How to extend Zabbix

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Introduction

- Takanori Suzuki (irc: tsuzuki)
  - Member of Zabbix-JP, Zabbix community in Japan.
  - Working at MIRACLE LINUX corporation.
  - Making some Zabbix patches and extensions.
    - Non-stop, dynamically reloading “DebugLevel” and “LogSlowQueries”
    - Multiple Zabbix active agent monitoring support
    - Windows Eventing 6.0 support in Win2008

There are several ways to extend...

- Using Zabbix API
- Using Zabbix Protocol (get and sender)
- Changing Zabbix Server code
- Changing Zabbix Agent code

Using Zabbix API

- It`s well known, so I skip the explanation.
- Zabbix API Reference
  - URL:http://www.zabbix.com/documentation/2.0/manual/appendix/api/api
- Functions
  - Get, create, delete, update are supported on hosts, items, triggers, actions and many other objects.

Using Zabbix Protocol (get, sender and agent active)

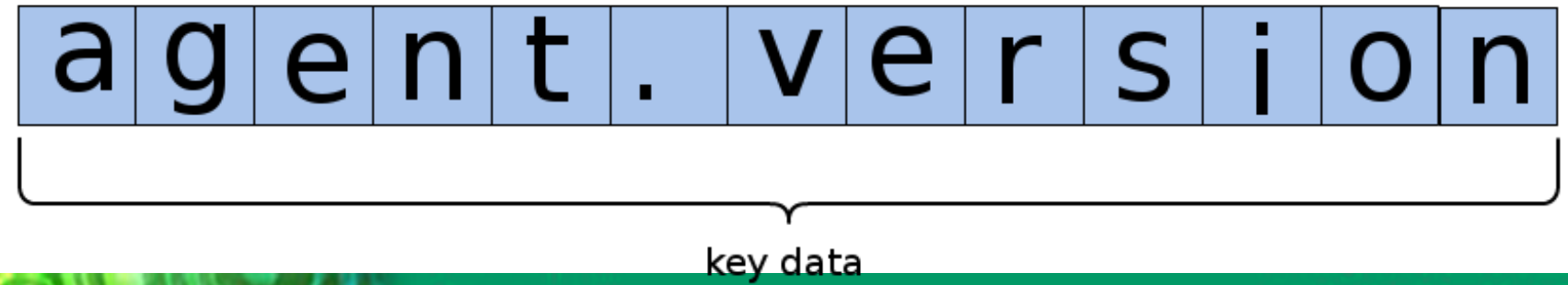
- If we want to send or get data to Zabbix, we can use Zabbix protocols.
  - Zabbix get protocol
  - Zabbix Sender protocol
  - Zabbix Agent (Active) protocol

