IBM Security

Agent X, You Work for Me!

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March, 2017

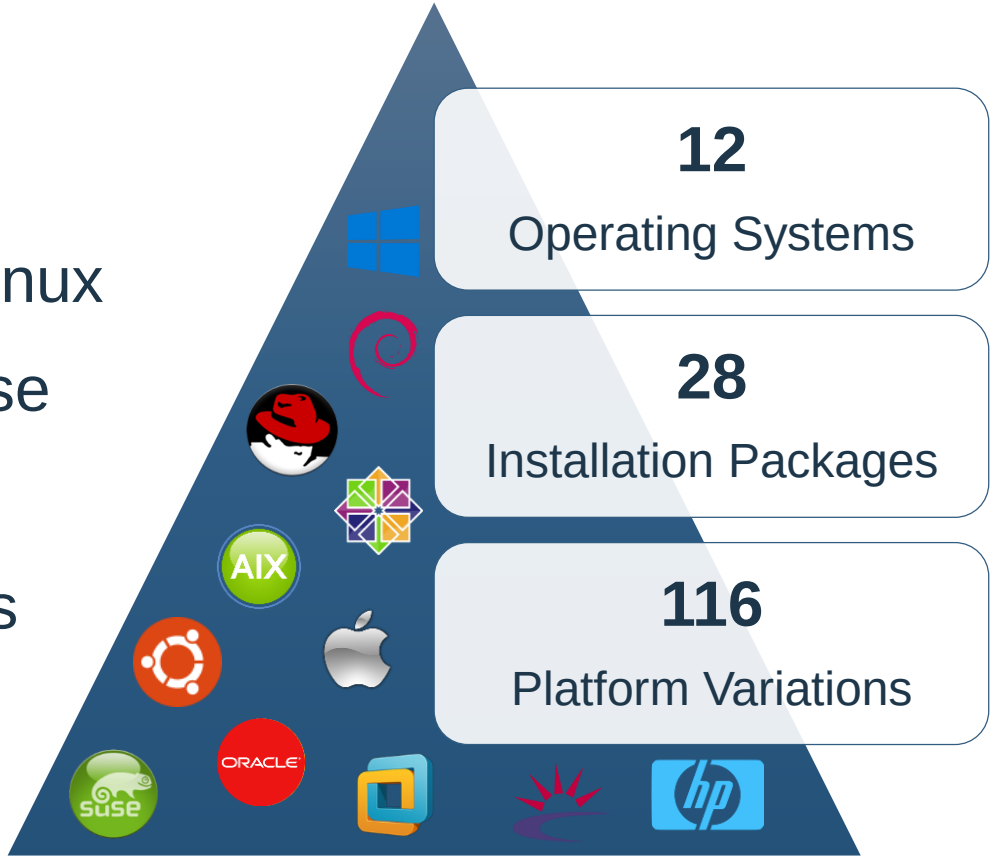
IBM

Topics

- Technical session
- What does the BigFix Agent do
- Agent CPU utilization
- Agent profiling

BigFix Agent supported platforms

- AIX
- CentOS
- Debian
- HP-UX
- Mac OS X
- Oracle Linux
- Red Hat
- Solaris
- SUSE Linux
- Enterprise
- Ubuntu
- Windows
- VMware ESX



12
Operating Systems

28
Installation Packages

116
Platform Variations

BigFix Agent

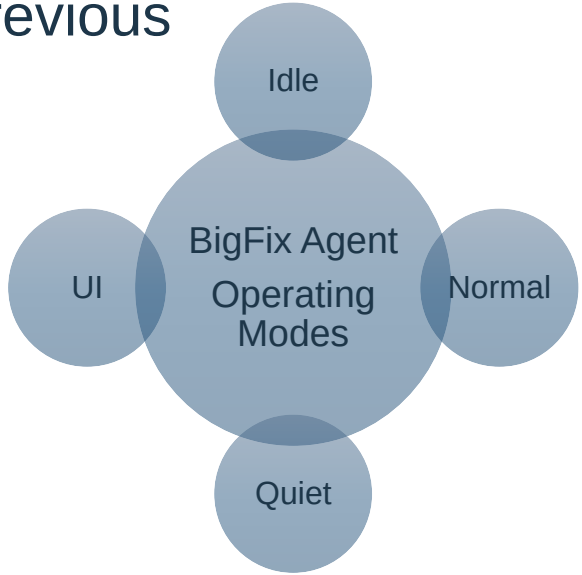
- The BigFix Agent basically has a big `while {...}` loop that processes Relevance, report properties and states, and waits to obey other commands send its way
- One key characteristic is the highly optimized tuning of the client to use the least resources to behavior properly
  - Caches appropriately
  - Backs off as needed
  - Very stable from the years of tuning in the real-world at customer sites
- The BigFix Agent has no other external dependencies

