Release Notes: Visual Production Scheduler

Product	Visual Production Scheduler
Version	1.23
Build	1.23.0.0
Date	4 July 2024

List of enhancements

No enhancements in this release.

List of fixed bugs

No fixed bugs in this release.

Product	Visual Production Scheduler
Version	1.22
Build	1.22.0.1
Date	4 April 2024

List of enhancements

- Adjustment to the internal license evaluation and reporting.

Product	Visual Production Scheduler
Version	1.22
Build	1.22.0.0
Date	28 March 2024

List of enhancements

- The new VPS version enables the new AppSourceTransact capability, allowing users to **directly purchase VPS licenses through AppSource**. This enhanced connectivity provides a seamless experience for users to access and acquire the licenses they need. This also applies to existing customers that need to migrate to the new licensing system.
  For detailed information, please see the article in our knowledge base How to deploy the VPS into a cloud infrastructure?

Product	Visual Production Scheduler
Version	1.21
Build	1.21.0.0
Date	31 January 2024

List of enhancements

- New **Viewer Mode,** allowing to view the schedule without changing it. The viewer mode offers especial shop floor support by:
    - automatic updating on a regular basis
    - automatic scrolling
    - current date-time line (also available in the scheduling mode)

    The mode can be selected by the according option in the new "Editing Mode" area in the VPS setup. As a result, all options for changing the schedule are deactivated and the corresponding menus and functionalities – also for saving - are hidden. **However, changes to Business Central data are still possible via the Business Central pages!**

    Depending on the selected mode, the user can make settings for automatic reloading (Viewer Mode only), diagram horizontal scrolling (Viewer Mode only)), and current date-time line (both modes), in the newly added "Automatic Screen Updates" area of the Setup dialog.

    As usual, the progress window is displayed during reloading. If the user was previously working as a planner, changed data there and then switched to the viewer mode, **changed data will be overwritten without prompting** (saving is not provided for in the viewer mode).

- Comprehensive **performance improvements**, especially the scheduling performance was increased by up to. 30 %.

Product	Visual Production Scheduler
Version	1.20
Build	1.20.0.1
Date	6 October 2023

List of fixed bugs

- Due to some internal problems, the Feature ColorPicker was not available.

Product	Visual Production Scheduler
Version	1.20
Build	1.20.0.0
Date	30 September 2023

List of enhancements

- Use of flow fields within table extensions to simulation tables for tooltips, bar, and table labels:
  Until now, flow fields could be created in the original tables of Microsoft Dynamics 365 Business Central or its extensions and calculated as required via the *OnBeforeTransfer* events.
  Now, under certain conditions, flow fields can also be created directly in NETRONIC's own simulation tables and used for tooltips, bar, and table labels.
  Important: Only persistent records can serve as the basis for calculating the values in the formulas for the flow fields, i.e., values that come about as a result of interactive rescheduling in the planning board are not included in the calculation. In addition, there is no event that is triggered before the value of the flow field is calculated. Therefore, it is not possible, for example, to use a date filter to restrict the calculation to dynamic values. Therefore, the feature should only be used in combination with values from standard Dynamics 365 Business Central tables.
- Feature ColorPicker available for external use, meaning that the related procedures have been set to public.
- Option to show/hide an info bar below the Gantt chart, which indicates whether a view filter is active and, if yes, which one.

List of fixed bugs

- Fields could not be moved up in the tooltip definition.
- The symbols for additional information were not shown in the context menu of the production order routing line.
- In some cases, the error "You cannot base a date calculation on an undefined date" occurred upon loading after having changed the time range.

Product	Visual Production Scheduler
Version	1.19
Build	1.19.0.0
Date	30 June 2023

List of enhancements
- New context menu items to navigate within one routing.
- Performance enhancement of backwards calculation.

List of fixed bugs
- In some cases, scheduling backwards resulted in an endless loop (freeze).

