

## The Industry Standard in IT Infrastructure Monitoring

### Purpose

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

- Downloading and Installing for XI
- Downloading and Installing for Core
- Understanding the BPI group logic
- Incorporating BPI groups into a Nagios check
- Manual configuration and troubleshooting

### Target Audience

This document is intended for use by Nagios Core and Nagios XI Administrators.

### Downloading and Installing Nagios BPI for Nagios XI

**IMPORTANT:** All versions of Nagios XI (2012RC2 and newer) ship with Nagios BPI by default! Do NOT try to install or upgrade the component using the steps, outlined below. This will break your component!

You can access Nagios BPI by clicking on the "Nagios BPI" link under the "Details" menu on the left.

If you are using Nagios XI older than 2012RC2, you will need to follow the directions for downloading and installing Nagios BPI for Nagios Core. This will install the "community" version of the addon (v.1.3.1).

### Downloading and Installing Nagios BPI for Nagios Core

- Download and unzip the master.zip into your /tmp directory:  

```
cd /tmp
wget https://github.com/NagiosEnterprises/nagiosbpi/archive/master.zip
unzip master.zip
```
- Copy the entire nagiosbpi folder to the inside of your Nagios directory or your preferred location that is accessible by your webserver. (depends on your distribution). For example:  

```
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
```
- Launch Nagios BPI from your web browser **http://<yourserver>/nagiosbpi**
- 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 <a href="#">Edit</a> <a href="#">Delete</a>
Warning	More Local Services	URL	1 problem(s) Demo Group 2 <a href="#">Edit</a> <a href="#">Delete</a>

### 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 <a href="#">Edit</a> <a href="#">Delete</a>

### 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.

**Warning** **BPI Group** 1 problem(s) This group con

Ok	CNN	DNS Resolution	DN
Ok**	localhost	Root Partition	DISK OK - free spac
Ok	CNN	HTTP	HTTP OK HTTP/1.1 200 OK - 9873
Ok	www.facebook.com	DNS Resolution	DNS OK
Ok	www.facebook.com	HTTP	HTTP OK HTTP/1.0
Ok	www.facebook.com	Ping	OK - www.facebook
Warning**	Local Services	URL	1 problem(s) Ex

## 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

### BPI Checks with Nagios XI

- <http://exchange.nagios.org/directory/Addons/Configuration/Configuration-Wizards/Nagios-Business-Process-Intelligence-%28BPI%29-Wizard/details>
- Download the BPI Wizard from Nagios Exchange and install the zip through the Admin->Manage Config Wizards page.
- The wizard will automatically populate your list of BPI groups that you can run checks against.

### BPI Wizard Monitoring Wizard - Step 3

### BPI Checks with Nagios Core

The check\_bpi.php plugin can be downloaded from the Nagios Exchange:

<http://exchange.nagios.org/directory/Addons/Components/Nagios-Business-Process-Intelligence/details>

Add this file to your Nagios plugins directory, and modify the include directory to match the file location of the “api\_tool.php” file located in your **nagiosbpi** directory. Also verify that the constants.conf file is using absolute directories for the file locations. **Note:** If you're using Nagios XI the directory locations should already be set for you.

Example edit for **check\_bpi.php** file:

```
$file = '/usr/local/nagiosxi/html/includes/components/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. **Setting up the BPI definitions in Nagios Core**

Define a new check command called check\_bpi with a command definition as follows:

```
$USER1$/check_bpi.php $ARG1$
```

Create a new host with a fake address such as 1.0.0.0.  
Use the “check-dummy” command with “0” as the \$ARG1\$  
This will create a host that always reads as UP.

Define a new service for this host using the following syntax:

```
check_bpi!<yourgroupID>
```

OR, for users on Nagios XI installations, enter the group ID as \$ARG1\$

Save and Apply the Configuration by restarting Nagios.

Your BPI Groups can now be used by Nagios!

Host	Service	Status	Duration	Attempt	Last Check	Status Information
BPI Groups	BPI DevBoxes	Ok	5m 19s	1/3	11/19/2010 13:04:50	Group state is: Ok: 1 Child Problems
	BPI Local Services	Warning	6m 43s	3/3	11/19/2010 13:07:26	Group state is: Warning: 1 Child Problems
	BPI Websites	Ok	18s	1/3	11/19/2010 13:09:51	Group state is: Ok: 1 Child Problems

## 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.