

Version 1.14

This document will provide details on the configuration and usage of the probe_of_things custom probe.

PLEASE NOTE: This probe is still in active development, please use at your own risk.

Probe New Features

This probe is a collection of useful callback utilities to help a UIM administrator manage their system. You can accomplish the following tasks currently with this probe:

- **NEW:** First run at the UIM hub and robot topology
 - Large environments are still an issue, I need to figure out the dynamic scaling of the D3.JS tree map.
- **UPDATED:** MYSQL database connection string
- **UPDATED:** HTML 5 report for Top Probes in use (15 default). Added the option to create your own TOP_N parameter (number)

Probe Existing Features

- Encrypt passwords for profile usage in almost all current probes
- Update the interface alias for a specified device->interface (Usually only available in USM)
- Reset a probe's security on a specified robot
- Retrieve a list of source->targets where data has not been received in a specific time frame
- Remove a device or list of devices from discovery with an option to delete QOS
- Delete QOS by providing a list of targets
- Clean niscache of provided list of robot names
- Generate HTML Reports for the following: License Pack Counts, UIM Users, Account Contacts, Hub Subscribers, CDM/Processes/NTServices Thresholds.
 - Threshold reports can now take a USM group parameter. This will create a report for just the devices in that group.
 - This needs to be the child group that actually contains the robots
- HTML 5 Report for inactive probes, this includes deactivated or offline probes
- Generate HTML Report for UMP database health. Based on TechDoc
http://search.ca.com/assets/SiteAssets/TEC1405477_External/UMPUSMSLowPerformanc eGuideandTroubleshootingChecklist1.1.pdf
- Manually configure probes by providing the following information: probe name, section, key and value. Can provide a comma-separated list of robots. Multi-threaded
- Modify single probe configuration by providing JSON

- Collect and ZIP a probe's log files and configuration files. Could be used for support.
- Collect thresholding information based on configured probe profiles, multi-threaded (This is the migration of the threshold_archive probe that is currently on the Communities). Multi-threaded
 - Can now be limited by providing a hublist parameter in the callback
 - This needs to be the hub name, not the hub address
- Generate HTML SVG report of VMware topology. This features uses the Vsphere API to collect parent-child relationships for your infrastructure. It 'should' generate one HTML page for each configured resource for each vmware probe instance. Multi-threaded.
 - **NOTE:** This connects to vSphere directly so the probe will need to be on the same physical network as the Vcenter or ESX host. The vmware probe doesn't collect the needed attributes out of the box, so that is why it connects directly to vSphere.
- Retrieve list of current USM Groups (Will be needed for future USM group creation feature)



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Prerequisites

- CA UIM Server version 8.0 or greater
- Java_jre version ≥ 1.7

Probe Configuration

This probe is driven from callbacks, so there is currently no recurring execution. However, there are still probe configuration options that are available for individual callbacks.

<setup>

- **loglevel** – Sets the loglevel of the probe. (1 = Info and 4 = Debug)
- **niscache_threads** – Threads used in the *automation_clean_niscache* callback. (Default: 10)
- **device_delete_threads** – Threads for the *automation_device_wiper* callback (Default: 10)
- **threshold_threads** – Threads for the *automation_get_probe_configs* and *threshold_get_configs* callbacks (Default: 10)
- **probe_config_threads** – Threads for the *automation_modify_probe_config*, *automation_probe_config_from_json* and *automation_modify_all_probe_configs* callbacks (Default: 10)
- **vmware_topology_threads** – Threads for the *topology_build_vmware* callback. (Default: 10)
- **archive_path** – Local system path to store probe configurations from *automation_get_probe_configs*.
- **generate_alarms** – Set this to yes if you want an alarm generated for each probe configuration difference from the *automation_get_probe_configs* callback.

