



# Towards Proactive Service with Call Home

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# What is Software Call Home? [1/2]



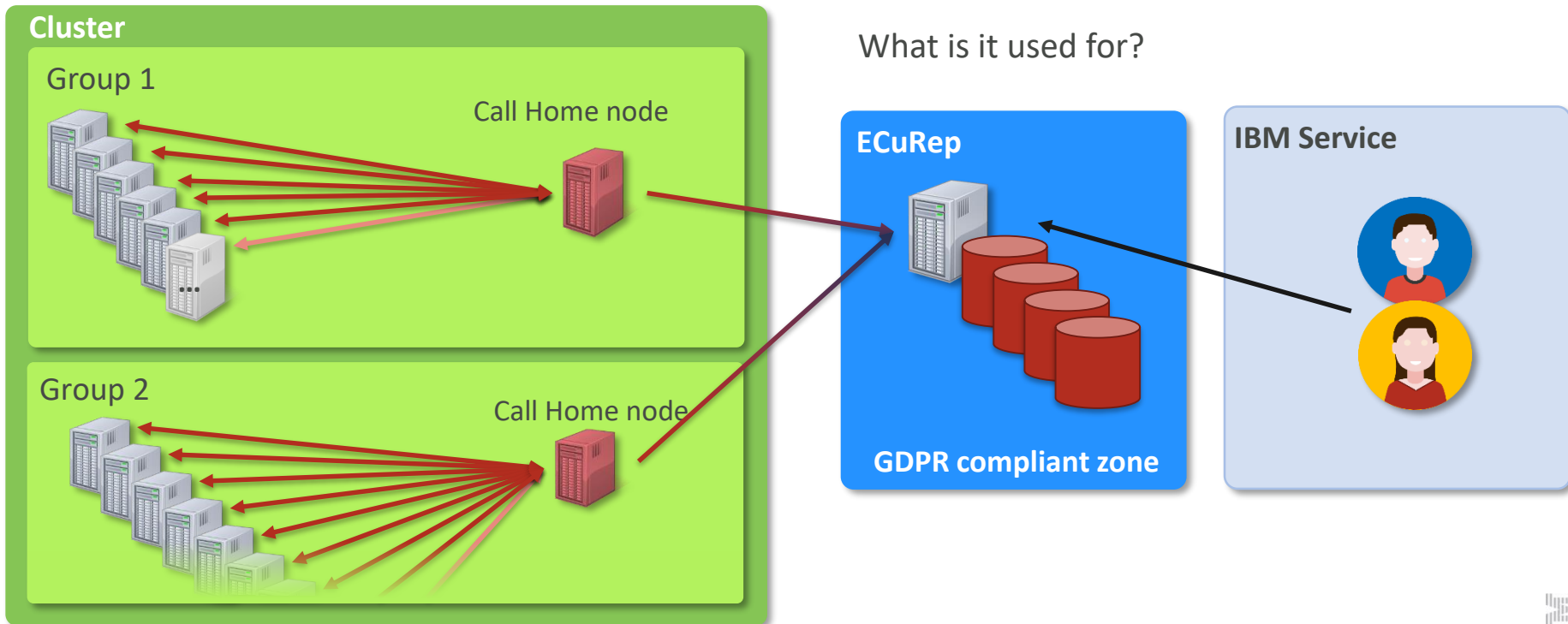
- Main features:
  - Upload of daily/weekly data collection (general cluster information)\*
  - Event-based data collection and upload (event specific information)\*
  - On-demand sharing data with support
- Currently supported on RHEL7, SLES and Ubuntu (x86, ppc, s390)
- Disabled by default (opt-in)
- Please note:
  - ESS Hardware Call Home  $\neq$  Spectrum Scale Software Call Home
  - Recommendation: Enable both!



