

Create custom Nagios probes

There are two kinds of probes:

1. active: executed directly from Nagios server to the monitored host;
 2. passive: "embedded" on an active probe; used to run commands on a WN using an active probe which submits a grid job to a CE.
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Example of writing an active probe: eu.wenmr.lcg-tags_probe

eu.wenmr.lcg-tags_probe gets software tags of a CE.

Steps:

- 1) Define the probe in the file grid-monitor03:/usr/lib/perl5/vendor_perl/5.8.5/NCG/LocalMetrics/Hash.pm:

```
# lcg-tags probe
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{native} = "Nagios";
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{probe} = 'wenmr/lcg-tags-probe';
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{metricset} = "wenmr";
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{config}->{path} = $NCG::NCG_PROBES_PATH_GRIDMON;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{config}->{interval} = 5;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{config}->{timeout} = 30;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{config}->{retryInterval} = 3;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{config}->{maxCheckAttempts} = 3;
#$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{flags}->{NOHOSTNAME} = 1;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{flags}->{PNP} = 1;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{flags}->{VO} = 1;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_sprobe'}->{flags}->{OBSESS} = 1;
# $WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{docurl} = "https://twiki.cern.ch/twiki/bin/view/LC
#$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{dependency}->{"hr.srce.GRAM-Command"} = 1;
#$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{dependency}->{"hr.srce.GridProxy-Valid"} = 0;
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{attribute}->{VONAME} = "--vo";
$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{attribute}->{X509_USER_PROXY} = "-x";
#$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{attribute}->{VO_FQAN} = "--vo-fqan";
#$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{flags}->{NOLBNODE} = 1;
#$WLCG_SERVICE->{'eu.wenmr.lcg-tags_probe'}->{flags}->{NRPE} = 1;
```

where wenmr/lcg-tags-probe is the name of the script containing the commands to be executed to test the monitored host. See <https://tomtools.cern.ch/confluence/display/SAM/NCG#NCG-Flags> for details on the meaning of the flags.

- 2) Associate the probe to the services it will test (in this example CREAM-CE and lcg-CE); this is defined in grid-monitor03:/usr/lib/perl5/vendor_perl/5.8.5/NCG/LocalMetrics/Hash.pm:

```
$WLCG_NODETYPE->{vo}->{'CREAM-CE'} = [
    'org.sam.CREAMCE-JobState',
    'org.sam.CREAMCE-JobSubmit',
    ...
    'eu.wenmr.lcg-tags_probe',
    ...
];
$WLCG_NODETYPE->{vo}->{CE} = [
    'hr.srce.GRAM-Auth',
    'org.sam.CE-JobState',
    'org.sam.CE-JobSubmit',
    ...
    'eu.wenmr.lcg-tags_probe',
    ...
];
```

```
];
```

3) Write the commands to be executed to test the monitored host inside the perl script `/usr/libexec/grid-monitoring/probes/wenmr/lcg-tags-probe` (`/usr/libexec/grid-monitoring/probes/` is the default directory for Nagios active probes, while `wenmr/lcg-tags-probe` is defined in `Hash.pm` as described above)

Here's the perl script of this example

The command executed is:

```
`X509_USER_PROXY=$proxy; /opt/glite/bin/lcg-tags --ce $ce --vo $vo --list`
```

A Nagios structure is used for input:

```
my $ce=$plugin->opts->get('H');
my $vo=$plugin->opts->get('vo');
my $proxy=$plugin->opts->get('x');
```

where:

- `$proxy` is the proxy used by Nagios
(`$WLCG_SERVICE->{'eu.wenmr.lcg-tags-probe'}->{attribute}->{X509_USER_PROXY} = "-x";`)
- `$ce` is the node to be tested
(`#$WLCG_SERVICE->{'eu.wenmr.lcg-tags-probe'}->{flags}->{NOHOSTNAME} = 1;`)
- `$vo` is the VO used by Nagios
(`$WLCG_SERVICE->{'eu.wenmr.lcg-tags-probe'}->{attribute}->{VONAME} = "--vo";`)

That structure is also used for the output shown in Nagios web pages:

```
$plugin->nagios_exit(OK, "$msgOut");
$plugin->nagios_exit(WARNING, "No tags found.");
```

Example of writing a passive probe: eu.wenmr.WN-csRosetta

`eu.wenmr.WN-csRosetta` runs `csRosetta` software into a WN

Steps:

