EPSON

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TrueOrder™ KDS

Analytics

About this Guide
This guide details the use of the Analytics feature of TrueOrder KDS, including device configuration and server requirements. The webserver taken as an example is Apache2 httpd, but the concepts apply to all. The feature is available in KDS software v3.36 and above.

Intended Audience
This guide expects familiarity with setting up a webserver such as Apache2 httpd, Nginx, IIS or similar.

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1. INTRODUCTION

1.1. Analytics on TrueOrder KDS

TrueOrder KDS parses data received from the Point of Sale (POS) and stores items, modifiers, special instructions, check numbers etc. in an internal database. For customers or ISV partners wishing to get quantitative data from their KDS, the traditional method is to use the KDS API. With KDS v3.36 and later, we introduce the ability to post order data to a remote server maintained by the customer or ISV. The current implementation expects a simple HTTP(S) file server with basic authentication that can accept data files from the KDS, and host the accompanying TrueOrder Dashboard Web Application provided by Epson.

Data is sent to the remote server on an hourly basis from the primary KDS device (aka "POS Connected" device in the Configuration Utility) only. It includes:

- A list of all orders bumped in the last hour.
- Item names for each order. (Note: modifiers or special instructions are not included.)
- Start and End times for each order.
- An indication if a particular order was voided.
- Average bump times for each station.

1.2. System Architecture

The primary requirement is for the KDS primary device to have access to the remote server.

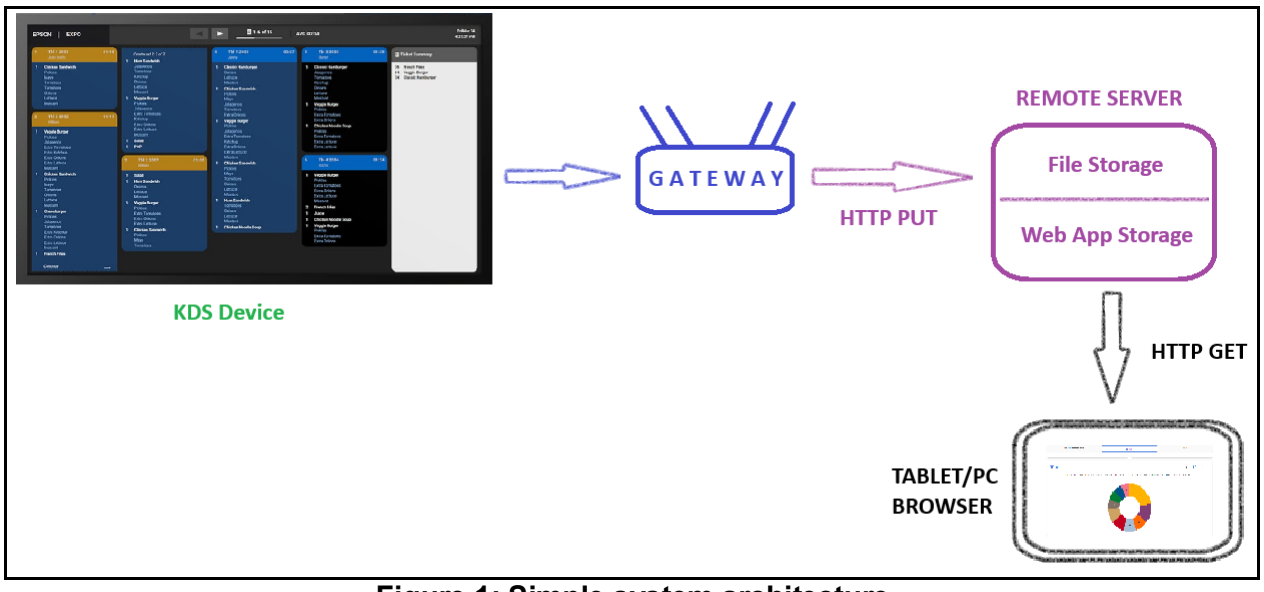


Figure 1: Simple system architecture

1.3. Sample KDS Analytics Web App

Epson provides a sample KDS Analytics web application shipped as a collection of html/javascript/css files. (Please contact your Epson representative to obtain a copy.) The application is intended to be hosted on the remote server, under the same document root where the KDS devices write data (as per Section 3.1).

The sample web application will be provided as a .zip archive containing a `[dist]` folder, which contains all required files to be hosted.

To upgrade the application to a newer version, use the Linux "rsync" tool or the Windows "robocopy" tool to copy new files over the old release. IMPORTANT: you want to preserve the following paths when upgrading:

```
[document root]/../configuration/config.json      # The application configuration path
[document root]/../assets/report/data             # The (default) data storage path
```

1.3.1. Single Tenant Design

The KDS Analytics web application assumes a single tenant setup, meaning that for each customer there shall be an isolated webserver and/or virtual host. Multiple sites (i.e. KDS systems) belonging to the same customer can, however, be configured under the same webserver access. This arrangement avoids different customers having access to others' data.

1.3.2. Web App Configuration

The app includes a simple configuration JSON file under this relative path:

[archive]/dist/configuration/config.json

Table 1: Sample KDS Analytics web app configuration fields

Field	Description
data_path	This is the relative path where the KDS devices are permitted to PUT data files. Default is "`assets/report/data`", relative to the webserver's document root.
cacheExpirationTimeInMinutes	This describes the cache expiration delay for the web app, allowing the browser to drop temporary data used by the web app. Default is 5 minutes.
authRefreshIntervalInMinutes	This dictates how often the application shall refresh its data and trigger a fetch of new data files from the remote server. Default is 30 minutes.
sites	**IMPORTANT!** It is mandatory to customize this field. It is a JSON array of all the sites covered under *this* unique instance of the web app. The site name used here must match the "Site Name" configured on each KDS that you want to show here. For example, consider a restaurant manager who handles 3 sites. The Site Name in each of those 3 KDS is set to "Sunny Pizza 1", "Sunny Pizza 2" and "Sunny Pizza 3". In order to show all 3 sites in the sample web app, this field will be as follows: "sites": ["Sunny Pizza 1", "Sunny Pizza 2", "Sunny Pizza 3"]

2. USAGE

2.1. Home Screen

When users access the system, they will be presented with a home screen. The main screen will feature a dashboard with statistics, charts, and filters for more specific searches and analyses.

2.1.1. Dashboard

When accessing the system, the screen below should be displayed if there is data for the applied filter.

