IBM Security

BigFix Query Unleashed!

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BigFix Query Requirements

- 9.5 Patch 2 (9.5.2.56 or greater) required for all components
  - This means no support for
    - Windows XP
    - Windows Server 2003
    - Mac OS X 10.7 Lion
    - RHEL 4

- Agents need to be able to receive UDP notifications
  - Does not work with agents behind firewall, NATed, etc.

Important Restriction – Agent Context / Automatic Group

- Agent invokes QNA to process queries

- Query does not work with Inspectors requiring agent context
  - Examples:
    - `number of relevant fixlets whose (value of header "X-Fixlet-Source-Severity" of it = "Critical") of site whose (name of it = "Enterprise Security")`
    - `expiration date of client license`
    - `now of registration server`

Settings – Long Running Queries

- By default, queries are timed out after the following amount of elapse time to avoid bad queries that overwhelm the endpoints

- _BESClient_Query_MOMaxQueryTime
  - Seconds – default 60

- _BESClient_Query_NMOMaxQueryTime
  - Seconds – default 10

Settings – CPU Utilization

- By default, queries are throttled to use around 2% of the CPU

- _BESClient_Query_WorkTime
  - Milliseconds – default 10

- _BESClient_Query_SleepTime
  - Milliseconds – default 480

Settings – How Long to Keep the Requests and Responses

- BESAdmin settings
  - queryHoursToLive
    - Hours – default 1440 (60 days)
  - queryResultsHoursToLive
    - Hours – default 4 hours

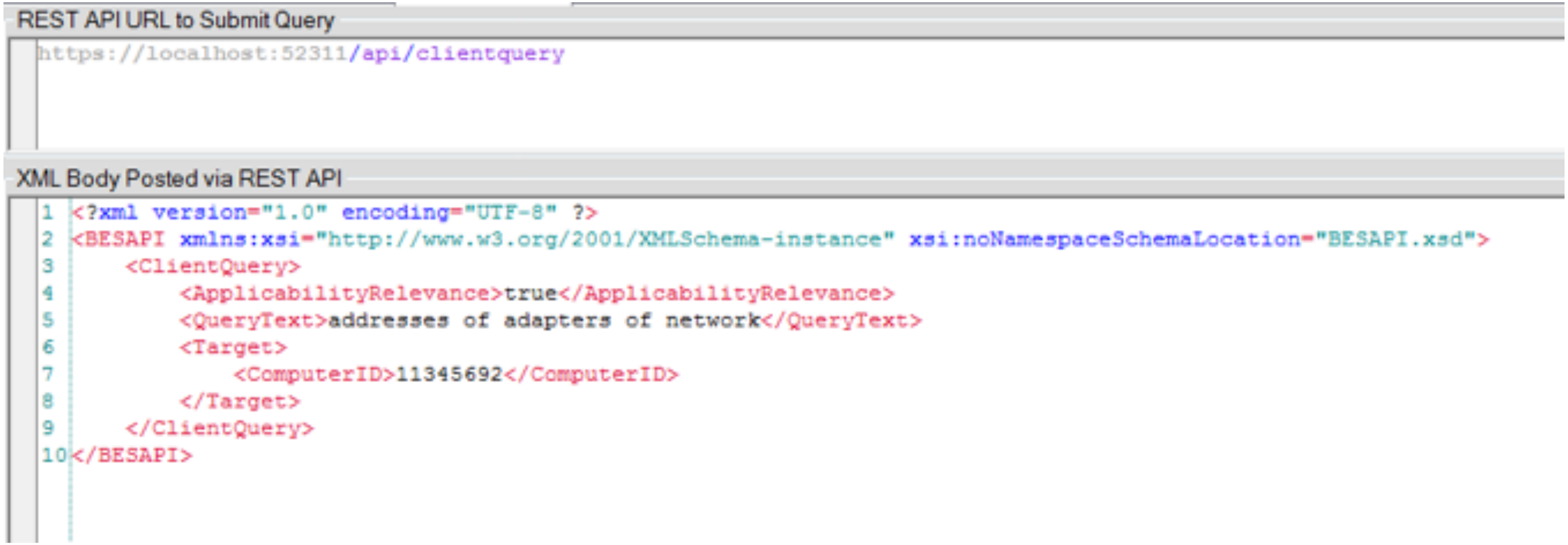
REST API

- Simple to implement
  - One URL to submit queries
  - One URL to retrieve results, with the paging capability

