NAC DHIS2 USER MANUAL

By Computer Business Solutions
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About this guide

The DHIS2 documentation is a collective effort and has been developed by the development team and users. While the guide strives to be complete, there may be certain functionalities which have been omitted or which have yet to be documented. This section explains some of the conventions which are used throughout the document.

DHIS2 is a browser-based application. In many cases, screenshots have been included for enhanced clarity. Shortcuts to various functionalities are displayed such as Data element > Data element group. The “>” symbol indicates that you should click Data element and then click Data element group in the user interface.

Different styles of text have been used to highlight important parts of the text or particular types of text, such as source code. Each of the conventions used in the document are explained below.

⚠️ **Note**

A note contains additional information which should be considered or a reference to more information which may be helpful.

ℹ️ **Tip**

A tip can be a useful piece of advice, such as how to perform a particular task more efficiently.

⚠️ **Important**

Important information should not be ignored, and usually indicates something which is required by the application.

⚠️ **Caution**

Information contained in these sections should be carefully considered, and if not heeded, could result in unexpected results in analysis, performance, or functionality.

⚠️ **Warning**

Information contained in these sections, if not heeded, could result in permanent data loss or affect the overall usability of the system.

Program listings usually contain some type of computer code. They will be displayed with a shaded background and a different font.

Commands will be displayed in bold text, and represent a command which would need to be executed on the operating system or database.

Links to external web sites or cross references will be displayed in blue text, and underlined like this.

Bibliographic references will displayed in square brackets like this [Store2007]. A full reference can be found in the bibliography contained at the end of this document.
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Chapter 1. Login to LOMSHA DHIS2 system

Type or copy and paste this URL [https://www.naclsdhis2.org](https://www.naclsdhis2.org) on your browser and the following screen will load.

Enter user name and password and click on sign in. on the successful login the home screen shown below will load.

Add stuff by searching from the search field above

Then arrange dashboard by dragging and dropping items
Chapter 2. Using the Data Entry app

2.1. About the Data Entry app

The Data Entry app is where you manually enter aggregated data in DHIS2. You register data for an organization unit, a period, and a set of data elements (data set) at a time. A data set often corresponds to a paper-based data collection tool which is LOMSHA manual in our case.

A data set can have both section and custom forms

If a data set has both a section form and a custom form, the system displays the custom form during data entry. Users who enter data can't select which form they want to use. In web-based data entry the order of display preference is:
1. Custom form (if it exists)
2. Section form (if it exists)
3. Default form

Mobile devices do not support custom forms. In mobile-based data entry the order of display preference is:
1. Section form (if it exists)
2. Default form

When you close an organization unit, you can't register or edit data to this organization unit in the Data Entry app.

2.2. Enter data in a data entry form

1. Open the Data Entry app.
2. In the organization unit tree to the left, select an organization unit.
3. Select a Data set.
4. Select a Period.
The available periods are controlled by the period type of the data set (reporting frequency). You can jump a year back or forward by clicking **Prev year** or **Next year**.

**Note**

Depending on how you've configured the data entry form, you might have to enter additional information before you can open the date entry form. This can for example be a project derived from a category combination.

5. Enter data in the data entry form.

- A green field means that the system has saved the value.
- A grey field means that the field is disabled and you can't enter a value. The cursor will automatically jump to the next open field.
- To move to the next field, press the Tab key or the Down Arrow key.
- To move back to the previous field, press Shift+Tab or the Up Arrow key.
- If you type in an invalid value, for example a character in a field that only accepts numeric values, you'll get a pop-up that explains the problem and the field will be coloured yellow (not saved) until you have corrected the value.
- If you have defined a minimum maximum value range for the field and you enter a value that is outside this range, you'll get a pop-up message that says the value is out of range. The value remains unsaved until you've changed the value or updated the value range and then re-entered the value.

6. When you've filled in the form, click **Run validation** in the top right corner or below the data entry form.

All validation rules which involves data elements in the current data entry form (data set) are then run against the new data. If there are no violations of the validation rules, you'll see a message saying **The data entry screen successfully passed validation.** If there are validation violations, they will be presented in a list.

7. (Optional) Correct validation violations.

**Note**

Zero (0) will delete the value if the data element has been configured to not store zeros.

8. When you've corrected errors and you're done with data entry, click **Complete**.

The system uses this information when generating completeness reports for district, county, province or the national level.

**2.3. Mark a data value for follow-up**
If you for example have a suspicious value that you need to investigate further, you can keep it in the system, but mark it for follow-up. In the Data Quality app you can then run a follow-up analysis to view and correct all marked values.

1. Open the Data Entry app.
2. Open an existing data entry form.
3. Double-click the field with the value you want to mark for follow-up.
4. Click the star icon.

### 2.4. Edit data values in a completed data entry form

1. Open the Data Entry app.
2. Open an existing data entry form.
3. Click Incomplete.
4. Change the relevant data values.

**Note**

Zero (0) will delete the value if the data element has been configured to not store zeros.

5. Click Complete.

### 2.5. Display a data value's history
You can display the last 12 values registered for a field.

1. Open the **Data Entry** app.
2. Open an existing data entry form.
3. Double-click the field with the value you want to view the history for.
4. Click **Data element history**.

### 2.6. Display a data value's audit trail

The audit trail allows you to view other data values which have been entered prior to the current value. The audit trail also shows when the data value was altered and which user who made the changes.

1. Open the **Data Entry** app.
2. Open an existing data entry form.
3. Double-click the field with the value you want to view the audit trail for.
4. Click **Audit trail**.

### 2.7. Create minimum maximum value range manually (Only for administrators)
NB: Do not set the values without the concern of system administrator

1. In the Data Entry app, open a data entry form.
2. Double-click the field for which you want to set the minimum maximum value range.
3. Enter Min limit and Max limit.
4. Click Save.

If values don't fall within the new value range the next time you enter data, the data entry cell will appear with an orange background.
5. (Optional) Type a comment to explain the reason for the discrepancy, for example an event at a facility which may have generated a large number of clients.
6. (Optional) Click Save comment.

Tip
Click the star icon to mark the value for further follow-up.

2.8. Enter data offline

The Data Entry app works even if you don't have a stable Internet connection during data entry. When you don't have an internet connection, the data you enter is saved to your local computer. When the Internet connection is back, the app will push the data to the server. The total bandwidth usage is reduced since data entry forms no longer are retrieved from the server for each rendering.

Note
To use this functionality, you must login to the server while you've an Internet connection.

• When you're connected to the Internet, the app displays this message at the top of the data entry form:

  ![dhis2]
  You are online

• If your Internet connection breaks during data entry, the app detects it and displays this message:

  ![dhis2]
  You are offline, data will be stored locally
Now your data will be stored locally. You can continue to enter data as normal.

- Once you have entered all necessary data and the app detects that the Internet connection is back, you'll see this message:

  ![Upload Button](image)

  Click **Upload** to synchronize data with the server.

- When the data has successfully synchronized with the server, you'll see this confirmation message:
Chapter 4. Using reporting functionality

4.1. Reporting functionality in DHIS2

The reporting module in DHIS2 provides a range of reporting alternatives, and this section will explain how to use them to view and analyse data. Another section explains how to configure and set up the various reporting tools.

**Standard reports:** Standard reports are built on pivot tables, but are more advanced in its design allowing for more cosmetics and styles. These reports can also combine multiple tables and charts in the same report and be made available as one-click reports that are very easy to use. These reports can be downloaded as PDF files which makes them ideal for printing as well as sharing offline.

**Dataset reports:** Dataset reports are simply a printer friendly way to look at the data entry forms with either raw or aggregated data (over time or place). The design used in data entry will be used also in the data set reports. This will work only for data sets that has a custom data entry form set up.

**Dashboard:** The fastest way to view your data. The dashboard can display up to four updated charts as well as shortcuts to your favorite reports, report tables, and map views. Each user can configure a personal dashboard.

**Data Visualizer:** Do flexible visualizations of your data as charts and data tables. Any number of indicators and data elements can be included. Several chart types are available, such as column, stacked column, line, area and pie charts. The charts can be saved in order to be easily retrieved later and can also be put on your personal dashboard. Charts can be downloaded as image and PDF files to your local computer.

**Orgunit distribution reports:** These reports are generated off the orgunit group set information and can show what types (and how many of each type) of health facilities that are located in a given area (any level in the hierarchy). These reports are automatically generated and display the information in both tables and charts, and downloads in PDF, excel, and CSV are available.

**Reporting rate summary:** These reports provide a nice overview of how many facilities that have submitted their data for a given dataset and period. Here you can get both the counts and the percentages showing the reporting rate for all or single data sets.

**Web-based pivot tables:** The built in pivot table tool is a web-based tool to display indicator data by orgunit and period in a typical pivot table view and allows for pivoting manipulations of the tables. It allows for large amounts of data to be downloaded offline for analysis as well.

**GIS:** Present and analyse your data using thematic maps. You can view both data elements and indicators and given that you have coordinates for all your orgunits you can drill down the hierarchy and view maps for all levels from country polygons to facility points. See the separate chapter on GIS for more details. All the map information is built into DHIS2 and all you need to do is to register coordinates for your organization units and the maps will be available.