Product	Visual Production Scheduler
Version	1.18
Build	1.18.0.0
Date	31 March 2023

List of enhancements

- Performance improvements (improved calendar entry handling)
- Three new options for bar coloring in the "Appearance" settings of the setup dialog:
  - Graded: nonworking times are displayed in a lighter shade of the main color
  - Solid: draws a continuous block in the main color
  - Only allocated times: nonworking times appear with white background

  The new options ensure that the label texts are always readable

- New field "Expected Capacity Need" on production order routing line level which we designed so that the value matches the BC field "Expected Capacity Need"

List of fixed bugs

- Enlarging the time range led to showing incomplete weekend grids
- The processing of capacity need entries with start and end time value of 00:00:00 and setup time/runtime set to =0 did not work correctly and led to unexpected white gaps in bars in the Capacity View
- Restore initial values of a production order routing line did not restore the setup time
- Invalid date error when opening the planning board
- Progress was calculated for too many operations in case of scheduling a released operation

Product	Visual Production Scheduler
Version	1.17
Build	1.17.0.0
Date	22 December 2022

List of enhancements

- **Extended info symbol functionality**: showing info symbols is now available not only for comments, but also for tool information, personnel information, and quality measure information. The feature can be activated in the "General" area of the VPS Setup that was enhanced by the new entry "Show info symbol on additional information."
According new items in the context menu allow to **directly open the dialog** where the information can be created and edited.
- Set **color of date line grids and weekends** in the "Appearance" section of the VPS setup.

List of fixed bugs

No fixed bugs in this release.

Product	Visual Production Scheduler
Version	1.16
Build	1.16.1.0
Date	5 December 2022

List of enhancements

- Like tooltips and bar labels, the **texts in tables** can now also be defined as having more than one line.
- Performance Improvements in Reload/Update scenarios
- Improved handling of errors inside the core visualization component.

Product	Visual Production Scheduler
Version	1.16
Build	1.16.0.0
Date	28 October 2022

List of enhancements

- **Finished operations** appear grayed out.
- It is possible now to select **several operations in one go**. This is done either by clicking them while pressing the Ctrl key or by drawing a frame around the desired operations. The feature has to get switched on in the VPS settings with the following options:
  - no multi select
  - select production order routing lines that are assigned to one capacity only
  - complete free multiple selection

List of fixed bugs

- In case of a reload being carried out directly after the initial loading, without an element having been clicked before, neither datelines of the production order nor the custom datelines were displayed when the element was selected.
- There was an issue with bar labels containing more than ten fields.

Product	Visual Production Scheduler
Version	1.15
Build	1.15.1.4
Date	7 September 2022

List of fixed bugs

- In case of several production order lines being linked by reservations and the last production order routing line having just one operation, the links were not shown.
- After applying the view filter, resources and links were missing.

Product	Visual Production Scheduler
Version	1.15
Build	1.15.1.3
Date	24 August 2022

List of fixed bugs

- The progress bar was not shown in the Capacity View.

Product	Visual Production Scheduler
Version	1.15
Build	1.15.1.1
Date	10 August 2022

List of fixed bugs

- Error when using a field number that does not exist for defining table or bar texts.

Product	Visual Production Scheduler
Version	1.15
Build	1.15.1.0
Date	4 August 2022

List of enhancements

- Comprehensive performance improvements: increasing performance gains with increasing number of data (production order routing lines)
- **Load** performance: 44% performance increase (sample data with 5500 production order routing lines) | 32% performance increase (sample data with 2800 production order routing lines)
- **Reload** performance: 54% performance increase (sample data with 5500 production order routing lines) | 42% performance increase (sample data with 2800 production order routing lines)
- Improved overall **update performance**.
- Performance improvements when **saving**. This concerns plans containing many production order lines with many reservations.

List of fixed bugs

- In the Production Order View, production order routing lines were displayed without their parent production order lines, whereas these production order lines then did not display their children.

Product	Visual Production Scheduler
Version	1.15
Build	1.15.1.0
Date	4 August 2022

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Product	Visual Production Scheduler
Version	1.15
Build	1.15.0.0
Date	30 June 2022

List of enhancements

- A new **info window** shows **progress information** while the data are being loaded/reloaded to the VPS.
- **Comments** that have been added to a production order routing line/operation in Business Central, are now indicated in the VPS by showing a **symbol** on the according bar.