# What is Software Call Home? [2/2]



## Current Architecture:



# Why enable it?



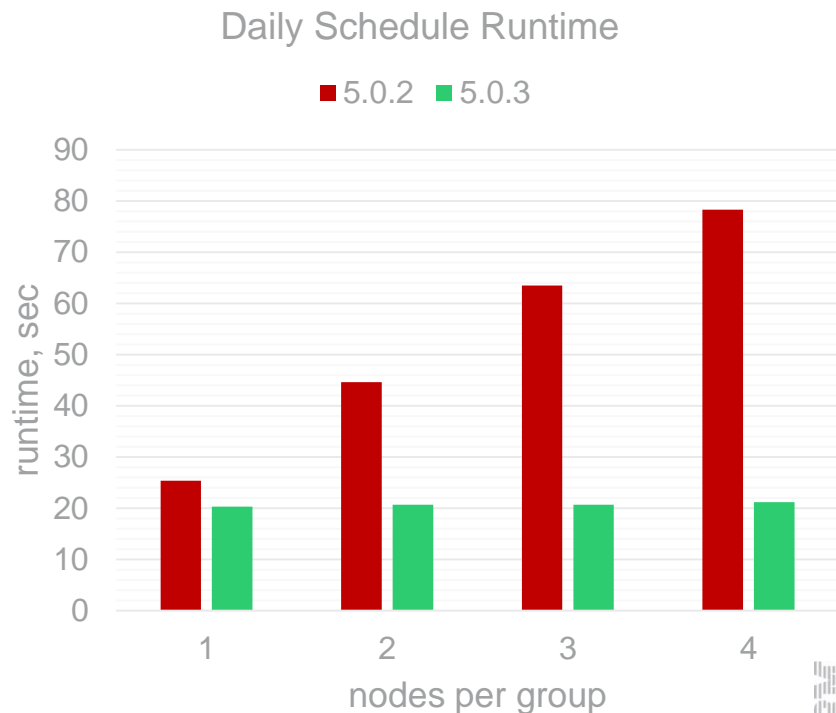
- Who has Spectrum Scale / ESS Software Call Home enabled?
- Running 4.2.3.8, 5.0.0 or higher?
  - Please enable Call Home
- Why?
  - Faster service response times
  - Easier/faster sharing data with support
  - Better test coverage for your configuration
  - (Future) Proactive recognition of issues
  - (Future) Automatically open service tickets for selected cases



# What is new in Call Home in 5.0.3? [1/5]



- Performance / scalability
  - Faster + much better scalable data collection
  - Smart caching of `_callhomeconfig`
    - 2.5x faster execution of list commands
    - Cumulative 25x speedup since 5.0.1
  - 2.5x faster group add
  - 2.5x faster group auto
  - 3.0x faster group delete



# What is new in Call Home in 5.0.3? [2/5]



- Simplified setup / less dependencies
  - No need for Call Home rpms/debs on child nodes
    - Will be still installed by installer, may be omitted with manual install
  - gpfs.callhome has no Perl-dependencies

```
root@g5030-11

Before:
[root@g5030-11 ~]# rpm -qRp gpfs.callhome-5.0.2-0.el7.noarch.rpm | grep perl | wc
 44      48      892
[root@g5030-11 ~]# rpm -qlpv gpfs.callhome-5.0.2-0.el7.noarch.rpm | wc
 18      162     2024

After:
[root@g5030-11 ~]# rpm -qRp gpfs.callhome-5.0.3-0.190306.092115.el7.noarch.rpm | grep perl | wc
 0      0      0
[root@g5030-11 ~]# rpm -qlpv gpfs.callhome-5.0.3-0.190306.092115.el7.noarch.rpm
-rwx-----      1 root      root          0 Mar  6 15:47 /usr/lpp/mmfs/bin/callhomeutils.pl
```



# What is new in Call Home in 5.0.3? [3/5]



- Introduced Call Home heartbeats
  - Collect the basic cluster config even if no schedule is configured
    - License, OS, CPU arch, memory, config
  - Previously:
    - No schedules enabled = no data
    - No inventory data from legacy customers



