

How To Use The Nagios XI 2024 User Macros Component

Purpose

This document describes how to use The Nagios XI User Macros Component.

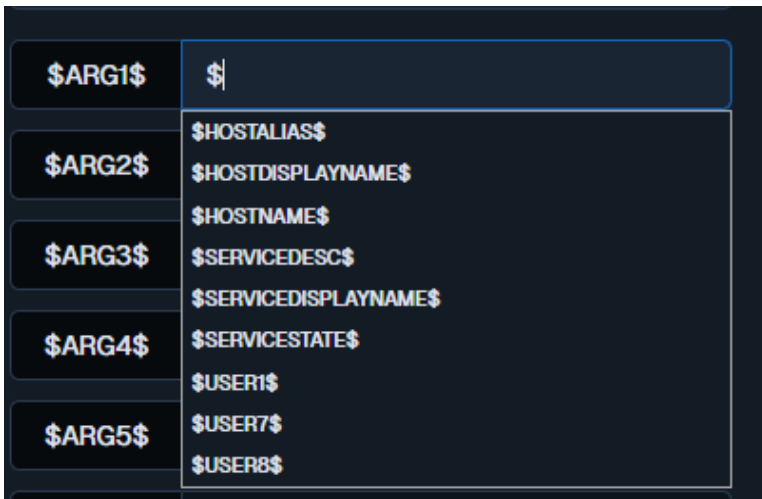
What is a Macro?

One of the main features that make Nagios so flexible is the ability to use macros in object definitions. If you are familiar with programming languages, a macro is just like a variable:

- A value is assigned to a macro
- The macro is used in object definitions
- If you update the macro, all the object definitions use the updated value in the macro

There are two types of macros in Nagios XI, user macros and system macros.

What Does The User Macros Component Do?



\$ARG1\$	\$
\$ARG2\$	\$HOSTALIAS\$ \$HOSTDISPLAYNAME\$ \$HOSTNAME\$
\$ARG3\$	\$SERVICEDESC\$ \$SERVICEDISPLAYNAME\$
\$ARG4\$	\$SERVICESTATE\$ \$USER1\$
\$ARG5\$	\$USER7\$ \$USER8\$

The primary purpose of the **User Macros** component is to make the user and system macros available for use when using **Configuration Wizards** or when editing objects in **Configuration Manager**.

An auto-complete list will appear when you start typing with a \$ (dollar) character, see the screenshot to the right. In the example shown to the right, a combination of user and system macros is shown.

The **User Macros** component allows you to edit the existing user macros and add new macros. This functionality is performed in **Core Configuration Manager** and will be explained in this documentation.

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User Macros

User macros are macros that can be defined by the Nagios XI administrator. They are stored by default in the `resource.cfg` file, located in the `/usr/local/nagios/etc/` directory.

The syntax to define a macro in this file is:

```
$USERn$=x
```

- `n` = a number between 1-256 (you cannot have the same number defined more than once; the first defined macro will always take precedence)
- `x` = the value of the macro, no space after the = character

The `resource.cfg` file will have default macros defined in it already such as `$USER1$=/usr/local/nagios/libexec` and these should not be edited or removed without knowing the full consequences; this can break the core processes from running checks and could be a real headache.

The `$USER1$` macro is a great example of how a macro is used in a command definition, look at this command definition:

```
$USER1$/check_http -H $HOSTADDRESS$
```

Instead of typing `/usr/local/nagios/libexec` all you need to type is `$USER1$` in the command definition.

The maximum number of macros by default is **256**. You can change this through configuration if you need more macros than the default (**Note:** the max number is a Nagios Core setting).

A feature of the **User Macros** component is the ability to update the `resource.cfg` file from within **Configuration Manager**, instead of having to edit the file from a terminal session, which will be explained in this documentation.

