Purpose

This document explains how to use the Capacity Planning feature of Nagios XI to predict what the future trends in your network infrastructure will be. Predicting trends helps in supporting network growth and sustainability, and is a valuable asset for anybody, from a junior network admin, to a C-level wanting a more overall view.

Prerequisites

Capacity planning is a feature of the Enterprise Edition license. If you do not have the Enterprise Edition license of Nagios XI, you can enable the free 60-day trial to experience what it has to offer before making a purchase. The trial can be activated via **Admin** > **System Config** > **License Information**.

Navigating to Capacity Planning

Capacity Planning is located under the **Reports** menu.

The default view will display the 1-week capacity planning reports for the hosts in alphabetical order. From the screenshot above you can see the first one displayed is the APC Smart-UPS 1500 host with the rta data source from the `check_icmp` plugin.

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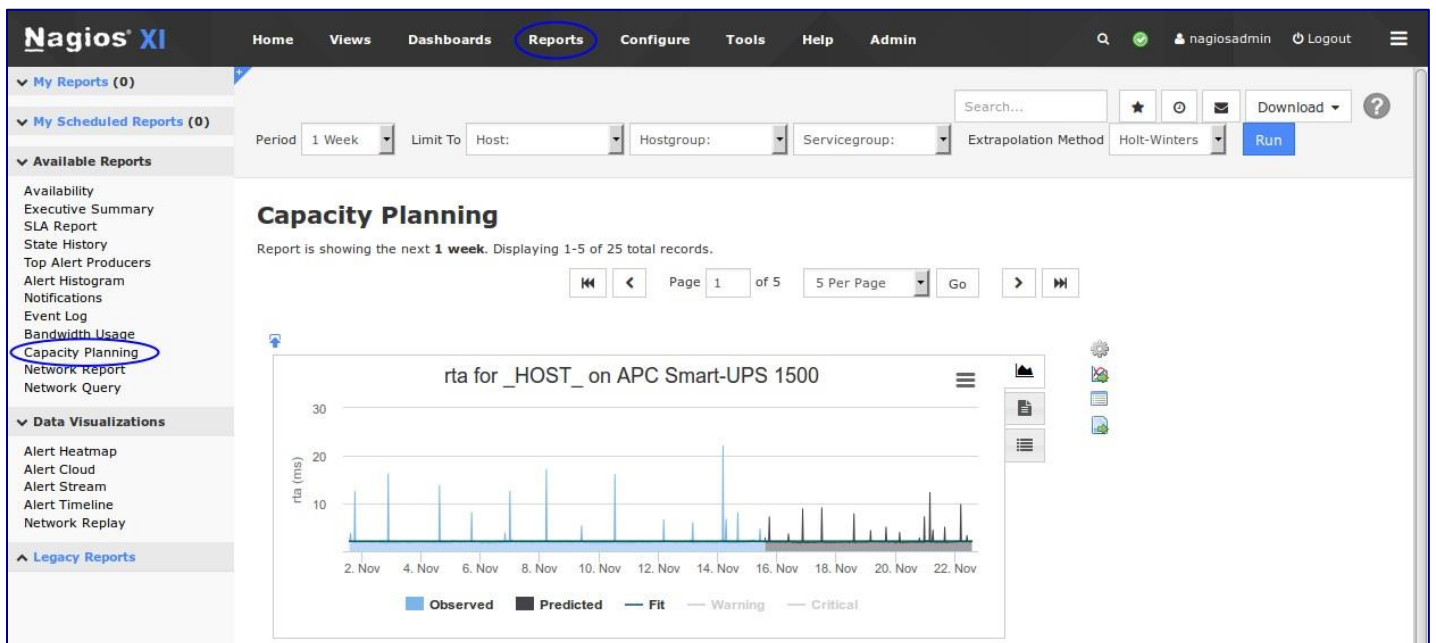
Description Of Report Options

At the Top of the page, there is an options button to change report options. They are described as follows:

Period

This is the Duration that you would like to see the capacity report predict into the future.

Limited To

This is the criteria you wish to use for your report. You can choose options such as a specific host, a specific service (available after selecting a host), a hostgroup, or a servicegroup. The Host Selection drop box allows you to pick a host to evaluate and the Service selection drop down (appears after selecting a host) allows you the same.

Extrapolation Method

This is referring to the mathematical method that will be used to approximate and forecast that data that it receives. The current methods are Holt-Winters and then three more forms of a polynomial fitting. HoltWinters has long been regarded as a good forecasting algorithm for hard to predict trends. The polynomial fits would be good to use if you are expecting exponential growth or decay.
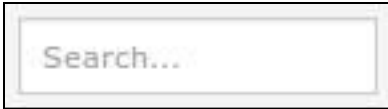
Apply and Run

Click **Apply and Run** to generate the capacity planning report.

Search

A search box for easier access to specific services/hosts.

Report Options

Options for managing the reports you have ran, you can save, email, schedule and download the report.