# What is new in Call Home in 5.0.3? [4/5]



- Enhancements for event-based uploads (more mmhealth events trigger call home)
  - Enabled for dozens of events, across many components
  - Better flooding protection / scalability (bulk uploads)
  - Increased stability
  - Collects both node and cluster data
  - Uploads can be better automatically processed (ftdcEvents.json)
- mmhealth reports if no connection to ECuRep

```
root@g5030-11

[root@g5030-11 ~]# mmhealth node show

Node name:      g5030-11d.localnet.com
Node status:    HEALTHY
Status Change:  5 min. ago

Component      Status      Status Change  Reasons
-----
GPFS           HEALTHY     5 min. ago     -
NETWORK        HEALTHY     5 min. ago     -
FILESYSTEM     HEALTHY     5 min. ago     -
DISK           HEALTHY     5 min. ago     -
CALLHOME       FAILED     Now            callhome_heartbeat_failed
PERFMON        HEALTHY     5 min. ago     -
THRESHOLD      HEALTHY     5 min. ago     -
```



# What is new in Call Home in 5.0.3? [5/5]



- SLES 15 support
- Spectrum Scale Erasure Code Edition - Specific data collection
- **5.0.2** Extended automatic group configuration

```
root@gpfs-11
```

```
Usage:
```

```
mmcallhome group add GroupName server [--node {all | ChildNode[,ChildNode...]}]
mmcallhome group list [--long] [-Y]
mmcallhome group delete GroupName
mmcallhome group auto [--server {ServerName1[,ServerName2...]}]
                        [--nodes {all | ChildNode1[,ChildNode2...]}]
                        [--force]
                        [--group-names {group1[,group2...]}]
                        [--enable [{LICENSE | ACCEPT}] | --disable]
```



# Future of Call Home [1/2]



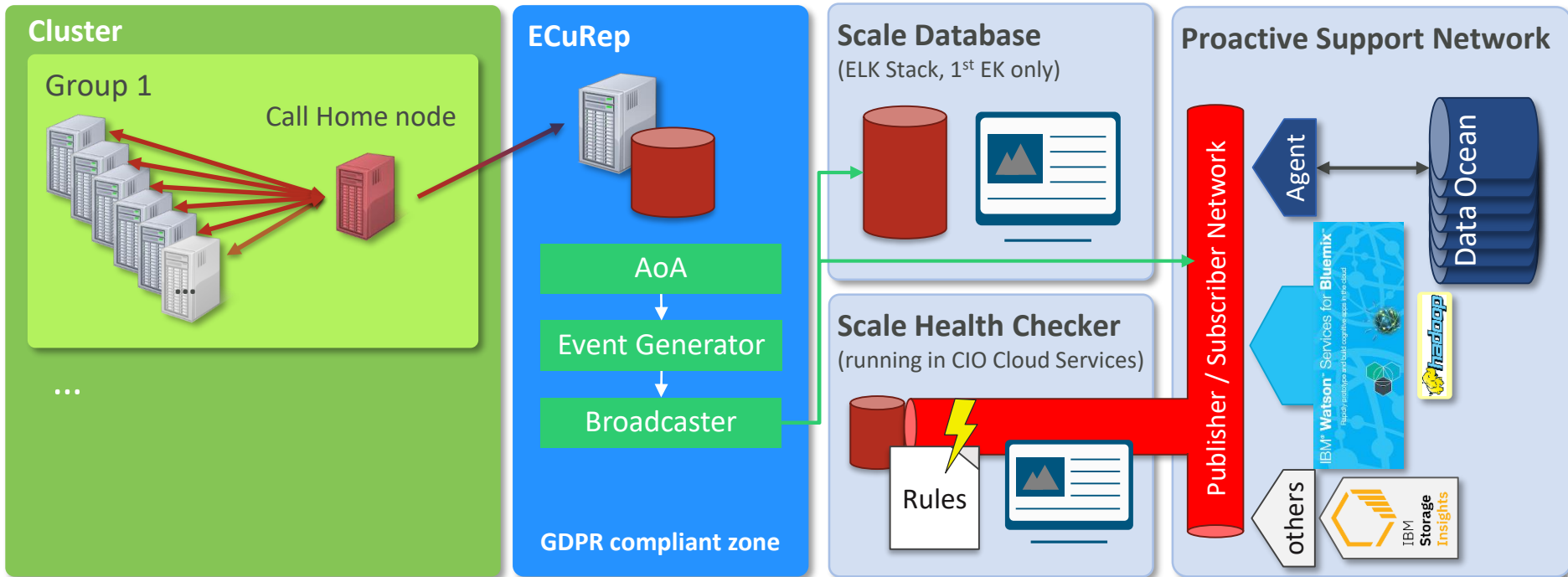
- **Proactively** detect:
  - Common misconfigurations & Known issues
  - System/component failures by using AI / ML
  - Receive real-time tuning suggestions
- Customer insight reports for support and development (ElasticSearch)
  - Quickly better understand customer systems
- Ticket creation via Call Home
- Backchannel – pushing alerts back to the customer system:
  - Latest insights without Spectrum Scale upgrade