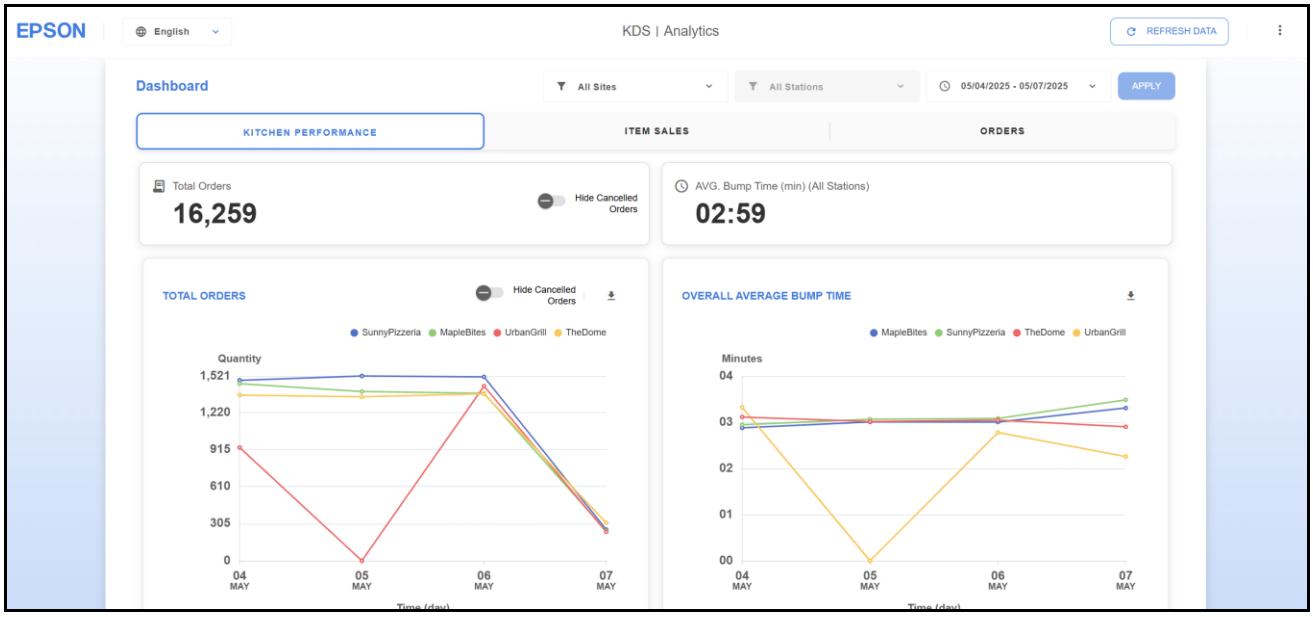


Figure 2: Typical dashboard view

2.2. Top Bar

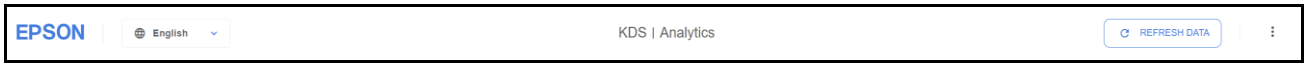


Figure 3: Top bar

Language Selection - On the left side of the header, there is a dropdown menu that allows users to select the language for the system. The system supports both English and French languages. Before a language is set, the system will default to the browser's language settings, automatically choosing either English or French based on available internationalization options.

Refresh Data: On the right side of the header, there is a button to refresh the data, allowing the statistics and charts to update with any new data generated by the KDS.

User Manual: Link to open a PDF document containing this User Manual.

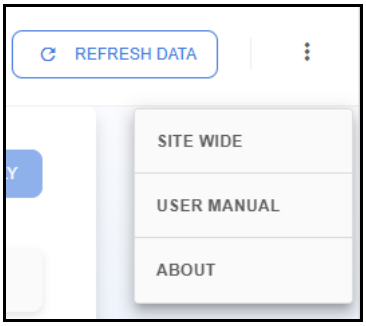


Figure 4: User Context Menu

2.2.1. About

This **About** section provides essential information about the **KDS Analytics** application. This dialog includes:

- Application Name: KDS Analytics.
- Copyright Information: Displays the copyright details and the company name.
- Version Number: Indicates the current version of the software
- Open-Source Package Licenses: A link (“License”) is provided to access a PDF document listing the open-source libraries used in the project.

Figure 5: The “About” modal

2.2.2. Site Wide

The **Site Management** section allows users to manage and configure sites within the KDS Analytics system. This interface provides the ability to add, edit and remove site entries easily.

Adding a New Site: Users can insert a new site name in the input field and click the **"ADD"** button to register it in the system.

Editing a Site: To modify an existing site name, users can click the edit icon next to the corresponding site entry, update the name and save the changes by clicking the check icon.

Removing a Site: If a site is no longer needed, users can delete it by clicking the trash icon under the "Actions" column. It will be necessary to confirm the deletion on a popup dialog box that will be shown after clicking the trash icon.

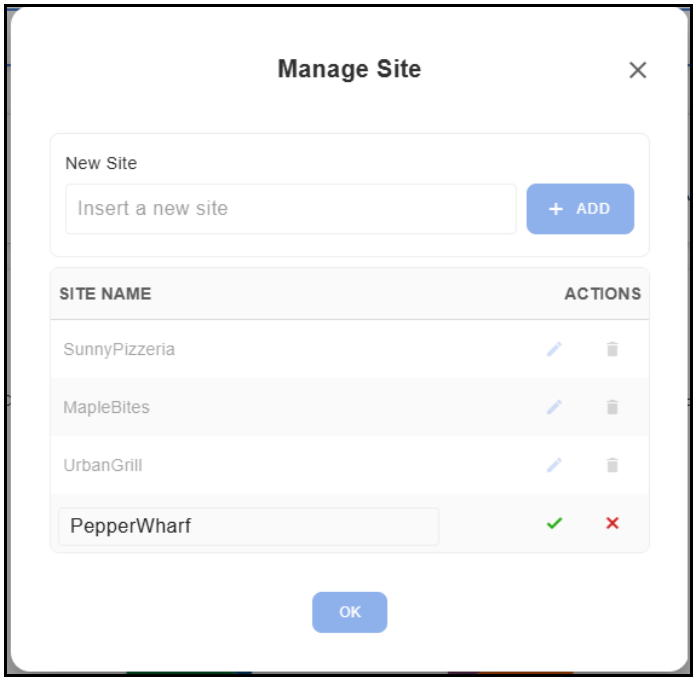


Figure 6: Manage Site modal

Note: Sites that are configured via configuration file (config.json) will appear as disabled in the list, as they cannot be edited or removed through this modal. Only the sites that have been added using this modal can be edited.

Note: Sites added through this modal work locally and are not persisted in any file, so once the user stops using the system or closes the browser, this data will likely be lost.

2.3. Filters

Figure 7: Filters

The filters consist of three fields: **Sites, Stations, and Time Period**. To retrieve information, the user must make selections in all three fields and then click "Apply" to activate the filter.

The "Apply" button will be enabled whenever there is a change in any of the filter fields, indicating that a new search is required to update the data based on the modified filter.

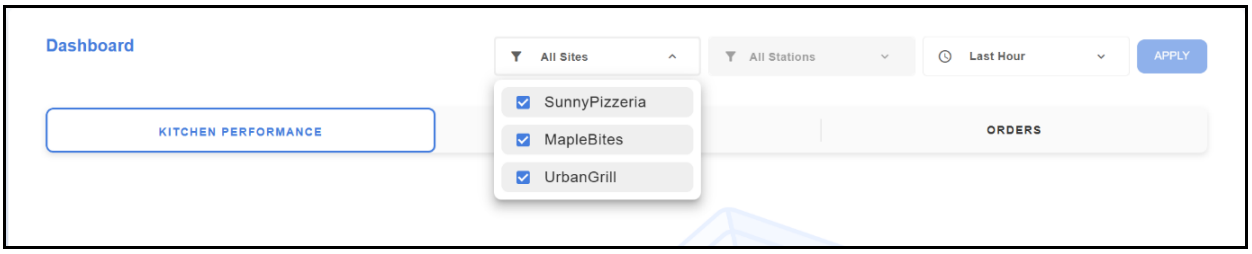


Figure 8: Site field

In the Site field, multiple sites can be selected. The Station field is affected based on the selections made in the Site field. If more than one site is selected, the Station field will display all stations available, as the charts will show a comparison across the selected sites.