4.2. Using standard reports

You access the available reports by navigating to Apps->Reports. In the report menu in the left bar, click Standard Report. A list of all pre-defined reports will appear in the main window.
You run/view a report by clicking on the name of the report and then selecting "Create" from the contextual menu. If there are any pre-defined parameters, you will see a report parameter window where you must fill in the values needed for orgunit and/or reporting month, depending on what has been defined in the underlying report table(s). Click on "Get Report" when you are ready. The report will either appear directly in your browser or be available as a PDF file for download, depending on your browser settings for handling PDF files. You can save the file and keep it locally on your computer for later use.

4.3. Using dataset reports

Dataset reports are printer friendly views of the data entry screen filled with either raw or aggregated data. These are only available for data sets that have custom data entry forms and not for default or section forms.

You can access data set reports from Apps->Reports.

A Criteria window will appear where you fill in the details for your report:

**Dataset**: The data set you want to display.

**Reporting period**: The actual period you want data for. This can be aggregated as well as raw periods. This means that you can ask for a quarterly or annual report even though the data set is collected monthly. A data set's period type (collection frequency) is defined in data set maintenance. First select the period type (Monthly, Quarterly, Yearly etc.) in the drop down next to Prev and Next buttons, and then select one of the available periods from the dropdown list below. Use Prev and Next to jump one year back or forward.

**Use data for selected unit only**: Use this option if you want a report for an orgunit that has children, but only want the data collected directly for this unit and not the data collected by its children. If you want a typical aggregated report for an orgunit you do not want to tick this option.

**Reporting Organization unit**: Here you select the orgunit you want the report for. This can be at any level in the hierarchy as the data will be aggregated up to this level automatically (if you do not tick the option above).

When you are done filling in the report criteria you click on "Generate". The report will appear as HTML in a printer-friendly format. Use the print and save as functions in the browser to print or save (as HTML) the report. You can also export the data set report in Excel and PDF formats.
4.4. Using resources

The resource tool allows you to upload both files from your local computer to the DHIS server and to add links to other resources on the Internet through URLs. If cloud storage is configured for your system, resources will be saved there.

To create a new resource:
1. Open the Reports app and click Resource.
2. Click Add new.
3. Enter a Name.
4. Select a Type: Upload file or External URL.
5. Click Save.

4.5. Using reporting rate summary

Access the reporting rate summary from the Apps->Reports menu. Reporting rate summaries will show how many datasets (forms) that have been submitted by organization unit and period. There are two methods available to calculate reporting rates (completeness):

- Based on complete data set registrations. A complete data set registration refers to a user marking a data entry form as complete, typically by clicking the complete button in the data entry screen, hereby indicating to the system that she considers the form to be complete. This is i.e. a subjective approach to calculating completeness.
- Based on compulsory data element: You can define any number of data elements in a data set to be compulsory. This implies that data values must be captured for all data elements which have been marked as compulsory in order for the data set to be considered complete. This is i.e. an objective approach to calculating completeness.

The reporting rate summary will for each row show a range of measures:

- Actual reports: Indicates the number of data entry complete registrations for the relevant data set.
- Expected reports: Indicates how many data entry complete registrations are expected. This number is based on the number of organization units the relevant data set has been assigned to (enabled for data entry).
- Percent: The percentage of reports registered as complete based on the number expected.
- Reports on time: Same as actual reports, only reports registered as complete within the maximum number of days after the end of the reporting period. This number of days after reporting period can be defined per data set in the data set management.
- Percent on time: Same as percentage, only reports registered as complete on time used as numerator.

To run the report you can follow these steps:

- Select an orgunit from the tree.
- Select one of the completeness methods to use to calculate the reporting rates.

Select all or one data set. All will give you a report with all data sets for the selected organization unit. A single data set will give you a report with completeness for all children of the selected organization unit.

- Select a period type and a period from the list of available periods for that period type. Move back/forward one year by using the prev/next buttons.
- The report will then be rendered. Change any of the parameters above and the report will be updated automatically.
4.6. Using organization unit distribution reports

You can access the Orgunit Distribution reports from the left side menu in the Apps->Reports. Orgunit distribution reports are reports that show how the orgunits are distributed on various properties like type and ownership, and by geographical areas. The result can be presented in a table-based report or in a chart. **Running a report:**

To run a report first select an orgunit in the upper left side orgunit tree. The report will be based on orgunits located under the selected orgunit. The select the orgunit group set that you want to use, typically these are Type, Ownership, Rural/Urban, but can be any user-defined orgunit group set. The you can click on either Get Report to get the table-based presentation or Get chart to get the same result in a chart. You can also download other format such as PDF, Excel and CSV.

**Orgunit distribution report**

![Graph showing organizations working with NAC - National AIDS Commission]
4.7. Generate analytics table (For administrators only)

Please refer to technical Manual
Chapter 5. Analyze data in pivot tables

5.1. About the Pivot Table app

With the Pivot Table app, you can create pivot tables based on all available data dimensions in DHIS2. A pivot table is a dynamic tool for data analysis which lets you summarize and arrange data according to its dimensions. Examples of data dimensions in DHIS2 are:

• data dimension itself (for example data elements, indicators and events)
• periods (representing the time period for the data)
• organization hierarchy (representing the geographical location of the data)

From these dimensions you can freely select dimension items to include in the pivot table. You can create additional dimensions in DHIS2 with the group set functionality. This allows for different aggregation pathways, such as aggregation by "Partner" or facility type.

A pivot table can arrange data dimensions on columns, rows, and as filters. When you place a data dimension on columns, the pivot table will display one column per dimension item. If you place multiple data dimensions on columns, the pivot table displays one column for all combinations of the items in the selected dimensions. When you place a data dimension on rows, the pivot table displays one row per dimension item in a similar fashion. The dimensions you select as filters will not be included in the pivot table, but will aggregate and filter the table data based on the selected filter items.

Constraints and tips

• You must select at least one dimension on columns or rows.
• You must include at least one period.
• Data element group sets and reporting rates can't appear in the same pivot table.
• A pivot table can't contain more than the maximum number of analytic records which have been specified in the system settings. The maximum number of records could also be constrained by the maximum RAM which is available to your browser. Consider making smaller tables instead of one table which displays all of your data elements and indicators together.
• The Pivot Table app supports drill-down and up for periods and organization unit. This means that you can for example drill down from yearly periods to quarters, months and weeks inside a pivot table. You can also drill down from the global organization unit to countries, provinces and facilities.

5.2. Create a pivot table

1. Open the Pivot Table app.
2. In the menu to the left, select the dimension items you want to analyse, for example data elements or indicators.
3. Click Layout and arrange the data dimensions as columns, rows and filters. You can keep the default selection if you want.
4. Click Update.

Example 5.1. Example pivot table with data elements as columns and periods as rows.

In this example, indicators are listed as columns and periods as rows.
5.2.1. Select dimension items

The left menu lists sections for all available data dimensions. From each section you can select any number of dimension items. As an example, you can open the section for data elements and select any number of data elements from the available list. You can select an item by marking it and clicking on the arrow in the section header or simply double-clicking on the item. Before you can use a data dimension in your pivot table you must at least select one dimension item. If you arrange a dimension as columns or rows but do not select any dimension items, the dimension is ignored.

You must choose at least one data dimension type to create a pivot table. The available types are described in this table:

Table 5.1. Data dimension types

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<th>Data dimension type</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
<td>An indicator is a calculated formula based on data elements.</td>
<td>Coverage of immunization across a specific district.</td>
</tr>
<tr>
<td>Data elements</td>
<td>Represents the phenomenon for which data has been captured.</td>
<td>Number of malaria cases; number of BCG doses given.</td>
</tr>
<tr>
<td>Data sets</td>
<td>A collection of data elements grouped for data collection.</td>
<td>Reporting rates for immunization and morbidity forms.</td>
</tr>
</tbody>
</table>

You can select:
- **Reporting rates**: the percentage of actual reports compared to the expected number of reports
- **Reporting rates on time**: the reporting rates based on timely form submissions. A timely submission must happen within a number of days after the reporting period.
- **Actual reports**: the actual number of reports
- **Actual reports on time**: the actual number of reports based on timely form submissions. A timely submission must happen
<table>
<thead>
<tr>
<th>Data dimension type</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>within a number of days after the reporting period.</td>
<td></td>
</tr>
<tr>
<td>Expected reports:</td>
<td>the number of expected reports based on organization units where the data set and the reporting frequency has been assigned.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Expected reports: the number of expected reports based on organization units where the data set and the reporting frequency has been assigned.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A data element that is part of a program representing events that have been captured.</td>
<td>Average weight and height for children in a nutrition program.</td>
</tr>
<tr>
<td>Program indicators</td>
<td>A calculated formula based on data elements in a program representing events.</td>
<td>Average BMI score for children in a nutrition program.</td>
</tr>
</tbody>
</table>

You can combine these dimensions to display for example aggregate data with reporting rates, or event data items together with program indicators, all in the same pivot tables. For the "data element" data dimension, you are also able to select "Totals" and "Details", which will allow you to view different category combination options together on the same pivot table.

