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Warning: This documentation is for a pre-release version of pgAdmin 4

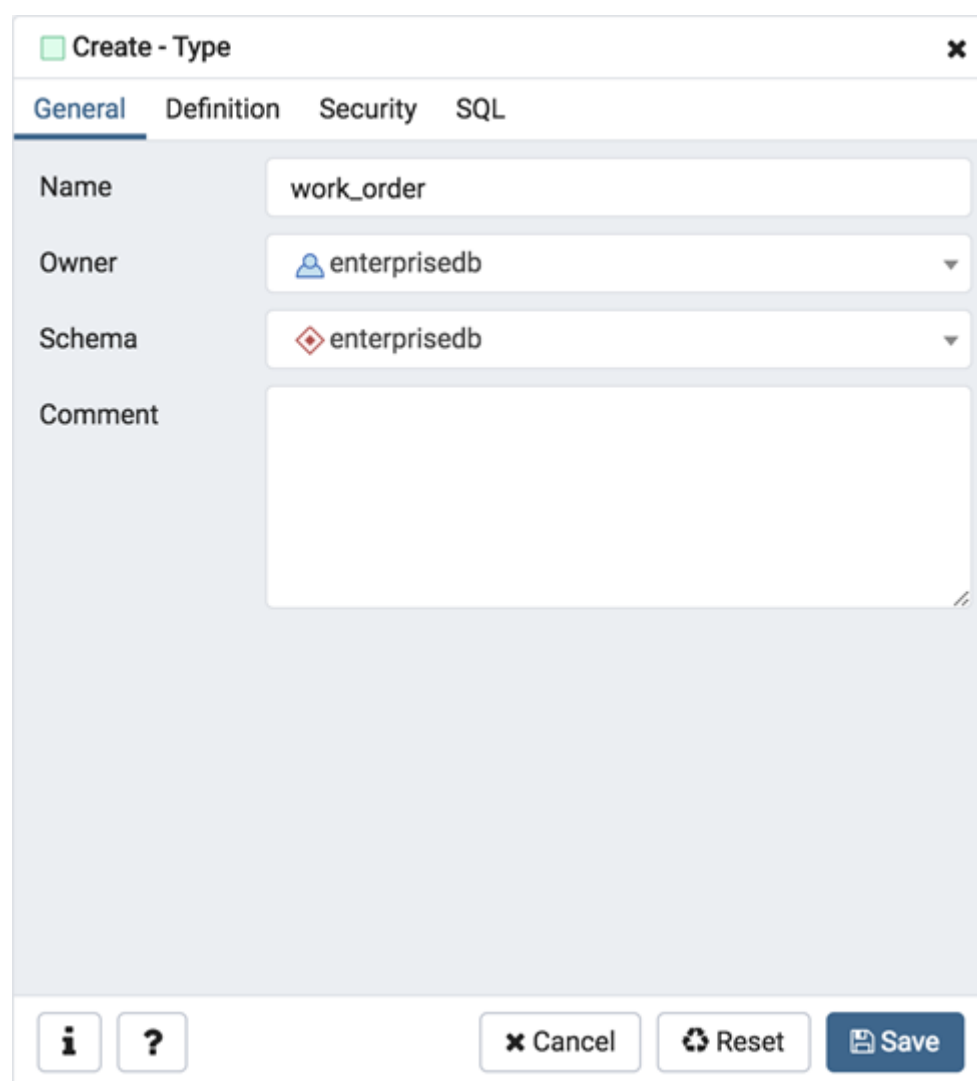
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Type Dialog

Use the *Type* dialog to register a custom data type.

The *Type* dialog organizes the development of a data type through the following dialog tabs: *General*, *Definition*, and *Security*. The *SQL* tab displays the SQL code generated by dialog selections.

The image shows a screenshot of a software dialog box titled "Create - Type". It has four tabs: "General", "Definition", "Security", and "SQL". The "General" tab is currently selected. Inside the "General" tab, there are four fields: "Name" with the text "work_order", "Owner" with a dropdown menu showing "enterprisedb", "Schema" with a dropdown menu showing "enterprisedb", and "Comment" with a large empty text area. At the bottom of the dialog, there are four buttons: an information icon, a question mark icon, a "Cancel" button, a "Reset" button, and a "Save" button.