System Macros

System macros are macros that cannot be defined by the Nagios XI administrator, their values are inherited from object definitions and can also be dynamic. Some examples are:

- `$HOSTADDRESS$` = The value of the address directive in a host definition
- `$ARG1$` = The value of argument #1 in a host or service definition
- `$HOSTSTATE$` = The current state of the HOST object, this dynamic macro is commonly used in a notification command

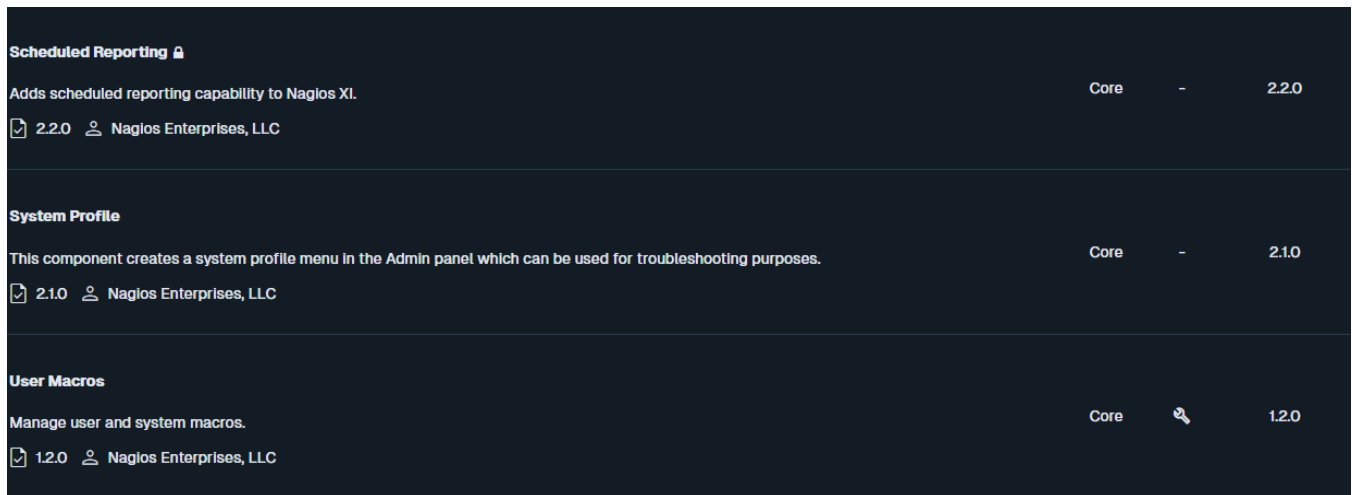
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These macros are useful in many ways and are explained in detail in [this article](#).

A feature of the **User Macros** component is the ability to define which of these system macros will be made available in areas like **Configuration Manager** and **Configuration Wizards**, which will be explained in this documentation.

