

Keysight Open RAN Simulators, Cloud Edition 5.0.1

Troubleshooting Guide

Notices

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Mexico	001-888-829-5558	8h00 – 17h00
Other	+1-719-273-6516	8h00 – 17h00
<i>EMEA</i>		
Belgium	0800-18686	8h30 – 17h30
Finland	0800-913-352	8h30 – 17h30
France	0800-917228	8h30 – 17h30
Germany	0800-0824099	8h30 – 17h30
India	1800-18-02552	8h30 – 17h30
Ireland	1800-949245	8h30 – 17h30
Israel	1-809-454975	8h30 – 17h30
Italy	0800-790571	8h30 – 17h30
Luxembourg	0800-25112	8h30 – 17h30
Netherlands	0800-022-9086	8h30 – 17h30

Romania	0213 015 699	8h30 – 17h30
Spain	800-654386	8h30 – 17h30
Sweden	0201-202266	8h30 – 17h30
United Kingdom	0800-0293882	8h30 – 17h30
<i>Asia and Australia</i>		
Australia	1-800-370-558	8h30 – 17h00
China Mainland	800-810-0005	8h30 – 17h30
	400-810-0005	8h30 – 17h30
Hong Kong	800-931-613	9h00 – 18h00
Japan	0120-421-621	9h00 – 17h30
Malaysia	1800-819 092	8h30 – 17h30
South Korea	080-770-0800	8h30 – 17h30
Singapore	800-101-3797	8h30 – 17h30
Taiwan	0800-699-880	9h00 – 18h00
Other	+65 6215 7600	8h30 – 17h30 (Singapore)

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CHAPTER 1

Troubleshooting Topics

This *Troubleshooting Guide* presents the most common errors or issues and their associated resolution (if available).

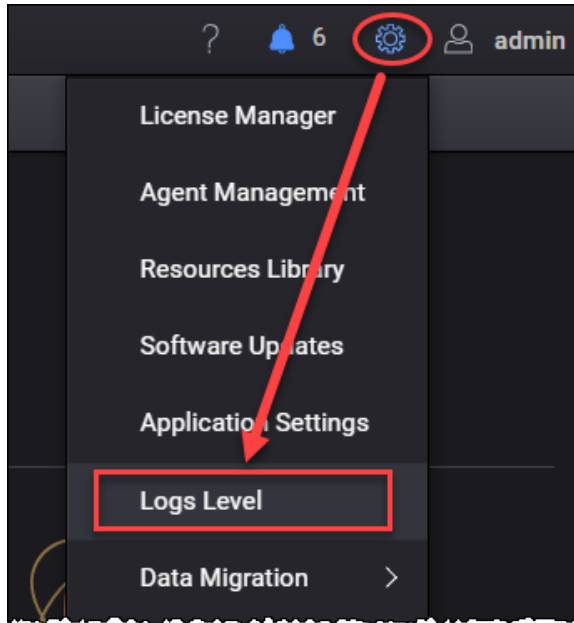
Topics:

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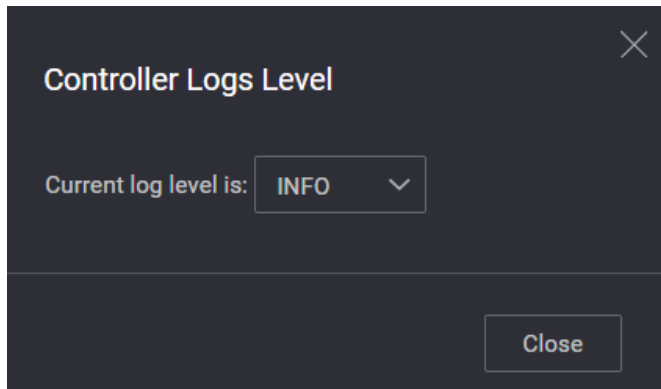
How to collect diagnostics from Middleware, License Server and from specific test results

Middleware diagnostics

From the Middleware UI, before collecting diagnostics, the log level can be checked/changed, by selecting the Settings menu(⚙️) on the upper right corner, and then selecting **Logs Level**:



The default log level is set to **Info**.