BigFix Agent main functions

- Registration, Relay selection, authentication
- Gathering site content
- Relevance evaluation (Fixlets, properties, actions, etc.)
- Action processing
- Reporting (Properties, Fixlet and action states)
- Client user interface
- Archiving and uploading data
- Client compliance API processing
- Fast Query processing, communication and control
- BigFix Detect agent communication and control

BigFix Agent CPU utilization

- CPU usage and utilization is throttled
- Given throttling, the percentages quotes are "average" usage not maximum
- CPU usage using actual CPU time over previous elapse time (new in 9.0)
- What 2%?
- The many modes of CPU usage
  - Idle
  - UI
  - Normal
  - Quiet



BigFix Agent modes

Idle
The default mode when not in the other modes (including Quiet)

UI
Elevates CPU usage when the end-user opens the Client UI

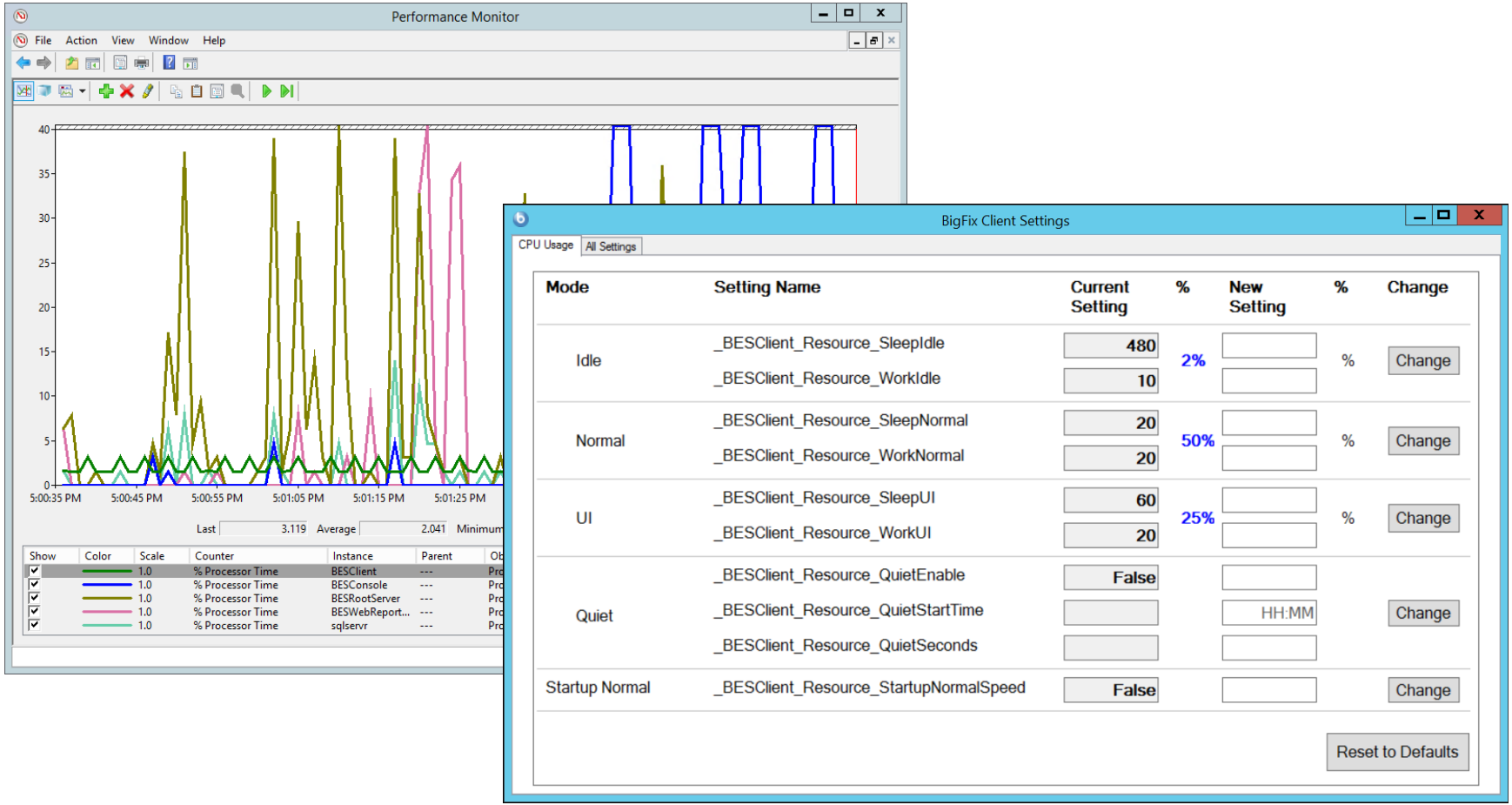
Normal
Elevates CPU usage while performing actions