Configuring User Macros Component

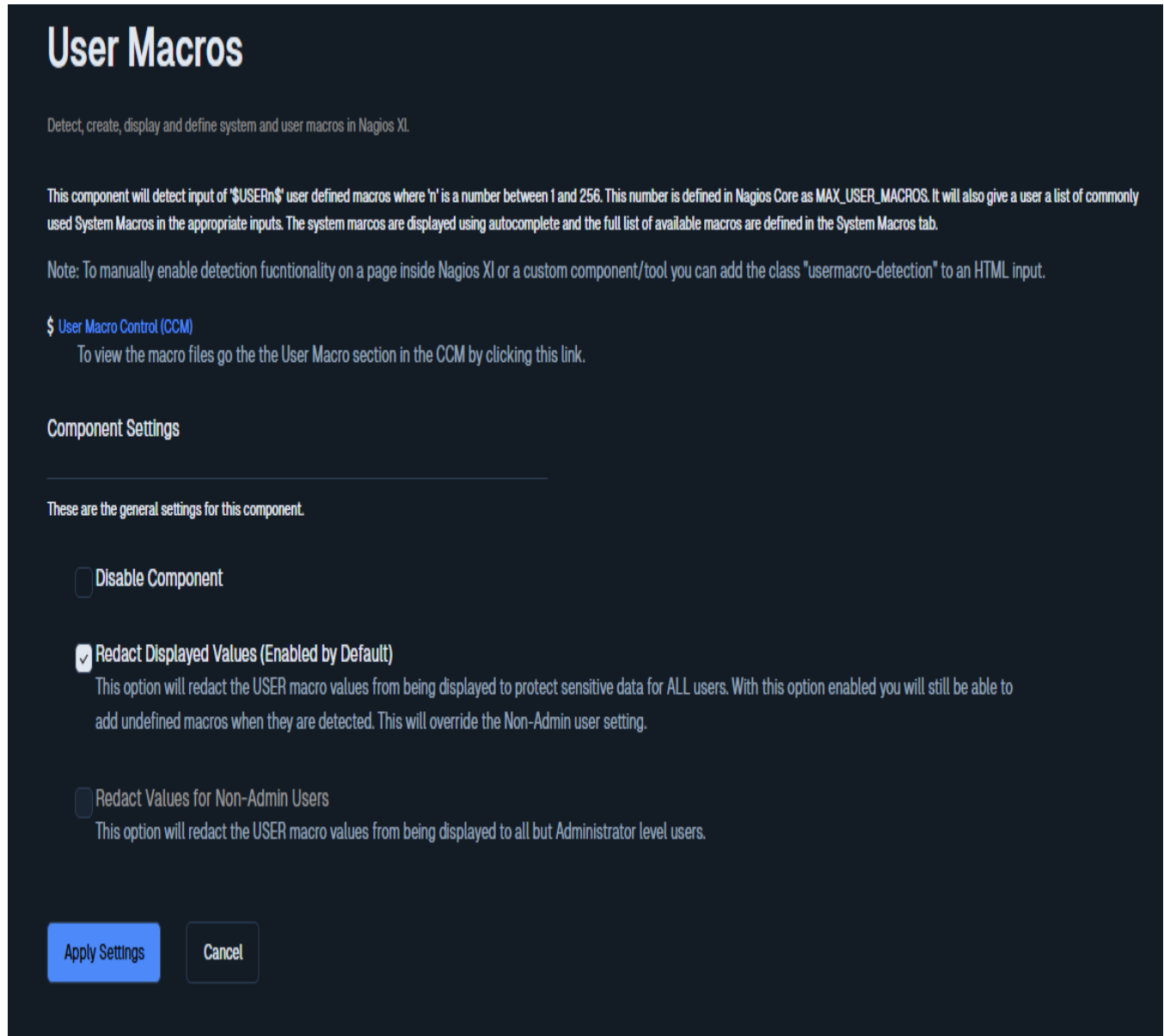
1. Login to Nagios XI and navigate to **Admin > System Extensions > Manage Components**.



Scheduled Reporting 			
Adds scheduled reporting capability to Nagios XI.	Core	-	2.2.0
 2.2.0  Nagios Enterprises, LLC			
System Profile			
This component creates a system profile menu in the Admin panel which can be used for troubleshooting purposes.	Core	-	2.1.0
 2.1.0  Nagios Enterprises, LLC			
User Macros			
Manage user and system macros.	Core		1.2.0
 1.2.0  Nagios Enterprises, LLC			

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2. Click the **Edit Settings** icon to configure the **User Macros** component, which will display the settings available for the component as follows:



The screenshot shows the 'User Macros' configuration page in Nagios XI. The page has a dark blue background with white text. At the top, the title 'User Macros' is displayed in a large, bold font. Below the title, there is a subtitle: 'Detect, create, display and define system and user macros in Nagios XI.' A paragraph of text explains that the component will detect input of '\$USERn\$' user defined macros where 'n' is a number between 1 and 256. It also mentions that the number is defined in Nagios Core as MAX_USER_MACROS and that it will give a user a list of commonly used System Macros in the appropriate inputs. A note states: 'Note: To manually enable detection functionality on a page inside Nagios XI or a custom component/tool you can add the class "usermacro-detection" to an HTML input.' Below this, there is a section titled '\$ User Macro Control (CCM)' with a link: 'To view the macro files go to the User Macro section in the CCM by clicking this link.' The 'Component Settings' section is separated by a horizontal line and contains the text: 'These are the general settings for this component.' There are three settings, each with a checkbox: 1. 'Disable Component' (checkbox is unchecked). 2. 'Redact Displayed Values (Enabled by Default)' (checkbox is checked). Below this checkbox is a description: 'This option will redact the USER macro values from being displayed to protect sensitive data for ALL users. With this option enabled you will still be able to add undefined macros when they are detected. This will override the Non-Admin user setting.' 3. 'Redact Values for Non-Admin Users' (checkbox is unchecked). Below this checkbox is a description: 'This option will redact the USER macro values from being displayed to all but Administrator level users.' At the bottom of the settings section, there are two buttons: 'Apply Settings' (a blue button) and 'Cancel' (a white button with a grey border).

Disable Component:

This will turn off all detection of macros and the **User Macro** link in the **Configuration Manager** will not be available. This option is specifically useful if you need to vet the component or have security concerns with the content of your resources file where User macros are stored.

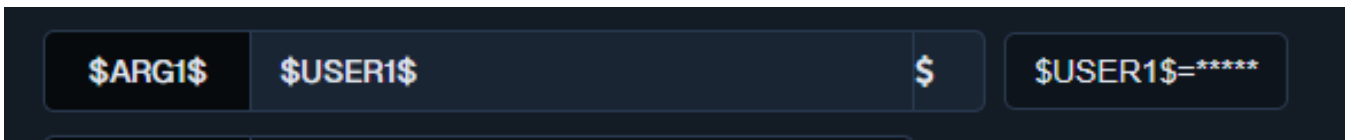
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Redact Values:

User Macros often contains sensitive data such as passwords or tokens. They are also useful for using restricted characters that are normally not allowed for use in certain commands (example: Nagios Core interpreting a '!' character in a command). Since the information they hold can be sensitive, there are two options for obscuring the values of the macros:

Redact Displayed Values:

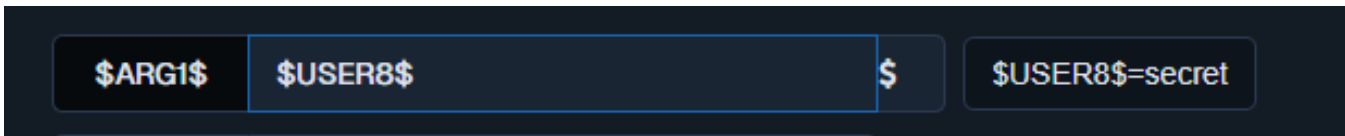
This will redact USER macro values from being displayed anywhere. Here is an example:



When you hover the mouse over the \$ box a message box will display the value with asterisks.

When **Redact Displayed Values** is enabled, you can create a new User macro while using the detection in Configuration Manager and in Configuration wizards (explained in detail further on in this document). However, you will not be able to directly edit the User macros via **CCM > Tools > User Macros**.

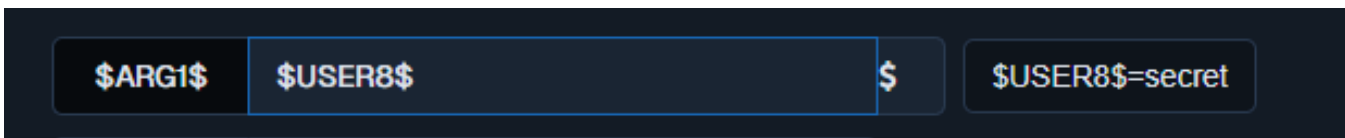
In a fresh Nagios XI installation this will be turned on by default (enabled). If you turn off (disable) this option, all users will be able to see the macro values, for example:



Redact Displayed values for Non-Admin Users:

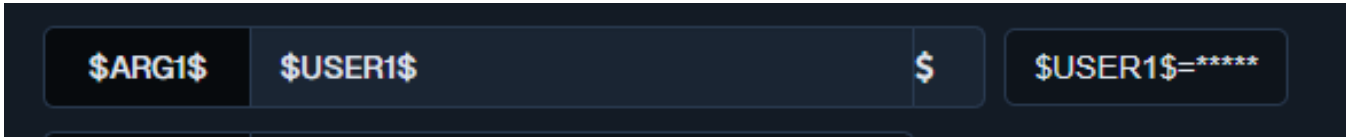
This feature works exactly like the default redact function but is specifically designed to always show macro values to Admin level users and hide values from all non-admin users. This option can only be enabled when the Redact Displayed Values option is disabled.

Here is an example of what the Admin user will see:



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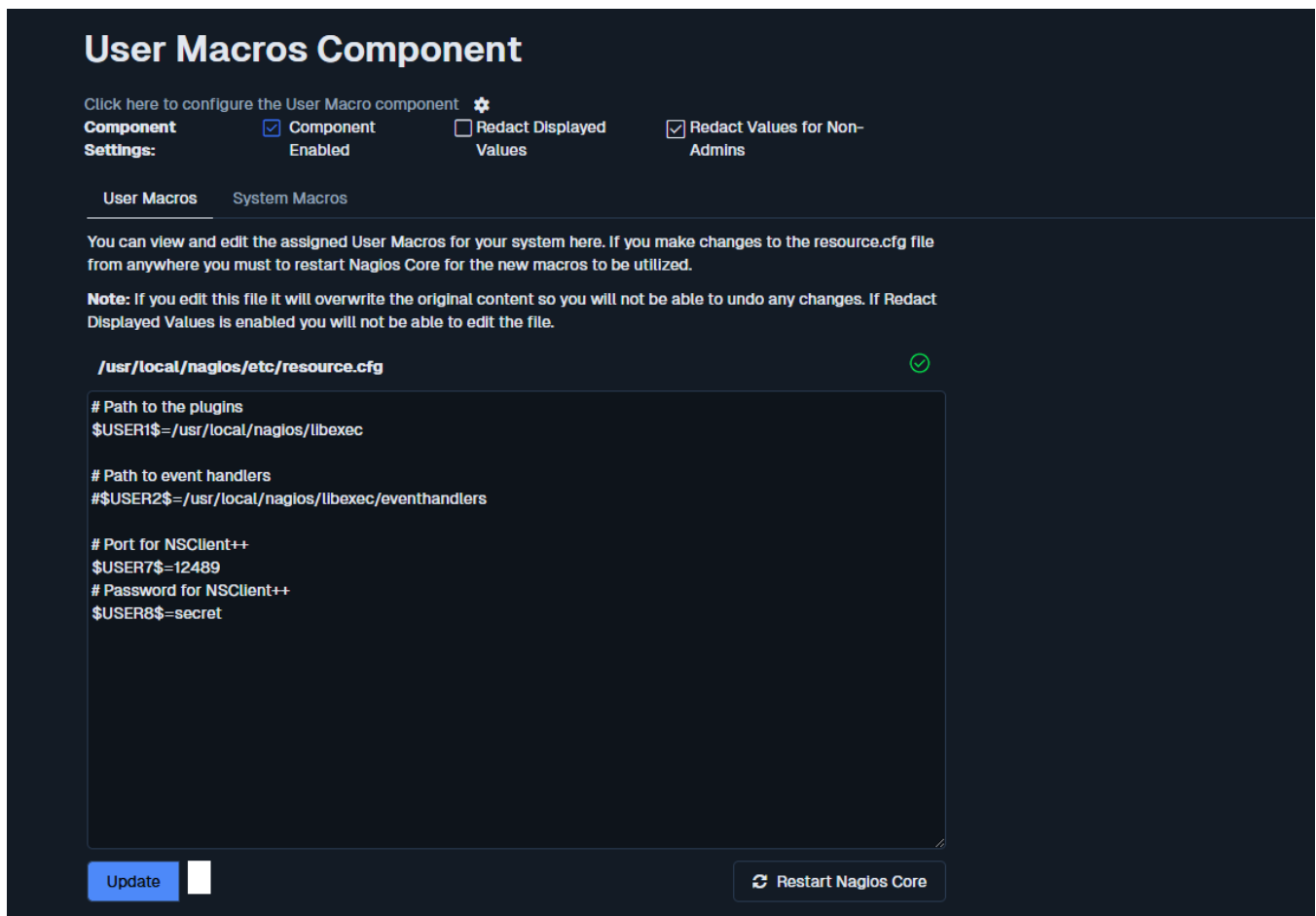
Here is an example on what a NON-Admin user will see:



This should be considered when giving admin rights to users since those users will be able to see all user macro values. This would be like a user who has login access to the Nagios XI machine, since they could just read the `resource.cfg` file from the command line.

Edit User Macros

1. Login to Nagios XI and navigate to **Configure > Core Config Manager > Tools > User Macros**.

A screenshot of the Nagios XI User Macros Component configuration page. The page title is "User Macros Component". Below the title, there is a link to configure the component and a gear icon. The "Component Settings" section shows three checkboxes: "Component Enabled" (checked), "Redact Displayed Values" (unchecked), and "Redact Values for Non-Admins" (checked). Below this, there are two tabs: "User Macros" (selected) and "System Macros". The main content area contains a text box with the following text: "You can view and edit the assigned User Macros for your system here. If you make changes to the resource.cfg file from anywhere you must to restart Nagios Core for the new macros to be utilized." Below this is a note: "Note: If you edit this file it will overwrite the original content so you will not be able to undo any changes. If Redact Displayed Values is enabled you will not be able to edit the file." The text box is titled "/usr/local/nagios/etc/resource.cfg" and contains the following content: "# Path to the plugins", "\$USER1\$=/usr/local/nagios/libexec", "# Path to event handlers", "\$USER2\$=/usr/local/nagios/libexec/eventhandlers", "# Port for NSClient++", "\$USER7\$=12489", "# Password for NSClient++", "\$USER8\$=secret". At the bottom of the page, there are two buttons: "Update" and "Restart Nagios Core".

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2. The **User Macros** tab is the default tab selected. The **User Macros** section will appear differently depending on how the User Macros component is configured.
 - a. **Redact Displayed Values option is Enabled:**
 - i. All values will be redacted and will appear with *****
 - ii. You cannot edit existing values or add new values
 - iii. The Update button is NOT displayed
 - b. **Redact Displayed Values option is Disabled:**
 - i. All values will be shown
 - ii. You can edit existing values and add new values
 - iii. The Update button is displayed
 - iv. The screenshot above is an example of this.

Updating an existing macro or adding a new macro is as easy as adding a new line. For example:

```
$USER10$=!ts@S3cr3t
```

Click the **Update** button once you've made the changes.

3. Please refer to the [User Macros](#) section of this document for the correct syntax.
4. After making changes, **Nagios Core** will need to be restarted so that the updated values are loaded from the `resource.cfg` file. This can be done via **CCM > Tools > Config File Management > Restart Nagios Core**.

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System Macros

Login to Nagios XI and navigate to **Configure > Core Config Manager > Tools > User Macros** and then click the **System Macros** tab.

The screenshot shows the Nagios XI interface for configuring System Macros. At the top, there are settings for the User Macro component: 'Component' is checked and 'Enabled', 'Redact Displayed Values' is unchecked, and 'Redact Values for Non-Admins' is checked. Below this, the 'System Macros' tab is selected. A text block explains that System Macros are displayed as selection options when a macro is detected and provides a link to Nagios Core documentation. The main area contains two lists: a source list on the left with a search filter and an 'Update' button, and an 'Active Detected System Macros' list on the right. The source list contains 17 macros, and the active list contains 6 macros. Navigation arrows are positioned between the two lists.