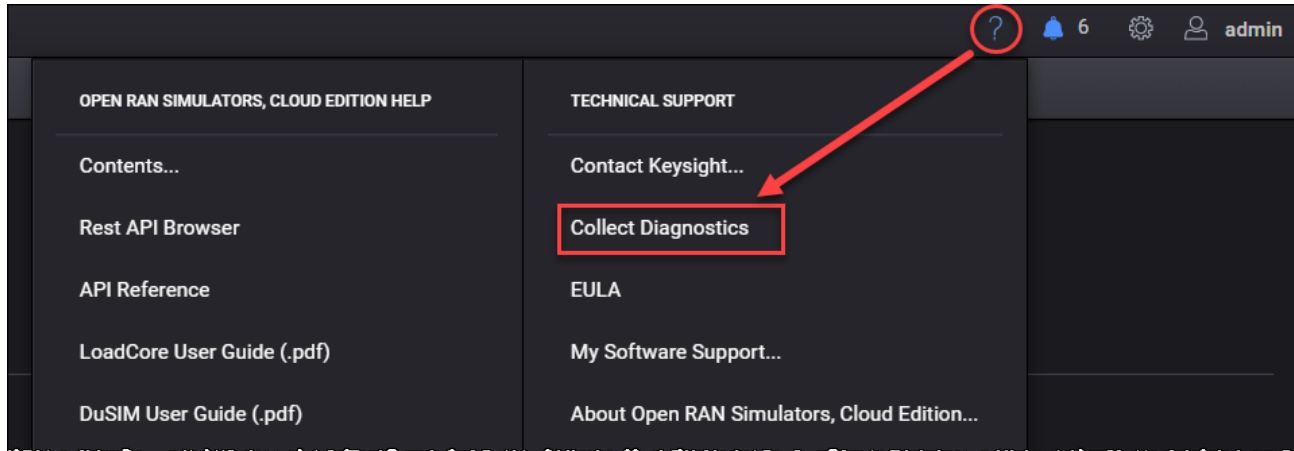


It is recommended to use **Debug** level only if it is needed for detailed troubleshooting, as it consumes more resources on the Middleware.

The log level change takes effect the moment it is applied.

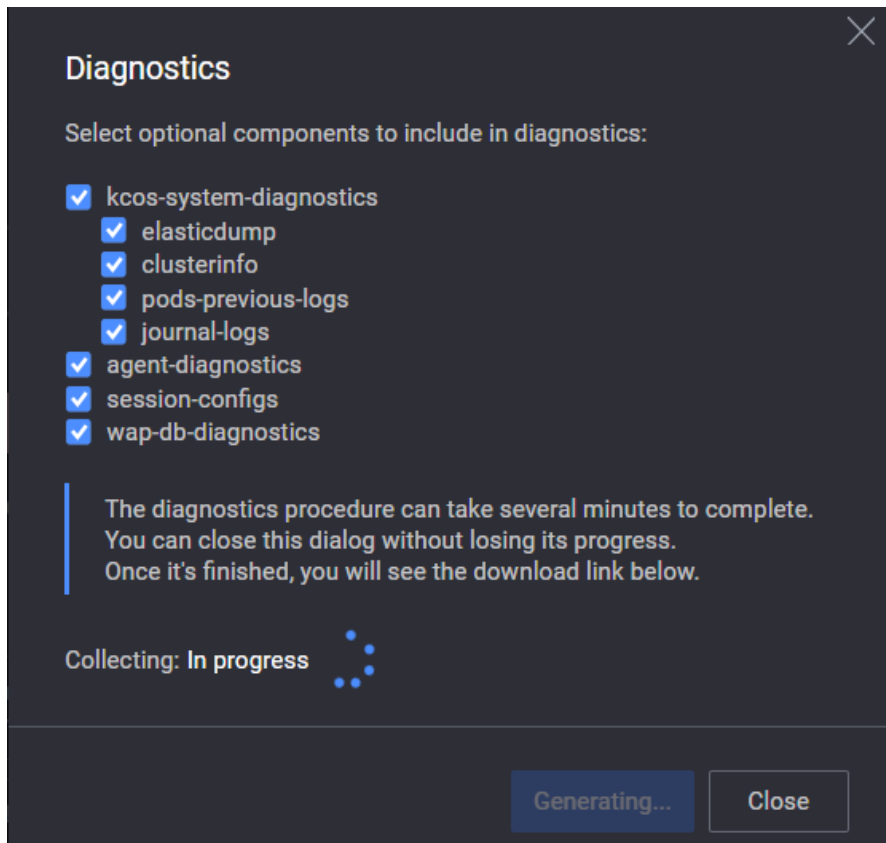
If downloading diagnostics concerning a previously encountered issue, changing log level will not affect the concerning logs.