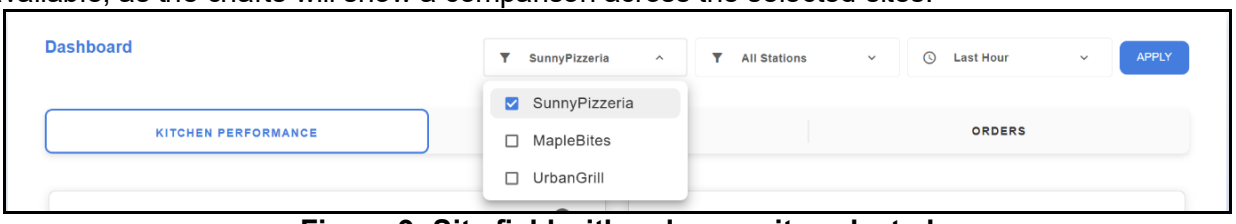


Figure 9: Site field with only one site selected

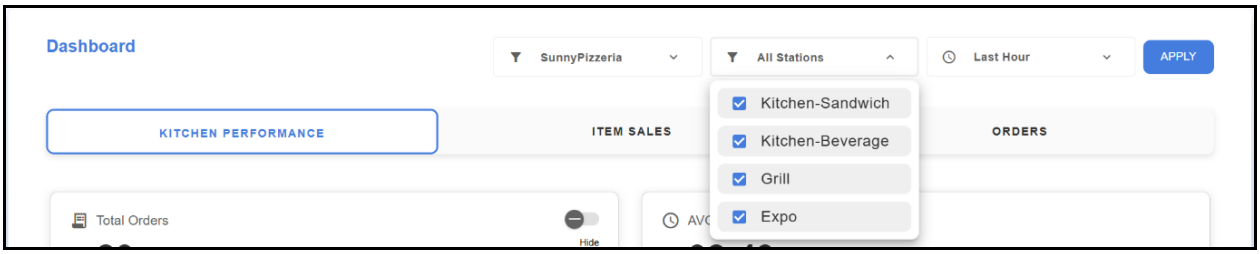


Figure 10: Stations' list (example site: SunnyPizzeria)

If only one site is selected, the Station field will be enabled and will display all stations for that specific site. The charts will then show a comparison of the stations within this selected site.

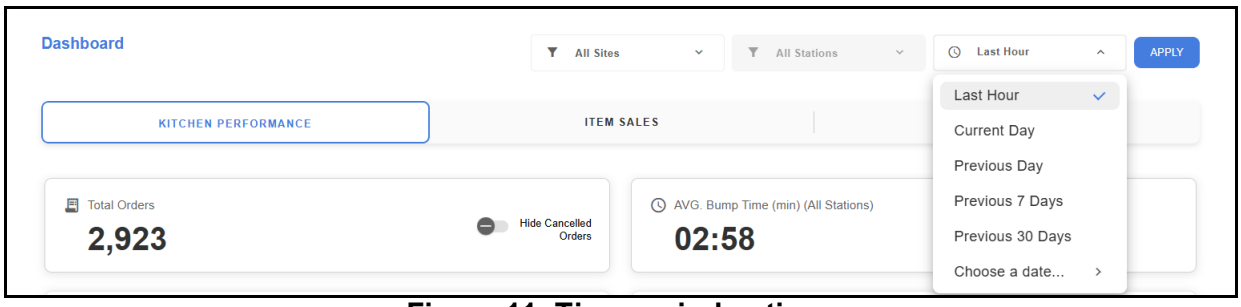


Figure 11: Time period options

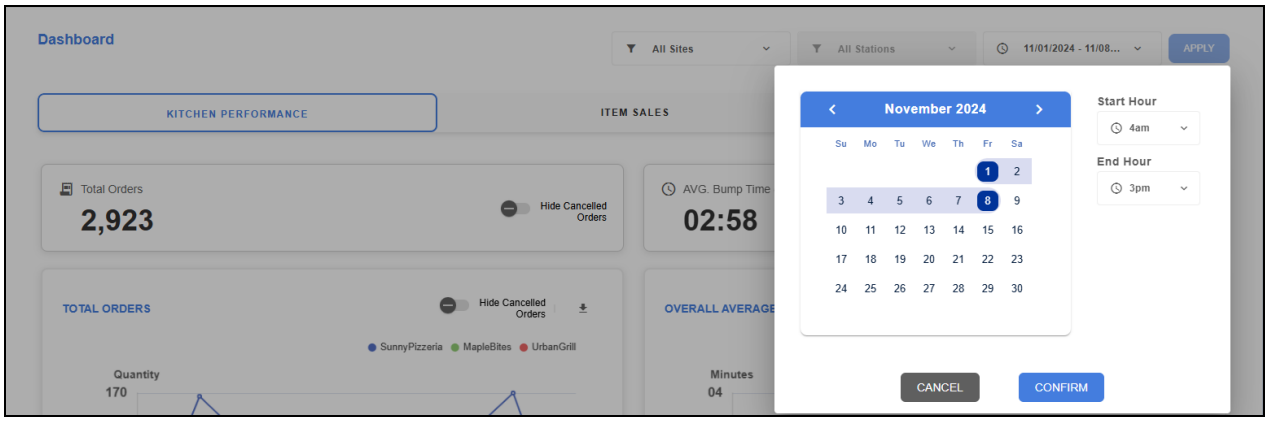


Figure 12: Date/Time picker for custom period selection

In the Time Period filter, there are predefined periods available, as well as the option to select a specific date and time for both the start and end of the period.

Last Hour: Updates the dashboard charts with data from the previous hour, e.g., if the current time is 10:20, the filter will show data from 9:00 to 10:00.

Current Day: Updates the dashboard charts with data from the past hours from the current day.

Previous Day: Updates the dashboard charts with data from the previous 24-hour period, from 12 am to 12:59 pm of the previous day.

Previous 7 Days: Updates the dashboard charts with data from the previous 7 days, starting from 12:00 am of the first day and ending at 12:59 pm of the previous day.

Previous 30 Days: Updates the dashboard charts with data from the previous 30 days, ending at 12:59 pm of the previous day.

Choose a date...: Presents a modal with a date time picker calendar and two additional filters for selecting the 'Start Hour' (from the first selected day) and 'End Hour' (from the last selected day).