Source List	Active Detected System Macros
\$HOSTNAME\$	\$HOSTNAME\$
\$HOSTDISPLAYNAME\$	\$HOSTDISPLAYNAME\$
\$HOSTALIAS\$	\$HOSTALIAS\$
\$HOSTADDRESS\$	\$SERVICEDESC\$
\$HOSTSTATE\$	\$SERVICEDISPLAYNAME\$
\$HOSTSTATEID\$	\$SERVICESTATE\$
\$LASTHOSTSTATE\$	
\$LASTHOSTSTATEID\$	
\$HOSTSTATETYPE\$	
\$HOSTATTEMPT\$	
\$MAXHOSTATTEMPTS\$	
\$HOSTEVENTID\$	
\$LASTHOSTEVENTID\$	
\$HOSTPROBLEMID\$	
\$LASTHOSTPROBLEMID\$	

The purpose of the **System Macros** tab is to be able to select specific macros that you would like to be displayed when the auto-complete list appears.

In this screenshot you can see that six macros were added to the **Active Detected System Macros**.

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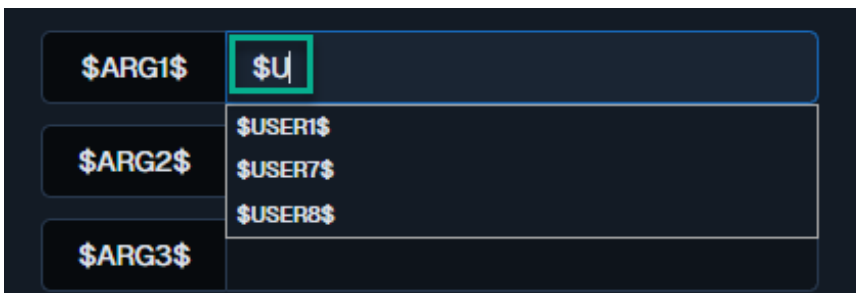
In this screenshot you can see that these three macros are now available in the auto-complete list.



It's important to note that adding system macros to the **Active Detected System Macros** list is purely to make it easy to select a system macro from the auto-complete list. All system macros will work in any configuration area of Nagios XI whether they are included in this list or not.

Creating New User Macros On The Fly

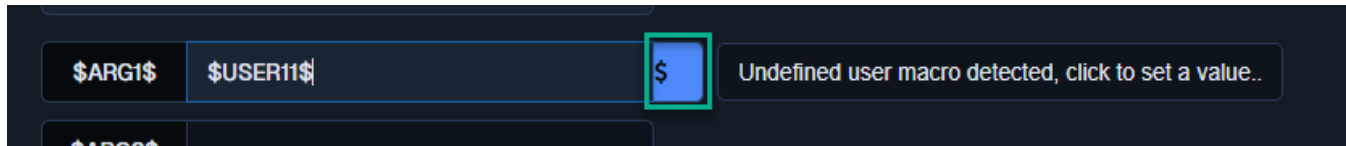
In the **Edit User Macros** section of this document, you were shown how to add a new macro. Another feature of the **User Macros** component is the ability to create a new User macro when you are in the middle of running a configuration wizard OR editing an object in **CCM**. Here is how it works when you are the **Configuration Manager**.



First you start off by typing \$U to make the auto-complete list appear. You can see in the screenshot to the right that \$USER1\$, \$USER7\$ and \$USER8\$ already exist.

