changes
  – Expect the truth
  – Get the news early – good or bad
  – One set of numbers
  – Accountable – do what you say you are going to do

• Financial savings
  – 25-30% improvement in working capital
  – 32-49% improvement in asset utilization...
  – 24-30% increase in return on assets
  – 25-29% increase in gross margin

Source: Oliver Wight