For the period dimension you can choose between using fixed periods or relative periods. An example of a fixed period is "January 2012". To select fixed periods start by selecting a period type from the period type list. You can then select periods from the list of available periods.

Relative periods are periods relative to the current date. Examples of relative periods are "Last month", "Last 12 months", "Last 5 years". Relative periods can be selected by ticking the check-boxes next to each period. The main advantage of using relative periods is that when you save a pivot table favorite, it will stay updated with the latest data as time goes by without the need for constantly updating it.

For the organization unit dimension you can select any number of organization units from the hierarchy. To select all organization units below a specific parent organization unit, right click and click "Select all children". To manually select multiple organization units, click and hold the Ctrl key while clicking on organization units. You can tick "User org unit", "User sub-units" or "User sub-x2-units" in order to dynamically insert the organization unit or units associated with your user account. This is useful when you save a pivot table favorite and want to share it with other users, as the organization units linked with the other user's account will be used when viewing the favorite.
Selection of fixed and relative periods.

Dynamic dimensions can consist of organization unit group sets, data element group sets, or category option group sets which have been configured with the type of "Disaggregation". Once the group sets have been configured, they will become available in the pivot tables, and can be used as additional analysis dimensions, for instance to analyse aggregate data by Type of organization unit or Implementing partner. Dynamic dimensions work the same as fixed dimensions.

Tip

Some dynamic dimensions may contain many items. This can cause issues with certain browsers due to the length of the URL when many dimension members are selected. A special "All" check box is available for dynamic dimensions, which allows you to include all available dimensions implicitly in your pivot table, without specifying each and every dimension member.

5.2.2. Modify pivot table layout

After selecting data dimensions it is time to arrange your pivot table. Click "Layout" in the top menu to open the layout screen. In this screen you can position your data dimensions as table columns, rows or filters by clicking and dragging the dimensions from the dimensions list to the respective column, row and filter lists. You can set any number of dimensions in any of the lists. For instance, you can click on "Organization units" and drag it to the row list in order to position the organization unit dimension as table rows. Note that indicators, data elements and data set reporting rates are part of the common "Data" dimension and will be displayed together in the pivot table. For instance, after selecting indicators and data elements in the left menu, you can drag "Organization Unit" from the available dimensions list to the row dimension list in order to arrange them as rows in the pivot table.
The table layout screen.

After you have set up your pivot table you can click "Update" to render your pivot table, or click "Hide" to hide the layout screen without any changes taking effect. Since we in our example have selected both the period and organization unit dimension as rows, the pivot table will generate all combinations of the items in these dimensions and produce a table like this:

Pivot table where organization units and periods are repeated on rows.

5.3. Change the display of your pivot table

1. Open the Pivot Table app.
2. Create a new pivot table or open a favorite.
3. Click Options.
4. Set the options as required.

### Table 5.2. Pivot table options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data</strong></td>
<td></td>
</tr>
<tr>
<td>Show column totals</td>
<td>Displays total values in the table for each row and column, as well as a total for all values in the table.</td>
</tr>
<tr>
<td>Show row totals</td>
<td></td>
</tr>
<tr>
<td>Show column sub-totals</td>
<td>Displays subtotals in the table for each dimension.</td>
</tr>
<tr>
<td>Show row sub-totals</td>
<td>If you only select one dimension, subtotals will be hidden for those columns or rows. This is because the values will be equal to the subtotals.</td>
</tr>
<tr>
<td><strong>Show dimension labels</strong></td>
<td>Shows the dimension names as part of the pivot tables.</td>
</tr>
<tr>
<td><strong>Hide empty rows</strong></td>
<td>Hides empty rows from the table. This is useful when you look at large tables where a big part of the dimension items don't have data in order to keep the table more readable.</td>
</tr>
<tr>
<td><strong>Hide empty columns</strong></td>
<td>Hides empty columns from the table. This is useful when you look at large tables where a big part of the dimension items don't have data in order to keep the table more readable.</td>
</tr>
<tr>
<td><strong>Skip rounding</strong></td>
<td>Skips the rounding of data values, offering the full precision of data values. Can be useful for finance data where the full dollar amount is required.</td>
</tr>
<tr>
<td><strong>Aggregation type</strong></td>
<td>The default aggregation operator can be over-ridden here, by selecting a different aggregation operator. Some of the aggregation types are <strong>Count</strong>, <strong>Min</strong> and <strong>Max</strong>.</td>
</tr>
<tr>
<td><strong>Number type</strong></td>
<td>Sets the type of value you want to display in the pivot table: <strong>Value</strong>, <strong>Percentage of row</strong> or <strong>Percentage of column</strong>.</td>
</tr>
<tr>
<td></td>
<td>The options <strong>Percentage of row</strong> and <strong>Percentage of column</strong> mean that you’ll display values as percentages of row total or percentage of column total instead of the aggregated value. This is useful when you want to see the contribution of data elements,</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Events</strong></td>
<td><strong>Include only completed events</strong></td>
</tr>
<tr>
<td></td>
<td>Includes only completed events in the aggregation process. This is useful for example to exclude partial events in indicator calculations.</td>
</tr>
<tr>
<td><strong>Organization units</strong></td>
<td><strong>Show hierarchy</strong></td>
</tr>
<tr>
<td></td>
<td>Shows the name of all ancestors for organization units, for example &quot;Sierra Leone / Bombali / Tamabaka / Sanya CHP&quot; for Sanya CHP.</td>
</tr>
<tr>
<td></td>
<td>The organization units are then sorted alphabetically which will order the organization units according to the hierarchy.</td>
</tr>
<tr>
<td></td>
<td>When you download a pivot table with organization units as rows and you've selected <strong>Show hierarchy</strong>, each organization unit level is rendered as a separate column. This is useful for example when you create Excel pivot tables on a local computer.</td>
</tr>
<tr>
<td><strong>Legend</strong></td>
<td><strong>Apply legend</strong></td>
</tr>
<tr>
<td></td>
<td>Applies a legend to the values. This means that you can apply a colour to the values.</td>
</tr>
<tr>
<td></td>
<td>Select <strong>By data item</strong> to color the table cells individually according to each data element or indicator.</td>
</tr>
<tr>
<td></td>
<td>You configure legends in the <strong>Maintenance</strong> app.</td>
</tr>
<tr>
<td><strong>Style</strong></td>
<td><strong>Display density</strong></td>
</tr>
<tr>
<td></td>
<td>Controls the size of the cells in the table. You can set it to <strong>Comfortable</strong>, <strong>Normal</strong> or <strong>Compact</strong>.</td>
</tr>
<tr>
<td></td>
<td><strong>Compact</strong> is useful when you want to fit large tables into the browser screen.</td>
</tr>
<tr>
<td></td>
<td><strong>Font size</strong></td>
</tr>
<tr>
<td></td>
<td>Controls the size of the table text font. You can set it to <strong>Large</strong>, <strong>Normal</strong> or <strong>Small</strong>.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Digit group separator</td>
<td>Controls which character to separate groups of digits or &quot;thousands&quot;. You can set it to Comma, Space or None.</td>
</tr>
<tr>
<td>General</td>
<td>Table title</td>
</tr>
<tr>
<td>Parameters (for standard reports only)</td>
<td>Note</td>
</tr>
<tr>
<td></td>
<td>You create standard reports in the Reports app.</td>
</tr>
<tr>
<td></td>
<td>In the Pivot Table app you set which parameters the system should prompt the user for.</td>
</tr>
<tr>
<td>Reporting period</td>
<td>Controls whether to ask user to enter a report period.</td>
</tr>
<tr>
<td>Organization unit</td>
<td>Controls whether to ask user to enter an organization unit.</td>
</tr>
<tr>
<td>Parent organization unit</td>
<td>Controls whether to ask user to enter a parent organization unit.</td>
</tr>
<tr>
<td>Include regression</td>
<td>Includes a column with regression values to the pivot table.</td>
</tr>
<tr>
<td>Include cumulative</td>
<td>Includes a column with cumulative values to the pivot table.</td>
</tr>
<tr>
<td>Sort order</td>
<td>Controls the sort order of the values.</td>
</tr>
<tr>
<td>Top limit</td>
<td>Controls the maximum number of rows to include in the pivot table.</td>
</tr>
</tbody>
</table>

5. Click Update.

5.4. Manage favorites

Saving your charts or pivot tables as favorites makes it easy to find them later. You can also choose to share them with other users as an interpretation or display them on the dashboard.

You view the details and interpretations of your favorites in the Pivot Table, Data Visualizer, Event Visualizer, Event Reports apps. Use the Favorites menu to manage your favorites.

5.4.1. Open a favorite

1. Click Favorites > Open.
2. Enter the name of a favorite in the search field, or click Prev and Next to display favorites.
3. Click the name of the favorite you want to open.