<profiles>

Use this section to create threshold gathering profiles for the *threshold_get_configs* callback. There are three available keys for each profile: probe, sections and keys. Both the sections and keys parameter will also accept a *, which basically tells the probe to pull every possible configuration entry.

```
<cdm>
  probe = cdm
  sections = /cpu,/disk,/memory
  keys = active,threshold
</cdm>
```

```
<ntevl>
    probe = ntevl
    sections = /watchers
    keys = *

</ntevl>
```

Callback Usage

automation_encrypt_password – Use this callback to encrypt a probe_config_set capable password for the multiple probes and an ADE XML encrypted password for robot deployments.

probe_list: ad_response, ade, celerra, cisco_unity, db2, email_response, ews_response, exchange_monitor, iis, Informix, jdbc_response, jvm_monitor, ldap_response, logmon, mysql, nexec, oracle, printers, processes, rsp, sql_response, sqlserver, tomcat, url_response, vmware

automation_snmp_interface_alias – This callback will allow you to modify the interface alias for a specific device->interface without using the USM or writing directly to the database.

automation_device_wiper – One click ability to remove a device from discovery with an option for QOS deletion. Provide a device name or CSV list of devices and this callback will find the associated cs_keys from the CM_COMPUTER_SYSTEM table. If the delete_qos option is chosen, it will delete all S_QOS_DATA entries associated with that device name. An option to check the S_QOS_SNAPSHOT table for recent data, if data is found it will skip the device deletion.

Note: if only device_name or devices_list is provided, delete_qos will default to no and only remove the device from discovery.

automation_delete_qos_by_target – Delete QOS by providing a CSV list of targets. Will need to query the S_QOS_DATA table for the targets

automation_reset_probe_security – HDB or Spooler not registering correctly after an automated deployment? Use this callback in order to send a probe_verify callback followed by a probe stop/start.

automation_clean_niscache – Takes a provided list of robot names (or single robot) and clears the niscache via the available controller callback, then restarts the robot.

automation_modify_probe_config – One click ability to modify the configuration of a probe on a single robot or a comma-separated list of robots. Modifies the probe configuration using the controller's probe_config_set callback.

automation_modify_all_probe_config – One click ability to modify **EVERY** instance of a single probe. Same technical details as automation_modify_probe_config callback.

automation_modify_probe_config_from_json – One click ability to modify multiple key/value pairs on a set robot and probe. Current version only supports one robot and one probe at a time.

JSON Example: `{probe:cdm, domain:Nimsoft-Monitor, hub:WorldWideHQ, robot:usildodnime1, configuration:[{section:setup, key:loglevel, value:3}, {section:setup, key:logsize, value:2048}]}`

automation_get_usm_groups – Returns a PDS table of currently configured USM groups.

automation_get_probe_logs_support – Retrieves the probe.log, _probe.log and probe.cfg files and creates a new ZIP file in the /logs directory of this probe.

automation_get_probe_configs – Retrieves the probe configurations for all probes on all robots and stores them on the collector file system and in the local H2 database as well. On the next run, it will compare the two probe configuration versions and detect if a change has been made. You have the option to generate an alarm on configuration change. The data is stored in two tables, configuration_current and configuration_changes. Multi-threaded

healthcheck_get_devices_no_data – This will return a list of source->target combinations that have not collected QOS data in the specific timeframe. If the return count is less than 250 the list will be returned in the Probe Utility PDS window. If the return count is > 250 a CSV file will be created in the probe installation directory with the filename of devices_with_no_data-TIMESTAMP.csv.

Note: This currently only supports MYSQL and MSSQL databases. If you want to use this feature, the probe will need to be installed on a robot that has direct TCP access to the database.

healthcheck_ump_health – Creates an HTML report in the probes/system/probe_of_things/report directory that contains information regarding the health and configuration of the database in regards to UMP/USM performance. Based on UIM Tech Doc - http://search.ca.com/assets/SiteAssets/TEC1405477_External/UMPUSMSlowPerformanceGuideandTroubleshootingChecklist1.1.pdf

licensing_run_all – Creates an HTML report in the probes/system/probe_of_things/report directory that contains a list of all environment hub subscribers, UIM users, contacts and currently in use license packs.