# Future of Call Home [2/2]



- Future Architecture (subject to change):



# How to enable Call Home



## ▪ How?

- Spectrum Scale installer
- Spectrum Scale GUI
- mmcallhome command

```
root@gpfs-11

[root@gpfs-11 installer]# ./spectrumscale callhome
usage: spectrumscale callhome [-h]
                               {enable,disable,list,schedule,clear,config} ...

[root@gpfs-11 ~]# mmcallhome --help
Usage:
  mmcallhome group      Administer topology, groups, server and client nodes.
  mmcallhome capability Enable, disable and list callhome capability.
  mmcallhome info       Administer customer data.
  mmcallhome proxy      Administer proxy configuration.
  mmcallhome schedule   Administer call home scheduling
```

Call Home

Enable Call Home

Call home node:  
gpfs-11.localnet.com

Company Information

Company name: \*      Customer ID: \*

E-mail: \*      Country: -

Proxy Information

Enable Proxy

Proxy host: \*      Proxy port: \*

Enable Proxy authentication

Proxy username: \*      Proxy password: \*

Test Connection      Configure Call Home

# How to enable Call Home [1/3]



## 1. Configure basic call home settings

- Set up the customer information, using the command:

```
mmcallhome info change --customer-name CustomerName --customer-id CustomerId --email Email --country-code CountryCode
```

- Optionally: Set up the scheduled data collection, using the following commands:

```
mmcallhome schedule add --task DAILY
```

- If you are using proxy, configure the proxy settings.

- Set the proxy location and authentication settings, using the command:

```
mmcallhome proxy change --proxy-location ProxyLocation --proxy-port ProxyPort [--proxy-username ProxyUsername --proxy-password ProxyPassword]
```

- Enable the proxy, using the command:

```
mmcallhome proxy enable [--with-proxy-auth]
```

- Enable the callhome capability, using the following command:

```
mmcallhome capability enable
```



# How to enable Call Home [2/3]



## 2. Call Home group creation

```
mmcallhome group auto [--server servername[,servername]] [--nodes | Node1[,Node2...]
```

- *The --nodes option limits Call Home to a subset of nodes (recommended on large clusters)*
- *When omitting the --server option, nodes with internet access will be discovered automatically*
- *When specifying the --server option:*
  - *the number of servers defines the number of groups*
  - *Make sure the servers have internet access*

```
[root@md-11 ~]# mmcallhome group auto --server md-11
```

```
...
```

```
[root@md-11 ~]# mmcallhome group list  
callHomeGroup callHomeNode callHomeChildNodes
```

```
-----  
autoGroup_1   md-11       md-11,md-13,md-12
```



# How to enable Call Home [3/3]



## Alternativ: Manual group creation

```
mmcallhome group add GroupName server [--node {all | ChildNode[,ChildNode...]}]
```

- *<5.0.3 ? Don't put more than 32 nodes into a group*
- *Make sure that the specified server has internet access*

```
[root@md-11 ~]# mmcallhome group auto --server md-11
```

```
...
```

```
[root@md-11 ~]# mmcallhome group list  
callHomeGroup callHomeNode callHomeChildNodes
```

```
-----  
autoGroup_1   md-11       md-11,md-13,md-12
```





Questions ?





Thank you for your attention !!!