Zabbix get protocol

- Just sending key character data to 10050 port

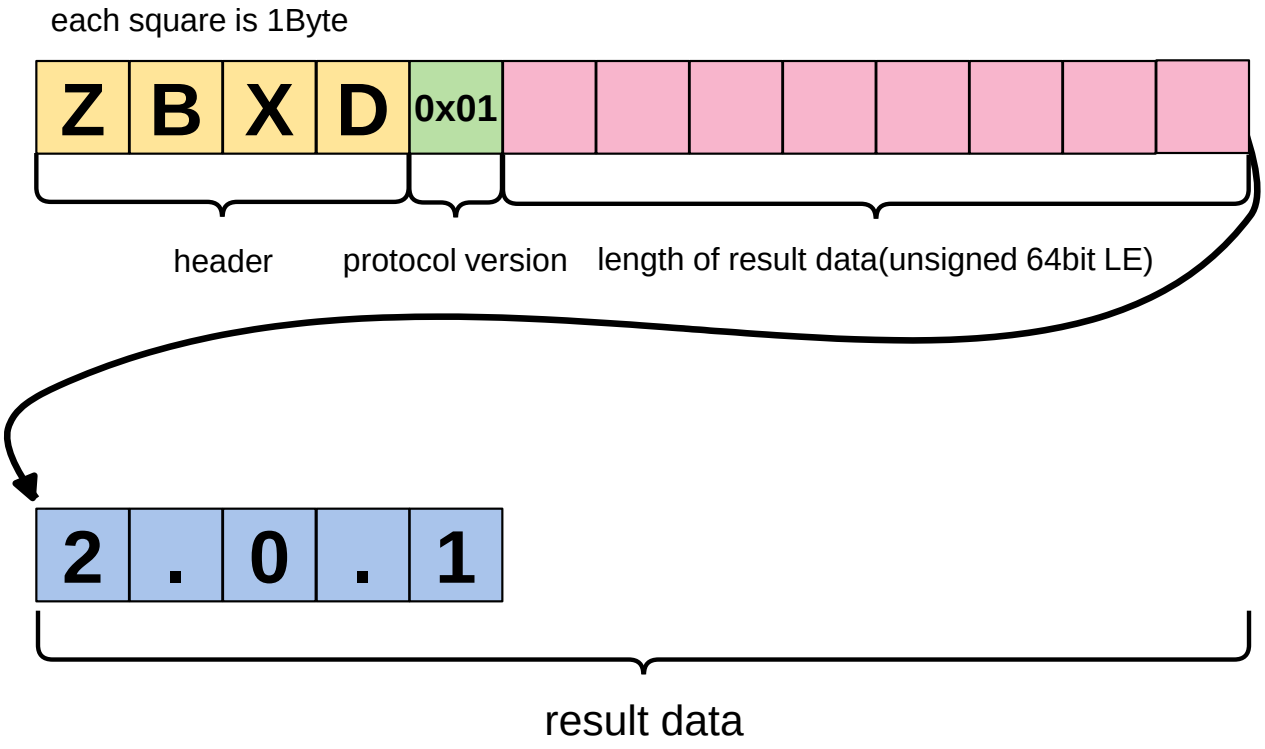
```
$ telnet 127.0.0.1 10050
Trying 127.0.0.1...
Connected to localhost (127.0.0.1).
Escape character is '^]'.
agent.version
ZBXD2.0.1Connection closed by foreign host.
```

each square is 1Byte



Zabbix get protocol

- Data is returned with header “ZBXD\1” and the following data length.



Zabbix get protocol library

- I made Zabbix get protocol class to Python library "zbxpy".