- Does not require the WebUI framework

- Best documentation for Query REST API
  - Link

REST API Query Example



REST API URL to Submit Query

```
https://localhost:52311/api/clientquery
```

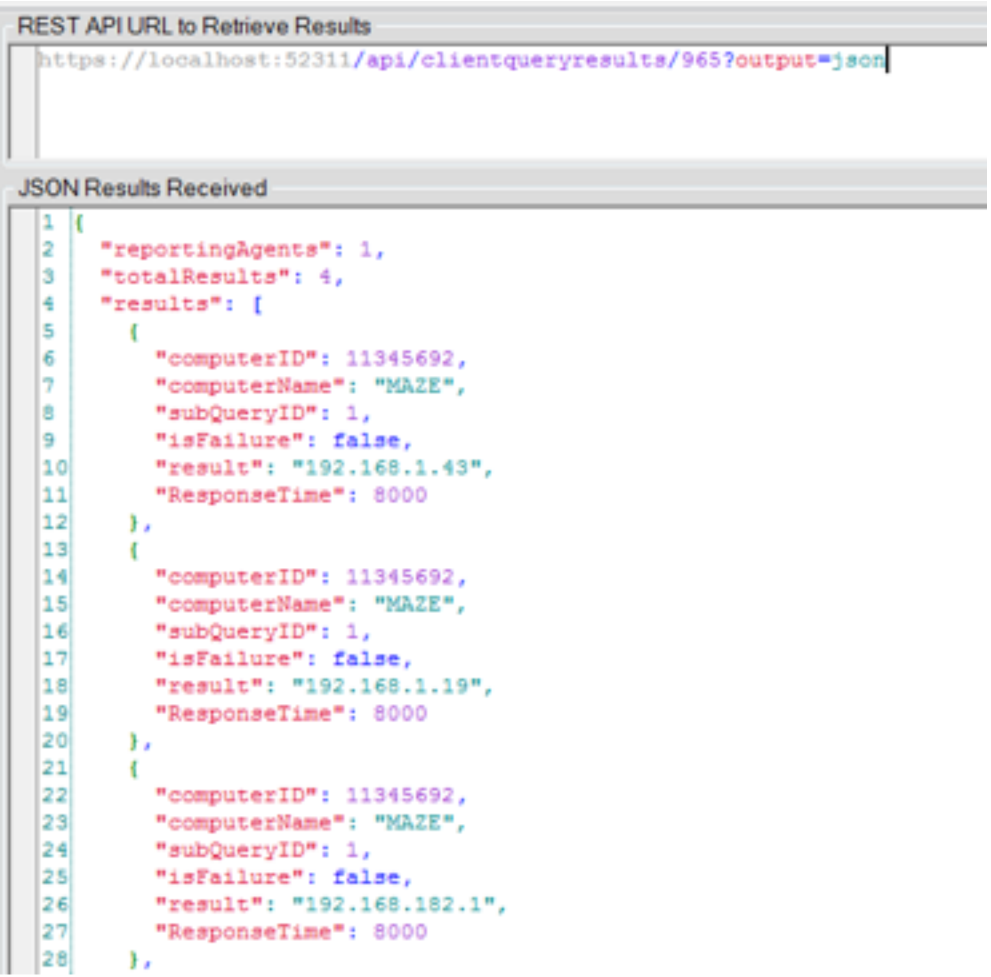
XML Body Posted via REST API

```
<?xml version="1.0" encoding="UTF-8" ?>
<BESAPI xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="BESAPI.xsd">
    <ClientQuery>
        <ApplicabilityRelevance>true</ApplicabilityRelevance>
        <QueryText>addresses of adapters of network</QueryText>
        <Target>
            <ComputerID>11345692</ComputerID>
        </Target>
    </ClientQuery>
</BESAPI>
```

```
<?xml version="1.0" encoding="UTF-8" ?>
<BESAPI xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="BESAPI.xsd">
<ClientQuery>
    <ApplicabilityRelevance>true</ApplicabilityRelevance>
    <QueryText>addresses of adapters of network</QueryText>
    <Target></Target>
</ClientQuery>
</BESAPI>
```