Quiet
Allows the Agent to be completely quiet (0%) for a set period within a day

BigFix Agent CPU resource configuration settings

- All settings are configured and stored in the common settings locations
  - Windows Windows Registry
  - Unix/Linux /var/opt/BESClient/besclient.config
  - Mac OS X /Library/Preferences/com.bigfix.BESAgent.plist
- Configure as per other computer settings
- All are configured as Work/Sleep balance

Using Perfmon and Client Setting utility

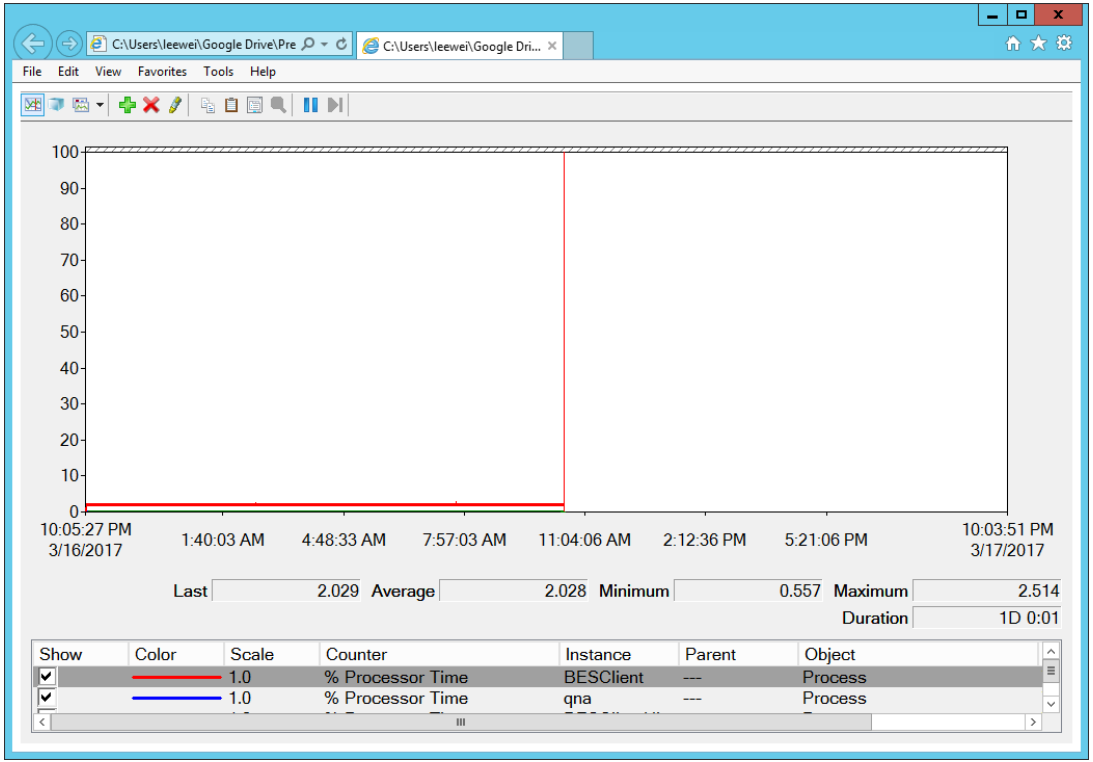


Idle mode (2%)

- Idle is the default mode when the Agent is not in other modes
- The "2% CPU utilization" famously references this mode in its default
- Idle is a misnomer in that the agent is performing a lot of work
- When should I and why would I want to change this?
- 10ms work cycle is a good rule of thumb
- Demo
  - Switch to 190/10 (5%)