5.4.2. Save a favorite

1. Click Favorites > Save as.
2. Enter a Name and a Description for your favorite.
3. Click Save.
5.4.3. Rename a favorite
1. Click Favorites > Rename.
2. Enter the new name for your favorite.
3. Click Update.

5.4.4. Write an interpretation for a favorite

An interpretation is a link to a resource with a description of the data at a given period. This information is visible in the Dashboard app. To create an interpretation, you first need to create a favorite. If you’ve shared your favorite with other people, the interpretation you write is visible to those people.

1. Click Favorites > Write interpretation.
2. In the text field, type a comment, question or interpretation. You can see this information in the Dashboard app.
3. Search for a user group that you want to share your favorite with, then click the + icon.
4. Change sharing settings for the user groups you want to modify.
   • Can edit and view: Everyone can view and edit the object.
   • Can view only: Everyone can view the object.
   • None: The public won't have access to the object. This setting is only applicable to Public access.
5. Click Share.

5.4.5. Create a link to a favorite
1. Click Favorites > Get link.
2. Select one of the following:
   • Open in this app: You get a URL for the favorite which you can share with other users by email or chat.
   • Open in web api: You get a URL of the API resource. By default this is an HTML resource, but you can change the file extension to "json" or "csv".

5.4.6. Delete a favorite
1. Click Favorites > Delete.
2. Click OK.

5.4.7. View interpretations based on relative periods

To view interpretations for relative periods, such as a year ago:
1. Open a favorite with interpretations.
2. Click >>> in the top right of the workspace.
3. Click an interpretation. Your chart displays the data and the date based on when the interpretation was created. To view other interpretations, click them.

5.5. Download data from a pivot table

5.5.1. Download table layout data format

To download the data in the current pivot table:
1. Click **Download**.

2. Under **Table layout**, click the format you want to download: Microsoft Excel, CSV or HTML.

   The data table will have one column per dimension and contain names of the dimension items.

   **Tip**

   When you download a pivot table with organization units as rows and you've selected **Show hierarchy** in **Table options**, each organization unit level is rendered as a separate column. This is useful for example when you create Excel pivot tables on a local computer.

   **Tip**

   You can create a pivot table in Microsoft Excel from the downloaded Excel file.

5.5.2. Download plain data source format

You can download data in the current pivot table in JSON, XML, Excel, and CSV as plain data formats with different identification schemes (ID, Code, and Name). The data document uses identifiers of the dimension items and opens in a new browser window to display the URL of the request to the Web API in the address bar. This is useful for developers of apps and other client modules based on the DHIS2 Web API or for those who require a plan data source, for instance for import into statistical packages.

To download plain data source formats:

1. Click **Download**.

2. Under **Plain data source**, click the format you want to download.

**Table 5.3. Available formats**

<table>
<thead>
<tr>
<th>Format</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSON</td>
<td>Click JSON</td>
<td>Downloads JSON format based on ID property. You can also download JSON format based on <strong>Code</strong> or <strong>Name</strong> property.</td>
</tr>
<tr>
<td>XML</td>
<td>Click XML</td>
<td>Downloads XML format based on ID property. You can also download XML format based on <strong>Code</strong> or <strong>Name</strong> property.</td>
</tr>
<tr>
<td>Microsoft Excel</td>
<td>Click Microsoft Excel</td>
<td>Downloads XML format based on ID property. You can also download Microsoft Excel format based on <strong>Code</strong> or <strong>Name</strong> property.</td>
</tr>
<tr>
<td>CSV</td>
<td>Click CSV</td>
<td>Downloads CSV format based on ID property. You can also download CSV format based on <strong>Code</strong> or <strong>Name</strong> property.</td>
</tr>
<tr>
<td>JRXML</td>
<td>Put the cursor on Advanced and click JRXML</td>
<td>Produces a template of a Jasper Report which can be further customized based on</td>
</tr>
<tr>
<td>Format</td>
<td>Action</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Raw data SQL</td>
<td>Put the cursor on <strong>Advanced</strong> and click <strong>Raw data SQL</strong></td>
<td>Provides the actual SQL statement used to generate the pivot table. You can use it as a data source in a Jasper report, or as the basis for an SQL view.</td>
</tr>
</tbody>
</table>

### 5.5.3. Download a CSV format without rendering data in the web browser

You can download data in CSV format directly without rendering the data in the web browser. This helps to reduce any constraints in the system settings that has been set with regards to the maximum number of analytic records. This lets you download much larger batches of data that you can use for later offline analysis.

To download data in CSV format without first rendering data in the web browser:

1. Click the arrow beside **Update**.

2. Click **CSV** to download the format based on ID property. The file downloads to your computer.

**Tip**

You can also download CSV format based on **Code** or **Name** property.

### 5.6. Embed a pivot table in an external web page

Certain analysis-related resources in DHIS2, like pivot tables, charts and maps, can be embedded in any web page by using a plug-in. You will find more information about the plug-ins in the Web API chapter in the *DHIS2 Developer Manual*.

To generate a HTML fragment that you can use to display the pivot table in an external web page:

1. Click **Embed**.
2. Click **Select** to highlight the HTML fragment.

### 5.7. Visualize pivot table data as a chart or a map

When you have made a pivot table you can switch between pivot table, chart and map visualization of your data.

#### 5.7.1. Open a pivot table as a chart

1. Click **Chart > Open this table as chart**. Your current pivot table
5.7.2. Open a pivot table selection as a chart

If you want to visualize a small part of your pivot table as a chart you can click directly on a value in the table instead opening the whole table.

1. In the pivot table, click a value.

2. To verify the selection, hold the cursor over **Open selection as chart**. The highlighted dimension headers in the table indicate what data will be visualized as a chart.

3. Click **Open selection as chart**.

5.7.3. Open a pivot table as a map

1. Click **Chart > Open this table as map** Your current pivot table opens as a map.

5.7.4. Open a pivot table selection as a map

1. In the pivot table, click a value. A menu displays.

2. Click **Open selection as map**. Your selection opens as a map.
Chapter 6. Using the Data Visualizer app

6.1. About the Data Visualizer app

With the Data Visualizer app, you can select content, for example indicators, data elements, periods and organization units, for an analysis. The app works well over poor Internet connections and generates charts in the web browser.

Constraints and tips

• Hide and show individual data series in the chart by clicking directly on the series label in the chart. They appear either at the top or to the right of the chart.
• Click the triple left-arrow button on the top centre menu. This collapses the left side menu and gives more space for the chart. You can get the menu back by clicking on the same button again.

6.2. Create a chart

1. Open the Data Visualizer app and select a chart type.
2. In the menu to the left, select the metadata you want to analyse. You must select one or more elements from all of the three dimensions - data (indicators, data elements, reporting rates), periods (relative, fixed) and organization units (units or groups).

Note

If you've access to the system settings, you can change the default period type under General settings > Default relative period for analysis.

Last 12 Months from the period dimension and the root organization unit are selected by default.
3. Click Layout and arrange the dimensions. You can keep the default selection if you want.
4. Click Update.
6.3. Select a chart type

The Data Visualizer app has nine different chart types, each with different characteristics.

To select a chart type:

1. In Chart type, click the chart type you need.

<table>
<thead>
<tr>
<th>Chart type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column chart</td>
<td>Displays information as vertical rectangular columns with lengths proportional to the values they represent. Useful when you want to, for example, compare performance of different districts.</td>
</tr>
<tr>
<td>Stacked column chart</td>
<td>Displays information as vertical rectangular columns, where bars representing multiple categories are stacked on top of each other. Useful when you want to, for example, display trends or sums of related data elements.</td>
</tr>
<tr>
<td>Bar chart</td>
<td>Same as column chart, only with horizontal bars.</td>
</tr>
<tr>
<td>Stacked bar chart</td>
<td>Same as stacked column chart, only with horizontal bars.</td>
</tr>
<tr>
<td>Line chart</td>
<td>Displays information as a series of points connected by straight lines. Also referred to as time series. Useful when you want to, for example, visualize trends in indicator data over multiple time periods.</td>
</tr>
<tr>
<td>Area chart</td>
<td>Is based on line chart, with the space between the axis and the line filled with colors and the lines stacked on top of each other. Useful when you want to compare the trends of related indicators.</td>
</tr>
<tr>
<td>Pie chart</td>
<td>Circular chart divided into sectors (or slices). Useful when you want to, for example, visualize the proportion of data for individual data elements compared to the total sum of all data elements in the chart.</td>
</tr>
<tr>
<td>Radar chart</td>
<td>Displays data on axes starting from the same point. Also known as spider chart.</td>
</tr>
<tr>
<td>Speedometer chart</td>
<td>Semi-circle chart which displays values out of 100 %. Also referred to as a gauge chart.</td>
</tr>
</tbody>
</table>

2. Click Update.

6.4. Select dimension items

A dimension refers to the elements which describe the data values in the system. There are three main dimensions in the system:

- Data: Includes data elements, indicators and datasets (reporting rates), describing the phenomena or event of the data.
- Periods: Describes when the event took place.
- Organization units: Describes where the event took place.
The Data Visualizer app lets you use these dimensions completely flexible in terms of appearing as series, categories and filter.

