



Order Sequencing

Easily plan and re-plan order sequences, driving both production stability and flexibility

Business context

To maximize the reliability and efficiency of production cycles, planning teams must be able to define and implement a consistent production sequence for orders. Without this, production is likely to run below capacity — and meeting deadlines might require expedited delivery or overstocking in warehouses. The key to success is a stable, lean production cycle optimized and locked to maximize resource utilization. Often referred to the pearl chain model, production planners rely on this concept to ensure accurate forecasting to partners, as well as on-time completion of production runs for sub-component build and final assembly. Stable pearl chain planning considers multiple production steps and assembly lines, product personalization demands, and constraints like capacity and materials availability.

But since every production plan is subject to change — often at the last minute — order re-sequencing is inevitably needed. To succeed, planners can't rely on manual analysis alone to tackle the complexity of adjusting a sequence in real time to support rush orders, component shortages or equipment downtime. They need a fast, automated way to adjust sequencing and immediately lock the plan so production targets are met.

The Blue Yonder solution

That's where Blue Yonder Order Sequencing comes in. Powered by advanced optimization engines, it enables rapid concept testing and then generates a resource-optimized assembly sequence for use across all existing orders. The sequence considers all constraints — including those in the supply and transportation planning functions — so bottlenecks are eliminated at every step, and logistics and warehousing costs are controlled.



Key Benefits



Achieves sequence stability of up to 100%



Increases productivity by 1-2% via smoothing



Reduces safety stock and associated capital by 30-50%



Decreases rework by 30-50%



Increases throughput by up to 20%



Increases planning efficiency by up to 60%



Guarantees reliable compliance with production targets

Blue Yonder Order Sequencing is purpose-built to deliver the flexibility required in today's volatile production landscape, along with the precision and stability of the pearl chain model. With a consistent focus on optimizing efficiency, resource utilization, time and cost, Order Sequencing combines the strategic advantages of a stable order sequence with the practical benefits of an adaptable production scheduling solution.

Order sequencing was once a specialized capability managed by a handful of employees. But today any planner can use Order Sequencing to quickly define rules and restrictions, leaving Blue Yonder's advanced algorithms to do the heavy lifting. With Blue Yonder, planners' time can be devoted to higher-value work such as results checking.

Capability Details

Increased productivity for all assets

Order Sequencing identifies potential bottlenecks in assembly and offers recommendations to prevent disruptions. The result? Higher productivity from assembly lines and labor, as well as a more efficient usage of transportation and warehousing assets. The outcomes of a given order sequence are calculated from end to end, across all assets and assembly lines, for holistic optimization. Order Sequencing enables planners to analyze and sequence extremely complex bills of materials in minutes.

Significant time and cost savings

Blue Yonder Order Sequencing is built to distribute assembly work and time evenly down to the shop floor, driving smoother production. In contrast to other sequencing solutions — which only define production rules based on product characteristics — Order Sequencing goes deeper. It smooths the assembly times of a facility, a station or even a section of a conveyor belt holistically, across all facilities. The result is an optimized production program in terms of labor and equipment costs, assembly time and workload balancing.

A dynamic, user-friendly tool for rapid resequencing

While Order Sequencing is a sophisticated tool that models the complex process of assembly planning, it's also designed with users in mind. Its simple modeling methodology and rule sets are easily understood, and it provides drag-and-drop adjustment of parameters to