Select the Help menu (question mark icon) on the upper right corner and select **Collect Diagnostics**:



By default all components will be enabled and included in the diagnostics archive.

Selecting **Generate** will start the collection process which can take a few minutes. After it is complete, a download link will be displayed for the archive (which can be a few hundred MBs in size).



Middleware logs can also be collected by `ssh`-ing to its IP and using `kcos` commands (for details, refer to the *KCOS CLI Reference Guide*).

To start the generation of the diagnostics archive file, issue the command:

```
kcoss logs diagnostics collect
```

To show the diagnostics file previously generated, issue the command:

```
kcoss logs diagnostics show
```

To download the file, issue the following command with the archive id:

```
kcoss logs diagnostics download -i
```

```
admin@kcoss-framework-shell-db6c8b97-ltvw2:~$ kcoss logs diagnostics show
ID      FILENAME                                     TIMESTAMP                                     STATE    MESSAGE
--      -
1       system_logs-2023-10-23-07-40-27-1.zip      2023-10-23 07:47:59.478599305 +0000 UTC    SUCCESS  Operation finished successfully

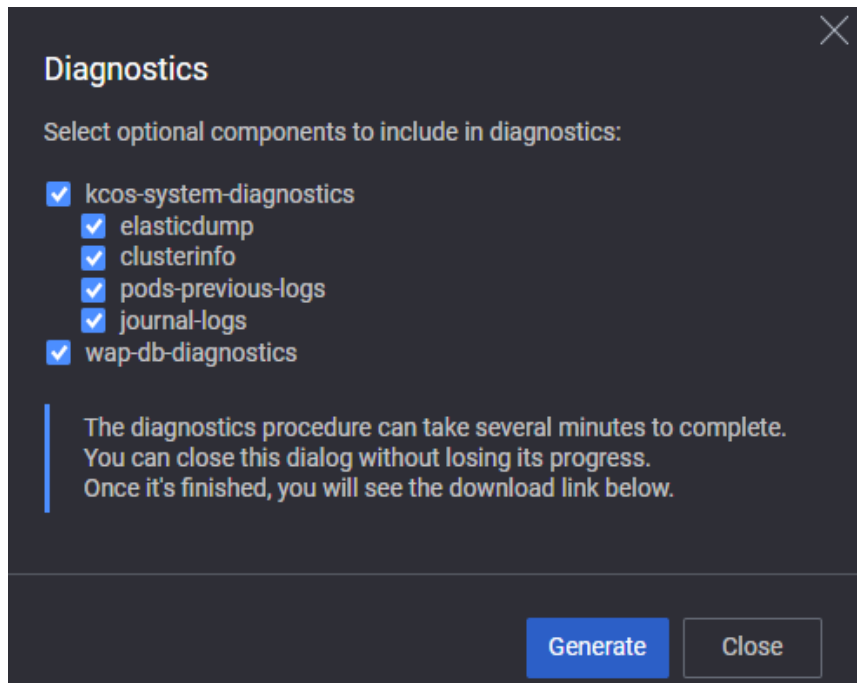
admin@kcoss-framework-shell-db6c8b97-ltvw2:~$ kcoss logs diagnostics download -i 1

Logs downloaded successfully
File Path  /tmp/logs-2023-10-23-07-51-13.zip
scp admin@<machine-ip>:/tmp/logs-2023-10-23-07-51-13.zip <desired-local-folder>
```

License Server diagnostics

For license server the process is almost identical to the one presented in the [Middleware section](#) (less components in the archive).