List of fixed bugs

- When saving modified production order routing lines, the content of custom extended fields in the Business Central ProdOrderRoutingLine table was removed.
- Moving multiple elements horizontally did not work correctly.
- Fixed issue with handling the default calendar.
- The data filter on work center groups did not work properly on reloading after having defined the filter.
- There was a bug when moving direct parallel production order routing lines with an active view filter.

Product	Visual Production Scheduler
Version	1.14
Build	1.14.0.1
Date	20 April 2022

List of fixed bugs

- Extended fields values were lost in an extended BC Prod.OrderRoutingLine table when saving changed production order routing lines.

Product	Visual Production Scheduler
Version	1.14
Build	1.14.0.0
Date	1 April 2022

List of enhancements

- Warning symbols in the plan and in the table indicate sequence violations that can be caused by interactively moving operations.
- API:
  - New event **OnProvideAdditionalDateLine** to show/hide an additional date line that is not bound to an object.
  - The events **OnBeforeSchedulePORL, OnAfterSchedulePORL, OnBeforeSavePORL, OnAfterSavePORL** have been extended and improved in such a way that it is now possible for custom extensions to manipulate production order line data in the scheduling process and the transferring the changes to BC.

List of fixed bugs

- The position of production order routing lines with capacity need = 0 were not displayed correctly after saving and reloading.
- In some cases, overloads that start before the work date and last beyond it were not calculated correctly and in consequence, the according overload symbol sometimes appeared in the wrong place.
- The occurrence of last known error entries was reduced.
- The progress was not updated on (optimized) reload.
- Production order routing lines having been colored via the event **OnProvideProdOrderRoutingLineColor** were not reset after reloading, although they were not handled in the event.
- The processing of Capacity Need Entries with start and end time value of 00:00:00 and setup time/runtime set to =0 did not work correctly.
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Product	Visual Production Scheduler
Version	1.13
Build	1.13.0.0
Date	16 December 2021

List of enhancements

- **Enhanced sorting options**: In the Production Order View you can now also **sort by status**.
- **Comprehensive improvement in reload:** Only those production order routing lines which have been changed in Business Central get reloaded.
- **The collapsed/expanded states** of table elements and their curves get saved automatically now.
- A warning symbol is shown in the table header in case of a resource overload.
- API
    - New event **to reload after the view filter has been changed or switched off**. By subscribing the new custom event, a complete reload from Business Central is carried so that the current data is always visualized. Changes done by users can be saved.
    - New events **OnBeforeSchedulePORL, OnBeforeSavePORL, OnAfterSavePORL** which allow the user to intervene in the schedule (before) and saving (before and after) process.

List of fixed bugs

- Error that caused the message "The length of the string is x, but it must be less than or equal to y characters," was removed.
- The tooltips for histograms did not appear.
- The processing of Capacity Need Entries with end time value of 00:00:00 did not work correctly.

Product	Visual Production Scheduler
Version	1.12
Build	1.12.0.0
Date	15 October 2021

List of enhancements

- **Change sorting**: A new dialog, which is opened via a corresponding entry in the context menus of almost all elements, can be used to configure the sorting of the respective element. The configuration is also possible via user setup, like the configuration of tooltip, label, and table texts.
- **Tooltip delay:** You can now define a delay time after which the tooltip should appear. This is done in the user setup in the "Appearance" area.
- Editorial edit of tooltips for data fields and action buttons

List of fixed bugs

- Incorrect saving behavior in onBeforeTransferEvents for production orders and production order lines.
- Incorrect behavior of username query.
- Certain filter settings for reservation entries returned incorrect results.
- When an operation with a setup time > 0 and a runtime = 0 was moved to a machine with setup time = 0, the operation was not removed from its original place.
- The user could inadvertently adjust the end date of an operation.

Product	Visual Production Scheduler
Version	1.11
Build	1.11.0.0
Date	30 June 2021

List of enhancements

- **Enhanced search functionality:** you can now also search for production order routing lines and production order lines both in Production Order View and Capacity View**.** The respective view automatically scrolls to the first search result (the operation for production order routing line or to the first operation of the production order line i.e., operation without predecessor) which gets highlighted with a blinking frame and will also be selected so that the links are shown.
  The search dialogs can be personalized the same way as is known from Business Central by adding columns in the fields list.