Note: The license counts will not be 100% accurate at this time, but they should be a near representation of your configured monitoring. The storage probe pack is a misnomer as its just the amount of probes deployed, not the actual terabyte usage that is used to calculate compliance.

licensing_top_probes – Creates an HTML report for the top 15 monitoring probes in the environment.

licensing_top_probes_origin – Creates an HTML report for the top 15 monitoring probes in the environment filtered by origin.

threshold_get_configs – Collect threshold information based on profiles in the probe configuration and store them in a TCP accessible database (H2). Multi-threaded.

threshold_cdm_report – Creates an HTML report in probes/system/probe_of_things/report directory that shows the currently configured CPU/Disk/Memory thresholds.

threshold_ntservices_report – Creates an HTML report that shows the currently configured ntservices probe thresholds.

threshold_processes_report – Creates an HTML report that shows the currently configured processes probe thresholds.

topology_build_vmware – Uses the Vsphere API to generate HTML topology report. Should create a file for each configured resource in each vmware probe instance.

topology_build_uim – Scans the message bus for a list of hubs and their robots and creates a topology map in the /reports folder.

Technical Information

automation_encrypt_password – Parameters (probe, unencrypted password)

returns PDS: encrypted_password

automation_snmp_interface_alias – Parameters (device name, interface name, alias)

returns PDS: device, interface, previous alias, new alias

automation_device_wiper – Required Parameters: (device_name OR CSV list of devices)
Optional Parameters (delete_qos, snapshot_check, snapshot_days)

Parameter options: **delete_qos**: yes or true, **snapshot_check**: yes or true, **snapshot_days**: integer

returns PDS: result

automation_reset_probe_security – Parameters (robot address, probe)

returns PDS: result

automation_delete_qos_by_target – Parameters (targetlist CSV)

returns PDS: result

automation_get_usm_groups – Parameters ()

returns PDS: table of current USM groups

automation_clean_niscache – Parameters (robot name or CSV list of robots)

returns PDS: result

automation_modify_probe_config – Parameters (list_of_robots, probe, section, key, new_value)

returns PDS: result

automation_modify_all_probe_config – Parameters (probe, section, key, new_value)

returns PDS: result

automation_modify_probe_config_from_json – Parameters ()

returns PDS: result

automation_get_probe_configs – Parameters (json)

returns PDS: result

healthcheck_get_devices_no_data - Parameters (days_without_data)

returns CSV: List of source->targets

healthcheck_inactive_report – Parameters (hublist)

returns HTML: inactive_probes.html

healthcheck_get_probe_logs_support – Parameters (robot, probe)

returns ZIP: probe.log, _probe.log and probe.cfg files

healthcheck_ump_health – Parameters()

returns HTML: UMP Database Health (ump_health.html)

licensing_run_all – Parameters()

returns HTML: Robot and Probe Pack Counts, Users, Contacts and Hub Subscribers

licensing_top_probes – Parameters(Optional: top_n)

returns HTML: Top 15 monitoring probes in use

licensing_top_probes_origin – Parameters(Optional: origin, Optional: top_n)

returns HTML: Top 15 by default or the number provided in the top_n parameter monitoring probes in use by origin

threshold_get_configs – Parameters(hublist)

returns PDS: result

threshold_cdm_report – Parameters(usm_group)

returns HTML: CPU/Disk/Memory thresholds and status

threshold_ntservices_report – Parameters(usm_group)

returns HTML: NTService thresholds and status

threshold_processes_report – Parameters(usm_group)

returns HTML: Process thresholds and status

topology_build_vmware – Parameters()