REST API Results

- Results are returned in:
  - XML
  - JSON



REST API URL to Retrieve Results

```
https://localhost:52311/api/clientqueryresults/965?output=json
```

JSON Results Received

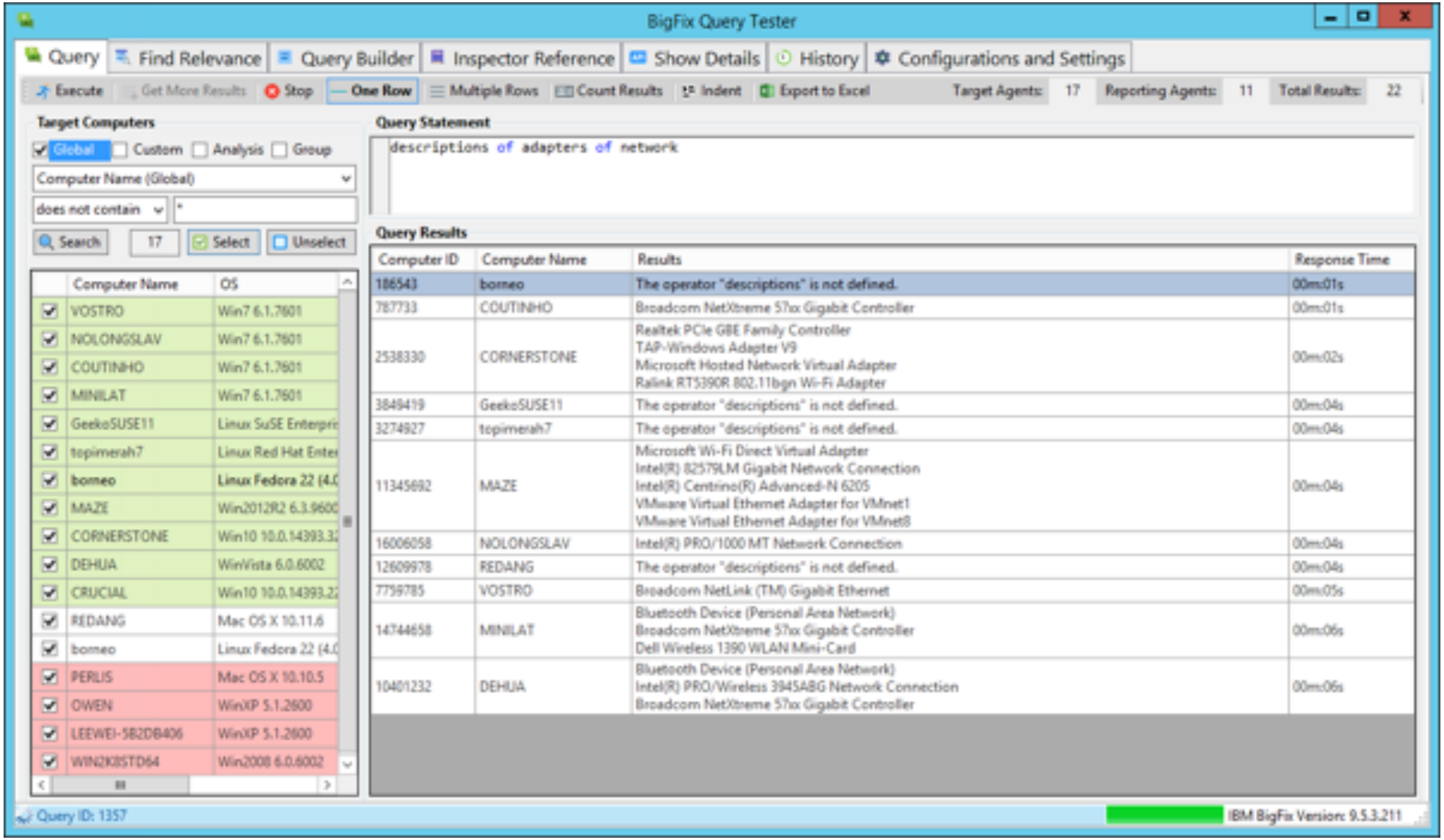
```
{
  "reportingAgents": 1,
  "totalResults": 4,
  "results": [
    {
      "computerID": 11345692,
      "computerName": "MAZE",
      "subQueryID": 1,
      "isFailure": false,
      "result": "192.168.1.43",
      "ResponseTime": 8000
    },
    {
      "computerID": 11345692,
      "computerName": "MAZE",
      "subQueryID": 1,
      "isFailure": false,
      "result": "192.168.1.19",
      "ResponseTime": 8000
    },
    {
      "computerID": 11345692,
      "computerName": "MAZE",
      "subQueryID": 1,
      "isFailure": false,
      "result": "192.168.182.1",
      "ResponseTime": 8000
    },
```