Select the Help menu (question mark icon) on the upper right corner and select **Collect Diagnostics > Generate**.



Also `kcoss logs diagnostics` commands are the same as for [Middleware section](#).

NOTE

It is recommended that, whenever collecting diagnostics from Middleware or License Server, to deselect the *elasticdump* option, because the generation time and the resulting archive size do increase considerably. Select this option only when specifically requested.

Specific test diagnostics

To collect specific test diagnostics, go to Browse Results menu, select the specific test, and select **Test Diagnostics**:

1 of 73 test results selected ⓘ All unlocked results will be automatically deleted after two weeks

Filter Tags ▾ Tag as ▾ Search results

	Config Name	Status	Started On ▾	Duration (hh:mm:ss)	Size	User	User Tags
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	In Progress	Oct 23, 2023, 9:51:44 AM			admin@example.org	Add user tags
<input checked="" type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 4:58:57 PM	64:52:16	11MB	admin@example.org	Add user tags
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 4:47:30 PM	00:11:04	5MB	admin@example.org	Add user tags
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 3:40:55 PM	01:04:34	5MB	admin@example.org	Add user tags
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 2:33:50 PM	00:56:26	15MB	admin@example.org	Add user tags
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 1:56:01 PM	00:37:10	655MB	admin@example.org	Add user tags
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 1:43:51 PM	00:00:15	784KB	admin@example.org	Add user tags
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 1:43:14 PM	00:00:14	0B	admin@example.org	Add user tags

Items per page: 15 ▾ 1 - 15 of 73

CSV
 Report
 Captures
 CONFIG
 Test Diagnostics

Be aware that the Test Diagnostics archive will include all logs, even from Middleware. The process will take a few minutes to generate and the archive will be a few hundred MBs in size.

×

Test Diagnostics

Select optional components to include in diagnostics:

☒ session-configs

☒ wap-db-diagnostics

☒ kcos-system-diagnostics

☒ elasticsearchdump

☒ clusterinfo

☒ pods-previous-logs

☒ journal-logs

☒ test-diagnostics

☒ CSVs

☒ Capture&Logs

☒ Report

The diagnostics procedure can take several minutes to complete.

You can close this dialog without losing its progress.

Once it's finished, you will see the download link below.

Generate

Close

Unless it is requested for detailed troubleshooting or it is presumed there is an issue with the Middleware, it is better/faster to collect only captures/logs for a specific test:

Filter Tags

Tag as

	Config Name	Status	Started On	Duration (hh:mm:ss)	Size	User
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	In Progress	Oct 23, 2023, 9:51:44 AM			admin@example.org
<input checked="" type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 4:58:57 PM	64:52:16	11MB	admin@example.org
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 4:47:30 PM	00:11:04	5MB	admin@example.org
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 3:40:55 PM	01:04:34	5MB	admin@example.org
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 2:33:50 PM	00:56:26	15MB	admin@example.org
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 1:56:01 PM	00:37:10	655MB	admin@example.org
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 1:43:51 PM	00:00:15	784KB	admin@example.org
<input type="checkbox"/>	8 - JMA CoreSIM RuSIM Config 19cc	Completed	Oct 20, 2023, 1:43:14 PM	00:00:14	0B	admin@example.org

CSV

Report

Captures

CONFIG

Test Diagno...

Load

Download

Delete

Items per page: 15

- 6 -

Middleware pods, their roles and useful `kubectl` commands

The Middleware and license server use separate kubernetes pods for their services.

These can be checked only when logged in as `root`.

IMPORTANT The `root` key/procedure is only provided on request and if it is needed to troubleshoot Middleware/license server issues.