- **Consider queue time**: the VPS now enables considering the queue time in the scheduling algorithm in the same way as is done in Business Central. The queue time is stored in the machine/work center and operates on the calendar or the relevant machine/work center. The feature can be enabled in the VPS setup.

- **Consider send ahead quantity**: in Business Central, the user can specify a send ahead quantity for an operation when defining a routing. This send ahead quantity that can be considered to start a dependent operation before the current operation is fully completed, can now also be used in the VPS, and can be enabled in the VPS setup.
  The algorithm used is slightly different from that of Business Central. The VPS algorithm tries to keep the working times on the following operation together without any gaps of nonproductive periods. By that the following operation may start later than expected, but therefore has a continuous workload.

- **Loading/reloading** performance improvements gained by optimizing the caching of dependencies.

- **Scheduling** performance improvements gained by optimizations in recursive scheduling process (parallel routings).

- Automatically generated translations were removed and exchanged by **manually created proper translations** in English and German. For partners wanting to create an own translation in their language, we provide the English xlf files as basis.

- API

- **The production order due date line** can now be customized via event (color, thickness, description color and dash). The event will be thrown in the load/reload phase of the VPS. If the event is not handled, the standard appearance will be applied.

- A new set of **OnBeforeTransfer** events was added. These events can be used to modify Business Central data before transferring them into our simulation data. This way, the customer can use flow fields, for example.
  The values of a field class Flowfield of standard BC are dynamically calculated and can be used in fields added by partners, but currently they are not triggered to get calculated during data transmission from Business Central to the SIM tables. By using the new events,

these fields can nevertheless be processed in a meaningful way and can be provided for tooltip, bar, and label texts. The partner enhances the BC as well as the SIM tables by new fields accordingly. The events occur on loading and are structured as follows:

*OnBeforeTransfer**BCTableName**(pClientGuid: Guid; var p**BCTableName**Record: Record "**BCTableName"** var pHandled: Boolean)*

BCTableName has to be replaced with the concrete table name. The following tables can be used:

- Production Order
- Prod. Order Line
- Prod. Order Routing Line
- Work Center
- Work Center Group
- Machine Center

The event delivers the BC record to be transferred. Then an own or an already existing FlowFilter can be set and FlowField values be calculated – the new value will be stored in the record. After this, the VPS will process the record and transfer it to the SIM tables. The calculated value is then used as well but it is also possible to describe "nonFlowFields" so that the BC data for the simulation can be modified. These data can be displayed in tooltip, bar, or table.

List of fixed bugs
- Now only reservations with the status "reservation" are loaded into the simulation and are considered. Thus, error messages in case of reservations not having the status "reservation" are avoided.
- If reservations and routings create double internal links between operations, this will no longer result in an error with stopping the code running.
- The selection color on the VPS setup page was always shown as "#ffa000", even though the color was changed, and the selection rectangle was using a different color.
- Brackets in the bar labels disappeared after switching to the "Setup" dialog.
- Moving an operation being in progress triggers a warning message where the user can decide whether to move the operation or not. Clicking on "No" had no effect and the action was carried out, nevertheless.
- Progress calculation by quantity was not based on the "Quantity (Base)" field of the production order line.
- Progress calculation by time now considers the "Capacity Unit of Measure Code" when summing up the posted time quantities.

Product	Visual Production Scheduler
Version	1.10
Build	1.10.0.0
Date	31 March 2021

List of enhancements

- The VPS was extended by an **API** with which the customer can change the behavior of the app via extensions, e.g., *ScrollToDate, setProdOrderRoutingLineCustomColor, setProdOrderRoutingLineSelection* .

List of fixed bugs

- By moving the last operation in the Capacity View from machine one to another machine the histogram of a machine without operations was not updated.
- If a data filter resulted in only one resource the histogram showed the load but no operations.
- Using a view filter on operations not only filtered them out in the diagram but also in the histogram.
- Error when working with quantities in decimal format (e.g., 1,1).