  https://github.com/BlueSkyDetector/zbxpy

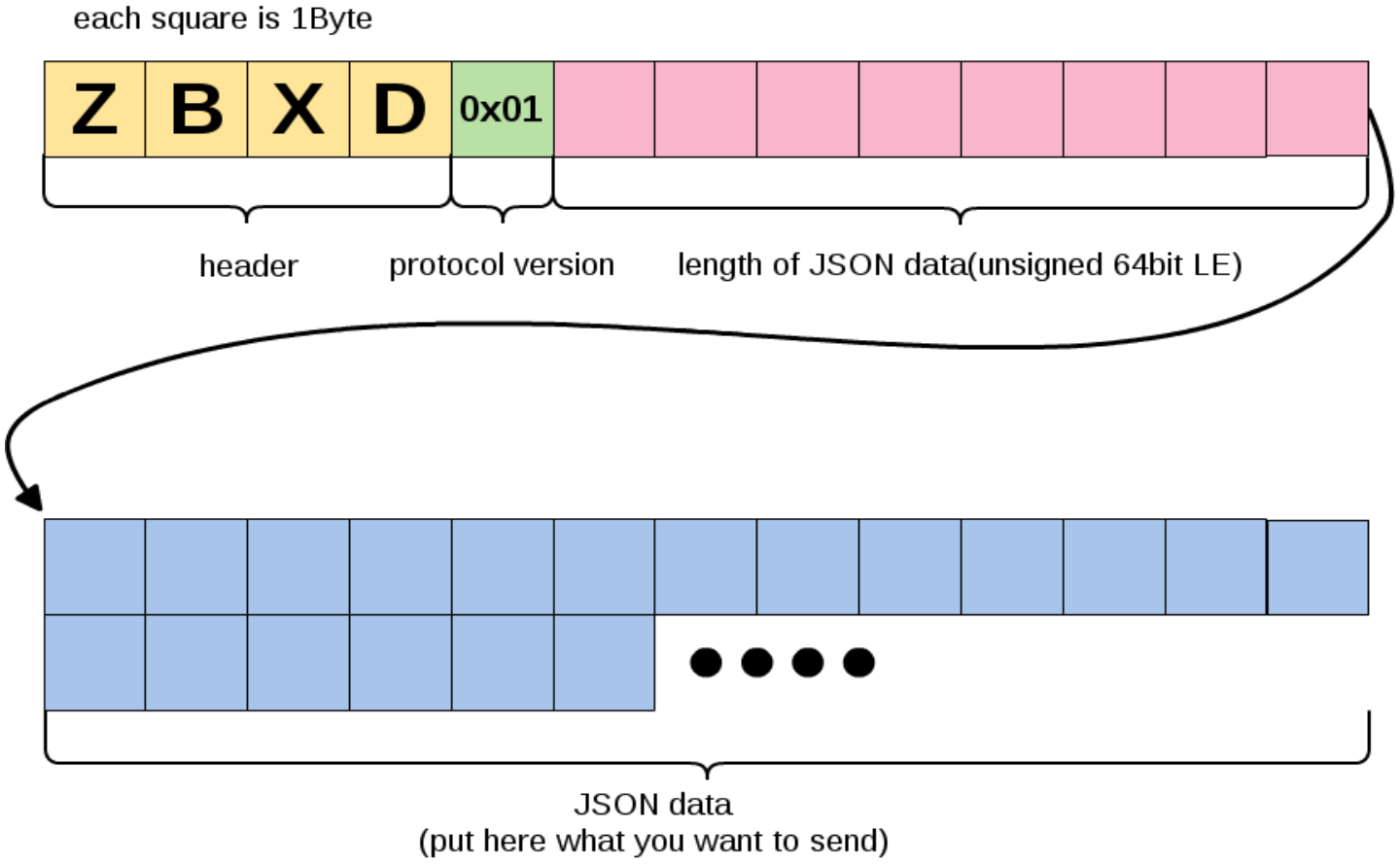
```
>>> import zbxpy
>>> zbx_get = zbxpy.ZabbixGet(u'127.0.0.1')
>>> zbx_get.request_key = "agent.version“
>>> print zbx_get.get()
2.0.1
```

Zabbix get protocol example

- Demo
  - By zbxpy, Python program can get data directly from Zabbix Agent.

Zabbix sender and active agent protocol

- data format is JSON with header.



Zabbix sender and active agent protocol

- JSON data format (send data)

```
{
  "data":
    [
      {
        "host":"HostA",
        "value":"sent data",
        "key":"AppX_Logger"
      }
    ],
  "request":"sender data"       <--- or “agent data”
}
```

Zabbix sender and active agent protocol

- JSON data format (receive data)

```
{
  "response":"success",
  "info":"Processed 2 Failed 0 Total 2 Seconds spent
0.000103"
}
```

Zabbix sender and active agent protocol library

- I made Zabbix sender protocol class to Python library "zbxpy".

  https://github.com/BlueSkyDetector/zbxpy

```
>>> import zbxpy
>>> sender = zbxpy.ZabbixSender(u'127.0.0.1')
>>> for num in range(0, 2):
...     sender.add_data(u'HostA', u'AppX_Logger', u'sent
data ' + str(num))
...
>>> res = sender.send()
>>> print sender.send_data
ZBXD?{"data":[{"host":"HostA","value":"sent data 0","key":"AppX_Logger"},
{"host":"HostA","value":"sent data 1","key":"AppX_Logger"}],
"request":"sender data"}
>>> print res
ZBXDW{
        "response":"success",
        "info":"Processed 2 Failed 0 Total 2 Seconds spent 0.034930"}
```