Important pods and their roles:

- `kcos-deployment-service` – its logs contain messages related to the Middleware initial start/deployment and upgrade
- `kcos-framework-v1-kcos-eula` – related to the license agreement asked about after the installation of the Middleware
- `kcos-system-diagnostics` – supports the collection of diagnostics, `exec` command can be used on the pod to collect certain logs
- `kcos-licensing` – is in charge of the integrated License Server on the MW or the license service on an external License Server
- `keycloak-0` – holds the keycloak framework, used for Access Control (authentication and authorization)
- `authproxy-kcos-keycloak` – pod needed for authentication of the users
- `agent-controller` – used for communication, registration and management of the agents
- `agent-diagnostics` – used to access the diagnostics and logs from the agents
- `agent-diagnostics-clean-up-cronjob` – cronjob that cleans up agent diagnostics every 6 hours
- `es-cluster-0` – very important pod, needed for elastic search; holds indexes for other pods
- `grafana` – pod related to the display of the statistics in the LC UI
- `license-service` – in charge of asking for test licenses from the License Server (not to be confused with `kcos-licensing`)
- `migration-service` – service in charge of migrating data (users, test configs ...) from one MW to another
- `nats` – service used for communication between MW and the agents
- `notification-service` – in charge of notifications like test starting, stopping, errors
- `notifications-cleanup-cronjob` – cronjob that deletes old notifications every 3 days
- `pdf-report-generator-service` – in charge of generating the PDF file with the test summary
- `rest-api-browser-v1` – in charge of the REST API browser page, which can be used to access certain tests and session information
- `results-cleanup-cronjob` – cronjob that deletes unpinned test results every 3 days
- `session-manager` – in charge of the test sessions
- `test-results-service` – manages test results (after the test has ended)
- `traffic-controller` – responsible for tests starting/running/completing and also sessions

- `wap-ntp-server` – in charge of the NTP service and also acts as NTP server for the agents
- `wap-db-postgresql-0` – database with multiple tables, for sessions, configs and test results; `exec` and `psql` commands can be used to check it
- `core-dns` – serves as the Kubernetes cluster DNS
- `weave-net` – responsible for the networking/communication between the pods, inside the kubernetes cluster

```
root@kcoos-5254007d7119:~# kubectl get pods -A -o wide
```