Product	Visual Production Scheduler
Version	1.9
Build	1.9.0.0
Date	17 December 2020

List of enhancements

- **Custom fields**: In addition to the default fields available in tooltip, label, and table text it is possible now to equip custom fields with data to use them in tooltip, bar label and table text.
- Due to a smarter calculation of the capacity curve, we gained considerable loading and interaction **performance improvements**.
- Improved reservation entry handling.
- Support of alternative connection to Microsoft's Base App. Requires Dynamics 365 BC v16.4 and higher.

List of fixed bugs

- No fixed bugs in this release.

Product	Visual Production Scheduler
Version	1.8
Build	1.8.0.0
Date	2 October 2020

List of enhancements
- New "Histogram" view available, showing the **capacity load** of the work centers and their respective machine centers.
- The **texts in tables** can be **designed individually** in analogy to tooltips and bar labels.

List of fixed bugs
- No fixed bugs in this release.

Product	Visual Production Scheduler
Version	1.7
Build	1.7.0.0
Date	22 June 2020

List of enhancements

The bar label can be customized in the "Setup" dialog. The new "format strings" allow, among other things, the multi-line display of the label or the separation of the individual fields by a "|". In this context, the new feature "Extendible bar text separator" was added that is to be implemented by the partner.

- The setup dialog was enhanced by the option to select the view the VPS shows upon starting.
- The following **settings get saved** upon closing the VPS and are active the next time it gets started:
- Show/hide setup times
- Show/hide work free periods
- Histogram aggregation
- New section "Appearance" in the "Settings" dialog where you can specify
- The zoom factor in %
- **Layout**: In the "Compact" layout, the display is reduced as much as possible to provide a **better overview, especially with large plans**
- Improved handling of reservation entries & linked production orders (incl. safety lead time).

List of fixed bugs

- Incorrect behavior regarding the language-dependent settings.
- It was ensured that UTF8 text coding is used internally.

Product	Visual Production Scheduler
Version	1.6
Build	1.6.0.0
Date	3 April 2020

List of enhancements

- Considerable performance improvement for updating graphical objects by only updating objects needed for the current view and not for the respective other.
- A new option in the "Histogram" menu allows for aggregating histograms by second.
- Tooltip customizable by a new dialog in the "Setup" menu.

List of fixed bugs

- Work center groups now appear with an underlying complete non-working times calendar in grey.
- Using the VPS in the Windows Client lead to problems with expanding/collapsing production orders.
- After clicking "Open in new window," the VPS appeared without data.

Product	Visual Production Scheduler
Version	1.5
Build	1.5.0.0
Date	6 February 2020

List of enhancements

- Every time you reload data (also when filtering) and your plan has unsaved changes, a message box pops up, asking whether you want to save them or not.
- The time in the update line now also shows seconds.
- Some minor modifications of the tooltip:
  - Reduced tooltip for curves.
  - Different tooltips for operations (depending on operation status/progress).

List of fixed bugs

- When scheduling via context menu (predecessors, successors), the current operation will not be scheduled any more.
- Bug fix regarding visualization of date and time.

Product	Visual Production Scheduler
Version	1.4
Build	1.4.0.0
Date	27 November 2019

List of enhancements

- New options in the "Setup" dialog:
  - Determine whether the "Data Filter" dialog comes up on starting the VPS or not. If not, the last selected filter will be activated.
  - Specify whether to activate the last selected view filter at the start.
  - Specify whether to show links between production order lines or not.
- Schedule predecessors/successors: Click the according new context menu items if moving an operation shall also affect its linked preceding and/or succeeding operations to the effect that they are moved accordingly (if you have ticked the according option in the "Setup" dialog, also across production order lines).
- The new context menu item "Restore to initial values" allows you to restore the original values of the selected operation in case you have not yet saved your modifications.
- A new date line in both views now indicates the time when your plan was last updated.
- Capacity calculation by day, week, or month via a new item in the menu ribbon: The capacity curve will aggregate the occupancy on the selected period.
- If an operation of a released production order with purchase order gets moved, a warning message occurs letting you decide whether to move it or not.
- An operation with setup and run time = 0 gets visualized in the capacity view by a vertical line, because no capacity is used.
- Optimized loading of calendar entries.