1) Define the probe in the file `grid-monitor03:/usr/lib/perl5/vendor_perl/5.8.5/NCG/LocalMetrics/Hash.pm`:

```
$WLCG_SERVICE->{'eu.wenmr.WN-csRosetta'}->{flags}->{PASSIVE} = 1;
$WLCG_SERVICE->{'eu.wenmr.WN-csRosetta'}->{parent} = "org.sam.CE-JobState";
$WLCG_SERVICE->{'eu.wenmr.WN-csRosetta'}->{flags}->{VO} = 1;
$WLCG_SERVICE->{'eu.wenmr.WN-csRosetta'}->{flags}->{OBSESS} = 1;
$WLCG_SERVICE->{'eu.wenmr.WN-csRosetta'}->{metricset} = 'org.sam.WN';
$WLCG_SERVICE->{'eu.wenmr.WN-csRosetta'}->{docurl} = "https://twiki.cern.ch/twiki/bin/view/LCG/SA";
```

where `org.sam.CE-JobState` is the active probe that submits a grid job to a CE.

2) Associate the probe to the services it will test (in this example `CREAM-CE` and `lcg-CE`); this is defined in `grid-monitor03:/usr/lib/perl5/vendor_perl/5.8.5/NCG/LocalMetrics/Hash.pm`:

```
$WLCG_NODETYPE->{vo}->{'CREAM-CE'} = [
    'org.sam.CREAMCE-JobState',
    'org.sam.CREAMCE-JobSubmit',
    ...
];
```

Example of writing an active probe: `eu.wenmr.lcg-tags_probe`

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```
'eu.wenmr.WN-csRosetta',
...
];
$WLCG_NODETYPE->{vo}->{CE} = [
    'hr.srce.GRAM-Auth',
    'org.sam.CE-JobState',
    'org.sam.CE-JobSubmit',
    ...
    'eu.wenmr.WN-csRosetta',
    ...
];
```

3) Edit `grid-monitor03:/usr/lib/perl5/vendor_perl/5.8.5/NCG/LocalMetrics/Hash.pm`, adding the path where the probe is located into the definition of the active probe `org.sam.CE-JobState`

In this example the probe is located in `/usr/libexec/grid-monitoring/probes/wenmr/wnjob/`

For CREAM-CE:

```
## CREAM CE
# org.sam.CREAMCE-JobState : [active+passive] submits grid job to CE, holds a status of the grid
$WLCG_SERVICE->{'org.sam.CREAMCE-JobState'}->{native} = "Nagios";
...
$WLCG_SERVICE->{'org.sam.CREAMCE-JobState'}->{parameter}->{"--add-wntar-nag"} = '/usr/libexec/gri
```

For lcg-CE:

```
# org.sam.CE-JobState : [active+passive] submits grid job to CE, holds a status of the grid job
$WLCG_SERVICE->{'org.sam.CE-JobState'}->{native} = "Nagios";
...
$WLCG_SERVICE->{'org.sam.CE-JobState'}->{parameter}->{"--add-wntar-nag"} = '/usr/libexec/grid-mon
```

Use a custom directory, not the Nagios default ones (ex.:`/usr/libexec/grid-monitoring/probes/org.sam`) in order to avoid loosing custom probes when updating `org.sam` package

4) Create the structure requested by Nagios (as written in <https://tomtools.cern.ch/confluence/display/SAM/CE#CE-IntegrationofthirdpartyWNchecks>) under the directory used in step 3.

In this example:

```
/usr/libexec/grid-monitoring/probes/wenmr/wnjob/
|-- etc
|   |-- wn.d
|       |-- wenmr
|           |-- commands.cfg
|           |-- services.cfg
|-- probes
    |-- wenmr
        |-- csRosetta
```

where `commands.cfg` and `services.cfg` are configuration files:

```
# cat etc/wn.d/wenmr/services.cfg
...
define service{
    use                sam-generic-wn-active
    service_description eu.wenmr.WN-csRosetta-<VOMS>
    check_command      csRosetta
}
...
```

Example of writing a passive probe: `eu.wenmr.WN-csRosetta`

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```
# cat etc/wn.d/wenmr/commands.cfg
...
define command {
    command_name     csRosetta
    command_line     $USER3$/wenmr/csRosetta
}
...
[root@grid-monitor03 wnjob]#
```

while probes/wenmr/csRosetta is a perl script containing the commands that will be really executed in the WN. Like for active probes, even this script requires a Nagios structure for output messages.

Here's the perl script

-- MarcoVerlato - 2012-02-20

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