returns HTML: D3.JS collapsible topology map

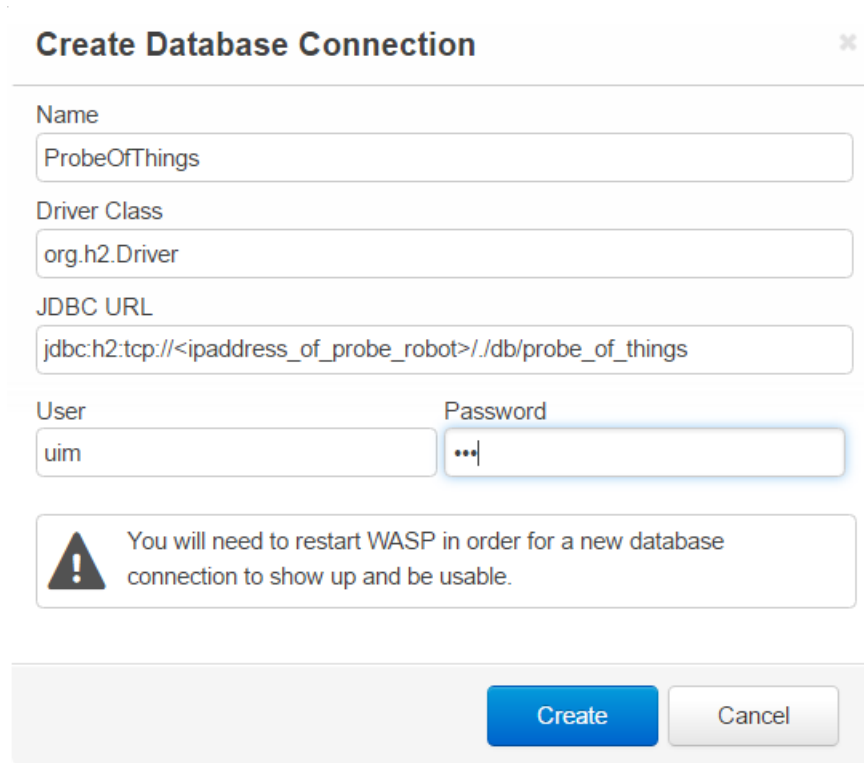
topology_build_uim – Parameters()

returns HTML: D3.JS collapsible map

Database Information

The probe uses an internal JDBC capable database (<http://www.h2database.com>) to store the probe configurations, configuration changes, thresholds and probe pack usage information. This database can be accessed from the Dashboard Designer, Unified Reports or CABI.

UMP HTML 5 Dashboard Connectivity



The dialog box titled "Create Database Connection" contains the following fields and controls:

- Name:** A text input field containing "ProbeOfThings".
- Driver Class:** A text input field containing "org.h2.Driver".
- JDBC URL:** A text input field containing "jdbc:h2:tcp://<ipaddress_of_probe_robot>/.db/probe_of_things".
- User:** A text input field containing "uim".
- Password:** A text input field containing "uim".
- Warning:** A message box with a warning icon stating: "You will need to restart WASP in order for a new database connection to show up and be usable."
- Buttons:** "Create" and "Cancel" buttons at the bottom right.

- **Name:** <Logical Name for the connection>
- **Driver Class:** org.h2.Driver (The driver can be found [Here](#).)
- **JDBC URL:** jdbc:h2:tcp://<ipaddress_of_probe_robot>/.db/probe_of_things
- **User:** uim
- **Password:** uim

CABI Connectivity

Set Data Source Type and Properties

First, select the type of data source you wish to add, then enter the required property values.

Type:

JDBC Driver:

JDBC Driver (required):

 Hint: org.postgresql.Driver

URL (required):

 Hint: jdbc:postgresql://localhost:5432/mydb

User Name:

Password:

Time Zone:

Hint: Do not change the time zone setting unless you know the database timestamp data is incorrect.

- Create a new data source
- Fill out the fields and then click Add Driver and import the downloaded H2 driver. The driver can be found [Here](#).
- Test the connection
- Save

Tables and Schema Information

- **configuration_current** – This is populated from the *automation_get_probe_configs* callback. This table stores the entire probe configuration files from each run.
 - **Columns** – origin , hub, robot, robot_address, probe, probe_version, archive_date, modify_time, configuration, record, file_path

- **configuration_changes** – This table contains the probe configuration differences between the current and previous archival.
 - **Columns** - hub, robot, probe, section, key, previous_value, current_value, previous_archive_date, current_archive_date, previous_record, current_record
- **threshold_current** – This table contains the current collected thresholds from the *threshold_get_configs* callback. This table is truncated on each run.
 - **Columns** – hub, robot, probe, section, key, value

Todo List

- Create USM groups from JSON
- Store data in H2 database for license usage over time
- Improve configuration archive and diff reports (configuration_archive functionality)
- Add more probe threshold reports (logmon, url_response, net_connect, ntevl)
- Improve probe configuration through JSON to support multiple robots and probes
- Continue testing the VMware topology feature