**Note**

You can select dimension items in different ways:
- Double-click a dimension item name.
- Highlight one or several dimension items and click the single-arrow.
- To select all dimension items in a list, click the double-arrow.
- To clear dimension items, use the arrows or double-click the names in the **Selected** list.

6.4.1. Select indicators

The Data Visualizer app can display any number of indicators and data elements in a chart. You can select both indicators and data elements to appear together in the same chart, with their order of appearance the same as the order in which they are selected.

1. Click **Data** and select **Indicators**.
2. Select an indicator group.

   The indicators in the selected group appear in the **Available** list.
3. Select one or several indicators by double-clicking the name. The indicator moves to the **Selected** list.

6.4.2. Select data elements

The Data Visualizer app can display any number of indicators and data elements in a chart. You can select both indicators and data elements to appear together in the same chart, with their order of appearance the same as the order in which they are selected.

1. Click **Data** and select **Data elements**.
2. Select a data element group.

   The data elements in the selected group appear in the **Available** list.
3. Select one or several data elements by double-clicking the name. The data element moves to the **Selected** list.

6.4.3. Select reporting rates

The Data Visualizer app can display reporting rates in a chart, by itself or together with indicators and data elements. Reporting rates are defined by data sets.

1. Click **Data** and select **Reporting rates**.

   The reporting rates appear in the **Available** list.
2. Select one or several reporting rates by double-clicking the name. The reporting rate moves to the **Selected** list.

6.4.4. Select fixed and relative periods

1. Click **Periods**.
2. Select one or several periods.

You can combine fixed periods and relative periods in the same chart. Overlapping periods are filtered so that they only appear once.

- Fixed periods: In the Select period type box, select a period type. You can select any number of fixed periods from any period type.
- Relative periods: In the lower part of the Periods section, select as many relative periods as you like. The names are relative to the current date. This means that if the current month is March and you select Last month, the month of February is included in the chart.

6.4.5. Select organization units

1. Click Organization units.
2. Click the gearbox icon.
3. Select a Selection mode and an organization unit. There are three different selection modes:

<table>
<thead>
<tr>
<th>Selection mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select organization units</td>
<td>Lets you select the organization units you want to appear in the chart from the organization tree.</td>
</tr>
<tr>
<td></td>
<td>Select User org unit to disable the organization unit tree and only select the organization unit that is related to your profile.</td>
</tr>
<tr>
<td></td>
<td>Select User sub-units to disable the organization unit tree and only select the sub-units of the organization unit that is related to your profile.</td>
</tr>
<tr>
<td></td>
<td>Select User sub-x2-units to disable the organization unit tree and only select organization units two levels down from the organization unit that is related to your profile.</td>
</tr>
<tr>
<td></td>
<td>This functionality is useful for administrators to create a meaningful &quot;system&quot; favorite. With this option checked all users find their respective organization unit when they open the favorite.</td>
</tr>
</tbody>
</table>

| Select levels              | Lets you select all organization units at one or more levels, for example national or district level.                                           |
|                           | You can also select the parent organization unit in the tree, which makes it easy to select for example, all facilities inside one or more districts. |

| Select groups              | Lets you select all organization units inside one or several groups and parent organization units at the same time, for example hospitals or chiefdoms. |

4. Click Update.

6.4.6. Select additional dimension items

Depending on the settings for your organization unit group sets and data element group sets, you can select additional dimension items from the left menu.
Here you can add dimension items such as age, sex, etc. without having to add them as detailed data element selections. This is useful when you want to separate these categories in your analysis.

The additional dimension items you select are available in Chart layout as dimensions.

6.5. Select series, category and filter

You can define which dimension of the data you want to appear as series, category and filter.

1. Click Layout.

2. Drag and drop the dimensions to the appropriate space. Only one dimension can be in each section.

3. Click Update.
Example 6.1. Chart illustrating the concepts of series, categories and filter

- **Series**: A series is a set of continuous, related elements (for example periods or data elements) which you want to visualize in order to emphasize trends or relations in its data.

- **Categories**: A category is a set of elements (for example indicators or organization units) for which you want to compare its data.

- **Filter**: The filter selection will filter the data displayed in the chart. Note that if you use the data dimension as filter, you can only specify a single indicator or data set as filter item, whereas with other dimension types you can select any number of items.

6.6. Change the display of your chart

1. Click **Options**.

2. Set the options as required.

Table 6.3. Chart options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data</strong></td>
<td><strong>Show values</strong></td>
</tr>
<tr>
<td></td>
<td>Shows the values above the series in the chart.</td>
</tr>
<tr>
<td></td>
<td><strong>Use 100% stacked values</strong></td>
</tr>
<tr>
<td></td>
<td>Displays 100% stacked values in column charts.</td>
</tr>
<tr>
<td></td>
<td><strong>Use cumulative values</strong></td>
</tr>
<tr>
<td></td>
<td>Displays cumulative values in line charts.</td>
</tr>
<tr>
<td></td>
<td><strong>Hide empty categories</strong></td>
</tr>
<tr>
<td></td>
<td>Hides the category items with no data from the chart.</td>
</tr>
<tr>
<td></td>
<td><strong>None</strong>: doesn't hide any of the empty categories</td>
</tr>
<tr>
<td></td>
<td><strong>Before first</strong>: hides missing values only before the first value</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>After last</td>
<td>hides missing values only after the last value</td>
</tr>
<tr>
<td>Before first and after last</td>
<td>hides missing values only before the first value and after the last value</td>
</tr>
<tr>
<td>All</td>
<td>hides all missing values</td>
</tr>
<tr>
<td>This is useful for example when you create column and bar charts.</td>
<td></td>
</tr>
<tr>
<td>Trend line</td>
<td>Displays the trend line which visualizes how your data evolves over time. For example if performance is improving or deteriorating. Useful when periods are selected as category.</td>
</tr>
<tr>
<td>Target line value/title</td>
<td>Displays a horizontal line at the given domain value. Useful for example when you want to compare your performance to the current target.</td>
</tr>
<tr>
<td>Base line value/title</td>
<td>Displays a horizontal line at the given domain value. Useful for example when you want to visualize how your performance has evolved since the beginning of a process.</td>
</tr>
<tr>
<td>Sort order</td>
<td>Allows you to sort the values on your chart from either low to high or high to low.</td>
</tr>
<tr>
<td>Aggregation type</td>
<td>Defines how the data elements or indicators will be aggregated within the chart. Some of the aggregation types are <strong>By data element</strong>, <strong>Count</strong>, <strong>Min</strong> and <strong>Max</strong>.</td>
</tr>
<tr>
<td>Events</td>
<td>Include only completed events</td>
</tr>
<tr>
<td>Includes only completed events</td>
<td>Includes only completed events in the aggregation process. This is useful when you want for example to exclude partial events in indicator calculations.</td>
</tr>
<tr>
<td>Axes</td>
<td>Range axis min/max</td>
</tr>
<tr>
<td>Defines the maximum and minimum value which will be visible on the range axis.</td>
<td></td>
</tr>
<tr>
<td>Range axis tick steps</td>
<td>Defines the number of ticks which will be visible on the range axis.</td>
</tr>
<tr>
<td>Range axis decimals</td>
<td>Defines the number of decimals which will be used for range axis values.</td>
</tr>
<tr>
<td>Range axis title</td>
<td>Type a title here to display a label next to the range axis (also referred to as the Y axis). Useful when you</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domain axis title</strong></td>
<td>Type a title here to display a label below the domain axis (also referred to as the X axis). Useful when you want to give context information to the chart, for example about the period type.</td>
</tr>
</tbody>
</table>

**General**

| Hide chart legend | Hides the legend and leaves more room for the chart itself.                                                                                       |
| Hide chart title  | Hides the title (default or custom) of your chart.                                                                                              |
| Chart title       | Type a title here to display a custom title above the chart. If you don't enter a title, the default title is displayed.                          |
| Hide chart subtitle | Hides the subtitle of your chart.                                                                                                               |
| Chart subtitle    | Type a subtitle here to display a custom subtitle above the chart but below the title. If you don't enter a subtitle, no subtitle is displayed in the chart. |

3. Click Update.

### 6.7. Manage favorites

Saving your charts or pivot tables as favorites makes it easy to find them later. You can also choose to share them with other users as an interpretation or display them on the dashboard.

You view the details and interpretations of your favorites in the Pivot Table, Data Visualizer, Event Visualizer, Event Reports apps. Use the Favorites menu to manage your favorites.

#### 6.7.1. Open a favorite

1. Click Favorites > Open.
2. Enter the name of a favorite in the search field, or click Prev and Next to display favorites.
3. Click the name of the favorite you want to open.

#### 6.7.2. Save a favorite

1. Click Favorites > Save as.
2. Enter a Name and a Description for your favorite.
3. Click Save.

#### 6.7.3. Rename a favorite

1. Click Favorites > Rename.
2. Enter the new name for your favorite.
3. Click **Update**.

### 6.7.4. Write an interpretation for a favorite

An interpretation is a link to a resource with a description of the data at a given period. This information is visible in the Dashboard app. To create an interpretation, you first need to create a favorite. If you've shared your favorite with other people, the interpretation you write is visible to those people.

