



Oracle Planning Central Cloud centralizes planning for better supply chains



Abstract

A special system for optimization, which provides higher flexibility to the local system while having a global entity for data ownership and integration, is the need of the hour for every organization's supply chain. It ensures smoother and efficient operations while reducing the hardware, integration, and maintenance costs. This point of view reviews Release 11 of Planning Central Cloud, which is Oracle's first step towards a centralized cloud-based planning system. It documents Oracle's move towards deterministic planning approaches and schedules in bringing centralized planning and control with a decentralized flexibility. The document also reviews the capability of Planning Central Cloud (Rel 11) and the benefit it brings to practitioners.

Introduction

A supply chain (SC) is a network of suppliers, production facilities, warehouses, and markets designed to acquire, manufacture, and store raw materials, while distributing products across markets. The entire process is driven by the demand generated in the markets. Organizations often have complex distributed supply chains, and operating them optimally becomes a challenging task. Decision making in the supply chain is a highly

complex phenomenon and can be performed in a centralized or decentralized way. There have been numerous studies in the past attempting to identify which one scores above the other. Some of the studies are by Beamon (1998), Rupp and Ristic (2000), Stadtler (2005), Saharidis et al. (2009), and Behdani et al. (2010), and the findings have been similar if not the same. Rupp and Ristic (2000), Banerjee (2007), and Saharidis et al. (2009) found that the

manufacturing resource planning system, MRP-II, was not flexible enough to meet the needs of the highly dynamic cooperative environment. The need is that of a system that leaves as much responsibility and expertise for optimization as possible to the local planning systems, while a global coordinating entity ensures the best performance and efficiency of the whole supply chain.



A Brief Review – Tracing the Oracle Planning System

A look at the MRP-II and Advanced Planning and Scheduling (APS) systems available today confirms that these use deterministic planning approaches (no uncertainty) with deterministic schedules, similar to the Oracle Materials Requirements Planning (MRP), Advanced Supply Chain Planning, and Demantra systems. These solutions are all networks of tasks connected to each other with dependencies that describe the work to be completed. Each task has a planned duration, and each task has a predecessor and a successor. This also brings the focus on a debate going on for decades — centralized versus decentralized planning. Thankfully, it is now getting well established that there is a need for a centralized backbone with a decentralized flexibility.

Oracle first introduced MRP that started with a decentralized approach. Close to the new millennium Oracle embraced more sophisticated technology and introduced Advanced Supply Chain Planning which aligned towards a more centralized approach to Supply Chain Planning. Yet, supply planning is more decentralized in most companies rather than being centralized. So, how do we leap forward from decentralized to a more centralized supply planning while maintaining local flexibility and context-specific nuances of supply planning?

Cloud-based Planning

Thanks to the Internet and cloud technologies, companies can now centralize planning and control. So, how does cloud enable centralized planning? Cloud ensures that all relevant data, information, and applications are stored and made available

— locally and at the center — for all those who have the necessary access rights. With easy-to-access storage capacity, the cloud offers an almost unlimited range of tools and databases, for large, mid, and small enterprises. This brings enormous advantages to global supply chains. It helps customers find solutions through the access to data and technology. The cloud allows the collection of data from suppliers, contractors, and customers about market demand or situations all over the world, whether in the most distant corner of Africa, the southernmost part of South America, tech centers of India, high rises of Shanghai, or the islands of Fiji. Only a central team closely collaborating with the organizations all across will be able to capture the trends, threats, and opportunities to determine and plan the most appropriate response.

Oracle Planning Central Cloud

With a deterministic approach and schedule for centralized planning, Oracle Planning Central in Release 11 gives the ability to create one plan that can do demand, inventory, and manufacturing / supply planning in one go which is a highly deterministic schedule. The whole idea of Planning Central is to host the Oracle planning system in the cloud. The planning system collects data from other cloud systems (like SCM Cloud, Manufacturing Cloud, Project Portfolio, etc.) driving a centralized standard data ownership, and then demand & supply planning of these data through cloud-based processes with individual local facilities as a part of the central plan having its own configuration and policies bringing in the required flexibilities.

Social collaboration options are provided to improve speed and quality of decisions. Stand-alone as well as integrated plans can be created. Thus, Oracle Planning Central

provides the ability to automatically release orders to execute material transfers, work orders, and/or purchase requisitions.

Demand Planning

The Oracle Planning Central demand solution automatically determines the best forecasting model applicable as per data, and has built-in features to incorporate seasonality and outliers. It generates forecasts based on shipment or booking and selects the most suited statistical engine to reduce errors. The forecast can be managed at different hierarchies like product family, and the same can be viewed, managed, and used. Planning Central demand planning solution can use the history of a similar product to create a forecast for a new item, for example, Chaining. It also provides the ability to load forecasts from external systems which can provide sales or customer forecasts. It also compares system-generated statistical forecasts with forecasts loaded from an external system for the

purpose of consensus demand planning.

Inventory Planning

From an inventory perspective, Planning Central automatically calculates buffer stock (safety stock) while minimizing inventory to increase service levels. Planning Central considers demand variability when it calculates safety stock. It also uses the Mean Absolute Deviation (MAD), Mean Absolute Percentage Error (MAPE), arrival rate forecast errors, service levels that are defined for an item, or a common service level for the entire plan to calculate safety stock levels automatically.

Safety stock levels can be set for an item, either in the Product Information Management work area or in Planning Central when an automated calculation is not appropriate. Planning Central can also use the 'days of cover' paradigm to calculate a safety stock level that varies according to time. Safety stock levels can also be imported into planning central.