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# Examples of on the cluster collected datasets



- mmauth\_show\_Y.txt
- mmces\_address\_list\_Y.txt
- mmdiag\_afm\_Y.txt
- mmdiag\_commands\_Y.txt
- mmdiag\_deadlock\_Y.txt
- mmdiag\_health\_Y.txt
- mmdiag\_lroc\_Y.txt
- mmdiag\_memory\_Y.txt
- mmdiag\_network\_Y.txt
- mmdiag\_nsd\_Y.txt
- mmdiag\_rpc\_24h\_Y.txt
- mmdiag\_stats\_Y.txt
- mmdiag\_tokenmgr\_Y.txt
- mmdiag\_waiters\_Y.txt
- mmhealth\_cluster\_show\_verbose\_Y.txt
- mmhealth\_config\_interval\_Y.txt
- mmhealth\_event\_list\_hidden\_Y.txt
- mmhealth\_node\_eventlog\_day\_Y.txt
- mmhealth\_node\_show\_v\_Y.txt
- mmhealth\_thresholds\_list\_Y.txt
- mmiscallback\_Y.txt
- mmisccluster\_ces\_Y.txt
- mmisccluster\_Y.txt
- mmismgr\_Y.txt
- mmisnode\_a.txt
- mmisnsd\_L\_Y.txt

```
mmdiag config -Y
mmcallhome:collection:HEADER:version:reserved:reserved:index:schedule:logName:machineType:node:command:timeout:helperOptions:
mmcallhome:collectionRC:HEADER:version:reserved:reserved:rc:starttime:exectime:
mmcallhome:collection:0:1:::COGP001:weekly:mmdiag_config_Y.txt:all:all:/usr/lpp/mmfs/bin/mmdiag --config -Y:10::
mmcallhome:collectionRC:0:1:::0:1504681727:0.12:
mmdiag:config:HEADER:version:reserved:reserved:name:value:changed
mmdiag:config:0:1:::aclHashSpaceSize:2000::
mmdiag:config:0:1:::afmHashVersion:2::
mmdiag:config:0:1:::afmMaxWorkerThreads:1024::
mmdiag:config:0:1:::aioWorkerThreads:256::
mmdiag:config:0:1:::allowDeleteAclOnChmod:1::
mmdiag:config:0:1:::assertOnStructureError:0::
mmdiag:config:0:1:::atimeDeferredSeconds:86400::
mmdiag:config:0:1:::ccrEnabled:1:static:
mmdiag:config:0:1:::cipherList:AUTHONLY:static:
mmdiag:config:0:1:::clusterId:14457945700455708859:static:
```

```
mmlsnsd -L -Y
mmcallhome:collection:HEADER:version:reserved:reserved:index:schedule:logName:machineType:node:command:timeout:helperOptions:
mmcallhome:collectionRC:HEADER:version:reserved:reserved:rc:starttime:exectime:
mmcallhome:collection:0:1:::COGP011:daily:mmlsnsd_L_Y.txt:all:chnode:/usr/lpp/mmfs/bin/mmlsnsd -L -Y:30::
mmcallhome:collectionRC:0:1:::0:1505738553:0.56:
mmlsnsd:nsd:HEADER:version:reserved:reserved:fileSystem:diskName:volumeld:serverList:
mmlsnsd:nsd:0:1:::gpfs0:disk1:0A006451598C7976:gpfs-81.localnet.com,gpfs-82.localnet.com,gpfs-83.localnet.com:
mmlsnsd:nsd:0:1:::gpfs0:disk6:0A006451598C7992:gpfs-81.localnet.com,gpfs-82.localnet.com,gpfs-83.localnet.com:
mmlsnsd:nsd:0:1:::gpfs1:disk2:0A006451598C797C:gpfs-81.localnet.com,gpfs-82.localnet.com,gpfs-83.localnet.com:
mmlsnsd:nsd:0:1:::disk3:0A006451598C7981:gpfs-81.localnet.com,gpfs-82.localnet.com,gpfs-83.localnet.com:
mmlsnsd:nsd:0:1:::disk4:0A006451598C7987:gpfs-81.localnet.com,gpfs-82.localnet.com,gpfs-83.localnet.com:
mmlsnsd:nsd:0:1:::disk5:0A006451598C798C:gpfs-81.localnet.com,gpfs-82.localnet.com,gpfs-83.localnet.com:
```

