



## Purpose

This document describes how to fully utilize the Nagios Business Process Intelligence (or BPI) add-on and incorporate checks into Nagios Core.

## Target Audience

This document is intended for use by Nagios Core Administrators.

## IMPORTANT

Nagios XI comes with Nagios BPI by default! Do **NOT** try to install or upgrade the component using the steps, outlined below. This will break your component! Please refer to the following documentation for Nagios XI:

[Using BPI In Nagios XI](#)

## Downloading And Installing Nagios BPI for Nagios Core

The following steps have been tested on Nagios Core 4.3.4 running on CentOS 7 using the following installation guide:

[Installing Nagios Core From Source](#)

Establish a terminal session to your Nagios XI server as root and execute the following commands:

```
cd /tmp
wget https://github.com/NagiosEnterprises/nagiosbpi/archive/master.tar.gz
tar xzf master.tar.gz
```

Move the entire `nagiosbpi` folder to the location that is accessible by your webserver:

```
mv /tmp/nagiosbpi-master/nagiosbpi /var/www/html/
```

Set the permissions:

```
cd /var/www/html/nagiosbpi
mkdir tmp
chmod +x set_bpi_perms.sh
./set_bpi_perms.sh
chown -R apache:nagios /var/www/html/nagiosbpi/
```

Edit the contents of the `constants.conf` file to match your directory locations. Use absolute directory locations, for example:

```
STATUSFILE=/usr/local/nagios/var/status.dat
OBJECTSFILE=/usr/local/nagios/var/objects.cache
CONFIGFILE=/var/www/html/nagiosbpi/bpi.conf
CONFIGBACKUP=/var/www/html/nagiosbpi/bpi.conf.backup
XMLOUTPUT=/var/www/html/nagiosbpi/tmp/bpi.xml
```

You will now be able to access Nagios BPI from your web browser using the following URL:

```
http://<yourserver>/nagiosbpi
```

An example config will be shown. From here you can start creating new BPI groups using the built-in configuration tools.

## Understanding the BPI Group Logic

The Nagios BPI groups can be a flexible tool for determining a "real" network state for a group of services. Dependencies are highly customizable and the logic for determining a group state can be defined by the user.

### Factors that create a 'Warning' or 'Critical' state

- All non-essential members are in a problem state
- Any "Essential members" are in a problem state
- The group's problem count exceeds the **Warning Threshold**
- The group's problem count exceeds the **Critical Threshold**

### A Basic BPI Group

This is a basic group with 5 members. The group has no thresholds set, and there are no essential members. Since there are still some members in an 'Ok' state, the group state is listed as 'Ok.'

Low Priority  
Show All Groups

Ok		BPI Basic Group		3 problem(s)	This group has no thresholds or essential members	Edit	Delete
Critical	CNN	DNS IP Match	DNS CRITICAL - expected '157.166.226.25' but got '157.166.224.25,157.166.224.26,157.166.226.25,157.166.226.26,157.166.255.18,157.166.255.19'				
Ok	CNN	DNS Resolution	DNS OK: 0.056 seconds response time. www.cnn.com returns 157.166.224.25,157.166.224.26,157.166.226.25,157.166.226.26,157.166.255.18,157.166.255.19				
Ok	localhost	Root Partition	DISK OK - free space: / 1794 MB (48% inode=93%):				
Warning	Local Services	URL	1 problem(s)	Example BPI Group	Edit	Delete	
Warning	More Local Services	URL	1 problem(s)	Demo Group 2	Edit	Delete	

### A Group Using Thresholds

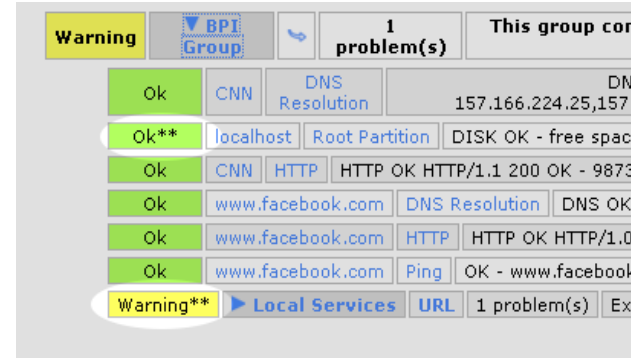
This next group has no essential members, but it has a warning threshold set at 3 problems, and a critical threshold set at 6 problems. Since the problem count of the group's members exceeds the warning threshold, the group state is 'Warning.'