1. Click **Favorites > Write interpretation**.
2. In the text field, type a comment, question or interpretation. You can see this information in the Dashboard app.
3. Search for a user group that you want to share your favorite with, then click the + icon.
4. Change sharing settings for the user groups you want to modify.
   - **Can edit and view**: Everyone can view and edit the object.
   - **Can view only**: Everyone can view the object.
   - **None**: The public won't have access to the object. This setting is only applicable to **Public access**.
5. Click **Share**.

### 6.7.5. Create a link to a favorite

1. Click **Favorites > Get link**.
2. Select one of the following:
   - **Open in this app**: You get a URL for the favorite which you can share with other users by email or chat.
   - **Open in web api**: You get a URL of the API resource. By default this is an HTML resource, but you can change the file extension to ".json" or ".csv".

### 6.7.6. Delete a favorite

1. Click **Favorites > Delete**.
2. Click **OK**.

### 6.7.7. View interpretations based on relative periods

To view interpretations for relative periods, such as a year ago:

1. Open a favorite with interpretations.
2. Click >>> in the top right of the workspace.
3. Click an interpretation. Your chart displays the data and the date based on when the interpretation was created. To view other interpretations, click them.

### 6.8. Download a chart as an image or a PDF

After you have created a chart you can download it to your local computer as an image or PDF file.

1. Click **Download**.
2. Under **Graphics**, click **Image (.png)** or **PDF (.pdf)**.

   The file is automatically downloaded to your computer. Now you can for example embed the image file into a text document as part of a report.
6.9. Download chart data source

You can download the data source behind a chart in JSON, XML, Excel, CSV, JXRML or Raw data SQL formats with different identification schemes (ID, Code, and Name). The data document uses identifiers of the dimension items and opens in a new browser window to display the URL of the request to the Web API in the address bar. This is useful for developers of apps and other client modules based on the DHIS2 Web API or for those who require a plan data source, for instance for import into statistical packages.

To download plain data source formats:
1. Click Download.
2. Under Plain data source, click the format you want to download.

<table>
<thead>
<tr>
<th>Format</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSON</td>
<td>Click JSON</td>
<td>Downloads JSON format based on ID property.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can also download JSON format based on Code or Name property.</td>
</tr>
<tr>
<td>XML</td>
<td>Click XML</td>
<td>Downloads XML format based on ID property.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can also download XML format based on Code or Name property.</td>
</tr>
<tr>
<td>Microsoft Excel</td>
<td>Click Microsoft Excel</td>
<td>Downloads Microsoft Excel format based on ID property.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can also download Microsoft Excel format based on Code or Name property.</td>
</tr>
<tr>
<td>CSV</td>
<td>Click CSV</td>
<td>Downloads CSV format based on ID property.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can also download CSV format based on Code or Name property.</td>
</tr>
<tr>
<td>JXRML</td>
<td>Put the cursor on Advanced and click JXRML</td>
<td>Produces a template of a Jasper Report which can be further customized based on your exact needs and used as the basis for a standard report in DHIS 2.</td>
</tr>
<tr>
<td>Raw data SQL</td>
<td>Put the cursor on Advanced and click Raw data SQL</td>
<td>Provides the actual SQL statement used to generate the data visualization. You can use it as a data source in a Jasper report, or as the basis for a SQL view.</td>
</tr>
</tbody>
</table>

6.10. Embed charts in any web page

Certain analysis-related resources in DHIS2, like pivot tables, charts and maps, can be embedded in any web page by using a plug-in. You will find more information about the plug-ins in the Web API chapter in the DHIS2 Developer Manual.

To generate a HTML fragment that you can use to display the chart in an external web page:

1. Click Share > Embed in web page.
The Embed in web page window opens.
2. Click Select to highlight the HTML fragment.

6.11. Open a chart as a pivot table or as a map
   • Open a Chart and click Chart or click Map.
Chapter 7. Using the GIS app

7.1. About the GIS app

With the GIS app you can overlay multiple layers and choose among different base maps. You can create thematic maps of areas and points, view facilities based on classifications, and visualize catchment areas for each facility. You can add labels to areas and points, and search and filter using various criteria. You can move points and set locations on the fly. Maps can be saved as favorites and shared with other people.

**Note**

To use predefined legends in the GIS app, you need to create them first in the Maintenance app.

Here's an overview of the GIS app workspace

- The icons in the top left of the workspace represent the map layers. They are the starting point of the GIS app.
- The panel on the right side of the workspace shows an overview of the layers:
  - The default base map is OSM Light. It's selected by default. If you're online you'll also see OpenStreetMap, Google Streets and Google Hybrid. You can use these maps as background maps and layers. Switch between them by selecting or clearing the checkbox.
  - If you want to increase or reduce the opacity of a layer, use the up and down arrows for the selected layer.
  - Use the map legends when you create a thematic map. A legend explains the link between values and colors on your map.
- **Zoom to content** automatically adjusts the zoom level and map center position to put the data on your map in focus.
- To view information for an event, simply click the event.
- Right-click to display the longitude and latitude of the map.

7.2. Create a new thematic map

You use four vector layers to create a thematic map. The workflow for creating a new thematic map is:
1. In the **Apps** menu, click **GIS**. The **DHIS2 GIS** window opens.

2. In the top menu, click a layer you want to add to the map.
   - Event layer
   - Facility layer
   - Boundary layer
   - Thematic layer 1 - 4

3. Click **Edit layer** and select the parameters you need.
4. Click **Update**.

### 7.3. Manage event layers

The event layer displays the geographical location of events registered in the DHIS2 tracker. Provided that events have associated GPS coordinates, you can use this layer to drill down from the aggregated data displayed in the thematic layers to the underlying individual events or cases.

You can also display aggregated events at the facility or at the boundary level. You do this through a thematic layer using event data items. This is useful when you only have the coordinates for the Org Unit under which the events are recorded.

#### Event layer

![Event layer](image)

### 7.3.1. Create or modify event layer

1. In the top menu, click the event layer icon.
2. Click **Edit layer**.
3. Select a program and then select a program stage.

   If there is only one stage available for the selected program, the stage is automatically selected. A list of data elements and attributes will appear in the **Available data items** panel.
4. Select any data element or attribute from this list as part of your query.
• To select you can either double-click a data element or (multi) select and use the single-arrow downward button. The double-arrow button will select all data elements in the list. All selected data elements will get their own row in the Selected data items.
• For data elements of type text you will get two choices: Contains implies that the query will match all values which contains your search value, and Is exact implies that only values which is completely identical to your search query will be returned.
• For data elements of type option set, you can select any of the options from the drop down box by using the down-wards arrow or by start typing directly in the box to filter for options.

5. In the Periods section, select the time span for when the events took place. You can select either a fixed period or a relative period.
   • Fixed period: In the Period field, select Start/end dates and fill in a start date and an end date.
   • Relative period: In the Period field, select one of the relative periods, for example This month or Last year.

6. In the Organization units section, select the organization units you want to include in the query.

7. In the Options section, you can:
   • Select a value from the Coordinate field for the positions shown on the map. By default, “Event location” is selected. Depending on the data elements or attributes that belong to a program, other coordinates such as “Household position” are available.

   • Select or clear Clustering to group nearby events.

   • Go to Style to select a color for the cluster points or change the radius of clusters (between 1 and 20). Clustering if you want to group nearby events and change the style of the cluster points.

8. Click Update.

7.3.2. Turn off cluster

By default events are clustered in a map. You can turn off this function to display all events separately.
1. In the top menu, click the event layer icon.
2. Click Edit layer.
3. Click Options.
4. Clear **Group nearby events** check box.
5. Click **Update**.

### 7.3.3. Modify cluster style

1. In the top menu, click the event layer icon.
2. Click **Edit layer**.
3. In the **Options** section, change the **Point color** and **Point radius**.
4. Click **Update**.

### 7.3.4. Modify information in event pop-up windows

For events in a cluster map, you can modify the information displayed in the event pop-up window.

**Pop-up window with event information**

1. Open the **Programs / Attributes** app.
2. Click **Program**.
3. Click the program you want to modify and select **View program stages**.
4. Click the program stage name and select **Edit**.
5. Scroll down to the **Selected data elements** section.
6. For every data element you want to display in the pop-up window, select corresponding **Display in reports**.
7. Click **Update**.

### 7.3.5. Clear event layer

To clear all data in a map:

1. In the top menu, click the event layer icon.
2. Click **Clear**.

### 7.4. Manage facility layers

The facility layer displays icons that represent types of facilities. Polygons do not show up on the map, so make sure that you select an organization unit level that has facilities.

A polygon is an enclosed area on a map representing a country, a district or a park. In GIS, a polygon is a shape defined by one or more rings, where a ring is a path that starts and ends at the same point.
7.4.1. Create or modify a facility layer
1. In the top menu, click the facility layer icon.
2. Click Edit layer.
3. In the Organization unit group icons section, select a Group set.
4. In the Organization units section, select one or several organization units.
5. In the Options section, select if you want to show labels and if so, how they look.
6. In the Options section, select if you want to display a circle with a certain radius around each facility.
7. Click Update.