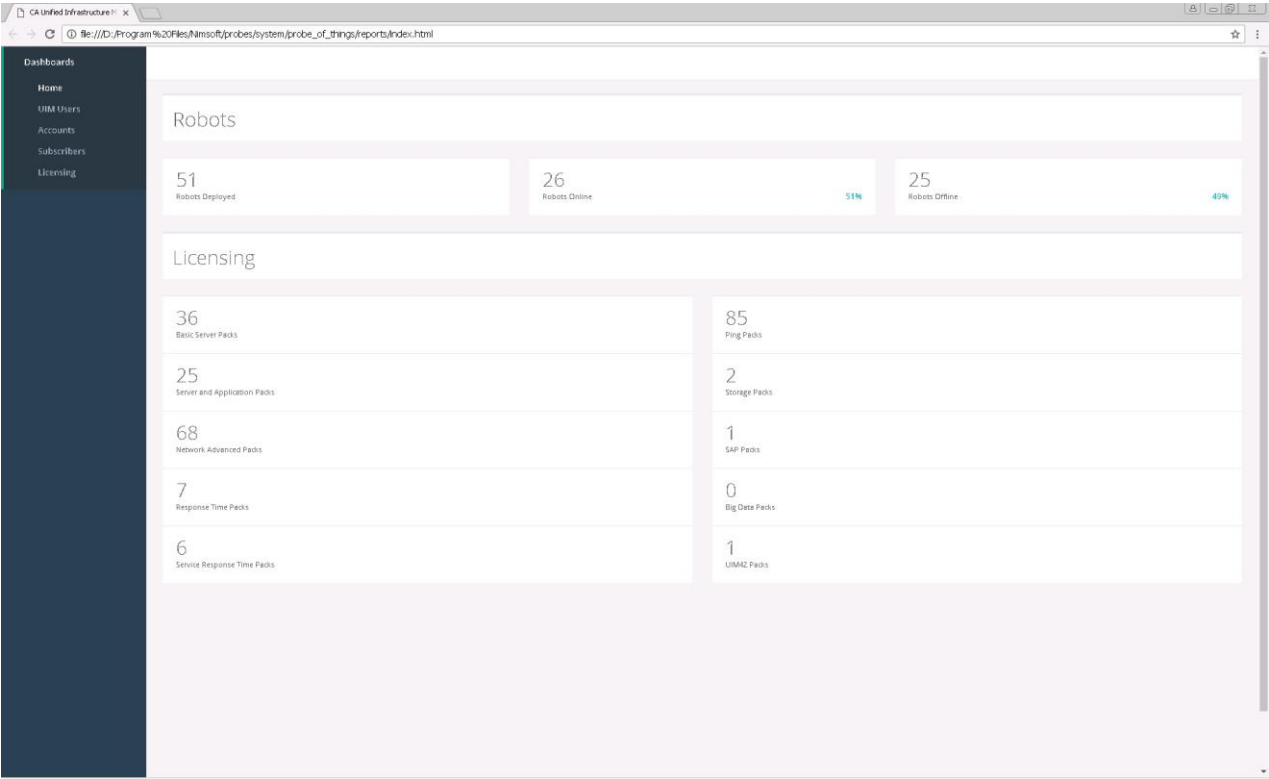
Revision History

Date	Version	Change
July 22 nd , 2016	1.00	Initial Draft
July 22 nd , 2016	1.01	Added devices_with_no_data
July 25 th , 2016	1.02	Devices with no data always creates a CSV, no matter the size. Initial merge of healthcheck probe with just list_subscribers creating a CSV.
July 28 th , 2016	1.03	Added automation_device_wiper callback
September 9 th , 2016	1.04	Removed decrypt password option, added list_accounts/users, can now provide a CSV list of devices for removal
October 4 th , 2016	1.05	Added ability to manually configure probe configurations, uim license reporting via HTML, callback timer for historical licensing reports (future).
October 26 th , 2016	1.10	Added niscache_clean, modify probe configurations from json, UMP/database health report, threshold gathering and reporting and vmware topology
November 8 th , 2016	1.11	Added support file retrieval and processes/ntservices threshold reports

November 21 st , 2016	1.12	Delete QOS by target, inactive probe report and added filtering for threshold gathering and reporting
December 7 th , 2016	1.13	Integration of configuration_archive, top probe usage report, top probe usage report by origin
January 3 rd , 2017	1.14	Improved MYSQL db connectivity, uim topology map