Supply Planning

Planning Central in its current version offers an in-memory, unconstrained (resource or supplier capacity) planning capability. It balances demand with supply to reduce inventory and prevent stock-outs. It uses the functionality of sourcing rules, forecasts consumption, recommends new supply, and reschedules or cancels existing supplies. Through business rules like effectivity dates on components, expiration dates on inventory lots, and reservations of on-hand inventory, automation of many tasks can be achieved. At the same time, Planning Central's supply plans can model outsourced manufacturing and delivery scenarios, including drop shipments and back-to-back orders. Some hub-and-spoke configurations are supported in planning central like:

- Using the forecast from one Planning Central plan as a demand schedule for a second Planning Central plan
- Production Planning (manufactured items) in first Planning Central Plan and then using these as an input to second Planning Central Plan which acts as MRP

Respond and Analytics

Planning Central has built-in integration with other Oracle SCM Cloud applications to publish its order recommendations, synchronize updates, and make changes when necessary. Planners can set up auto-release rules, or release orders manually. It provides a configurable planner workbench allowing planners to view multiple plans and strategize inputs simultaneously. Planners can choose to view data using pre-seeded layouts or create user-defined page layouts. Page layouts can be reused across plans and simulation sets.

Planning Central has a unified data model and data analysis hierarchies that are shared across demand and supply planning functions. This enables planners to analyze results at arbitrary aggregate levels; for example, at a category-business unit level, and to view demands and supplies across different units of measure using a single consistent reporting unit of measure such as in a currency unit of measure.

Data Collection

The collections process collects item, resource, organization, customer, and calendar data that

define planning dimensions. Planning Central also collects:

- Item structures to explode item-level demand into component demands and supplies
- Work definitions to assign resource dependencies for items
- Units of measure to align plan data and to convert plans from one set of units to another
- Costs to review plans in financial terms and evaluate the financial impact of planning decisions
- Sales orders that flow from Oracle Order Management Cloud Service
- Shipment history from Oracle Materials Management Cloud Service
- Supply data from Oracle Inventory Management Cloud Service related to on-hand inventory, reservations, material transfers, in-transit supplies, and receipts
- Oracle Manufacturing Cloud Service for work-in-process status and any manufacturing work orders
- Oracle Purchasing Cloud Service for purchase requisitions and purchase orders

Together these sources give a complete picture of the supplies that are being held or moved, built or bought.





Benefits of Oracle Planning Central Cloud

Oracle Planning Central Cloud helps the organization drive compliance on their as well as global standards, for better forecasting, optimized cost, reduced hiring and training costs, higher customer satisfaction, lower recovery costs through better quality control, and more appropriate and timely responses to irregularities and disruptions. Here are more details:

- **On-demand capacity augmentation:** A planning system traditionally requires a lot of infrastructure and has to be structured and allocated in advance based on the type of plan, the volume of data, and the number of users. Planning Central Cloud allows us to increase or decrease capacity in real time; this helps customers start with a baseline configuration of resources and then increase the capacity as per the demand.

This way we can avoid huge CAPEX investment at the start of the project.

- **Auto-scaling:** This feature allows automatic scaling of resources based on demand. For example, planning for the holiday season will have more data, and thus the underlying number of web servers can automatically increase to handle the load, and once the traffic is reduced, the number of web servers can go back to the original count which is the baseline configuration. This way the organization will be able to manage the peak utilization and cost effectively in real time.
- **Enhanced security:** Security is generally a major concern when it comes to cloud, but when we look into the details of security measures of Oracle Cloud, it is very clear that world-class security

best practices are integrated into the architecture at all levels, and it is much more enhanced and precise as compared to traditional infrastructure. Also, this secure landscape is much more cost effective, efficient, and truly world-class.

- **Enhanced planner productivity:** With configurable Planner's Workbench, capability to view multiple plans, user-defined plus multi-pane page layouts, and the ability to switch layouts, the productivity is bound to improve.
- **Advanced analytics and spreadsheet integration:** Oracle Planning Central cloud provides advanced analytics features along with Excel integration through ADF desktop integrator.



Conclusion

Planning Central Cloud (Release 11) is Oracle's first step towards a centralized cloud-based planning system. There are more planning features like constrained based plan, demand sensing and shaping, and sales and operations planning which are yet to be added, but the beginning looks promising and the future is full of opportunities. Oracle Planning Central Cloud is preconfigured and ready to use from the moment the account is provisioned by Oracle. Instead of spending time procuring hardware, integrating applications, and configuring the software, the system can be live in weeks.



References

- Banerjee, A., (2007), Global Trends in Supply Chain Planning in Semiconductor Industry. SETLabs Briefings. Vol 5, No 3, 53-62.
- Behdani, B.; Lukszo, Z.; Adhitya, A.; Srinivasan, R., (2010), Decentralized vs. centralized management of abnormal situations in a multi-plant enterprise using an agent-based approach, in Computer Aided Chemical Engineering, S. Pierucci and G.B. Ferraris, Editors. Elsevier. P. 1219-1224.
- Beamon, B.M., (1998), Supply chain design and analysis: Models and methods. International Journal of Production Economics. 55, 281-294.
- Rupp, M., Ristic, T.M., (2000) Fine planning for supply chains in semiconductor manufacture. J. Materials Processing Technology 107: 390–397.
- Saharidis, G.K.D.; Kouikoglou, V.S.; Dallery, Y., (2009), Centralized and decentralized control policies for a two-stage stochastic supply chain with subcontracting. International Journal of Production Economics. 117, 117-126.
- Stadtler, H., (2005), Supply chain management and advanced planning—basics, overview, and challenges. European Journal of Operational Research. 163, 575-588.



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