Purpose

This document describes how to use the User Macros component in Nagios XI. The component exposes the user and system macros available in Nagios Core to multiple areas of Nagios XI, allowing for more flexible configurations.

Target Audience

This document is intended for use by Nagios XI Administrators who want to take advantage of user and system macros in Nagios XI.

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 ?

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 Core Configuration Manager (CCM).

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.

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

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 which is 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, take a 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).

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A feature of the **User Macros** component is the ability to update the `resource.cfg` file from within CCM, 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

These macros are useful in a number of ways and are explained in detail here:

https://assets.nagios.com/downloads/nagioscore/docs/nagioscore/4/en/macrolist.html

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

Configuring User Macros Component

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

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

Disable Component:

This will turn off all detection of macros and the User Macro link in the CCM 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.

Redact Values:

User Macros often contain 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:
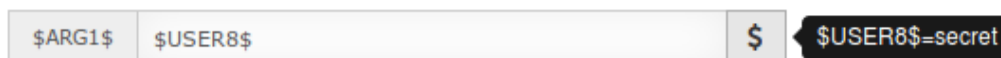
Redact Displayed Values:

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

$ARG1$	$USER8$		$	$USER8$=*****

When you hover the mouse over the **$** box a message box will display the value with asterisk's.

When **Redact Displayed Values** is **enabled**, you can create a new User macro while using the detection in CCM 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 install 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:

$ARG1$	$USER8$		$	$USER8$=secret

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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 an Admin user will see:

| $ARG1$ | $USER8$ | | $ | $USER8$=secret |
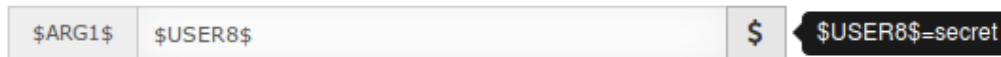
Here is an example on what a NON-Admin user will see:

Configuration Wizard: Windows Server - Step 2   ⚙ $ $USER8$=*****

This should be considered when giving admin rights to users since those users will be able to see all user macro values. This is similar to 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

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

Understanding The User Macros Component

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.

Redact Displayed Values option is Enabled:

All of the values will be redacted and will appear with *****

You cannot edit existing values or add new values

The **Update** button is NOT displayed

Redact Displayed Values option is Disabled:

All of the values will be shown

You can edit existing values and add new values

The **Update** button is displayed

The screenshot on the previous page 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.

Please refer to the User Macros section of this document for the correct syntax.

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 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 the above screenshot you can see that three macros were added to the **Active Detected System Macros**.

In the screenshot to the right 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 regardless if they are in this list or not.

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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's how it works when you are in CCM.

First you start off by typing $ʊ to make the auto-complete list appear. You can see in the screenshot to the right that $USER1$, $USER7$ and $USER8$ already exist.
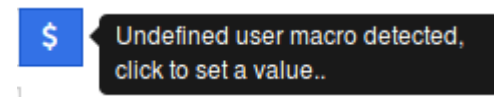
This example is going to add $USER11$ as it does not exist.

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 (see the following page).

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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.

Click the **Close** button when done.

Create New User Macro

/usr/local/nagios/etc/resource.cfg

```
# Path to the plugins
$USER1$=*****

# Path to event handlers
#$USER2$=*****

# Port for NSClient++
$USER7$=*****
# Password for NSClient++
$USER8$=*****
```

Successfuly added new user macro.

New Macro $USER11$ Sup3rS3cr3t Save Macro Close

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 as long as 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 will 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 amount 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:

https://support.nagios.com/kb/article.php?id=580

Finishing Up

This completes the documentation on understanding the User Macros component in Nagios XI.
If you have additional questions or other support related questions, please visit us at our Nagios Support Forums:

https://support.nagios.com/forum

The Nagios Support Knowledgebase is also a great support resource:

https://support.nagios.com/kb