Report Samples

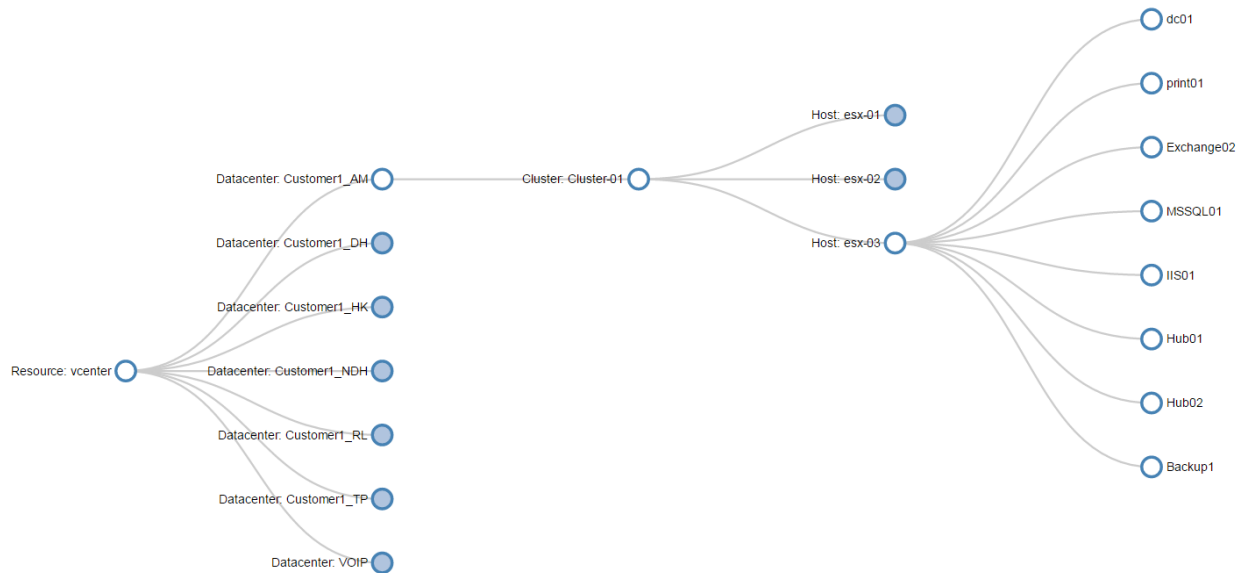
Probe Packs



CDM Thresholds

System Probe of Things Reports/bdm_thresh.html														
Origin	Hub	Robot	Total Error Active	Total Error Threshold	Total Warning Active	Total Warning Threshold	Swap Error Active	Swap Error Threshold	Swap Warning Active	Swap Warning Threshold	Physical Error Active	Physical Error Threshold	Physical Warning Active	Physical Warning Threshold
DMZ	DMZ	uslrc96	yes	50	no	50	no	85	no	60	no	95	no	85
DMZ	DMZ	dod-na-nlme-p04	yes	50	no	50	no	85	no	60	no	95	no	85
EMEA	EMEA	ukdrt12	yes	50	no	50	no	85	no	60	no	95	no	85
Enterprise	MSP	nim-exchange	no	50	no	50	no	85	no	60	no	95	no	85
Enterprise	MSP	nim-storage	no	50	no	50	no	85	no	60	no	95	no	85
MSP	MSP	nim-poller	yes	50	no	50	no	85	no	60	no	95	no	85
uslstda-hub1	uslstda-hub1	uslstda-hub1	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	dod-na-nlme02	yes	50	yes	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	uslstda-nlme01	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	dod-lpar1	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	uslstda-nlme01	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	uslstda-nlme01	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	uslstda-nlme01	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	uslstda-nlme01	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	uslstda-nlme01	yes	50	no	50	no	85	no	60	no	95	no	85
WorldWideHQ	WorldWideHQ	uslstda-nlme01	yes	50	no	50	no	85	no	60	no	95	no	85
Origin	Hub	Robot	Total Error Active	Total Error Threshold	Total Warning Active	Total Warning Threshold	Swap Error Active	Swap Error Threshold	Swap Warning Active	Swap Warning Threshold	Physical Error Active	Physical Error Threshold	Physical Warning Active	Physical Warning Threshold