NAMESPACE	NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS GATES
kcoos-deployment	kcoos-deployment-service-v1-5c949c8d9b-5brms	1/1	Running	24 (4d23h ago)	33d	10.32.0.58	mgmt	<none>	<none>
kcoos-framework	kcoos-framework-shell-configuration-577b858884-hp7wp	1/1	Running	24 (4d23h ago)	33d	10.32.0.30	mgmt	<none>	<none>
kcoos-framework	kcoos-framework-shell-db63b97-1tw2	1/1	Running	24 (4d23h ago)	33d	10.32.0.50	mgmt	<none>	<none>
kcoos-framework	kcoos-framework-v1-kcoos-sala-54855b784-8j7nt	1/1	Running	24 (4d23h ago)	33d	10.32.0.35	mgmt	<none>	<none>
kcoos-framework	kcoos-framework-v1-naas-0	3/3	Running	72 (4d23h ago)	33d	10.32.0.46	mgmt	<none>	<none>
kcoos-framework	kcoos-framework-v1-postgresql-0	1/1	Running	24 (4d23h ago)	33d	10.32.0.33	mgmt	<none>	<none>
kcoos-framework	kcoos-framework-vital-6b6bd6d86-djks1	1/1	Running	24 (4d23h ago)	33d	10.32.0.32	mgmt	<none>	<none>
kcoos-framework	kcoos-ingress-v1-cmm-77444bbb78-wm7j5	1/1	Running	24 (4d23h ago)	33d	10.32.0.12	mgmt	<none>	<none>
kcoos-framework	kcoos-ingress-v1-ingress-nginx-controller-dqzm7	1/1	Running	24 (4d23h ago)	33d	192.168.99.1	mgmt	<none>	<none>
kcoos-framework	kcoos-local-storage-v1-6484c5969f-7shdb	1/1	Running	24	33d	10.32.0.53	mgmt	<none>	<none>
kcoos-framework	kcoos-logging-framework-798cd58940-s9xxz	1/1	Running	24 (4d23h ago)	33d	10.32.0.10	mgmt	<none>	<none>
kcoos-framework	kcoos-logging-rotate-28khg	1/1	Running	24 (4d23h ago)	33d	10.32.0.18	mgmt	<none>	<none>
kcoos-framework	kcoos-system-diagnostics-55c7f886f-cwgpq	1/1	Running	24 (4d23h ago)	33d	10.32.0.7	mgmt	<none>	<none>
kcoos-framework	nfs-server-provisioner-v2-0	1/1	Running	24 (4d23h ago)	33d	10.32.0.52	mgmt	<none>	<none>
kcoos-licensing	kcoos-licensing-v1-74f4bcb4b-hrtws	1/1	Running	24 (4d23h ago)	33d	10.32.0.57	mgmt	<none>	<none>
kcoos-metrics-service	kcoos-metrics-service-v1-metrics-server-796c568596-t62x7	1/1	Running	24 (4d23h ago)	33d	10.32.0.5	mgmt	<none>	<none>
kcoos-ss0	authproxy-kcoos-keycloak-764db47f85-bcxgr	1/1	Running	1 (4d23h ago)	5d1h	10.32.0.25	mgmt	<none>	<none>
kcoos-ss0	kcoos-licensing-v1-rbac-setup-job--1-csfsp	0/1	Completed	1	5d1h	10.32.0.4	mgmt	<none>	<none>
kcoos-ss0	keycloak-0	1/1	Running	1 (4d23h ago)	5d1h	10.32.0.34	mgmt	<none>	<none>
kcoos-ss0	keycloak-operator-6788b8f4-tppgm	1/1	Running	1 (4d23h ago)	5d1h	10.32.0.19	mgmt	<none>	<none>
kcoos-ss0	keycloak-postgresql-56b59d9bf-p6mbz	1/1	Running	1 (4d23h ago)	5d1h	10.32.0.3	mgmt	<none>	<none>
keysight-nimbusosaic	countersmodule-54fdd96596-9dpdw	1/1	Running	2 (4d23h ago)	5d	10.32.0.27	mgmt	<none>	<none>
keysight-nimbusosaic	exec-edit-mob-9d965c795-tqgmj	3/3	Running	6 (4d23h ago)	5d	10.32.0.29	mgmt	<none>	<none>
keysight-nimbusosaic	gateway-75bd9f99c-vppmf	1/1	Running	1 (4d23h ago)	5d	10.32.0.44	mgmt	<none>	<none>
keysight-nimbusosaic	perspective-5b8df76bc9-wkfnh	1/1	Running	1 (4d23h ago)	5d	10.32.0.24	mgmt	<none>	<none>
keysight-nimbusosaic	tatmcconnector-567eff864c-f91bq	1/1	Running	2 (4d23h ago)	5d	10.32.0.26	mgmt	<none>	<none>
keysight-wap	agent-controller-6596ab997-1dsg	1/1	Running	2 (4d23h ago)	5d	10.32.0.6	mgmt	<none>	<none>