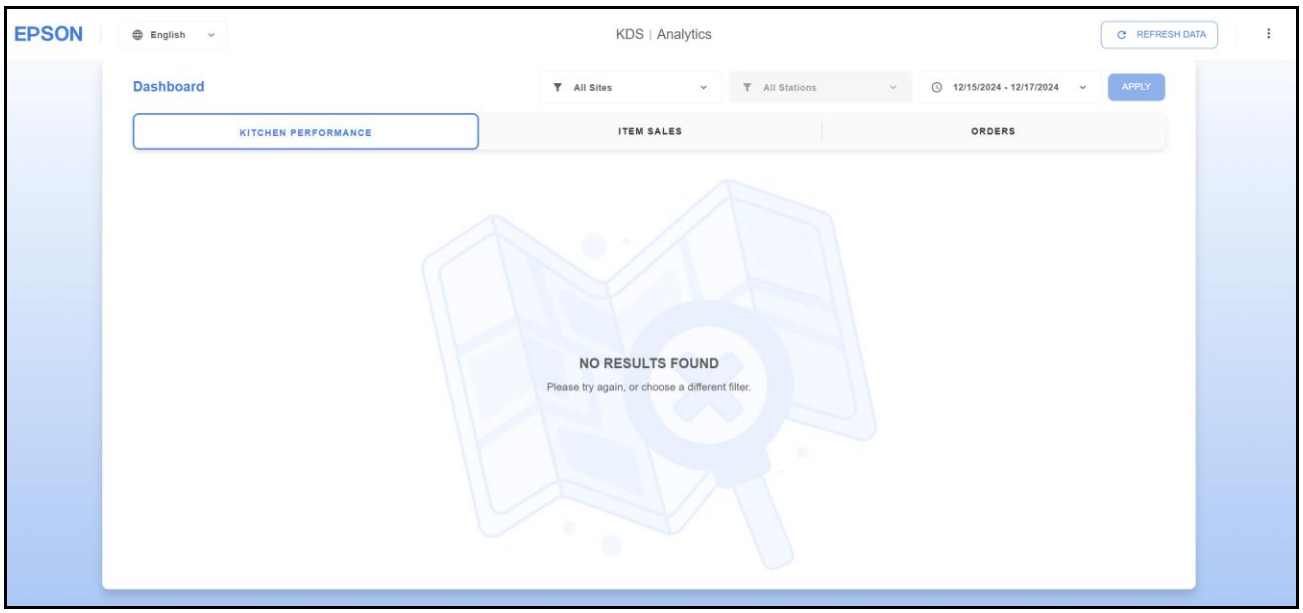


Figure 13: No Results Found page

If no data is found for the selected filter combination, a "No Results Found" page will appear, alerting the users and suggesting they try again with different filter selections.

2.4. Kitchen Performance Tab

This tab displays comprehensive performance data for sites and stations, including order details, averages, and comparisons.

2.4.1. Kitchen Statistic Boxes

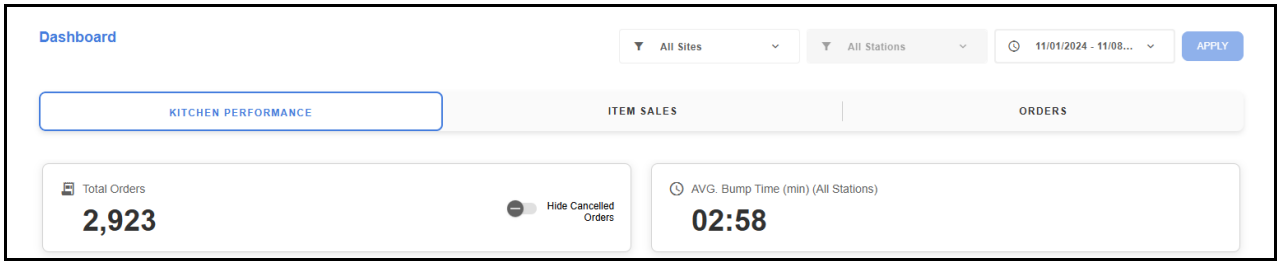


Figure 14: Statistics box

There are two statistic boxes: Total Orders and AVG Bump Time. Each reflects global statistics based on all the stations from the selected sites.

- **Total Orders**: The total number of orders placed at the sites.
    - The 'Hide Cancelled Orders' toggle allows you to include or exclude cancelled orders from the total order count.
- **AVG Bump Time**: The average bump time across the selected sites.

2.4.2. Kitchen Charts

2.4.2.1. Average Bump Time

This chart displays the average bump time across all selected sites. A lower bump time indicates faster order processing, while a higher bump time may suggest delays in the kitchen workflow. The graph provides insights into the efficiency of the kitchen operations and helps identify areas for improvement in order handling.

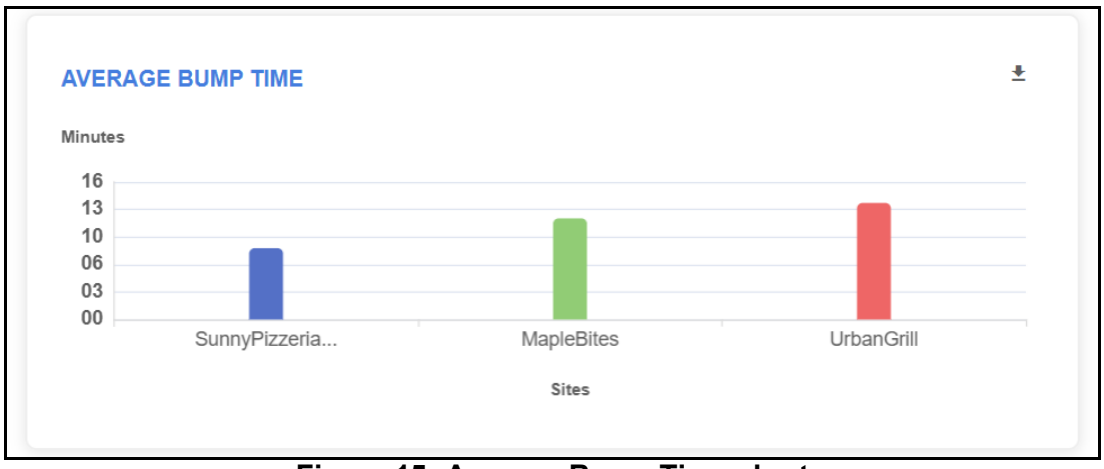


Figure 15: Average Bump Time chart

2.4.2.2. Overall Average Bump Time

This line chart displays the overall average bump time (in minutes) for multiple selected sites over a period. Fluctuations in the lines highlight changes in operational efficiency over time, helping to identify days with potential bottlenecks or improvements. This chart is a tool for monitoring overall performance trends and comparing efficiency across different sites. When only one site is selected in the filter, the chart will display the stations of that site.

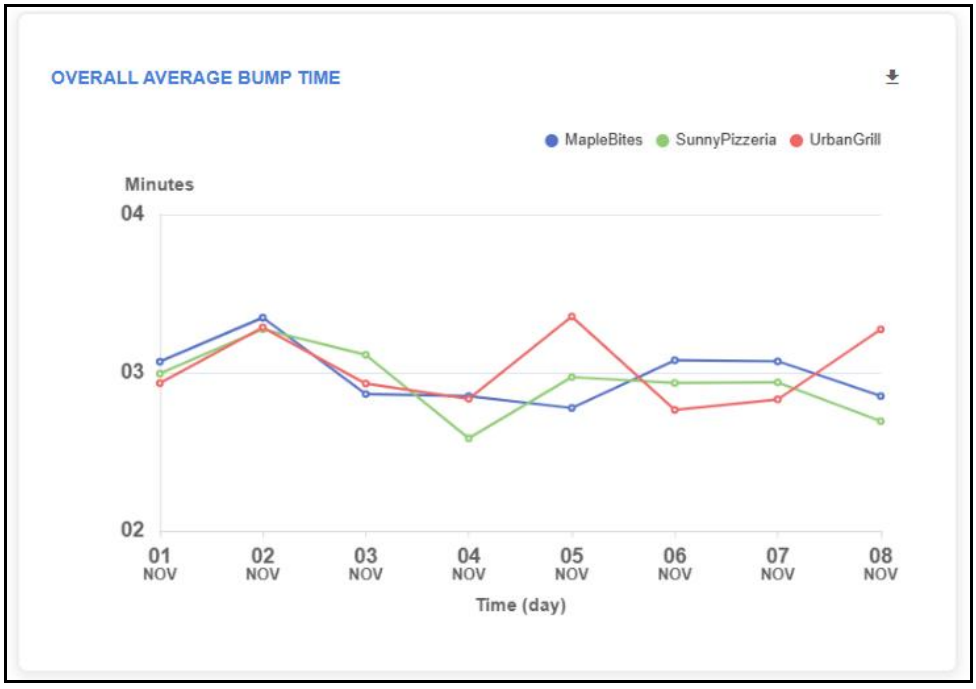


Figure 16: Overall Average Bump Time chart

2.4.2.3. Total Orders

This chart displays the total number of orders processed over a specified time across all selected sites. Each line represents a different site, allowing users to compare the volume of orders handled by each location. By analyzing the trends, users can identify peak periods, assess site performance, and evaluate overall order flow.