This is explained in further detail further on in this document.

Extrapolation Options

Nagios XI chooses the available Periods that you are allowed to choose from based on how long you have been collecting data for. If the Nagios XI instance is relatively new, then you won't have much data to extrapolate off, and thus selecting a high period would not be advised.

You must have twice as much solid data as the period you wish to use. A caveat of this is that if the data that you are gathering is spotty, capacity planning will not work. Capacity planning also requires that 66% of the period you wish to extrapolate with must have real values. If Nagios goes down, or the plugin that you're using starts malfunctioning and performance data does not get recorded, that starts adding to the 66% of values that are not acceptable values for number crunching.

To cap it off, here are some points to remember:

- The more (complete) data you have, the further into the future you can extrapolate
- The method you choose can have an impact on the actual prediction, so it takes a bit of intuition

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Run Report

Once you have selected the data set you wish to evaluate, click the blue **Run** button to generate a report dashlet. Once your report dashlet has been generated, your first view should be of a graph containing the collected data as well as a prediction based on your extrapolation method (Holt-Winters by default). You should also see tabs on the right of this dashlet that include an executive summary as well as the data set used for this report. The dashlet can be added to any dashboard by clicking the icon.

Hosts and services in Nagios XI that generate performance data may have more than one datasource (DS) in the graph data. For example a **Ping** check returns four DS's **rta**, **pl**, **rtmax** and **rtmin**. The capacity planning reports will generate one report per DS.

The following examples are showing a **3 month** report for the **Shared Memory Usage** for the localhost using Holt-Winters:

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Graph

The graph shows the 66% of the data used to generate the prediction as the left part of the graph. The right hand part of the graph is the predicted data.
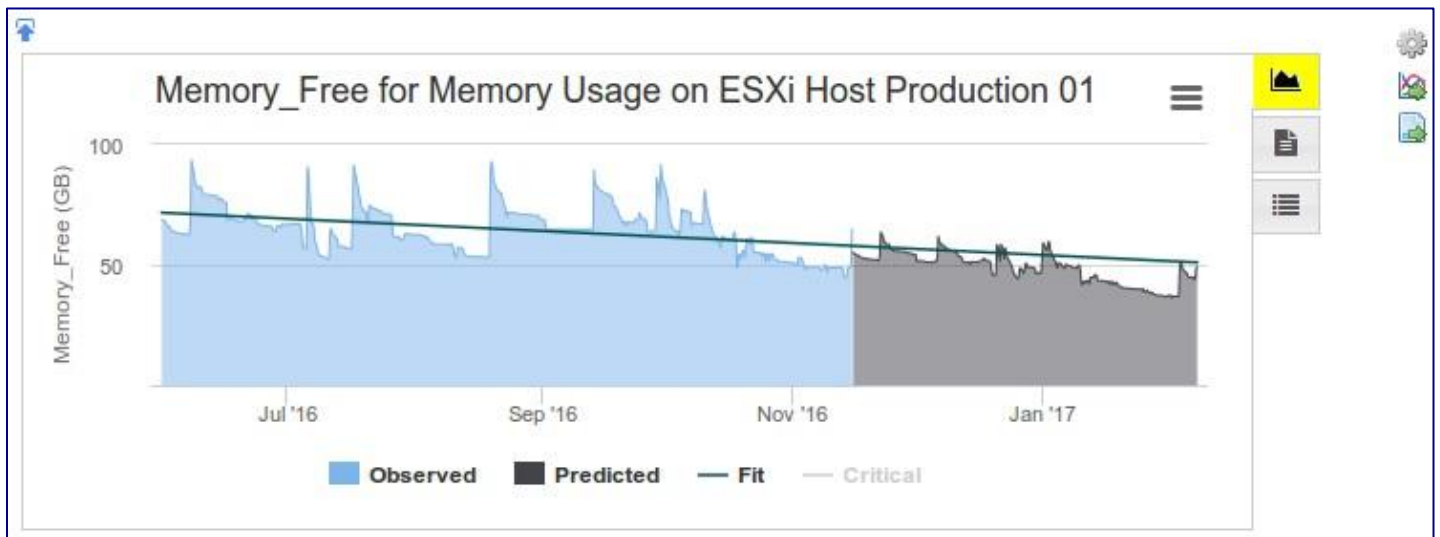

Moving your mouse cursor over the graph will display the relative graph values.

There is a **fit** line that spans the length of the graph which can make it easier to understand the prediction.

If the Nagios XI service performance data contained a warning or critical threshold then warning and critical lines are made available but not shown. In the screenshot above you can see the word **Critical** grayed out. If you click the word, the critical threshold line will be shown (as a horizontal line that spans the length of the graph).