# Examples of on the cluster collected datasets



```
mmlscluster -Y
mmcallhome:collection:HEADER:version:reserved:reserved:index:schedule:logName:machineType:node:command:timeout:helperOptions:
mmcallhome:collectionRC:HEADER:version:reserved:reserved:rc:starttime:exectime:
mmcallhome:collection:0:1:::COGP006:daily:mmlscluster_Y.txt:all:chnode:/usr/lpp/mmfs/bin/mmlscluster -Y:30:
mmcallhome:collectionRC:0:1:::0:1505738549:0.79:
mmlscluster:clusterSummary:HEADER:version:reserved:reserved:clusterName:clusterId:uidDomain:rshPath:rshSudoWrapper:rcpPath:rcpSudoWrapper:repositoryType:primaryServer:
econdaryServer:
mmlscluster:clusterNode:HEADER:version:reserved:reserved:nodeNumber:daemonNodeName:ipAddress:adminNodeName:designation:otherNodeRoles:adminLoginName:otherNodeR
olesAlias:
mmlscluster:cnfsSummary:HEADER:version:reserved:reserved:cnfsSharedRoot:cnfsMoundPort:cnfsNFSDprocs:cnfsReboot:cnfsMonitorEnabled:cnfsGaneshda:
mmlscluster:cnfsNode:HEADER:version:reserved:reserved:nodeNumber:daemonNodeName:ipAddress:cnfsState:cnfsGroupId:cnfsIpList:
mmlscluster:cesSummary:HEADER:version:reserved:reserved:cesSharedRoot:EnabledServices:logLevel:addressPolicy:
mmlscluster:cesNode:HEADER:version:reserved:reserved:nodeNumber:daemonNodeName:ipAddress:cesGroup:cesState:cesIpList:
mmlscluster:cloudGatewayNode:HEADER:version:reserved:reserved:nodeNumber:daemonNodeName:
mmlscluster:clusterSummary:0:1:::gpfs-cluster-8.localnet.com:14457945700455708859:localnet.com:/usr/bin/ssh:no:/usr/bin/scp:no:CCR:gpfs-81.localnet.com::
mmlscluster:clusterNode:0:1:::1:gpfs-81.localnet.com:10.0.100.81:gpfs-81.localnet.com:quorum:X,Z::perfmon,ces:
mmlscluster:clusterNode:0:1:::2:gpfs-82.localnet.com:10.0.100.82:gpfs-82.localnet.com:quorum:X,Z::perfmon,ces:
mmlscluster:clusterNode:0:1:::3:gpfs-83.localnet.com:10.0.100.83:gpfs-83.localnet.com::X,Z::perfmon,ces:
mmlscluster:cesSummary:0:1:::/mnt/gpfs0/ces:OBJ:0:even-coverage:mmlscluster:cesNode:0:1:::1:gpfs-81.localnet.com:10.0.100.81::e:192.168.122.81:
mmlscluster:cesNode:0:1:::2:gpfs-82.localnet.com:10.0.100.82::e:192.168.122.83:
mmlscluster:cesNode:0:1:::3:gpfs-83.localnet.com:10.0.100.83::e:192.168.122.82:
```



# Examples of collected performance data



## Performance data

```
Row,Timestamp,cpu_system,cpu_user,cpu_contexts
1,1512136018,0.500000,0.500000,1066
2,1512136019,2.530000,1.010000,1504
3,1512136020,0.000000,0.500000,941
4,1512136021,0.000000,0.500000,972
5,1512136022,0.500000,0.000000,992
6,1512136023,0.500000,0.500000,1073
7,1512136024,2.540000,9.140000,1439
8,1512136025,1.010000,6.570000,1114
9,1512136026,0.000000,0.500000,938
10,1512136027,1.510000,0.500000,1156
```