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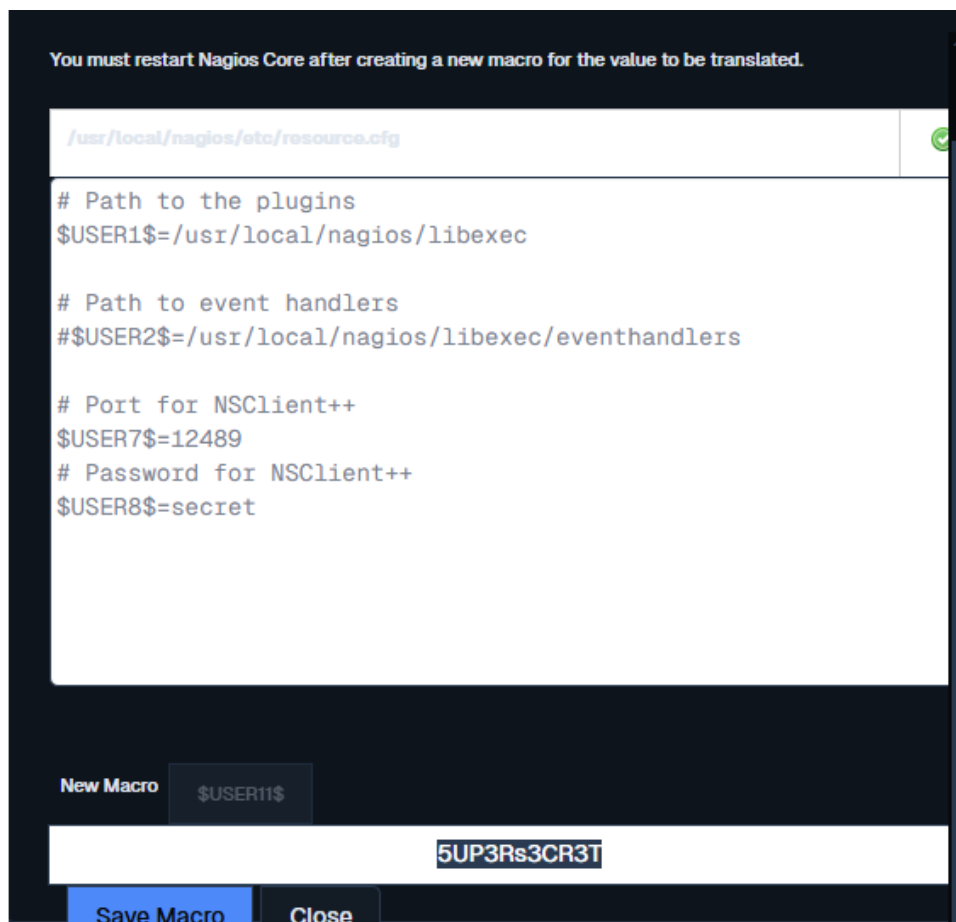
This example is going to add \$USER11\$ as it does not exist.



Simply finish typing the name of the user Macro and as soon as you type the closing \$ a blue \$ button will appear to the right.

When you hover your mouse over the blue \$ button a message window will appear informing you that the macro is undefined and to click it to set a value.

Click the blue \$ button and the **Create New User Macro** window will appear.



Type a value in the field at the bottom of the window and then click the **Save Macro** button.

You will receive a success message once the new macro has been added.

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Click the **Close** button when done

Note: The new macro will not be active until Nagios Core is restarted. This will occur when you **Apply Configuration** OR you finish a **Configuration Wizard**.

The ability to add new user macros will be available if the **User Macros** component is enabled, see the [Configuring User Macros Component](#) section for more information on this.

Special Characters

User macros are a great way to use complicated passwords with special characters in them. Special characters are a group of characters that carry out special instructions, like the dollar sign \$ which does expansion in bash. If you tried to use a \$ in a password argument at the command line, you would see it throw an unexpected error.

In Nagios Configurations an exclamation mark “!” Is used as an argument separator. If you used this in a password, then the password will be split, and it will change the number of arguments being presented to the monitoring engine.

The following KB article explains special characters in more detail and should be taken into consideration with user macros:

[Special Characters](#)

Finishing Up

This completes the documentation on how to use the Nagios XI User Macros Component. If you have additional questions or other support-related questions, please visit us at our Nagios Support Forum, Nagios Knowledge Base, or Nagios Library:

[Visit Nagios Support Forum](#)

[Visit Nagios Knowledge Base](#)

[Visit Nagios Library](#)