Example Query Tester Application

- Syntax highlighted Relevance statements
- Return multiple row results as one unit
- Count unique occurrences of the results
- Use any Relevance statements from properties, analyses, and Fixlets
- Query history
- Experimental Query Builder

- http://leewei.com/bigfix/prod/query/BigFixQueryTesterV2.0.zip

BigFix Query Tester



Target Agents: 17 Reporting Agents: 11 Total Results: 22

Target Computers

☑ Global ☐ Custom ☐ Analysis ☐ Group

Computer Name (Global)

does not contain: *

17

	Computer Name	OS
☑	VOSTRO	Win7 6.1.7601
☑	NOLONGSLAV	Win7 6.1.7601
☑	COUTINHO	Win7 6.1.7601
☑	MINILAT	Win7 6.1.7601
☑	GeekoSUSE11	Linux SuSE Enterpri
☑	topimerah7	Linux Red Hat Enter
☑	borneo	Linux Fedora 22 (4.0
☑	MAZE	Win2012R2 6.3.9600
☑	CORNERSTONE	Win10 10.0.14393.32
☑	DEHUA	WinVista 6.0.6002
☑	CRUCIAL	Win10 10.0.14393.22
☑	REDANG	Mac OS X 10.11.6
☑	borneo	Linux Fedora 22 (4.0
☑	PERLIS	Mac OS X 10.10.5
☑	OWEN	WinXP 5.1.2600
☑	LEEWEI-5B2DB406	WinXP 5.1.2600
☑	WIN2K8STD64	Win2008 6.0.6002