VMware Topology



UMP/Database Health

CA Unified Infrastructure X

WASP Robot List

Show 25 entries

Showing 1 to 1 of 1 entries

Robot	Robot Version	Robot Address	WASP Version	Operating System Information	Operating System Build
usliddadnump1	7.70 [Build 7.70.2507, Mar 18 2015]	rhinsoft-MonitorWorldWideHQ/usliddadnump1	8.40	Windows Server 2008 R2 Enterprise Edition, 64-bit	Service Pack 1 Build 7601

Previous 1 Next

Database Information

Show 25 entries

Showing 1 to 1 of 1 entries

Database Name	Database Version	Database Size	Database Unallocated Space	Database Recovery Model
newNimsoft	Microsoft SQL Server 2008 R2 (SP3) - 10.50.6000.34 (X64) Aug 19 2014 12:21:34 Copyright (c) Microsoft Corporation Standard Edition (64-bit) on Windows NT 6.1 (Build 7601; Service Pack 1) (hypervisor)	119343.06 MB	85781.27 MB	FULL

Previous 1 Next

Database Fragmentation

Show 10 entries

Showing 1 to 1 of 1 entries

Table Name	Index Name	Average Fragmentation	Page Count
DN_OOS_DATA_1378	DN_OOS_DATA_1378_idx1	99.7340425531915 96	376

CA Unified Infrastructure X

File:///D:/Program%20Files/Aimsoft/probes/system/probe_of_things/reports/lump_health.html

Table Size

Show 10 entries

Table Name	Row Counts	Total Space	Used Space	Unused Space
datomic_kv	20036254	12382.578125 MB	12379.1875 MB	3.390625 MB
RN_QOS_DATA_1075	7304545	611.1171875 MB	575.3203125 MB	35.796875 MB
RN_QOS_DATA_0167	3673457	298.328125 MB	288.703125 MB	9.625 MB
RN_QOS_DATA_8806	3673454	292.890625 MB	287.7109375 MB	5.1796875 MB
DN_QOS_DATA_0023	3481048	452.9140625 MB	415.8765625 MB	36.9375 MB
DN_QOS_DATA_0003	2782098	403.53125 MB	378.5078125 MB	25.0234375 MB
RN_QOS_DATA_0013	2360016	220.515625 MB	215.8765625 MB	4.5390625 MB
RN_QOS_DATA_0014	2359855	196.515625 MB	185.2890625 MB	11.2265625 MB
RN_QOS_DATA_1523	2289144	197.515625 MB	177.1484375 MB	20.3671875 MB
DN_QOS_DATA_0019	1510283	180.3515625 MB	172.078125 MB	8.2734375 MB
Table Name	Row Counts	Total Space	Used Space	Unused Space

Showing 1 to 10 of 100 entries

Previous 1 2 3 4 5 ... 10 Next

Poor Performing Queries

Show 10 entries

Creation Time	Last Execution Time	Physical Reads	Logical Reads	Logical Writes	Execution Count	Worker Time	Elapsed Time	Average Elapsed Time	Query
2016-10-26 10:58:19.323	2016-10-26 10:58:19.5	0	744	0	67	8788 ms	8788 ms	131 ms	UPDATE [L_qos_data] set [origin] = @1,[host] = @2,[probe] = @3,[probe] = @4,[mime_origin] = NULL,[modifier] = @5,[sample_rate] = @6 WHERE ([checksum]=@7
2016-10-26 10:58:20.097	2016-10-26 10:58:20.517	0	21	0	1	22460 ms	22460 ms	22460 ms	SELECT top 10 creation_time,last_execution_time,total_physical_reads,total_logical_reads,total_logical_writes, execution_count, total_worker_time, total_elapsed_time, total_elapsed_time / execution_count avg_elapsed_time, SUBSTRING(st.text, (qs.statement_start_offset/2)+1, ((CASE statement_end_offset WHEN -1 THEN DATALENGTH(st.text) ELSE qs.statement_end_offset END - qs.statement_start_offset)/2)+1) AS statement_text FROM sys.dm_exec_query_stats AS qs CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) st ORDER BY total_elapsed_time / execution_count DESC