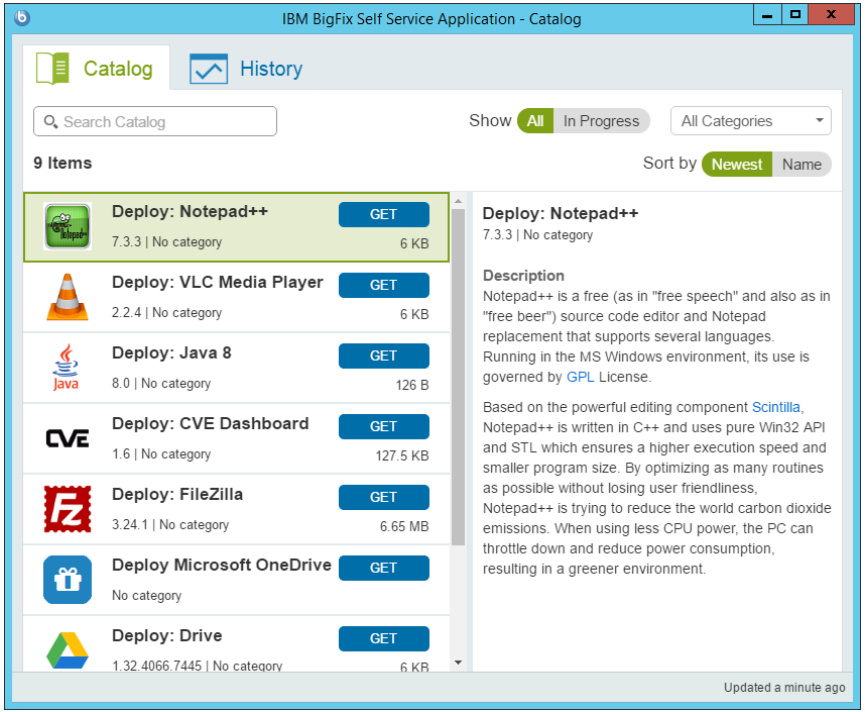
Idle mode

- If not in other modes, the Agent is expected to maintain the average CPU utilization configured
- Example of an Agent in Idle mode for a period of 12 hours



UI mode (25%)

- When the user opens the Client UI (aka Self Service Application), the Agent enters into the UI mode
- This helps speed up agent execution for a better user experience
- The Agent UI will exit this mode based on completion of work to be done
- The default is an average of 25% of the CPU



Normal mode (50%)

- Increases CPU utilization when agent is performing important tasks
- By default, the agent will use on average 50% of the CPU
- Before version 8.5, it was <5%
- The Agent goes into Normal Mode when:
  - Processing actions
  - Performing a force refresh
  - Servicing the Client Compliance API
- Note that the agent does not have control of processes spawned – for example, Microsoft patch executables
  - Windows Updates will likely take 100% of the CPU
- Demo
  - Use Self-Service Application to take action
  - Force Refresh

Quiet mode

- Quiet mode addresses the use case and need to be absolutely quiet for a block of time per day
  - For example during banking or retail hours
- The Agent is expected to use 0% CPU
- The Agent will not evaluate any content, report status, or take actions
- There are 3 setting required to configure this mode
  - Enable the setting
    - `_BESClient_Resource_QuietEnable`
  - Specify the time of day
    - `_BESClient_Resource_QuietStartTime`
  - Specify the duration
    - `_BESClient_Resource_QuietSeconds`

BigFix Agent CPU usage modes summary

Mode	Default CPU %	Trigger for Entry	Trigger for Exit	Control Settings
Idle	2%	• When not in other modes	• Entering other working modes	`_BESClient_Resource_SleepIdle` `_BESClient_Resource_WorkIdle`
UI	25%	• User opens the Client UI	• User exits the Client UI	`_BESClient_Resource_SleepUI` `_BESClient_Resource_WorkUI`
Normal	50% (5% <9.0)	• Running actions • Forced refresh	• Completed action • Posted refresh report	`_BESClient_Resource_SleepNormal` `_BESClient_Resource_WorkNormal`

Quiet	0%	• Based on setting	• Based on setting	`_BESClient_Resource_QuietEnable`
				`_BESClient_Resource_QuietStartTime`
				`_BESClient_Resource_QuietSeconds`

Agent evaluation profiling (aka resource tracking)

- Logs time spent evaluating content
- Tracks the top 100 (default) content (Fixlets, properties, etc.) that take the longest time
- 2 Tasks in the BES Support site provided to enable/disable profiling
  - Enable BES Client Usage Profiler
  - Disable BES Client Usage Profiler
- Results in seconds
- Remember this is the Agent performing at low CPU utilization
- Enterprise Security is synonymous to Patches for Windows