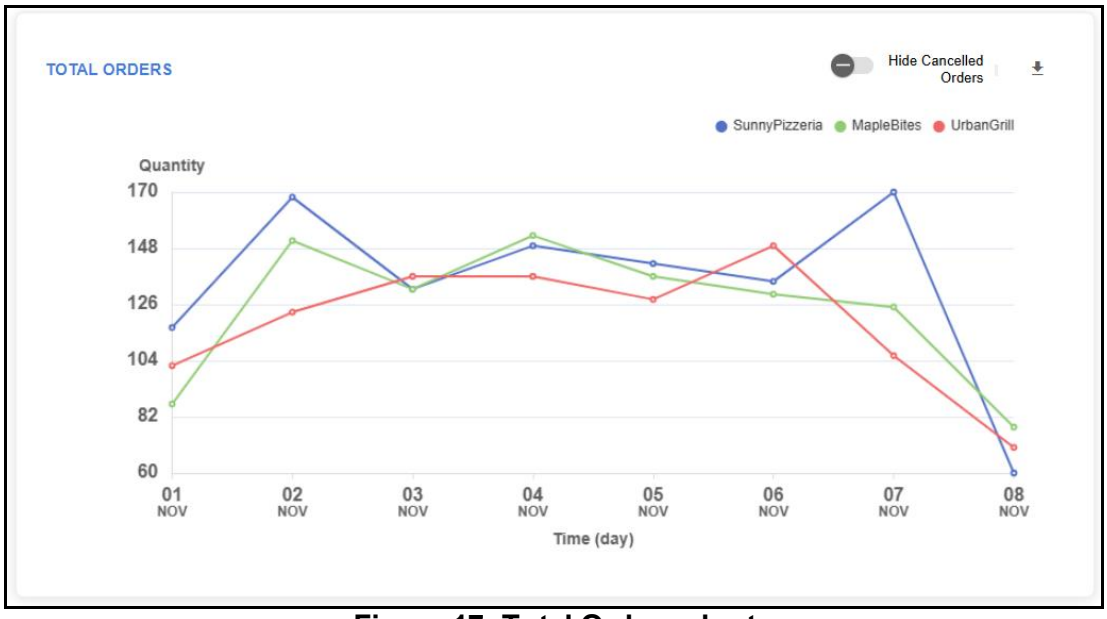


Figure 17: Total Orders chart

2.5. Item Sales Tab

This tab provides a detailed overview of item sales performance. This tab helps users understand overall sales trends, item popularity, and contributions to total sales. It supports decision-making for inventory planning and menu optimization.

2.5.1. Item Sales Statistic Boxes

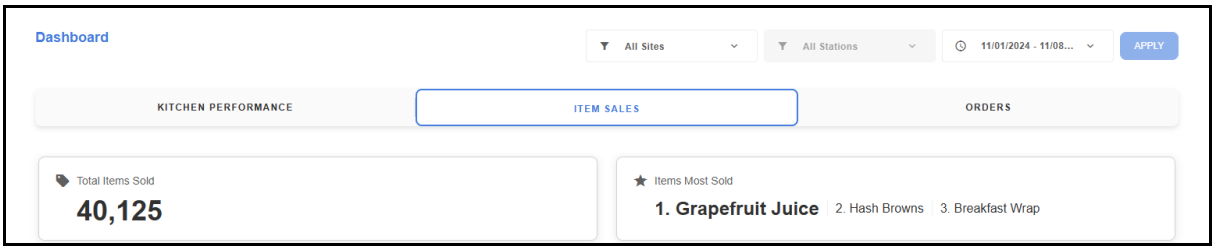


Figure 18: Items Sold statistics boxes

There are two statistic boxes: Total Items Sold and Items Most Sold. Each reflects global statistics based on all the stations from the selected sites.

- **Total Items Sold**: The total number of items sold across the selected sites and stations.
- **Items Most Sold**: The top three items most sold, displayed with their respective ranks (1st, 2nd, 3rd), based on the total sales during the selected time period.

This layout allows users to quickly assess overall item sales and identify which items are performing the best.

2.5.2. Item Sales Charts

2.5.2.1. Item Sales

This **pie/donut chart** displays the proportion of sales for items recorded in the system. Each segment of the chart represents a specific item, with distinct colors to facilitate identification. The legend at the top of the chart shows the item names corresponding to the colors in the chart.

Additional Features:

"View All Items" button allows you to expand or access more details about the listed items.

This chart is useful for quickly visualizing which items have higher or lower sales volumes, aiding in performance analysis and decision-making.