7.4.2. Search for an organization unit
To locate an organization unit in the map:
1. In the top menu, click the facility layer icon.
2. Click Search.

   The Organization unit search dialog box opens.
3. In the text field, type the name of the organization unit you are looking for or click a name in the list.
   The organization unit is highlighted in the map.

7.4.3. Clear facility layer
To clear all data in a facility layer:
1. In the top menu, click the facility layer icon.
2. Click Clear.

7.5. Manage facilities in a layer
You can have facilities in Facility, Boundary and Thematic layers.
7.5.1. Relocate a facility

1. Right-click a facility and click **Relocate**.
2. Put the cursor in the new location.

The new coordinate is stored permanently. This cannot be undone.

7.5.2. Swap longitude and latitude of a facility

1. Right-click a facility and click **Swap long/lat**.

This is useful if a user inverted latitude and longitude coordinates when creating the organization unit.

7.5.3. Display facility information

You can view organization unit information set by the administrator as follows:

<table>
<thead>
<tr>
<th>Function</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>View information for the current period</td>
<td>1. Click a facility.</td>
</tr>
<tr>
<td>View information for a selected period</td>
<td>1. Right-click a facility and click <strong>Show information</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. In the <strong>Infrastructural data</strong> section, select a period.</td>
</tr>
</tbody>
</table>

**Note**

You configure the displayed infrastructural data in the **System Settings** app.

7.6. Manage thematic layers 1- 4

There are four thematic layers in the GIS app. With these layers panels you can use your data for thematic mapping. Select your desired combination of indicator/data element, and period, then the organization unit level. If your database has coordinates and aggregated data values for these organization units, they will appear on the map.

**Note**

You must refresh the DHIS2 analytics tables to have aggregated data values available.
7.6.1. Create or modify a thematic layer

1. In the top menu, click the icon of the thematic layer you want to create or modify.
2. Click Edit layer.
3. In the Data and periods section, select the data and periods you want to display.
4. In the Organization units section, select one or several organization units.
5. In the Options section, go to Legend type and select Automatic or Predefined.
   • Automatic legend types means that the application will create a legend set for you based on your what method, number of classes, low color and high color you select. Method alludes to the size of the legend classes.
     Set to Equal intervals they will be “highest map value – lowest map value / number of classes”.
     Set to Equal counts the legend creator will try to distribute the organization units evenly. The legend appears as an even gradation from the start color to the end color.
   • If you have facilities in your thematic layer, you can set the radius for maximum and minimum values by changing the values in the Low color / size and High color size boxes.
6. In the Options section, select if you want to show labels and if so, how they look.
7. In the Options panel, select an aggregation type. See also Aggregation operators.
8. Click Update.

7.6.2. Filter values in a thematic layer

Thematic layer 1-4 menu have a Filter option in addition to the boundary layer menu options. It lets you apply value filters to the organization units on the map. The filter is removed when you close the filter window.

To filter values in a thematic layer:
1. In the top menu, click the icon of thematic layer you want to create or modify.
2. Click Filter....
3. Modify the Greater than and And/or lower than values.
4. Click Update.

7.6.3. Search for an organization unit

To locate an organization unit in a thematic layer:
1. In the top menu, click the relevant thematic layer icon.
2. Click Search.

   The **Organization unit search** dialog box opens.
3. In the text field, type the name of the organization unit you are looking for or click a name in the list.

   The organization unit is highlighted in the map.

7.6.4. Navigate between organization hierarchies

When there are visible organization units on the map, you can easily navigate up and down in the hierarchy without using the level/parent user interface.
1. Right-click one of the organization units.
2. Select **Drill up** or **Drill down**.

   The drill down option is disabled if you are on the lowest level or if there are no coordinates available on the level below. Vice versa goes for drilling up.

7.6.5. Clear thematic layer

To clear all data in a thematic layer:
1. In the top menu, click the relevant thematic layer icon.
2. Click Clear.

7.7. Manage boundary layers

The boundary layer displays the borders and locations of your organization units. This layer is useful if you are offline and don't have access to background maps.

   **Boundary layer**
7.7.1. Create or modify boundary layers
1. In the top left menu, click the boundary layer icon.
2. Click Edit layer.
3. In the Organization units section, select one or several organization units.
   You can select the organization units you want to show on the map by selecting a level and a parent. That means "show all organizations units at this level that are children of this parent".
4. In the Options section, select if you want to show labels and if so, how they look.
5. Click Update.

7.7.2. Search for organization units
To locate an organization unit on the map:
1. In the top menu, click the boundary layer icon.
2. Click Search.
   The Organization unit search dialog box opens.
3. In the text field, type the name of the organization unit you are looking for or click a name in the list.
   The organization unit is highlighted in the map.

7.7.3. Navigate between organization hierarchies
When there are visible organization units on the map, you can easily navigate up and down in the hierarchy without using the level/parent user interface.
1. Right-click one of the organization units.
2. Select Drill up or Drill down.
   The drill down option is disabled if you are on the lowest level or if there are no coordinates available on the level below. The same applies when you are drilling up.

7.7.4. Clear boundary layer
To clear data in a boundary layer:
1. In the top menu, click the boundary layer icon.
2. Click Clear.
7.8. Manage Earth Engine layer

The Google Earth Engine layer lets you display satellite imagery and geospatial datasets from Google's vast catalog. This layer is useful in combination with thematic and event layers to enhance analysis. The following layers are supported:

- Elevation: Metres above sea level
- Nighttime lights: Lights from cities, towns, and other sites with persistent lighting, including gas flares (from 2013)
- Population density: Population in 100 x 100 m grid cells (from 2010)
- Temperature, population and land cover at any location.

Right-click on the layers to view more information, for example temperature and elevation.

7.8.1. Create or modify an Earth Engine layer

1. In the top menu, click the Google Earth Engine layer icon.
2. Select a data set, for example "Elevation".
3. Select Min / max value.

The meaning of these values depend on which data set you've selected.
4. Select a **Color scale**.

5. Select the number of **Steps**.

   The number of steps means the number of distinct colors in the color scale.

6. Click **Update**.

7.9. Add external map layers

1. In the top menu, click the **External layer** icon.

2. Click **Edit** to add a new layer.

3. Select a layer from the list.

4. Click **Update**.

   To remove a layer, click **Clear**.

   To hide a layer, go to the **Layer stack/opacity** menu pane and clear the **External layer** checkbox.

Here are some examples of external layers:

**Example 1: First-order administrative boundaries**
Example 2: Aerial imagery of Dar-es-Salaam

Example 3: Dark basemap with nighttime lights from Google Earth Engine

Example 4: World time zones

Note
To define external map layers, see the Maintenance app documentation.
7.10. Manage map favorites

**Favorite maps**

![Favorite maps](image)

Saving your maps as favorites makes it easy to restore them later. It also gives you the opportunity to share them with other users as an interpretation or put it on the dashboard. You can save all types of layers as a favorite. A favorite always opens with the default background map.

### 7.10.1. Save a map as a favorite

When you have created a map it is convenient to save it as a favorite:

1. Click **Favorites**.
2. Click **Add new**.
   - The **Create new favorite** dialog box opens.
3. In the text field, type the name you want to give your pivot table.
4. Click **Create**.
   - Your favorite is added to the list.

### 7.10.2. Open a favorite

1. Click **Favorites**.
   - The **Manage favorites** dialog box opens.
2. Find the favorite you want to open. You can either use **Prev** and **Next** or the search field to find a saved favorite. The list is filtered on every character that you enter.
3. Click the name.

### 7.10.3. Rename a favorite

1. Click **Favorites**.
   - The **Manage favorites** dialog box opens.
2. Find the favorite you want to rename.
   - You can either use **Prev** and **Next** or the search field to find a saved favorite.
3. Click the grey rename icon next to the favorite's name. The **Rename favorite** dialog box favorite opens.
4. Type the new name and click **Update**.

### 7.10.4. Overwrite a favorite

To save the current map to an existing favorite (overwrite):

1. Click **Favorites**.

   The **Manage favorites** dialog box opens.

2. Find the favorite you want to overwrite.

   You can either use **Prev** and **Next** or the search field to find a saved favorite.

3. Click the green overwrite icon next to the favorite's name.

4. Click **OK** to confirm that you want to overwrite the favorite.

### 7.10.5. Share a map interpretation

For certain analysis-related resources in DHIS2, you can share a data interpretation. An interpretation is a link to the relevant resource together with a text expressing some insight about the data.

To create an interpretation of a map and share it with all users of the system:

1. Open or create a favorite map.

2. Click **Share > Write interpretation**.

   The **Write interpretation** dialog box opens.

3. In the text field, type a comment, question or interpretation.

4. Click **Share**.

   The dialog box closes automatically. You can see the interpretation on the **Dashboard**.