Executive Summary
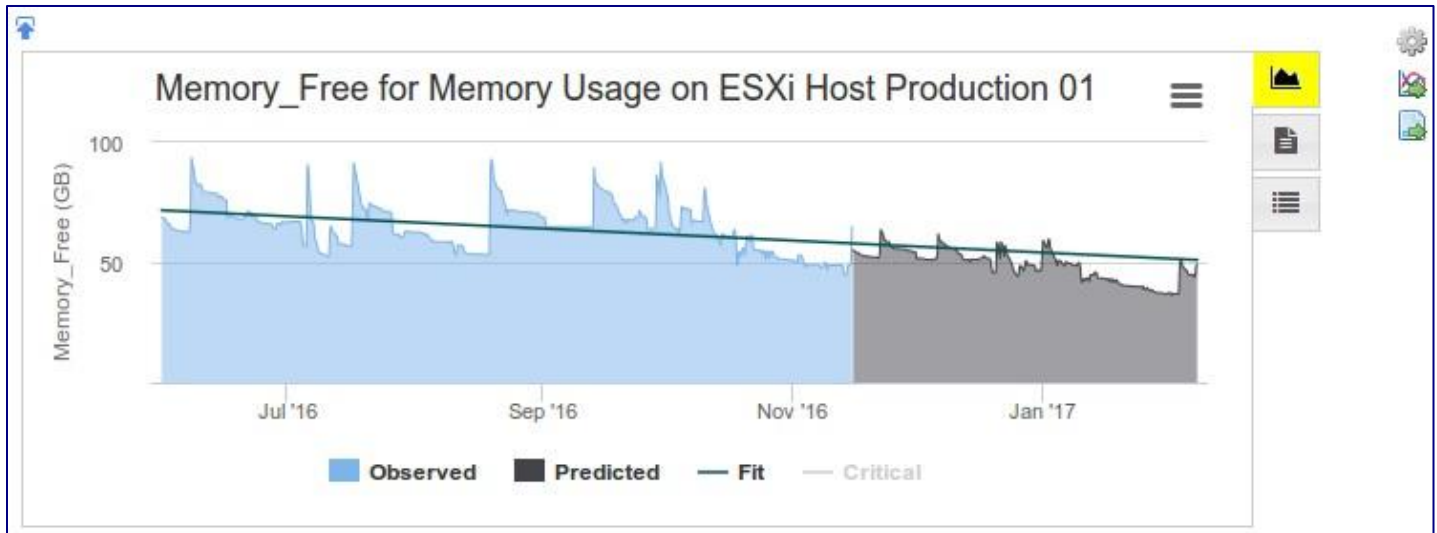
This provides a written summary of the observed data and how it relates to the predicted data.

Data

Date	Value	Warning	Critial	Fit
2016-11-14 17:00	48.741		3	57.983
2016-11-14 23:00	48.794		3	57.962
2016-11-15 05:00	49.388		3	57.942
2016-11-15 11:00	64.815		3	57.921
2016-11-15 17:00	54.964		3	57.901
2016-11-15 23:00	54.696		3	57.880
2016-11-16 05:00	54.687		3	57.860
2016-11-16 11:00	54.008		3	57.839

This shows you the raw data used for the prediction. The observed data is white, while the predicted data is gray. If you had any critical values set up you would see them in the critical column.

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Dashlet Icons

There are three icons that are located on the right hand pane of the dashlet which perform the following:

Edit Dashlet Settings - This allows the "time period" and "extrapolation method" to be defined specifically for this dashlet

View All Service Tracks - Displays all the capacity planning services available for the object you are currently viewing

Download as CSV - Provides you with a CSV file of all the data used to generate the prediction

Report Output Options
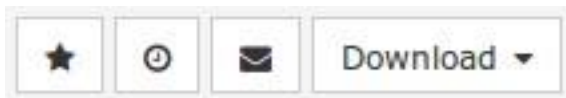
These options allow you to save, schedule, email and download a report.

Add

Clicking the **Add** button will allow you to save the report under the **My Reports** section. When you click the button, you will be presented with the following screen:

Add to My Reports

Use this function to save reports that you frequently access to your 'My Reports' menu.

Report Title: Capacity Planning

The name you want to use for this report.

☐ Do not show this report in the my reports menu section.

Save Report   Cancel

Populate the fields as required and click **Save Report** when done.

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Schedule

Clicking the **Schedule** button will allow you to schedule the report to run at specific times and email selected recipients. When you click the button you will be presented with the following options:

Report Name

A name required for the report

Schedule

Define when you would like this report to run

Attachments

Select the type(s) of attachments you want the report to included in the email as

Recipients

Provide a list (comma-separated) of email addresses this report should be sent to

Subject

The subject of the email being sent

Message

The message body of the email being sent

Populate the fields as required and click **Save** when done.

Email

Clicking the **Email** button will allow you to send the report immediately via email to selected recipients.

The options available are identical to the **Schedule** options listed above.

Download

The Download button can be used to save the report as a PDF or JPG.

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Finishing Up

This completes the documentation on how to use Capacity Planning. 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