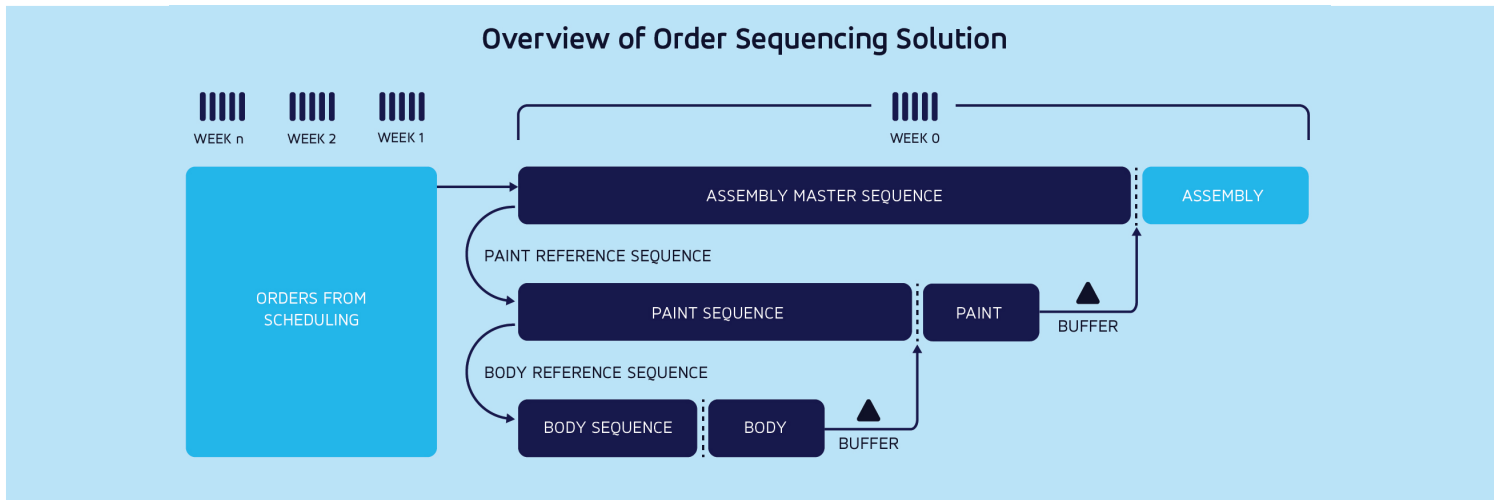
simplify concept testing. That allows faster action and reduces the potential for human error, which is critical when a disruption creates urgency.

Easy, intuitive rules customization

Order Sequencing gives planners the freedom to adapt the rules by which order sequences are created, at any time. Planners can select rules from a standard library, adapt existing rules to new conditions, or create entirely new decision factors. In addition to defining rules for the assembly line, planners can create rules for upstream and downstream functions. For example, they might create constraints for final assembly and paint line sequencing. While Order Sequencing is a robust tool right out of the box, it's also easily customized.

Flexibility meets stability


Operational flexibility is a growing imperative, as disruptions are only increasing. But that doesn't mean production planners must abandon the precision and stability of the pearl chain when adapting to rush orders or changes in demand. Order Sequencing enables rapid responsiveness — but it also minimizes the effects of any disruption with a targeted intervention. It's designed to smooth production, minimize safety stocks and rework, and otherwise restore stability following an exception.



Blue Yonder Order Sequencing supports a three-step workflow:

 **1. Analysis of the order pool and order selection**

All existing customer orders are transferred to Blue Yonder Order Sequencing. This smart solution gives the planning team a current overview of the entire, un-sequenced order pool. Planners can define their own rules, priorities and constraints that guide the solution’s AI-enabled decision engines as they ingest data and conduct analysis for this pool. The planning team can also add or remove orders from the pool at any time. The aggregated view provided by Order Sequencing provides planners with a real-time perspective on the quantity of jobs to be produced, critical job attributes and any capacity violations.

 **2. Modeling optimized sequencing**

Next, Blue Yonder Order Sequencing enables planners to choose from multiple sequencing models based on upfront, standard rules. For instance, planners can see the effects of different limit conditions on the capacity calendar. They can dynamically change the guardrails for the solution’s decisions and predict the effects of the new sequence in advance — in a risk-free simulated environment. Once planners choose the optimal

sequencing model, it’s immediately applied to the current order pool. The new sequence has been optimized via AI for all production steps and all functions, including supply and transportation.

 **3. Sequencing results analysis**

At any point, the planning team can check the results generated by Blue Yonder Order Sequencing and manually intervene if needed. Order Sequencing is highly user-friendly, thanks to its drag-and-drop functionality. As conditions change, it automatically flags any orders that should be considered for sequence correction, making production planning decisions easier and more accurate than ever. If any rule violations occur during rescheduling, the system displays them in real time. An optional scheduling function calculates the exact assembly time for each order.