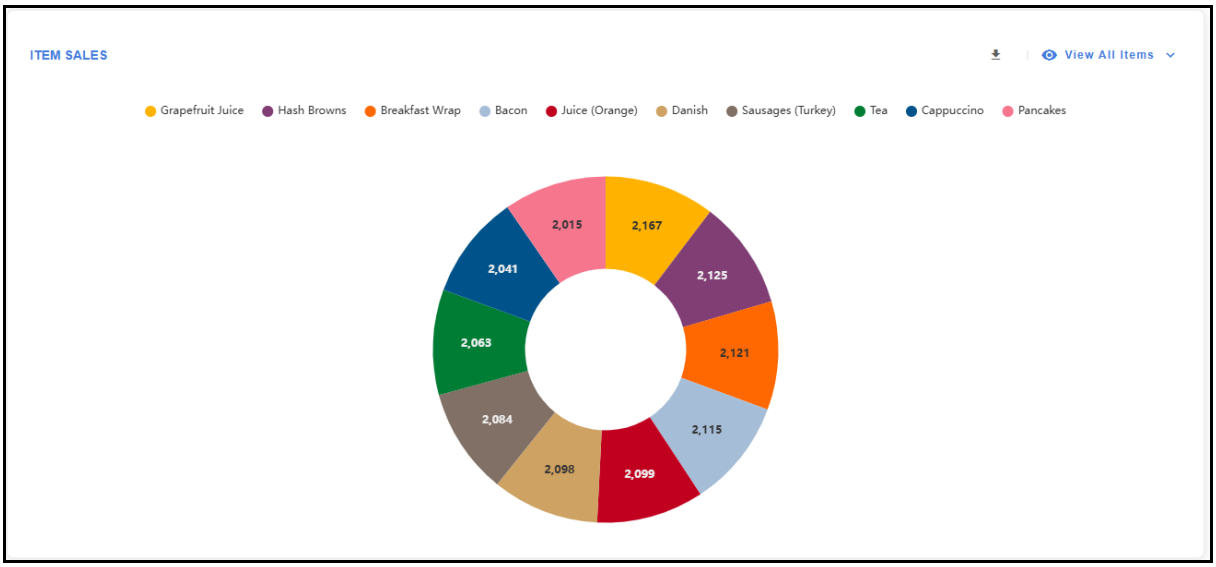
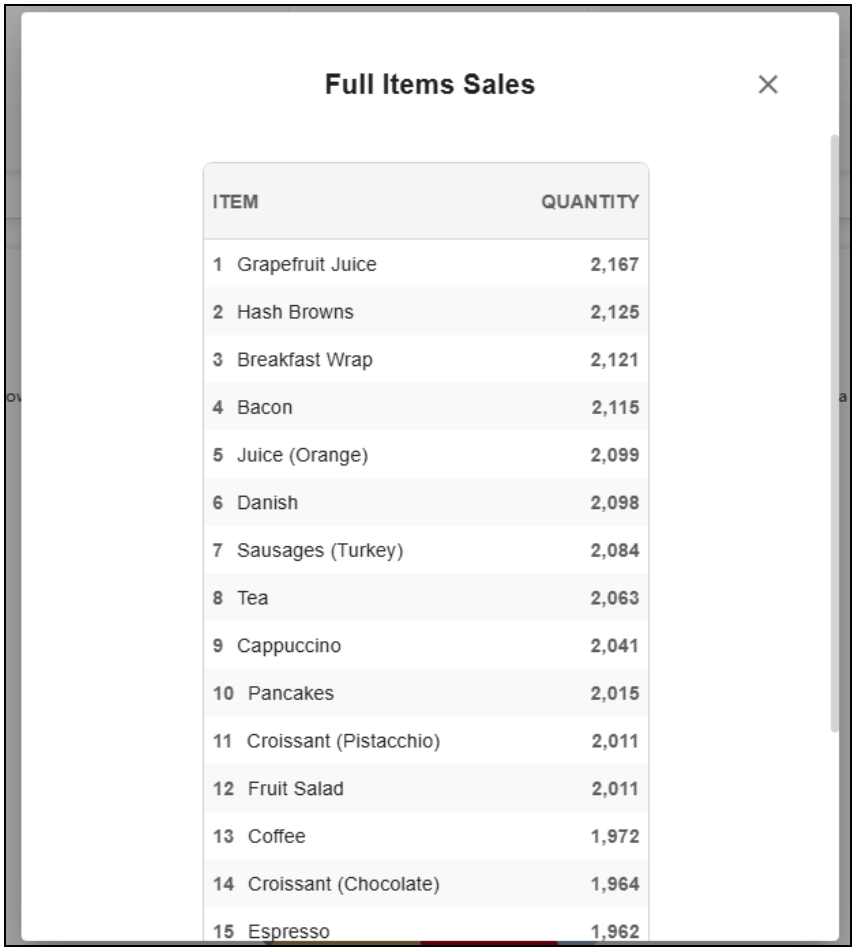


Figure 19: Item Sales chart



ITEM	QUANTITY
1 Grapefruit Juice	2,167
2 Hash Browns	2,125
3 Breakfast Wrap	2,121
4 Bacon	2,115
5 Juice (Orange)	2,099
6 Danish	2,098
7 Sausages (Turkey)	2,084
8 Tea	2,063
9 Cappuccino	2,041
10 Pancakes	2,015
11 Croissant (Pistacchio)	2,011
12 Fruit Salad	2,011
13 Coffee	1,972
14 Croissant (Chocolate)	1,964
15 Espresso	1,962

Figure 20: View All Items modal

2.5.2.2. Most Ordered

This line chart shows the daily quantities of the three most ordered items recorded in the system over a specific time range. The x-axis represents the dates, while the y-axis indicates the quantity of items ordered. Each line corresponds to a specific item, distinguished by a unique color.
The legend at the top right identifies the items corresponding to each color. Data points along each line show the exact quantities ordered on the respective days. By observing the trends, users can identify which items were most popular on specific dates and compare their performance over time.

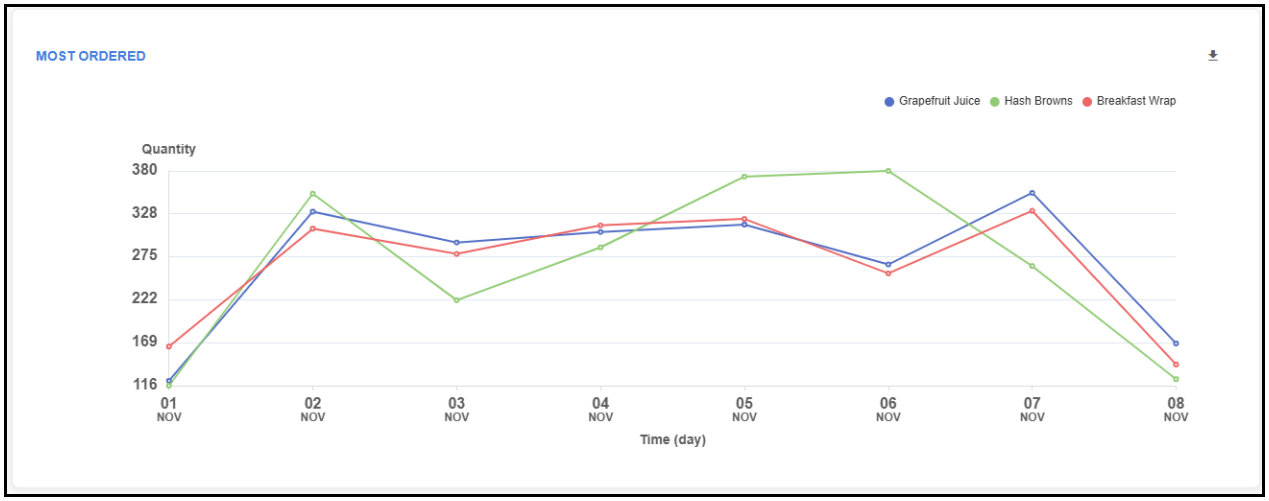


Figure 21: Most Ordered Items chart

2.5.2.3. Item Orders

This line chart displays the daily quantities of a selected item recorded in the system over a specific time range. The x-axis represents the dates, while the y-axis indicates the quantity of orders.

In this example, the chart highlights **Waffles** as the selected item. The blue line shows the trend in the number of waffles ordered each day, with specific data points marking the exact quantities.

The legend at the top right allows users to confirm the selected item being displayed. This chart helps users analyze the demand for a particular item over time and identify patterns, such as peaks and declines in orders.