Query Statement

```
descriptions of adapters of network
```

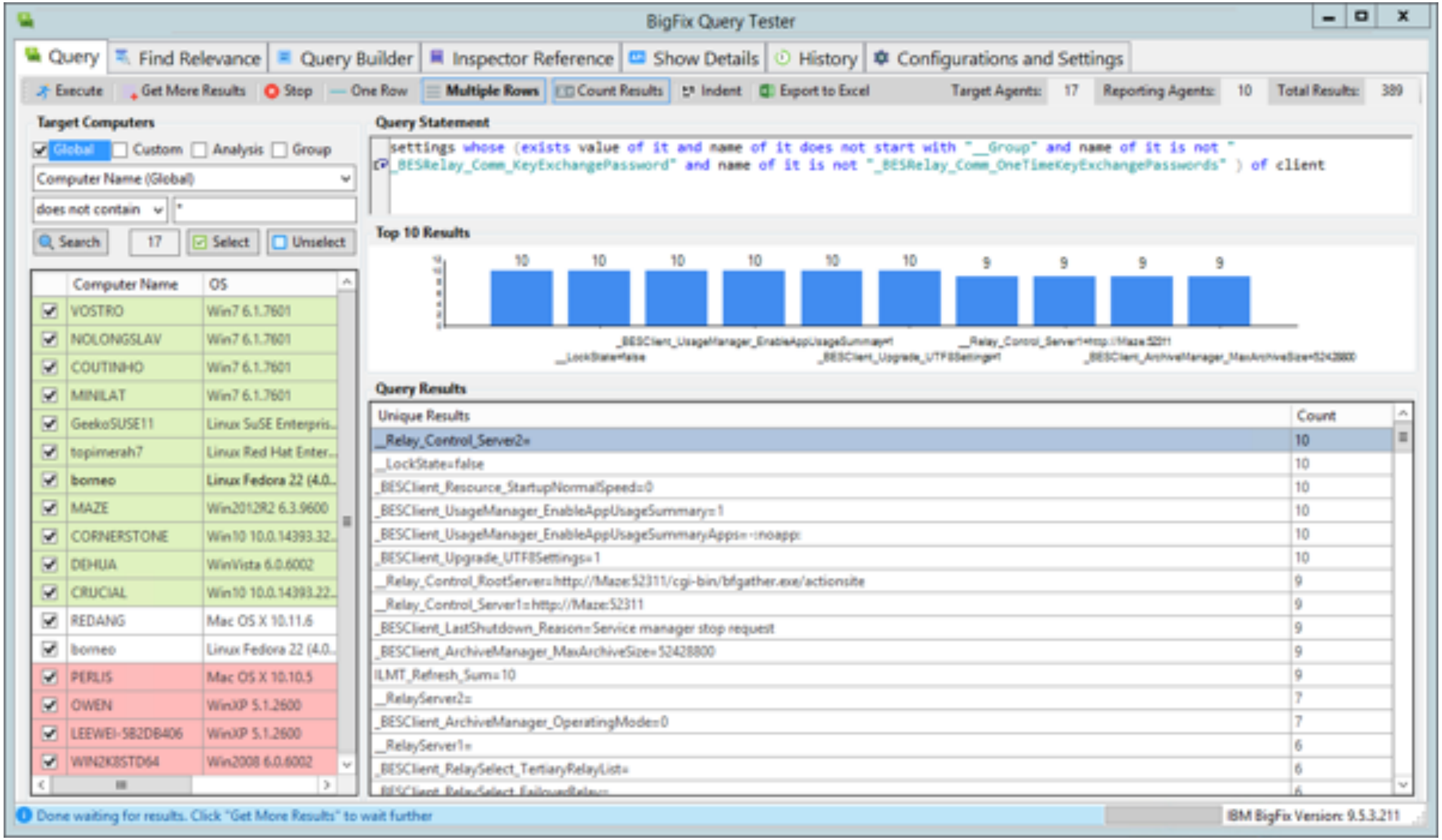
Query Results

Computer ID	Computer Name	Results	Response Time
186543	borneo	The operator "descriptions" is not defined.	00m:01s
787733	COUTINHO	Broadcom NetXtreme 57xx Gigabit Controller	00m:01s
2538330	CORNERSTONE	Realtek PCIe GBE Family Controller TAP-Windows Adapter V9 Microsoft Hosted Network Virtual Adapter Ralink RT5390R 802.11bgn Wi-Fi Adapter	00m:02s
3849419	GeekoSUSE11	The operator "descriptions" is not defined.	00m:04s
3274927	topimerah7	The operator "descriptions" is not defined.	00m:04s
11345692	MAZE	Microsoft Wi-Fi Direct Virtual Adapter Intel(R) 82579LM Gigabit Network Connection Intel(R) Centrino(R) Advanced-N 6205 VMware Virtual Ethernet Adapter for VMnet1 VMware Virtual Ethernet Adapter for VMnet8	00m:04s
16006058	NOLONGSLAV	Intel(R) PRO/1000 MT Network Connection	00m:04s
12609978	REDANG	The operator "descriptions" is not defined.	00m:04s
7759785	VOSTRO	Broadcom NetLink (TM) Gigabit Ethernet	00m:05s
14744658	MINILAT	Bluetooth Device (Personal Area Network) Broadcom NetXtreme 57xx Gigabit Controller Dell Wireless 1390 WLAN Mini-Card	00m:06s
10401232	DEHUA	Bluetooth Device (Personal Area Network) Intel(R) PRO/Wireless 3945ABG Network Connection Broadcom NetXtreme 57xx Gigabit Controller	00m:06s

