

Opmantek Synergy - opEvents Triggers opConfig to Collect Targeted Diagnostic Data

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Purpose

This article will provide an example of opConfig collecting specific command output based on event characteristics. The command output becomes embedded into the event allowing network operators to more quickly identify root cause and affect resolution.

Use Case

For this example we'll take actions if an event's stateful element is a BGP Peer. opEvents will fire scripts that result in useful information for engineers to follow up on.

Related Pages

- [Event Actions and Escalation](#)
- [opConfig Configuration Guide \(Version 1.x\)](#)

Configuration

opEvents

In this case the necessary configuration for opEvents is contained in `/usr/local/omk/conf/EventActions.nmis`. There are two sections we will be concerned with; script and policy.

Let's have a look at the script section first. For this example we want to ping the node that reported the problem, the BGP peer it's having an issue with, and leverage opConfig to gather related command output. Notice the arguments passed to `opconfig-cli.pl`, there is a command set name; `IOS_TS_BGP`. In the opConfig step we'll define what these specific router commands are.

`/usr/local/omk/conf/EventActions.nmis`

```
'script' => {
  'ping_node' => {
    arguments => '-c 5 node.host',
    exec => '/bin/ping',
    output => 'save'
  },
  'ping_neighbor' => {
    arguments => '-c 5 event.element',
    exec => '/bin/ping',
    output => 'save'
  },
  'troubleshoot_bgp' => {
    arguments => 'act=run_command_sets names=IOS_TS_BGP nodes=node.name
print_command_output=true mthread=false debug=0 quiet=1',
    exec => '/usr/local/omk/bin/opconfig-cli.pl',
    output => 'save'
  },
}
```

In the policy section we define a rule that matches stateful properties that contain 'BGP Peer'. If there's a match it will fire the scripts defined above.

/usr/local/omk/conf/EventActions.nmis

```
'policy' => {
  '10' => {
    IF => 'event.any',
    THEN => {
      '10' => {
        IF => 'event.stateful =~ "BGP Peer"',
        THEN => 'priority(8) AND script.ping_node() AND script.ping_neighbor()
AND script.troubleshoot_bgp()',
        BREAK => 'false'
      },
    },
  },
}
```

opConfig

The `/usr/local/omk/conf/command_sets.d` directory is where we have files detailing exec commands to be executed on nodes. For this example we are concerned with `ios.nmis`. Our `IOS_TS_BGP` command set will be running the following commands.

- show ip bgp
- show ip bgp summary
- show ip route summary

If you have a large number of BGP routes we do not recommend 'show ip bgp'.

/usr/local/omk/conf/command_sets.d/ios.nmis

```
'IOS_TS_BGP' => {
  'os_info' => {
    'version' => '/12.2|12.4|15.\d+/',
    'os' => 'IOS',
  },
  'scheduling_info' => {
    'run_commands_on_separate_connection' => 'false',
    'attempt_timeout_recovery' => 1,
  },
  'purging_policy' => {
    'keep_last' => 1000,
    'purge_older_than' => 2592000, # 30 days
    'autoprotect_first_revision' => 'true',
  },
  'commands' => [
    {
      'multipage' => 'true',
      'privileged' => 'true',
      'command' => 'show ip bgp',
      'tags' => [ 'troubleshooting', 'routing', 'detect-change' ],
    },
    {
      'multipage' => 'true',
      'privileged' => 'true',
      'command' => 'show ip bgp summary',
      'tags' => [ 'troubleshooting', 'routing', 'detect-change' ],
    },
    {
      'multipage' => 'true',
      'privileged' => 'true',
      'command' => 'show ip route summary',
      'tags' => [ 'troubleshooting', 'routing', 'detect-change' ],
    },
  ],
},
```

Testing and Verification

The easiest way to test this configuration is to administratively shutdown a BGP peer. After the next NMIS collect cycle a BGP Peer Down alert will be processed by opEvents. Here's an example from our lab.

opEvents 2.4.1 Views ▾ Modules ▾ System ▾ Help ▾ User: nmis ▾

Home / Event List / Alert: BGP Peer Down
Event Context

[Acknowledge](#) [Add Comments](#) [Details](#) [View Node in NMIS](#) [Show Node Performance](#) [More ▾](#) Filter 2h ↕

Event Context

Time: 2018-05-19T01:15:40

Node	Name	Group	Location	Customer	BusinessService	Host
	bnelab-rr1	bnelab	Eurong	Corporate		10.248.0.1