List of fixed bugs

- Bug fix regarding identification of objects between visualization and the Dynamics Business Central database.

Product	Visual Production Scheduler
Version	1.3
Build	1.3.0.0
Date	9 October 2019

List of enhancements

- New option "Show partial Prod. Order Lines" in the "General" area of the "Setup" dialog: Up to now, the standard procedure in the VPS was to visualize a PO line partially when, by setting filters, a single operation of a PO line was filtered out. Now the standard is to only visualize complete PO lines. By ticking/unticking the new option you can switch between the two behaviors.
- New view filter, to be reached via the "Actions" menu.
- When starting the VPS, a dialog pops up where you can edit, create, and apply data filters. After having started the VPS, the settings of the currently active filter can be edited in the "Setup - Edit Data Filter" dialog.
- Multiple data and view filters can be created, named, and stored.
- When clicking an operation in the Capacity View, a due date line in the color of the operation's status appears.
- A new context menu item allows to show the currently marked operation in the respective other view.
- Saving the views: For each view, the VPS memorizes which groups were expanded and which collapsed as well as the vertical scroll position. If the user switches between views or reloads data, he will always return to the same position as before
- .

List of fixed bugs

- Incorrect processing of ProdOrderCapNeed entries with end time 12:00 AM.
- Family orders are now correctly processed and displayed.
- When opening the VPS Setup page by Business Central search, the settings of the current user and no longer of the standard user are shown

Product	Visual Production Scheduler
Version	1.2
Build	1.2.0.0
Date	30 August 2019

List of enhancements

- In the Capacity View, the setup time can be visualized with the help of a new context menu.
- Non-working periods can be shown or hidden. For this, a new item has been added to the "Actions" menu.
- A data filter was added that applies already at the data interface to reduce the amount of loaded data. All filter setting options can be found in the new "Edit Data Filter" dialog that can be opened from the "Setup" dialog. You can filter by
    - Work Center Group
    - Work Center
    - Machine Center
    - Production Order
- Some improvements in the "Setup" dialog.
- Menu item "NETRONIC Promoted" renamed to "NETRONIC VPS."

List of fixed bugs

- When the option "Autoschedule Predecessors" and/or "successors" was activated in the "Setup" dialog and an operation was moved interactively, the message warning against moving operations already having started did only appear for the operation currently grabbed by the mouse and not for its potentially affected predecessors and successors.

Product	Visual Production Scheduler
Version	1.1
Build	1.1.0.0
Date	24 July 2019

List of enhancements

- Option of displaying a progress bar for released production orders below the bar.
  - New option in the "Setup" dialog to specify whether to display a progress bar at all or to show the progress by quantity or by time.
  - The color of the progress bar depends on the routing status and the percentage of completion:
    - Status "finished": black
    - Status "none," "planned," "in progress":
      - Progress by quantity / by time < 100% : grey
      - Progress by quantity / by time > 100 % : red
  - When trying to move operations "in progress," a warning pops up.
- Improved loading performance.

List of fixed bugs

- Operations with status "finished" cannot be moved any more.

Product	Visual Production Scheduler
Version	1.0
Build	1.0.0.0
Date	21 June 2019

Key features

- Two views:
    - The Production Order View
        - shows an overview of all production orders, grouped by status and production order number
        - allows to drill-down into production order lines and operations.
    - The Capacity View
        - shows an overview of all capacities and their allocations by Work Center Groups, Work Centers, and Machine Centers.
        - indicates capacity bottlenecks by load curves/histograms that can be shown on the Work and Machine Centers
- The bars get different colors according to their different production order status.
- Interactive moving of operations with simultaneously moving predecessors and/or successors.
- After interactive rescheduling, potential delivery date conflicts are visualized.
- Visualization of linked operations within a production order line, a production order, and across different production orders.
- Complete integration into the standard Manufacturing module of Dynamics 365 Business Central.
- Visual decision support in real-time.

Technical Details

- Available for Microsoft Dynamics 365 Business Central.
- Fully designed and implemented as future prove AL Extension.
- Designed for the Manufacturing module.
- Integrated as page in Microsoft Dynamics 365 Business Central.