Zabbix sender and active agent protocol example

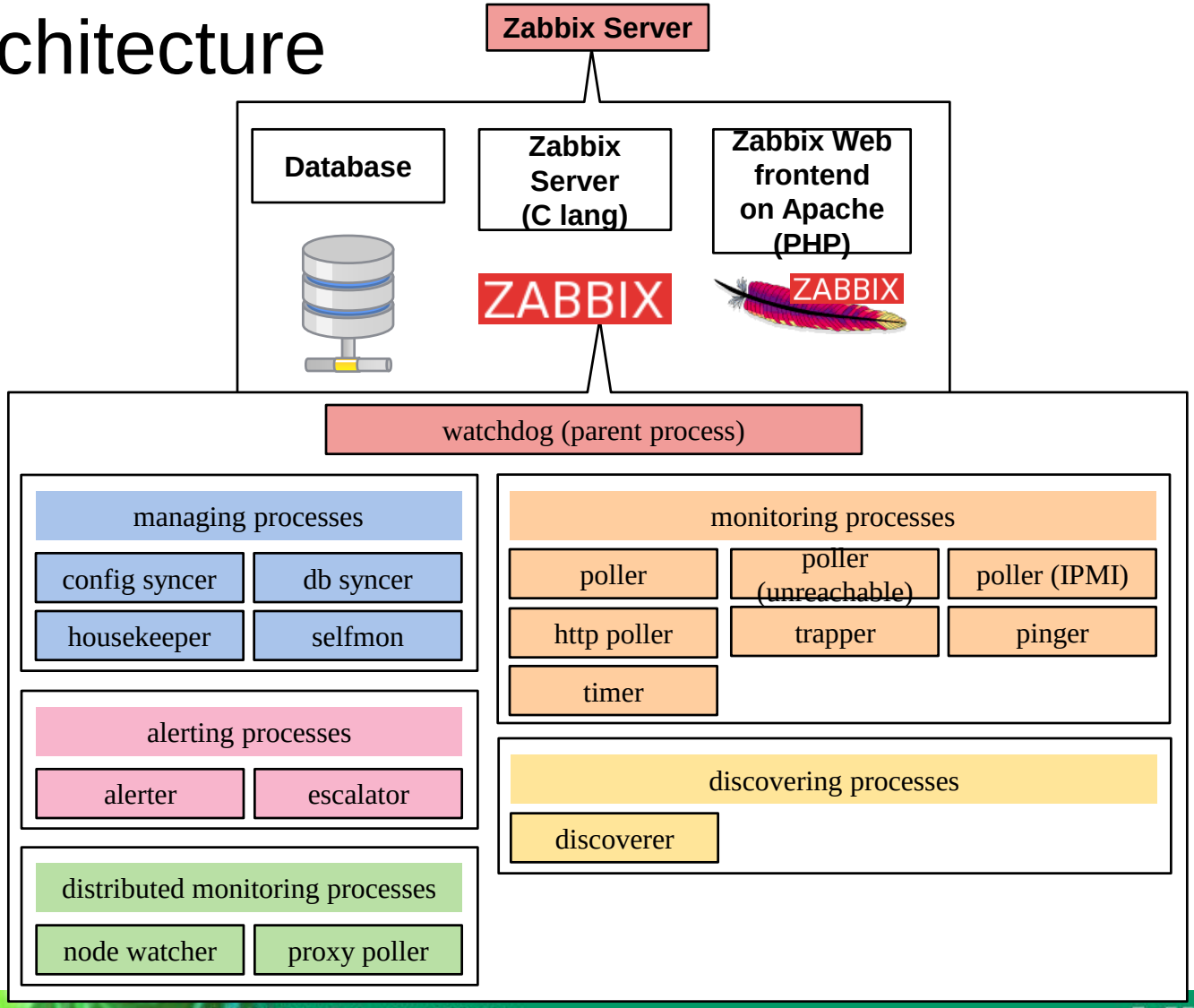
- Demo
  - By zbxpy, Python program can send data directly from the program to Zabbix Server.

Extend in Zabbix Server side

- Zabbix Server consists from some kind of processes.
- We can add new features by adding new code to each process code.