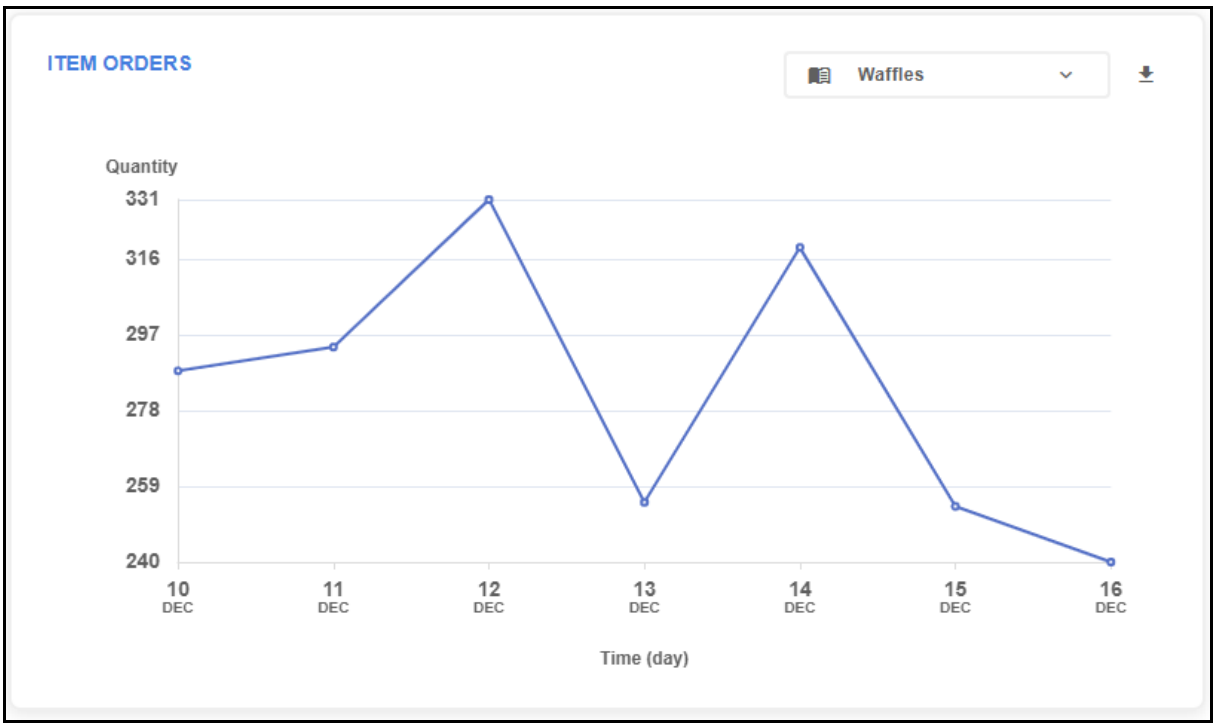


Figure 22: Specific Item Orders chart

2.5.2.4. Item Sold / Cancelled

This bar chart displays the daily quantities of a selected item recorded in the system, segmented into total items sold and cancelled items, over a specific time range. The x-axis represents the dates, while the y-axis indicates the quantity of items.

In this example, the chart highlights *Bacon* as the selected item. The blue bars represent the total number of bacon items sold each day, while the yellow bars show the quantity of cancelled items.

The legend at the top right allows users to confirm the displayed item and its respective quantities. This chart helps users analyze sales trends and cancellation patterns, identifying peaks and declines over time.

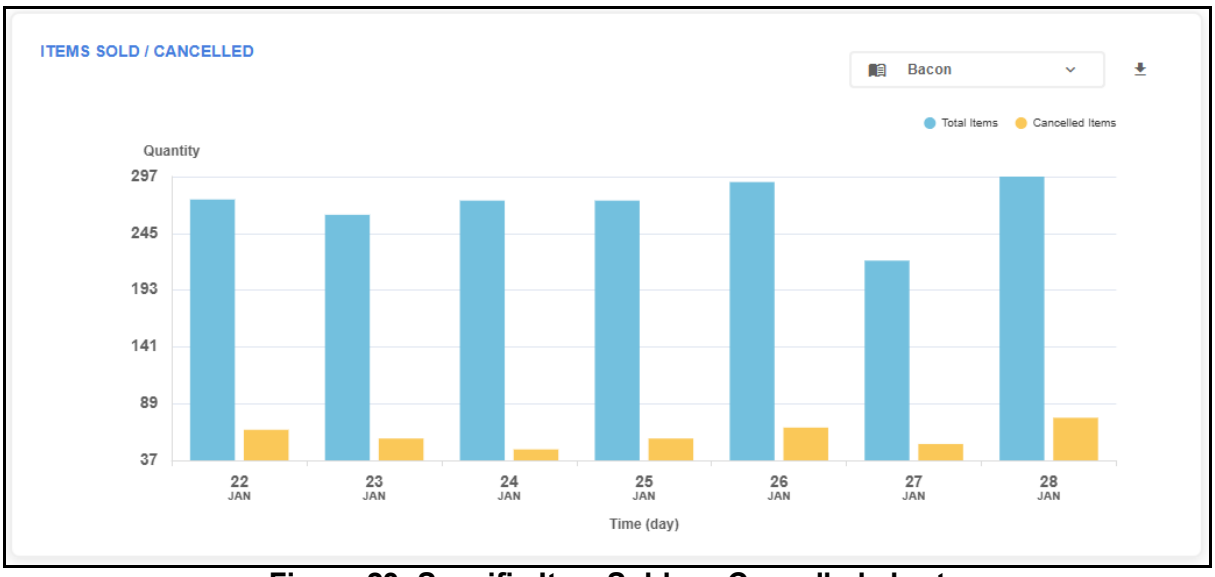


Figure 23: Specific Item Sold vs. Cancelled chart

2.6. Orders Tab

The **Orders** tab provides a detailed overview of individual orders, allowing users to search by order number and filter by date and time. To search for a specific order, it is **mandatory** to specify an **Order Number**. Each order displays key information, including:

- **Order Number:** Unique identifier for each order.
- **Items:** List of ordered items along with their quantities.
- **Cancelled Items:** Number of cancelled items per order.
- **Start Time & End Time:** Timeframe indicating when the order processing began and ended.

Additionally, the Clear button allows users to reset the search filters and clear previous search results.

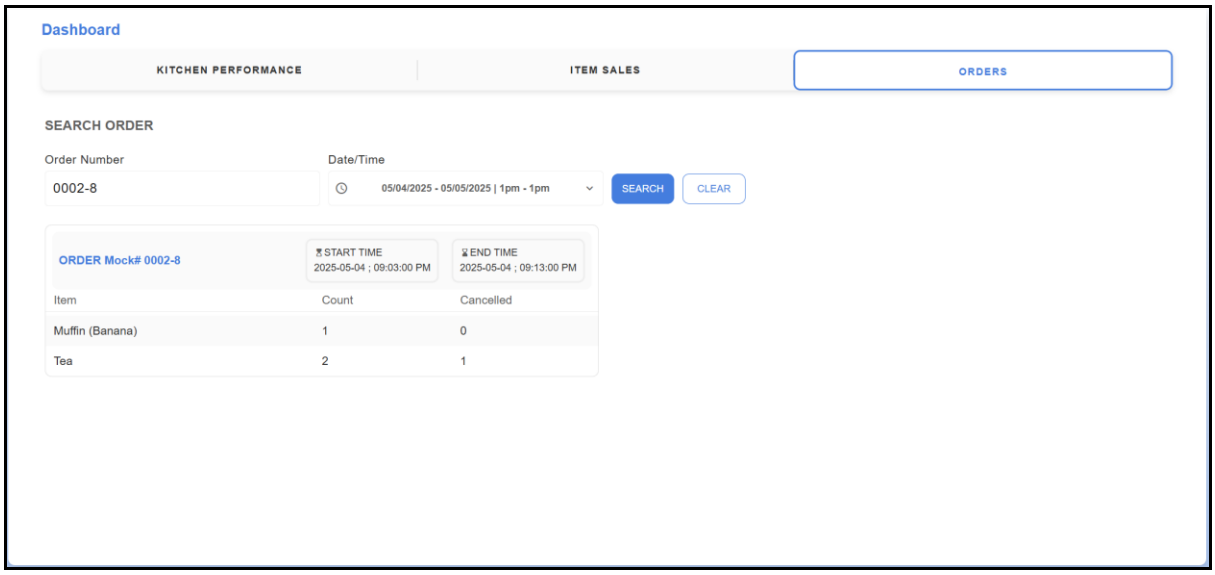


Figure 24: Order Details section

2.7. Export of Charts

Each chart has an iteration icon in the upper right corner to export the displayed data. Having 2 options:

- export the chart in JSON file format.
- export the chart in CSV file format.