usageprofiler.0001.log (1.6 KB) - BareTail

File Edit View Preferences Help

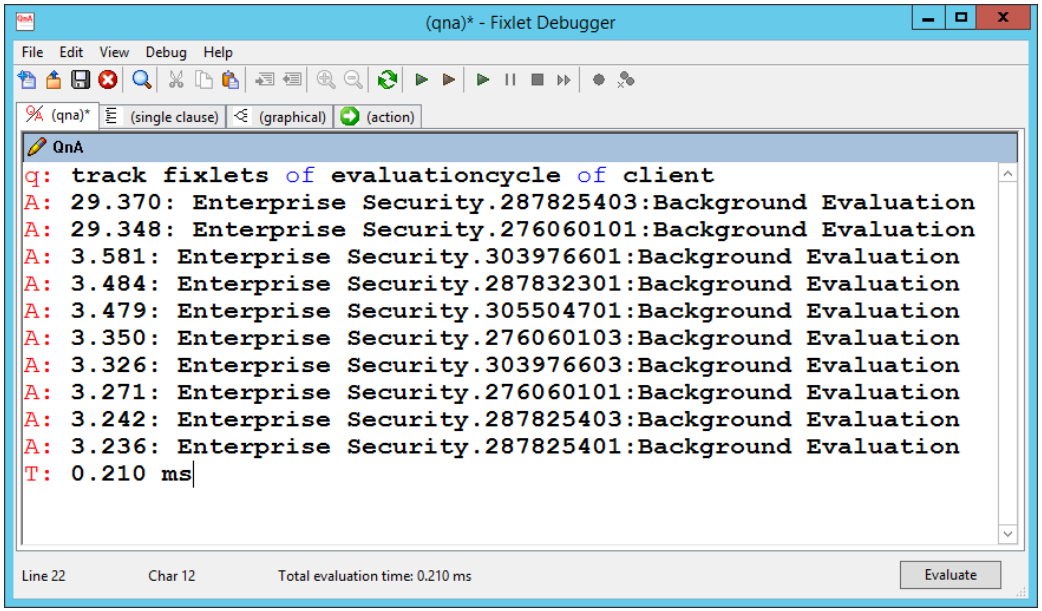
Open Highlighting Follow Tail ANSI C:\Program Files (x86)\BigFix Enterprise\BES Client\usageprofiler.0001.log (1.6 KB)

```
Start:Tue, 14 Mar 2017 21:18:19 -0700
Elapsed Time:00:08:13
Tracking: Top 25
Samples:2173
Elapsed Evaluation Time:00:06:20

0000) 56.971: Enterprise Security.311547503:Background Evaluation
0001) 56.895: Enterprise Security.287825401:Background Evaluation
0002) 55.571: Enterprise Security.276060101:Background Evaluation
0003) 55.483: Enterprise Security.287825403:Background Evaluation
0004) 53.231: Enterprise Security.287832301:Background Evaluation
0005) 51.677: Enterprise Security.287832303:Background Evaluation
0006) 3.863: Enterprise Security.316575601:Background Evaluation
0007) 3.122: BES Support.709:Background Evaluation
0008) 2.299: Enterprise Security.1613617:Background Evaluation
0009) 1.572: Client Manager for Anti-Virus.207:Background Evaluation
0010) 1.536: Enterprise Security.315827103:Background Evaluation
0011) 1.502: BES Support.354:Background Evaluation
0012) 0.891: actionsite.13:Evaluate Property 1
0013) 0.819: BES Support.173:Background Evaluation
0014) 0.778: BES Support.1647:Background Evaluation
0015) 0.771: Enterprise Security.254986401:Background Evaluation
0016) 0.764: BES Inventory and License.54:Background Evaluation
0017) 0.763: BES Inventory and License.46:Background Evaluation
0018) 0.762: CustomSite_Bricks.179:Background Evaluation
0019) 0.760: Client Manager for Anti-Virus.125:Background Evaluation
0020) 0.758: BES Support.840:Evaluate Property 5
0021) 0.758: Enterprise Security.69103:Background Evaluation
0022) 0.758: BES Support.1578:Evaluate Property 2
0023) 0.757: Enterprise Security.29211:Background Evaluation
0024) 0.757: BES Support.1165:Background Evaluation
```

Agent evaluation profiling (aka resource tracking)

- A new Agent inspector has been added in 9.0 to automatically track the top 10 longest running expressions
- However, the settings described in the previous slide will take precedence
- Try:
  - `track fixlets of evaluationcycle of client`
- Make sure to run QnA in “Local Client Evaluator” mode



Query settings

- Query uses a different processing channel to service requests
- QnA program is invoked do the Relevance evaluation
- There is a separate set of work/sleep settings for Query
  - `_BESClient_Query_WorkTime` (defaults to 10)
  - `_BESClient_Query_SleepTime` (defaults to 480)

`_BESClient_Resource_StartupSleepSecond` setting

- Make the Agent sleep until the desired time has elapsed during startup
- Similar to Windows service Automatic (Delayed Start)
- Use cases include:
  - Prevent race conditions (e.g. Relay selection)
  - Avoid boot storms

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