Low Priority  
Show All Groups

Warning		BPI Threshold Group		4 problem(s)	This group has warning threshold at 3, critical threshold at 6	Edit	Delete
Critical	CNN	DNS IP Match	DNS CRITICAL - expected '157.166.226.25' but got '157.166.224.25,157.166.224.26,157.166.226.25,157.166.226.26,157.166.255.18,157.166.255.19'				
Ok	CNN	DNS Resolution	DNS OK: 0.054 seconds response time. www.cnn.com returns 157.166.224.25,157.166.224.26,157.166.226.25,157.166.226.26,157.166.255.18,157.166.255.19				
Ok	localhost	Root Partition	DISK OK - free space: / 1794 MB (48% inode=93%):				
Ok	CNN	HTTP	HTTP OK HTTP/1.1 200 OK - 97994 bytes in 0.604 seconds				
Critical	CNN	Ping	CRITICAL - www.cnn.com: rta nan, lost 100%				
Critical	www.facebook.com	DNS IP Match	DNS CRITICAL - expected '66.220.149.25' but got '66.220.149.11'				
Ok	www.facebook.com	DNS Resolution	DNS OK: 0.129 seconds response time. www.facebook.com returns 66.220.149.11				
Ok	www.facebook.com	HTTP	HTTP OK HTTP/1.0 200 OK - 11454 bytes in 0.722 seconds				
Ok	www.facebook.com	Ping	OK - www.facebook.com: rta 79.870ms, lost 20%				
Warning	Local Services	URL	1 problem(s)	Example BPI Group	Edit	Delete	

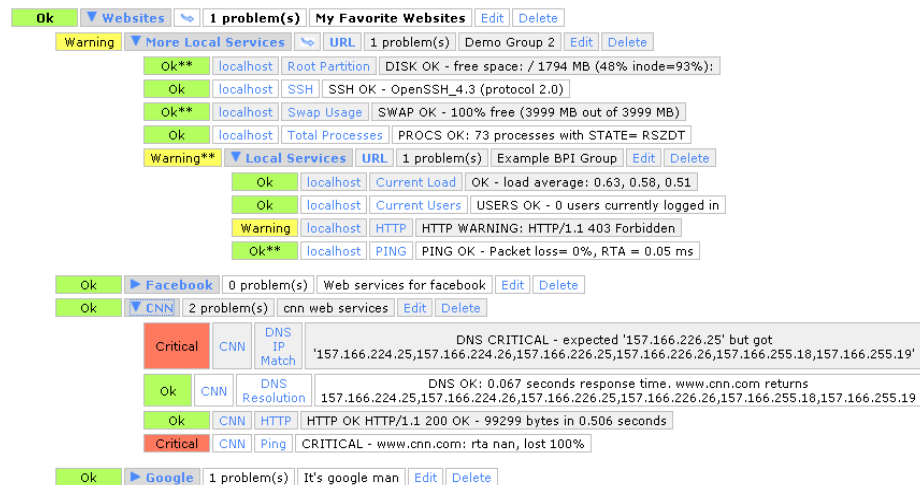
### A Group Using Essential Members

This group has 2 essential members defined, which are denoted with a \*\* next to their state. If an essential member has a problem, the entire group will be in a problem state, even though the thresholds have not been exceeded, and there is only one problem.



### Complex BPI Groups

The BPI groups determine state by looking down only one level. The BPI group will essentially look for the worst state trigger in the group, so if the warning threshold is exceeded for a group, but an essential member is "critical", the group will still be "critical". There is no limit to the number of sub groups that can be created, you can define as many levels in your dependency tree as you want.



### Primary Groups

"Primary" BPI groups are seen from the top level of BPI page, while a non-primary group must have a visible parent group in order to be seen on the display. If a non-primary group is defined but never assigned as a member somewhere else, it will not be visible on the display.

## Incorporating BPI Groups Into A Nagios Check

The `check_bpi.php` plugin is located in the `nagiosbpi` directory, for example

```
/var/www/html/nagiosbpi/.
```

Add this file to your Nagios plugins directory (`/usr/local/nagios/libexec/`), and modify the include directory to match the file location of the `api_tool.php` file located in your `nagiosbpi` directory.

Example edit for `check_bpi.php` file:

```
$file = '/var/www/html/nagiosbpi/api_tool.php';
```

Make sure the check plugin is executable:

```
chmod +x check_bpi.php
```

You can test the plugin with the following syntax:

```
./check_bpi.php <groupID>
```

Use the group ID as the argument. The group id can be found by mousing over the group name in the web interface, as well as in the definition statement in the `bpi.conf` file. For example:

```
./check_bpi.php localServices1
```

Output:

```
Group state is: Warning; 1 Child Problems
```

## Setting Up The BPI Definitions In Nagios Core

Define a new check command called `check_bpi` with a command definition as follows:

```
define command {
    command_name      check_bpi
    command_line      $USER1$/check_bpi.php $ARG1$
}
```

Create a dummy host similar to the following:

```
define host {
    host_name          bpigroups
    use                generic_host
    display_name       BPI Groups
    check_command      check_dummy!0
    address            1.0.0.0
    register            1
}
```

Define a new service for this host using the syntax `check_bpi!<yourgroupID>`, for example:

```
define service {
    host_name          bpigroups
    service_description My BPI Group
    use                generic_service
    check_command      check_bpi!localServices1
    register            1
}
```

Restart Nagios Core for the new services to be added to the running configuration.

Your BPI Groups are now monitored by Nagios and you'll be alerted when they exceed the set thresholds.

## Manual Configuration And Troubleshooting

All BPI group definitions are defined in a single configuration file `bpi.conf`. Nagios BPI does allow for manual configuration of this file, although the config editor through the web interface ensures the proper syntax. In the event of a bad configuration, Nagios BPI will open a text editor in the web interface to troubleshoot the syntax error.

## Finishing Up

This completes the documentation on how to use the BPI addon in Nagios Core.

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>