Query ID: 1357

IBM BigFix Version: 9.5.3.211

BigFix Query Tester



Target Agents: 17 Reporting Agents: 10 Total Results: 389

Target Computers

☑ Global ☐ Custom ☐ Analysis ☐ Group

Computer Name (Global)

does not contain *

17

	Computer Name	OS
☑	VOSTRO	Win7 6.1.7601
☑	NOLONGSLAV	Win7 6.1.7601
☑	COUTINHO	Win7 6.1.7601
☑	MINILAT	Win7 6.1.7601
☑	GeekoSUSE11	Linux SuSE Enterpris...
☑	topimerah7	Linux Red Hat Enter...
☑	**borneo**	**Linux Fedora 22 (4.0...**
☑	MAZE	Win2012R2 6.3.9600
☑	CORNERSTONE	Win10 10.0.14393.32...
☑	DEHUA	WinVista 6.0.6002
☑	CRUCIAL	Win10 10.0.14393.22...
☑	REDANG	Mac OS X 10.11.6
☑	borneo	Linux Fedora 22 (4.0...
☑	PERLIS	Mac OS X 10.10.5
☑	OWEN	WinXP 5.1.2600
☑	LEEWEI-5B2DB406	WinXP 5.1.2600
☑	WIN2K8STD64	Win2008 6.0.6002

Query Statement

```
settings whose (exists value of it and name of it does not start with "__Group" and name of it is not "
_BESRelay_Comm_KeyExchangePassword" and name of it is not "_BESRelay_Comm_OneTimeKeyExchangePasswords" ) of client
```

Query Results

Unique Results	Count
__Relay_Control_Server2=	10
__LockState=false	10
_BESClient_Resource_StartupNormalSpeed=0	10
_BESClient_UsageManager_EnableAppUsageSummary=1	10
_BESClient_UsageManager_EnableAppUsageSummaryApps=-:noapp:	10
_BESClient_Upgrade_UTF8Settings=1	10
__Relay_Control_RootServer=http://Maze:52311/cgi-bin/bfgather.exe/actionsite	9
__Relay_Control_Server1=http://Maze:52311	9
_BESClient_LastShutdown_Reason=Service manager stop request	9
_BESClient_ArchiveManager_MaxArchiveSize=52428800	9
ILMT_Refresh_Sum=10	9
__RelayServer2=	7
_BESClient_ArchiveManager_OperatingMode=0	7
__RelayServer1=	6
_BESClient_RelaySelect_TertiaryRelayList=	6
_BESClient_RelaySelect_FailoverRelay=	6

Done waiting for results. Click "Get More Results" to wait further

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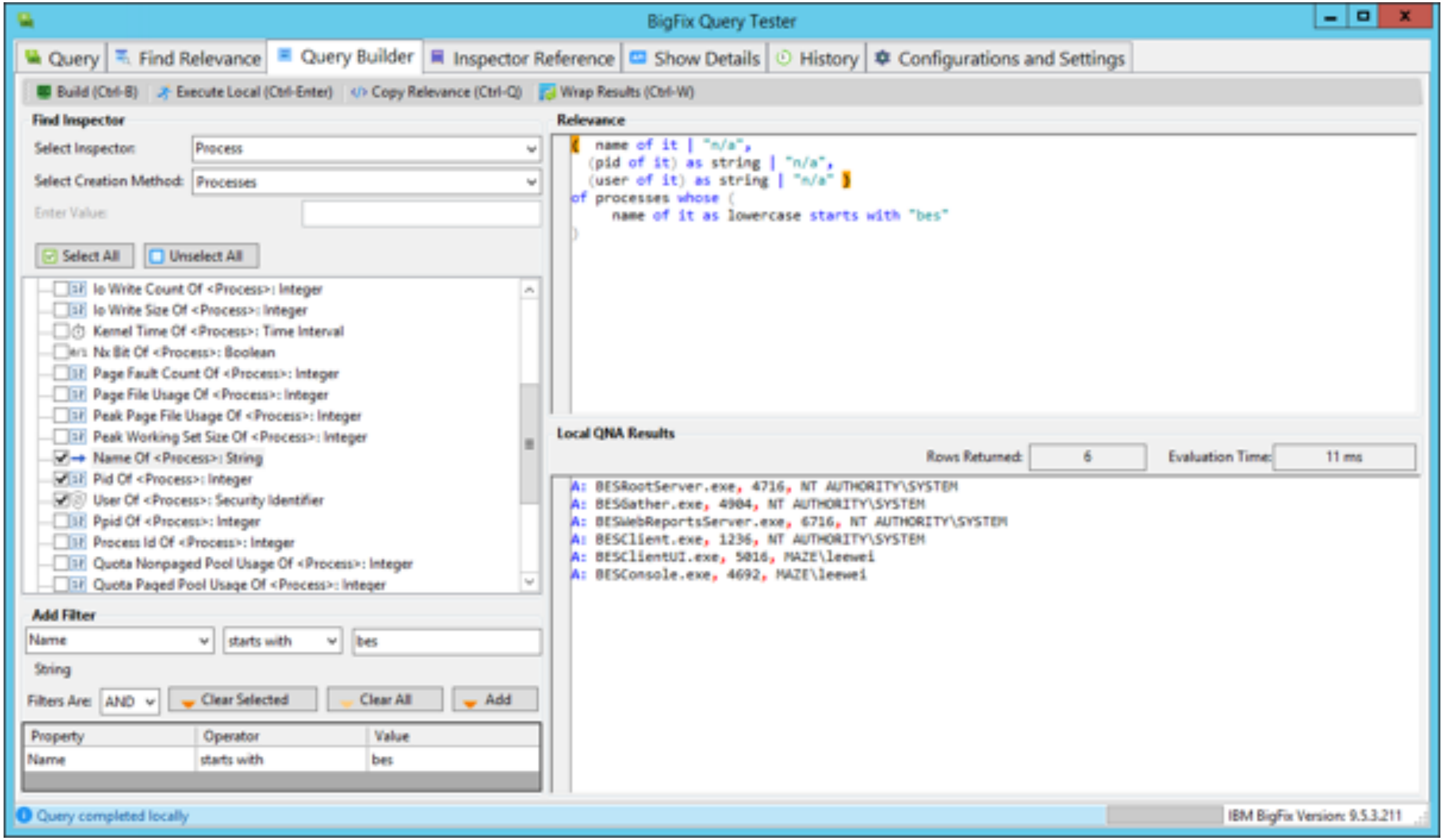
BigFix Query Tester