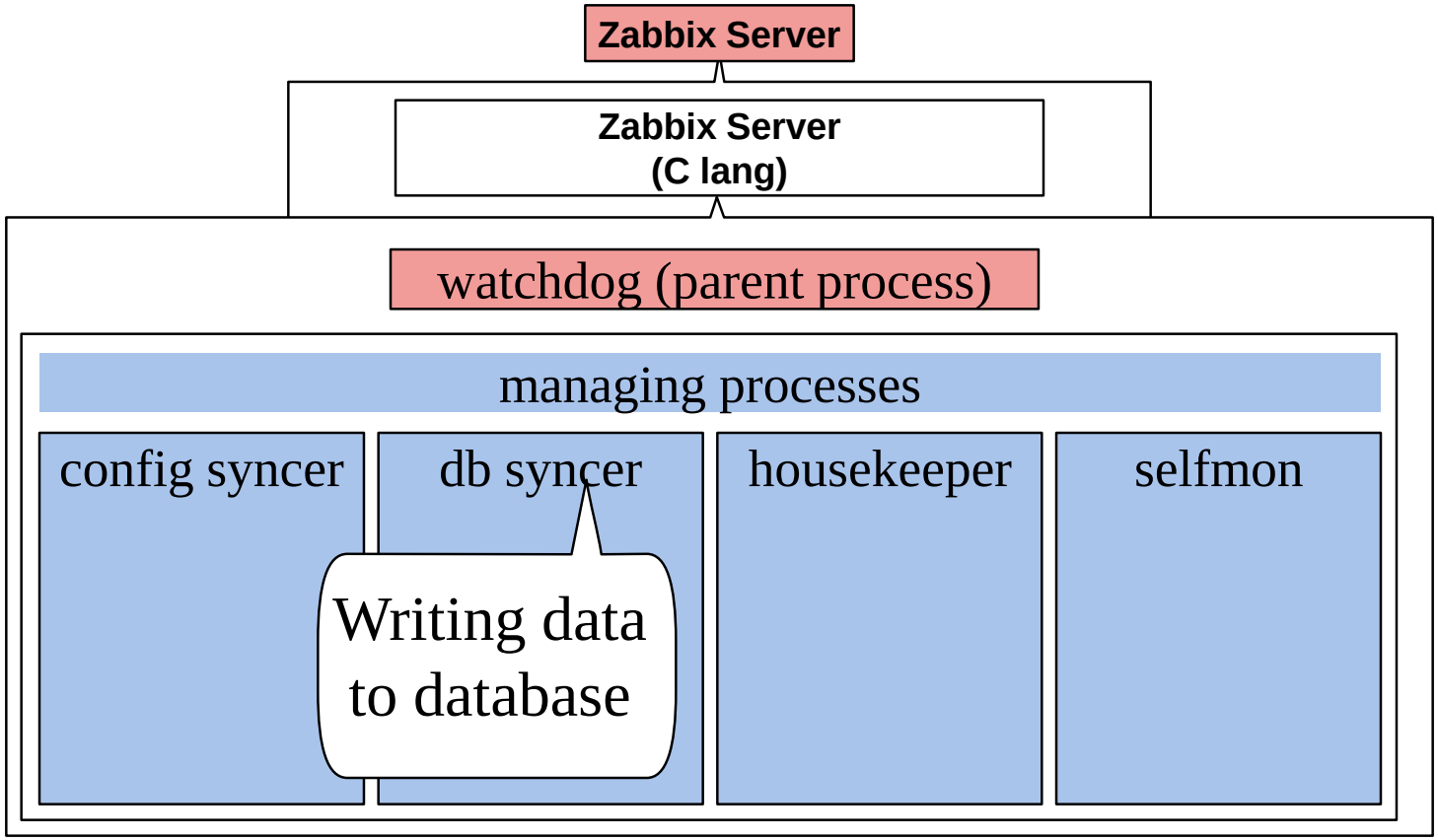
Extend in Zabbix Server side

Architecture



Extend in Zabbix Server side

For example, "db syncer" process stores history data to database.

