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Creating the MPS

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Creating the MPS

1. Purpose and Role of the MPS

The Master Production Schedule (MPS) translates the aggregate production plan into specific, time-phased build schedules for individual end items. It acts as the bridge between high-level planning and detailed material/ capacity scheduling. Mastering this concept helps you understand how the MPS drives MRP, guides material procurement, and ensures alignment with customer demand. It defines *what* will be produced, *in what quantities*, and *when*. MPS ensures stability, prevents schedule turbulence, and provides a mechanism for balancing service levels, inventory, and capacity. For CPIM, know the MPS's position within the planning hierarchy and its role in execution.

2. MPS Inputs and Required Data Accuracy

Creating an accurate MPS requires reliable inputs such as customer orders, forecasts, current inventory levels, BOM structures, routing information, and capacity data. Additional inputs include safety stock, planning fence policies, and production constraints. Understanding the importance of master data accuracy is essential because errors in lead time, lot size, or inventory records propagate through MRP, causing shortages or excess. CPIM evaluates your ability to identify input requirements, validate data, and understand how poor data affects planning outputs. Emphasis is on clean, timely, and controlled data sources.

3. Time Fences and Planning Zones

Time fences define the degrees of schedule flexibility in various time horizons—frozen, slushy, and liquid zones. The frozen zone restricts changes to protect capacity and

supplier commitments; the slushy zone allows controlled adjustments; the liquid zone offers maximum flexibility. MPS planners must know how to apply stabilizing policies, manage customer requests within fences, and work with sales to avoid unnecessary disruptions. CPIM tests your understanding of the purpose of time fences, how they stabilize schedules, and how businesses define fence lengths based on lead time, variability, and product characteristics.

4. Demand Time Fence and Planning Time Fence Rules

These rules determine whether actual demand (customer orders) or forecast drives planning in specific time periods. Inside the Demand Time Fence, customer orders replace forecasts to prevent overproduction; outside, forecasts dominate. Planning Time Fence defines when MPS changes require approval. Understanding how these fences maintain planning discipline, reduce nervousness, and improve customer service is essential. CPIM exams often test how MPS planners handle updated demand signals within fences, how to protect capacity, and how to ensure feasible schedules.

5. MPS Logic: Available-to-Promise (ATP)

ATP is a core output of the MPS that indicates the uncommitted inventory available to promise future customer orders. It helps customer service teams determine whether new demand can be accepted. ATP calculations depend on planned MPS receipts, existing customer commitments, and inventory balances. Knowing how cumulative and discrete ATP are computed and how ATP affects order acceptance decisions is vital. This concept is

often tested in CPIM via scenario-based calculations, emphasizing how ATP supports order promising, schedule reliability, and customer satisfaction.

6. MPS Stability and Managing Nervousness

MPS stability ensures predictable production signals, smoother capacity utilization, and better supplier performance. Nervousness occurs when minor plan changes cause large disruptions downstream. Controlling nervousness requires policies such as time fences, demand smoothing, forecast consumption rules, lot sizing discipline, and batch releases. CPIM expects you to explain why stability is essential, what practices stabilize schedules, and how excessive schedule changes impact inventory, labor efficiency, and supplier reliability. Understanding this helps improve execution accuracy and maintain alignment across the supply chain.

7. Lot Sizing Considerations for MPS Items

Lot sizing determines the quantity produced in each MPS cycle. Common lot sizing methods include fixed lot size, lot-for-lot, EOQ, minimum/maximum order quantities, and capacity-constrained planning. Choosing the right method balances inventory costs, changeover requirements, and service needs. CPIM tests your ability to evaluate lot sizing logic in relation to MPS stability, lead times, safety stock, and demand variability. Lot sizing also influences MRP signals, so understanding the impact on inventory and capacity planning is critical.

8. Rough-Cut Capacity Planning (RCCP) Validation
After creating the initial MPS, planners must validate it using RCCP to ensure that available key resources—labor, machines, suppliers—can support the proposed schedule. RCCP uses critical work centers, bottlenecks, and rate-based capacity analysis to detect overloads early. Mastering RCCP helps prevent unrealistic schedules that lead to shortages or missed customer commitments. CPIM evaluates how well you understand capacity profiles, constraint identification, load analysis, and corrective actions such as smoothing, overtime, outsourcing, or adjusting lot sizes.