Use the fields in the *General* tab to identify the custom data type:

- Use the *Name* field to add a descriptive name for the type. The name will be displayed in the *pgAdmin* tree control. The type name must be distinct from the name of any existing type, domain, or table in the same schema.
- Use the drop-down listbox next to *Owner* to select the role that will own the type.
- Select the name of the schema in which the type will reside from the drop-down listbox in the *Schema* field.
- Store notes about the type in the *Comments* field.

Click the *Definition* tab to continue.

Select a data type from the drop-down listbox next to *Type* on the *Definition* tab; the panel below changes to display the options appropriate for the selected data type. Use the fields in the panel to define the data type.

There are five data types:

- *Composite Type*
- *Enumeration Type*
- *Range Type*
- *External Type* (or *Base Type*)
- *Shell Type*

If you select *Composite* in the *Type* field, the *Definition* tab displays the *Composite Type* panel:

Create - Type

General Definition Security SQL

Type Composite

Composite Type +

	Member Name	Type	Length/precision	Scale	Collation
✕	data_member	"char" ▾			▾

i ? ✕ Cancel ↺ Reset Save

Click the *Add* icon (+) to provide attributes of the type. Fields on the *General* panel are context sensitive and may be disabled.

- Use the *Member Name* field to add an attribute name.
- Use the drop-down listbox in the *Type* field to select a datatype.
- Use the *Length/Precision* field to specify the maximum length of a non-numeric type, or the total count of significant digits in a numeric type.
- Use the *Scale* field to specify the number of digits to the right of the decimal point.
- Use the drop-down listbox in the *Collation* field to select a collation (if applicable).

Click the *Add* icon (+) to define an additional member; click the trash icon to the left of the row to discard a row.

If you select the *Enumeration* in the *Type* field, the *Definition* tab displays the *Enumeration Type* panel:

Create - Type

General Definition Security SQL

Type Enumeration

Enumeration Type

Label

data_label

Cancel Reset Save

Click the *Add* icon (+) to provide a label for the type.

- Use the *Label* field to add a label, which must be less than 64 bytes long.

Click the *Add* icon (+) after each selection to create additional labels; to discard a label, click the trash icon to the left of the row.

If you select *External*, the *Definition* tab displays the *External Type* panel:

Create - Type

General Definition Security SQL

Type External

Required Optional-1 Optional-2

Input function pg_catalog.diagonal

Output function pg_catalog.date_ge

Cancel Reset Save

On the *Required* tab:

- Use the drop-down listbox next to the *Input function* field to add an input_function. The input_function converts the type's external

textual representation to the internal representation used by the operators and functions defined for the type.

- Use the drop-down listbox next to the *Output function* field to add an output_function. The output_function converts the type's internal representation used by the operators and functions defined for the type to the type's external textual representation.

On the *Optional-1* tab:

- Use the drop-down listbox next to the optional *Receive Function* field to select a receive_function. The optional receive_function converts the type's external binary representation to the internal representation. If this function is not supplied, the type cannot participate in binary input.
- Use the drop-down listbox next to the optional *Send function* field to select a send_function. The optional send_function converts from the internal representation to the external binary representation. If this function is not supplied, the type cannot participate in binary output.
- Use the drop-down listbox next to the optional *Typmod in function* field tab to select a type_modifier_input_function.
- Use the drop-down listbox next to the optional *Typmod out function* field tab to select a type_modifier_output_function. It is allowed to omit the type_modifier_output_function, in which case the default display format is the stored typmod integer value enclosed in parentheses.
- Use the optional *Internal length* to specify a value for internal representation.
- Move the *Variable?* switch to specify the internal representation is of variable length (VARIABLE). The default is a fixed length positive integer.
- Specify a default value in the optional *Default* field in cases where a column of the data type defaults to something other than the null value. Specify the default with the DEFAULT key word. (A default can be overridden by an explicit DEFAULT clause attached to a particular column.)
- Use the drop-down listbox next to the optional *Analyze function* field to select a function for performing type-specific statistics collection for columns of the data type.
- Use the drop-down listbox next to the optional *Category type* field to help control which implicit cast will be applied in ambiguous situations.
- Move the *Preferred?* switch to Yes to specify the selected category type is preferred. The default is No.

On the *Optional-2* tab:

- Use the drop-down listbox next to the optional *Element type* field to specify a data type.
- Use the optional *Delimiter* field to indicate the delimiter to be used between values in the external representation of arrays for this data

type. The default delimiter is the comma (,). Note that the delimiter is associated with the array element type, not the array type itself.