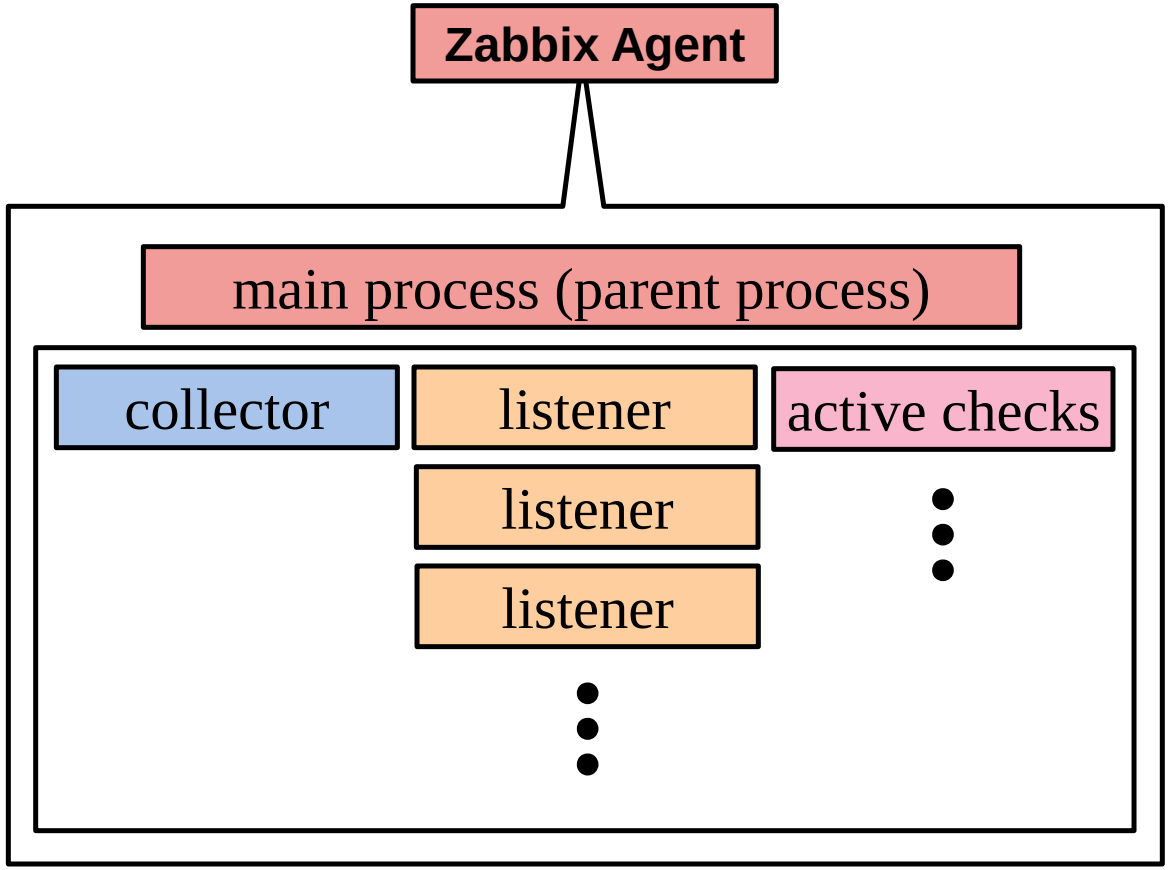


Extending Zabbix Server example

- By changing "db syncer" code, we can store the history data to other things, like NoSQL.