9. Scheduling End Items vs. Planning Families
The MPS can be created at different planning levels depending on product variety, demand patterns, and stability requirements. Some industries schedule individual SKUs, while others schedule planning families or platforms to reduce complexity. Understanding when to use families (e.g., high mix, low volume) and when to use end items (e.g., low mix, high volume) is essential. CPIM tests the trade-offs, including forecast accuracy, BOM complexity, inventory impact, and execution feasibility.

10. MPS for Make-to-Stock (MTS) Environments
In MTS settings, the MPS is driven largely by forecast demand to ensure product availability. Key concerns include safety stock levels, order fill rate, seasonality, and capacity balancing. MTS MPS planning prioritizes high service levels and smooth production flow. CPIM expects you to understand how forecast accuracy, lot sizing, and time fences influence inventory performance and schedule

stability. Knowing how MTS differs from MTO and ATO environments is frequently tested.

11. MPS for Assemble-to-Order (ATO) Environments
ATO environments maintain inventory at the component or subassembly level and assemble only after customer orders arrive. The MPS often schedules key subassemblies or modules rather than finished goods. This reduces lead times while allowing customization. CPIM tests your understanding of planning bills, options/configuration management, and how MPS drives component availability for rapid assembly. Mastery includes knowing how ATO balances flexibility, inventory investment, and customer responsiveness.

12. MPS for Make-to-Order (MTO) and Engineer-to-Order (ETO)
In MTO/ETO environments, products are built only after receiving customer orders, making MPS more of a workload planning tool than a build schedule. The focus is on capacity reservation, long-lead procurement, and engineering release coordination. CPIM exams emphasize differences between MTO/ETO and MTS/ATO planning, especially in how demand signals, BOM variability, and lead time uncertainty shape MPS creation.

13. Forecast Consumption Logic
Forecast consumption replaces forecast quantities with actual customer orders to avoid double counting demand. CPIM requires mastery of backward, forward, and two-way consumption rules, and how they influence MPS quantities, inventory, and ATP. Consumption ensures the MPS reflects

real demand while preventing overproduction. This concept is often tested with example-based questions.

14. Safety Stock and Buffer Strategies in MPS
Safety stock compensates for demand and supply variability. When creating an MPS, planners must ensure safety stock policies align with service objectives, lead time, and variability. CPIM covers concepts such as safety time, buffer positioning, and the distinction between cycle stock and safety stock. Understanding buffer strategies is essential for creating stable and reliable master schedules.

15. Order Promising Rules and Priority Management
Order promising involves determining whether new customer orders can be delivered on time based on MPS and ATP. CPIM focuses on priority rules like FIFO, due-date–based scheduling, available capacity prioritization, and allocation strategies during shortages. Understanding how to manage competing priorities ensures fair and profitable scheduling decisions.

16. Pegging and MPS Visibility
Pegging identifies the source of demand for planned MPS orders—actual customer orders, forecasts, or dependent requirements. This visibility helps planners understand why a certain quantity is scheduled and whether changes are advisable. Pegging supports root-cause analysis, exception management, and scenario planning. CPIM tests your understanding of full, partial, and multi-level pegging.

17. Exception Messages and MRP Feedback
Once the MPS is created, MRP evaluates material feasibility and provides exception messages such as expedite, defer, increase, or cancel. Planners must interpret these messages and adjust the MPS accordingly. CPIM emphasizes the interplay between MPS and MRP, and how ignoring exception messages leads to shortages or excess inventory.

18. Finite vs. Infinite Scheduling Approaches
Infinite scheduling assumes unlimited capacity, while finite scheduling respects actual resource constraints. MPS often uses infinite loading initially, followed by RCCP or finite load checks. CPIM tests your understanding of feasibility, lead time variation, and decision rules when capacity is constrained. Knowing when to adopt each approach is vital for realistic planning.

19. MPS Horizon and Planning Buckets
Determining the appropriate time horizon and bucket size (daily, weekly, monthly) is essential for accurate planning. Long horizons support capacity visibility, while shorter buckets improve detail and responsiveness. CPIM focuses on the trade-offs between planning precision, administrative burden, and system performance. Understanding bucketization helps design efficient planning calendars.

20. Continuous Monitoring and MPS Performance Metrics
MPS performance must be evaluated regularly using metrics such as schedule adherence, on-time delivery, forecast accuracy, capacity utilization, and ATP reliability. Continuous improvement ensures alignment with strategic goals and

operational capability. CPIM emphasizes root-cause analysis and corrective actions to improve schedule integrity, reduce nervousness, and strengthen overall planning accuracy.

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