### 7.10.6. Modify sharing settings for a favorite

After you have created a map and saved it as a favorite, you can share the favorite with everyone or a user group. To modify the sharing settings:

1. Click **Favorites**.

2. Find the favorite you want to share.

   You can either use **Prev** and **Next** or the search field to find a saved favorite.

3. Click the blue share icon next to the favorite's name.

4. In the text box, enter the name of the user group you want to share your favorite with and click the **+** icon.

   The chosen user group is added to the list of recipients. Repeat the step to add more user groups.

5. If you want to allow external access, select the corresponding box.

6. For each user group, choose an access setting. The options are:
   - None
   - Can view
   - Can edit and view

7. Click **Save**.
7.10.7. Delete a favorite
1. Click Favorites.

The Manage favorites dialog box opens.
2. Find the favorite you want to delete.

You can either use Prev and Next or the search field to find a saved favorite.
3. Click the red delete icon next to the favorite's name.
4. Click OK to confirm that you want to delete the favorite.

7.11. Save a map as an image
1. Take a screenshot of the map with the tool of your choice.
2. Save the screenshot in desired format.

7.12. Embed a map in an external web page

Certain analysis-related resources in DHIS2, like pivot tables, charts and maps, can be embedded in any web page by using a plug-in. You will find more information about the plug-ins in the Web API chapter in the DHIS2 Developer Manual.
To generate a HTML fragment that you can use to display the map in an external web page:
1. Click Share > Embed in web page. The Embed in web page window opens.
2. Click Select to highlight the HTML fragment.

7.13. Search for a location

The place search function allows you to search for almost any location or address. The place search is powered by the Mapzen mapping platform. This function is useful in order to locate for example sites, facilities, villages or towns on the map.

1. On the left side of the GIS window, click the magnifier icon.
2. Type the location you're looking.
   A list of matching locations appear as you type.
3. From the list, select a location. A pin indicates the location on the map.

7.14. Measure distances and areas in a map
1. In the upper left part of the map, put the cursor on the Measure distances and areas icon and click Create new measurement.
2. Add points to the map.
3. Click Finish measurement.

7.15. Get the latitude and longitude at any location
Right-click a map and select Show longitude/latitude. The values display in a pop-up window.

7.16. View a map as a pivot table or chart
When you have made a map you can switch between pivot table, chart and map visualization of your data. The function is inactive if the data the map is based on cannot render as a chart or table.

7.16.1. Open a map as a chart
1. Click Chart > Open this map as chart. Your current map opens as a chart.

7.16.2. Open a map as a pivot table
1. Click Chart > Open this map as table. Your current map opens as a pivot table.

7.17. See also
• Manage legends
Chapter 8. Manage dashboards

8.1. About dashboards

Dashboards are intended to provide quick access to different analytical objects (maps, charts, reports, tables, etc) to an individual user. Dashboards can also be shared with user groups.

Example 8.1.

A user or administrator could create a dashboard called "Malaria" which might contain all relevant information on malaria. This dashboard could then be shared with the user group called "Malaria control", which might consist of all users of the malaria control program. All users within this group would then be able to view the same dashboard.

8.2. Set up the dashboard

The dashboard can contain any number of objects (charts, maps, reports, tables, resources, etc). These can be freely arranged on the dashboard as you wish. Dashboard items can be located and added by searching for favourites, resources, users or messages in the available search box and clicking on the "Add" button.

In this screen shot, the dashboard has already been populated with a number of objects, such as charts, map views, tables and messages. There are several hyperlink options available on each item:

- **Remove**
  
  Allows you to remove the item from the dashboard when you have the appropriate user rights.

- **Get as Image**
  
  Opens up a pop-up window and allows you to download the image to your computer.

- **Share interpretation**
  
  Allows you to share an interpretation of the dashboard item. Your interpretation will be shared publicly with other users of the DHIS2 system, in the "Interpretation" section of the dashboard.

- **Explore**
  
  Loads the favorite in its corresponding app (ie. a map will open full-sized in the GIS app).

- **Resize**
  
  Resizes the dashboard item. There are 3 sizes in which to choose from.
Maps, charts and tables can be viewed as full size as images (in the case of charts and map views) or as HTML resources (in the case of reports, tables and messages).

To reorder how the dashboard appears, simply drag-and-drop any of the objects to a new position. In order to change between the various dashboards which are available, simply select the listed items that are available to review. The list can be scrolled through by using the <, > symbols to the left of the dashboard names.

8.3. Change dashboards name

1. Open a DHIS2 dashboard.
2. Click Manage.
3. In the Name field, type the new name of the dashboard.
4. Click Rename.

8.4. Add message widget to dashboards

1. Open a DHIS2 dashboard.
2. Click Manage and click Messages.

8.5. Delete dashboards

1. Open a DHIS2 dashboard.
2. Click Manage and click Delete.

8.6. Translate dashboard names

1. Open a DHIS2 dashboard.
2. Click Manage and click Translate.
3. Select a locale and enter the dashboard name's translation.
4. Click Save.

8.7. Dashboard sharing

In order to share a dashboard with user groups, first select “Share” from the dashboard page. This will bring up the dashboard sharing settings options. To share the dashboard with specific user groups, type in their name in the sharing settings dialogue box and click on the “+” sign to add them to the dashboard sharing settings.
All dashboards have two sharing groups set by default.

- **External access (without login)**
  
  This option, when selected, provides access to the dashboard as an external resource. This is useful for when you are creating an external web portal but would like to call information from a dashboard you have made internally within DHIS2. By default, this option is not selected.

- **Public access (with login)**
  
  This option allows the selected dashboard to be pushed to all users within your DHIS2 instance. This can also be hidden from public view by selecting the "None" option, which is the default option for new dashboards.

User groups which have been added manually can be assigned two types of permissions within the dashboard

- **Can view**
  
  Provides the user group with view only rights to the dashboard.

- **Can edit and view**
  
  Allows the user groups to edit the dashboard in addition to viewing it. Editing allows for altering the layout, resizing and removing items, renaming/deleting the dashboard etc.

### 8.8. Manage messages and feedback messages

#### 8.8.1. About messages and feedback messages

![Message table](image)
Within DHIS2 you can send messages and feedback messages to users, user groups and organization units. When you send a feedback message, it is routed to a particular user group. If you're a member of this user group, you've access to feedback handling tools. You can for example set the status of an incoming feedback to "Pending" while you're waiting for information.

**Note**

Messages and feedback messages are not sent to users' e-mail addresses, the messages only appear within DHIS2.

### 8.8.2. Create a message

1. From the **Dashboard**, click **Messages**.
2. Click **Write message**.
3. Define who you want to receive the message. You can send a message to organization units, users and user groups.
   - In the **To org unit** field, select the organization units or group of organization units you want to send the message to.
   - In the **To user** field, select the users or user groups you want to send the message to.
4. Type a subject and a message.
5. Click **Send**.

### 8.8.3. Read a message

1. From the **Dashboard**, click **Messages**.
2. Click a message.

   If the message is part of a conversation, you'll see all messages in this conversation.

### 8.8.4. Create a feedback message

1. From the **Dashboard**, click **Write feedback**.
2. Type a subject and a feedback message.
3. Click **Send**.

The feedback message will appear in all of the specified users' inboxes.

### 8.8.5. Manage feedback messages

**Note**

You'll only see feedback messages and have access to the feedback handling tools if you are a member of the user group that is set up to handle feedback messages.

![Feedback Message Example](image)

You'll receive feedback messages to your Messages inbox. For feedback messages you've the following options in addition to the messages options:

**Table 8.1. Feedback handling tools**

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priority</strong></td>
<td>You can mark a feedback message with different priorities: <strong>None</strong>, <strong>Low</strong>, <strong>Medium</strong> or <strong>High</strong>. Setting the priority makes it easier to keep track of which feedback message you need resolved first, and which feedback messages that can wait.</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>All feedback messages get the status <strong>Open</strong> when created. To keep track of existing feedback messages, you can change the status to <strong>Pending</strong>, <strong>Invalid</strong> or <strong>Solved</strong>. You can filter feedback messages in your inbox.</td>
</tr>
<tr>
<td>Function</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>based on their status. This makes it easier to switch between feedback messages and normal messages.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>You can assign a feedback message to any member of the user group that is set up to handle feedback messages. None means that you haven't assigned a user to the feedback message.</td>
</tr>
<tr>
<td>Internal reply</td>
<td>When you work in a feedback handling team you might want to discuss the feedback before sending an answer to the sender. You can keep this discussion in the same message conversation as the feedback itself. To send a reply that within the feedback handling user group, click Internal reply.</td>
</tr>
</tbody>
</table>

8.8.6. Configure feedback message function

To configure the feedback message function, you must:

1. Create a user group (for example "Feedback message recipients") that contains all the users who should receive feedback messages.
2. Open the System Settings app and click General > Feedback recipients and select the user group you created in the previous step.
APPENDIX A
User account recovery
In case the user forgot the password, the system offers an account recovery option where you can reset the password.

1. Open DHIS2
2. On the login screen, click Forgot password?
3. The system will require your username and the reset password link will be sent to your email account.

4. Follow the link on the received email and enter new password.