Extend in Zabbix Agent side

Architecture



Extending Zabbix Agent example

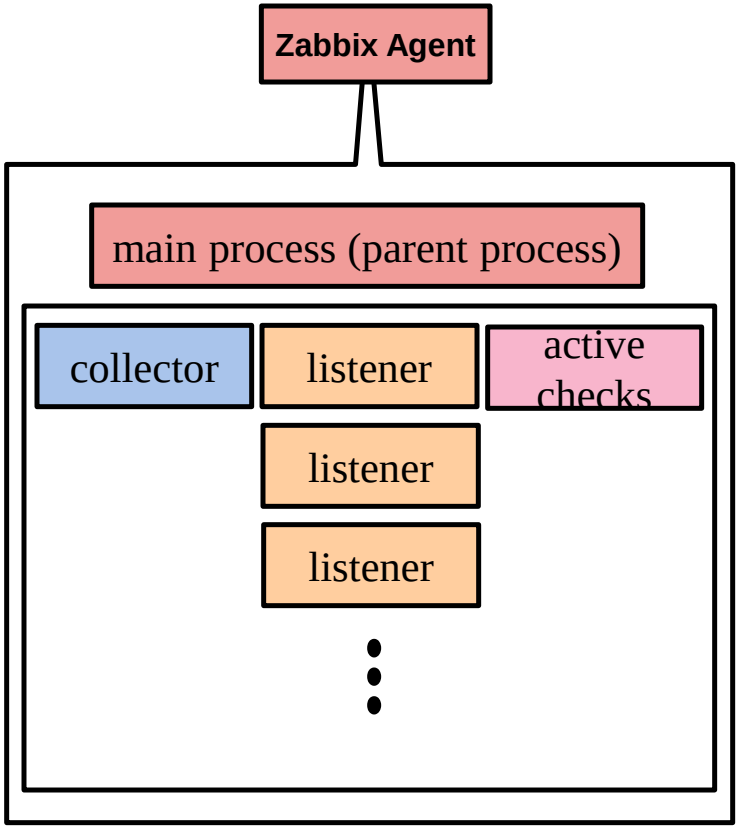
- I made a PoC patch, which adds multiple "active checks" process to Zabbix Agent to support multiple server in Active Checks.

  https://support.zabbix.com/browse/ZBXNEXT-584

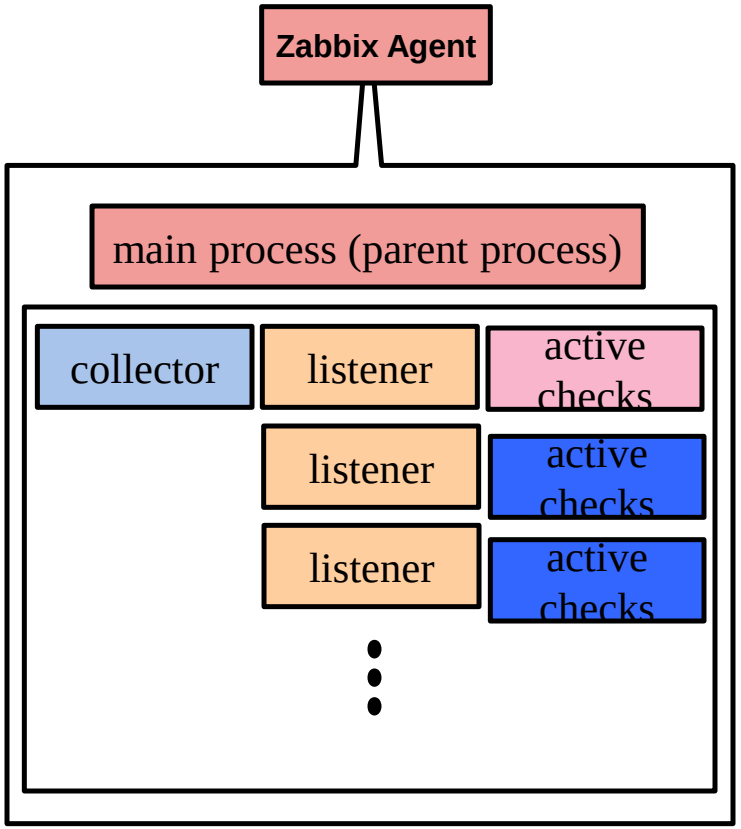
  - It's already merged after Zabbix 1.8.12 and 2.0RC3.

Extending Zabbix Agent example

Before



After



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