Figure 25: Export Data button

3. REMOTE SERVER REQUIREMENTS

3.1. File Storage

The primary KDS device shall transmit hourly data files to the remote server in JSON format. File storage on the remote server shall be accomplished by permitting the HTTP PUT request for a specific path, which must be configured on the KDS primary device when enabling the Analytics feature. Enabling PUT simplifies the remote server implementation by not requiring any server-side scripts to process incoming KDS data.

Assuming Apache2 httpd 2.4.62, the following configuration options are needed:

a. **File:** `httpd.conf`

   Change: Enable the DAV function to allow PUT method for KDS devices to write data to.

   Configuration:

```
Include conf/extra/httpd-dav.conf
DavLockDB "/path/to/document/root/DavLock"
```

b. **File:** `httpd.conf`

   Change: Set the path where the KDS device shall write data to. This filesystem path can be aliased in the webserver configuration, or used as-is relative to the document root, when configuring the analytics feature on the KDS primary device.

   Configuration:

```
Alias /report /path/to/document/root/kds-data-reporting/assets/report
<Directory "/path/to/document/root/kds-data-reporting/assets/report/">
   AllowMethods GET POST OPTIONS
</Directory>
<Directory
"/path/to/document/root/kds-data-reporting/assets/report/data/">
   Dav on
   AllowMethods GET POST PUT OPTIONS
   AllowOverride None
</Directory>
```

Assuming the document root is set to `/opt/mysites/` , the configuration above will enable the HTTP PUT method for the KDS device at:

```
/opt/mysites/kds-data-reporting/assets/report/data
```

which is further aliased as `/report` . The KDS device will therefore use the server URL of (refer to Section 4):

```
http(s):// remote.server.address/ report/ data/
```

3.2. Web App Storage

Extract the KDS Analytics application files to the webserver's document root on the remote server. Make sure the webserver user has full access permission to all files therein. (Typically the Apache2 httpd webserver runs as either `user:group` of `www-data:www-data` or `daemon:daemon`; please confirm with your webserver configuration.)

The end user shall use a browser to view the KDS Analytics application landing page, so the main index.html page should be accessible at the desired server URL.

3.3. Security Considerations

The customer is responsible for data security on the server. Some points to consider:

a. Make sure to use HTTPS only communications. The KDS device will work even if you must use a private or self-signed certificate on the remote server. It is important not to let data and credentials flow over networks unencrypted.

b. Using credentials (ID and password) is strongly recommended to avoid unauthorized access to data.

c. Make sure the webserver is up-to-date and has no open CVEs/security vulnerabilities.

d. Use a background housekeeping script to control the size of data files. For example, the script may remove data files older than 6 months.

3.4. Estimated Hardware Requirements

Although the data being generated by a site/KDS can vary greatly, the below estimates assume a steady flow of orders every minute, 24 hours a day, where an average order contains 5 long item names with 3 long modifiers each.

Storage:	128 MB per KDS per month of data retention
RAM:	2 GB available to the webserver
CPU:	Intel i3 or equivalent

Therefore, to support 5 KDS systems on the same server for a data retention period of 6 months, it is advisable to ensure roughly 4 GB of storage space is available on the server.

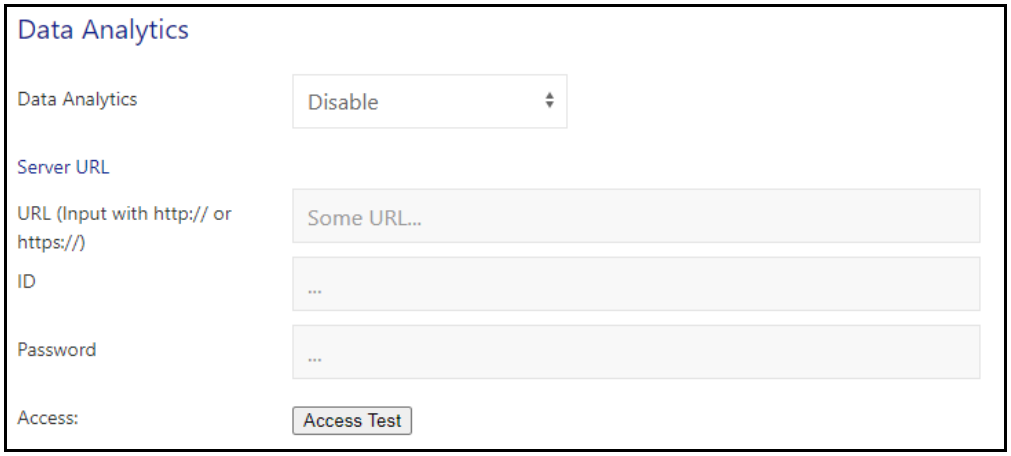
4. KDS DEVICE CONFIGURATION

4.1. Enable Analytics

The Analytics feature only needs to be enabled on the primary device (a.k.a. the “POS Connected” device selected when setting up the KDS, under the Application Settings tab). The primary device collects order details and average bump times from all stations on the top of every hour and pushes it out to the remote server.

Setup procedure:

1. Use a browser to load the WebConfig page of the primary KDS device:
   `https:// primary.kds.device.IP/ webconfig/`
   Example: https://192.168.1.100/webconfig/
   Default login: user “epson”, password “epson”
2. Click to expand the Data Analytics section.



3. Enable the feature.
4. Set the server URL. As described in Section 2, this should be the path where the webserver permits KDS devices to create data files using the HTTP PUT method.
5. Add any credentials (ID and password) used by the webserver to restrict access to the file storage path. KDS devices use basic authentication when presenting these credentials to the server.
6. Click the “Access Test” button to confirm *this* KDS device can access the remote server.
7. Click the “APPLY” button at the top right corner of this WebConfig page. Click OK on any popups that appear.

4.2. Confirm the KDS Site Name

The Site Name field is used by the primary KDS device to help distinguish its data on the remote server from other KDS data. It is therefore a requirement that Site Name is kept unique across different sites/KDS installations, particularly if all those sites will be accessed via the same remote server.

Setup procedure:

1. Use a browser to load the Configuration Utility page of the primary KDS device:
   `https:// primary.kds.device.IP/`
   Example: https://192.168.1.100/
2. Under the Application Settings tab -> Site Wide Configuration, note the Site **Name** field. In the example below, it is “SunnyPizzeria”.

3. Ensure the Site Name value is added to the “sites” array in the sample KDS Analytics Web App’s configuration file. See Section 1.3.2.

4.3. Data Retention on the KDS

The KDS creates analytics files on an hourly basis. If the KDS is unable to connect to the remote server, the files accumulate up to a maximum of 24 hours, after which they are cleared during the daily maintenance reset.

5. TROUBLESHOOTING

Table 2: Common usage issues and limitations

Issue	Common Reason	Resolution
Charts are blank.	There is no data to show.	Confirm appropriate time interval is selected in the search filters. For example, if the last hour filter is selected but the KDS is switched off when the site is closed, then there may be no data to show.
Charts take too long to populate.	Data fetch from the remote server is slow.	Try to reduce the time interval selected in the search filters. A large interval of several weeks or months means a lot more files need to be downloaded, possibly up to 24 for each day.
KDS is in use, but the charts do not show data from the last few hours.	KDS is unable to connect to the remote server.	Confirm the primary KDS device has access to the remote server. You may use the "Access" test button on the primary device's WebConfig page at [`https:// <device.ip.address>/ webconfig/`]. Once connection to the remote server is established, all data files since the last power cycle of the primary device will be posted to the server at the top of the hour.