- Use the drop-down listbox next to *Alignment type* to specify the storage alignment required for the data type. The allowed values (char, int2, int4, and double) correspond with alignment on 1, 2, 4, or 8 byte boundaries.
- Use the drop-down listbox next to optional *Storage type* to select a strategy for storing data.
- Move the *Passed by value?* switch to *Yes* to override the existing data type value. The default is *No*.
- Move the *Collatable?* switch to *Yes* to specify column definitions and expressions of the type may carry collation information through use of the COLLATE clause. The default is *No*.

If you select *Range* in the *Type* field, the *Definition* tab displays the *Range* panel. Fields on the *Range* panel are context-sensitive and may be disabled.

The screenshot shows the 'Create - Type' dialog box with the 'Definition' tab selected. The 'Type' field is set to 'Range'. Below it, the 'Subtype' field is set to 'abstime'. The 'Subtype operator class' field is empty. The 'Collation' field is empty. The 'Canonical function' field is empty. The 'Subtype diff function' field is empty. At the bottom, there are buttons for 'i', '?', 'Cancel', 'Reset', and 'Save'.

- Use the drop-down listbox next to *Sub-type* to select an associated b-tree operator class (to determine the ordering of values for the range type).
- Use the drop-down listbox next to *Sub-type operator class* to use a non-default operator class.
- Use the drop-down listbox next to *Collation* to use a non-default collation in the range's ordering if the sub-type is collatable.
- Use the drop-down listbox next to *Canonical function* to convert range values to a canonical form.
- Use the drop-down listbox next to *Sub-type diff function* to select a user-defined subtype_diff function.

If you select *Shell* in the *Type* field, the *Definition* tab displays the *Shell* panel:

Create - Type

General

Definition

Security

SQL

Type

Shell

Cancel

Reset

Save

A shell type is a placeholder for a type and has no parameters.

Click the *Security* tab to continue.

Create - Type

General

Definition

Security

SQL

Privileges

Grantee	Privileges	Grantor
<div><div></div>enterprisedb</div>	U*	<div><div></div>enterprisedb</div>

Security Labels

Provider	Security Label
<div><div></div>my_provider</div>	my_security

Cancel

Reset

Save

Use the *Security* tab to assign privileges and define security labels.

Use the *Privileges* panel to assign privileges for the type; click the *Add* icon (+) to grant privileges:

- Select the name of the role that will be granted privileges on the type from the drop-down listbox in the *Grantee* field.
- Click inside the *Privileges* field. Check the boxes to the left of one or more privileges to grant the selected privilege to the specified user.
- The current user, who is the default grantor for granting the privilege, is displayed in the *Grantor* field.

Click the *Add* icon (+) to assign additional privileges; to discard a privilege, click the trash icon to the left of the row and confirm deletion in the *Delete Row* popup.

Use the *Security Labels* panel to define security labels applied to the type. Click the *Add* icon (+) to add each security label selection:

- Specify a security label provider in the *Provider* field. The named provider must be loaded and must consent to the proposed labeling operation.
- Specify a security label in the *Security Label* field. The meaning of a given label is at the discretion of the label provider. PostgreSQL places no restrictions on whether or how a label provider must interpret security labels; it merely provides a mechanism for storing them.

Click the *Add* icon (+) to assign additional security labels; to discard a security label, click the trash icon to the left of the row and confirm deletion in the *Delete Row* popup.

Click the *SQL* tab to continue.

Your entries in the *Type* dialog generate a SQL command (see an example below). Use the *SQL* tab for review; revisit or switch tabs to make any changes to the SQL command.

Example ¶

The following is an example of a sql command generated by user selections made in the *Type* dialog:



```
1 CREATE TYPE public.work_order
2 (
3     INPUT = pg_catalog.int8mod,
4     OUTPUT = pg_catalog.numeric_div
5 );
6
7 ALTER TYPE public.work_order
8     OWNER TO enterprisedb;
9
10 GRANT USAGE ON TYPE public.work_order TO enterprisedb WITH GRANT OPTION;
11
12
13 SECURITY LABEL FOR my_provider ON TYPE public.work_order IS 'my_security'
```

The example shown demonstrates creating a data type named *work_order*. The data type is an enumerated type with three labels: new, open and closed.

- Click the *Info* button (i) to access online help.

- Click the *Save* button to save work.
- Click the *Cancel/* button to exit without saving work.
- Click the *Reset* button to restore configuration parameters.