Find Inspector

Select Inspector: Process

Select Creation Method: Processes

Enter Value:

- ☐ Io Write Count Of <Process>: Integer
- ☐ Io Write Size Of <Process>: Integer
- ☐ Kernel Time Of <Process>: Time Interval
- ☐ Nx Bit Of <Process>: Boolean
- ☐ Page Fault Count Of <Process>: Integer
- ☐ Page File Usage Of <Process>: Integer
- ☐ Peak Page File Usage Of <Process>: Integer
- ☐ Peak Working Set Size Of <Process>: Integer
- ☑ Name Of <Process>: String
- ☑ Pid Of <Process>: Integer
- ☑ User Of <Process>: Security Identifier
- ☐ Ppid Of <Process>: Integer
- ☐ Process Id Of <Process>: Integer
- ☐ Quota Nonpaged Pool Usage Of <Process>: Integer
- ☐ Quota Paged Pool Usage Of <Process>: Integer

Add Filter

Name | starts with | bes

String

Filters Are: AND

Property	Operator	Value
Name	starts with	bes

Relevance

```
(  name of it | "n/a",
  (pid of it) as string | "n/a",
  (user of it) as string | "n/a" )
of processes whose (
     name of it as lowercase starts with "bes"
)
```

Local QNA Results

Rows Returned: 6 Evaluation Time: 11 ms

```
A: BESRootServer.exe, 4716, NT AUTHORITY\SYSTEM
A: BESGather.exe, 4904, NT AUTHORITY\SYSTEM
A: BESWebReportsServer.exe, 6716, NT AUTHORITY\SYSTEM
A: BESClient.exe, 1236, NT AUTHORITY\SYSTEM
A: BESClientUI.exe, 5016, MAZE\leewei
A: BESConsole.exe, 4692, MAZE\leewei
```

Query completed locally

IBM BigFix Version: 9.5.3.211

Resource Links

- Very useful and detailed official documentation at Knowledge Center
  - Link
- Settings relating to Query
  - Link
- Engineering Blog with REST API information
  - Link
- Download BigFix Query Tester application
  - Link

Roadmap Features for R2

- Query Parameterization
  - Link
    - `versions of regapps "firefox.exe"`
    - `versions of regapps "{QUERY_PARAMETER{applicationName, "Enter the application executable name", "firefox.exe"}}"`
- Additional Out of the Box Queries
  - Link
- Query Authorization
    - Queries authorized by site, capabilities by user type (e.g. admin vs. operator)

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