Event: Alert: BGP Peer Down

Element: 10.248.0.4

Details: test evaluated with 0 as Warning

Priority: 8

Last Updated: 2018-05-19T01:17:22

Escalation: No policy set

Recent events for bnelab-rr1 (+/- 2h) [Overview](#)

Search:

Date	Event	Element (Description)
2018-05-19T01:15:40	Alert: BGP Peer Down	10.248.0.4
2018-05-19T01:12:13	Proactive Interface Discards Output Packets Closed	FastEthernet0/0
2018-05-19T01:07:03	Proactive Interface Discards Output Packets	FastEthernet0/0
2018-05-19T01:07:02	Alert: BGP Peer Down	10.248.0.3
2018-05-19T01:03:20	Alert: BGP Peer Down	10.248.0.2
2018-05-19T01:03:10	Node Configuration Change	
2018-05-19T00:45:14	Proactive Interface Discards Output Packets Closed	FastEthernet0/0
2018-05-19T00:35:05	Node Configuration Change	
2018-05-19T00:11:13	Proactive opTrend Interface iflnUtl1 Closed	Ethernet1.0:3:rr2
2018-05-19T00:06:14	Proactive opTrend Interface iflnUtl1	Ethernet1.0:3:rr2

Showing 1 to 10 of 12 entries

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Actions taken for event

Date	Action	Details	Comment
2018-05-19T01:17:22	script	troubleshoot_bgp	script ran for 10.37s, exitcode 0
2018-05-19T01:17:20	script	ping_neighbor	script ran for 8.59s, exitcode 0
2018-05-19T01:17:16	script	ping_node	script ran for 4.18s, exitcode 0
2018-05-19T01:17:12	priority	set priority to 8	new priority is 8

Showing 1 to 4 of 4 entries

Previous **1** Next

Scripts

Notice the Actions section is notifying us that our scripts fired. Scrolling down we can view the script output; it's now embedded into the event.

```

Command Output for show ip bgp summary:
BGP router identifier 10.248.5.41, local AS number 65001
BGP table version is 43, main routing table version 43
42 network entries using 5376 bytes of memory
84 path entries using 4368 bytes of memory
8/8 BGP path/bestpath attribute entries using 992 bytes of memory
4 BGP AS-PATH entries using 96 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 10832 total bytes of memory
BGP activity 42/0 prefixes, 126/42 paths, scan interval 60 secs

```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.248.0.2	4	65001	0	0	1	0	0	00:14:49	Idle (Admin)
10.248.0.3	4	65001	0	0	1	0	0	00:10:48	Idle (Admin)
10.248.0.4	4	65001	0	0	1	0	0	00:02:37	Idle (Admin)
10.248.0.5	4	65001	2823	2840	43	0	0	1d18h	0
10.248.0.6	4	65001	2827	2837	43	0	0	1d18h	0
10.248.0.7	4	65001	2835	2828	43	0	0	1d18h	21
10.248.0.8	4	65001	2828	2834	43	0	0	1d18h	21
10.248.0.9	4	65001	2832	2829	43	0	0	1d18h	21
10.248.0.10	4	65001	2834	2831	43	0	0	1d18h	21

```

Command Output for show ip route summary:
IP routing table name is default (0x0)
IP routing table maximum-paths is 32
Route Source Networks Subnets Replicates Overhead Memory (bytes)
connected 0 30 0 1840 5160
static 1 1 0 120 344
ospf 1 0 108 0 10200 19008
  Intra-area: 108 Inter-area: 0 External-1: 0 External-2: 0
  NSSA External-1: 0 NSSA External-2: 0
bgp 65001 0 33 0 1980 5676
  External: 0 Internal: 33 Local: 0
internal 1 7064
Total 2 172 0 14140 37252

```

ping_neighbor (completed at 2018-05-19T01:17:20, exit code 0)

```

PING 10.248.0.4 (10.248.0.4) 56(84) bytes of data.
64 bytes from 10.248.0.4: icmp_seq=1 ttl=251 time=2284 ms
64 bytes from 10.248.0.4: icmp_seq=2 ttl=251 time=1881 ms
64 bytes from 10.248.0.4: icmp_seq=3 ttl=251 time=1992 ms
64 bytes from 10.248.0.4: icmp_seq=4 ttl=251 time=2063 ms

--- 10.248.0.4 ping statistics ---
5 packets transmitted, 4 received, 20% packet loss, time 4009ms
rtt min/avg/max/mdev = 1881.760/2055.583/2284.129/146.998 ms, pipe 3

```