keysight-wap	agent-diagnostics-7d69df467-lw2bs	1/1	Running	3 (4d23h ago)	5d	10.32.0.36	mgmt	<none>	<none>
keysight-wap	agent-diagnostics-clean-up-cronjob-28300680--1-jbw6	0/1	Completed	0	3h14m	10.32.0.63	mgmt	<none>	<none>
keysight-wap	config-service-bf947795-flmw6	1/1	Running	1 (4d23h ago)	5d	10.32.0.41	mgmt	<none>	<none>
keysight-wap	dataservice-service-695f89d877-6hs56	1/1	Running	1 (4d23h ago)	5d	10.32.0.4	mgmt	<none>	<none>
keysight-wap	es-cluster-0	1/1	Running	24 (4d23h ago)	33d	10.32.0.62	mgmt	<none>	<none>
keysight-wap	es-curator-cronjob-28300500--1-bkjgw	0/1	Completed	0	6h14m	10.32.0.64	mgmt	<none>	<none>
keysight-wap	fluent-bit-tqchl	1/1	Running	24 (4d23h ago)	33d	10.32.0.43	mgmt	<none>	<none>
keysight-wap	grafana-779f7fbc47-starrx	1/1	Running	24 (4d23h ago)	33d	10.32.0.31	mgmt	<none>	<none>
keysight-wap	license-service-659c7488d8-lq5bz	1/1	Running	1 (4d23h ago)	5d	10.32.0.39	mgmt	<none>	<none>
keysight-wap	migration-service-5b0cf69fbb-v8njb	1/1	Running	1 (4d23h ago)	5d	10.32.0.22	mgmt	<none>	<none>
keysight-wap	nats-0	2/2	Running	48 (4d23h ago)	33d	10.32.0.61	mgmt	<none>	<none>
keysight-wap	nats-1	2/2	Running	48 (4d23h ago)	33d	10.32.0.11	mgmt	<none>	<none>
keysight-wap	nats-2	2/2	Running	48 (4d23h ago)	33d	10.32.0.54	mgmt	<none>	<none>
keysight-wap	nats-http-proxy-service-7864f69dbc-hd9vf	1/1	Running	1 (4d23h ago)	5d	10.32.0.42	mgmt	<none>	<none>
keysight-wap	notification-service-66f495b6d-966pz	1/1	Running	1 (4d23h ago)	5d	10.32.0.15	mgmt	<none>	<none>
keysight-wap	notifications-cleanup-cronjob-28300500--1-5tgp9	0/1	Completed	0	6h14m	10.32.0.63	mgmt	<none>	<none>
keysight-wap	pdf-report-generator-service-d8f6dfdb-tarpc	1/1	Running	24 (4d23h ago)	33d	10.32.0.38	mgmt	<none>	<none>
keysight-wap	rest-api-browser-helper-7cc679bd5f-tsakp	1/1	Running	1 (4d23h ago)	5d	10.32.0.20	mgmt	<none>	<none>
keysight-wap	rest-api-browser-v1-ui-745bfddcd4-md8dw	1/1	Running	24 (4d23h ago)	33d	10.32.0.8	mgmt	<none>	<none>
keysight-wap	rest-stats-service-7b67d859d9-pcmf5	1/1	Running	2 (4d23h ago)	5d	10.32.0.59	mgmt	<none>	<none>
keysight-wap	result-service-5c74c7879c-xj67b	1/1	Running	1 (4d23h ago)	5d	10.32.0.49	mgmt	<none>	<none>
keysight-wap	results-cleanup-cronjob-28300500--1-ccgmw	0/1	Completed	0	6h14m	10.32.0.65	mgmt	<none>	<none>
keysight-wap	session-manager-68699f8fc-kfc85	1/1	Running	1 (4d23h ago)	5d	10.32.0.56	mgmt	<none>	<none>
keysight-wap	stats-554d8bbcb4-5hs44	1/1	Running	3 (4d23h ago)	5d	10.32.0.17	mgmt	<none>	<none>
keysight-wap	stats-dashboards-service-856f9dc679-p62gt	1/1	Running	1 (4d23h ago)	5d	10.32.0.23	mgmt	<none>	<none>
keysight-wap	system-monitor-service-bd4f4469d-bt5v4	1/1	Running	1 (4d23h ago)	5d	10.32.0.13	mgmt	<none>	<none>
keysight-wap	test-results-service-665995b76-dwpt5	1/1	Running	1 (4d23h ago)	5d	10.32.0.2	mgmt	<none>	<none>
keysight-wap	traffic-controller-8549574dc-tkv99	1/1	Running	1 (4d23h ago)	5d	10.32.0.40	mgmt	<none>	<none>
keysight-wap	wap-appsec-data-model-5698b7f67f-822vp	1/1	Running	1 (4d23h ago)	5d	10.32.0.21	mgmt	<none>	<none>
keysight-wap	wap-appsec-resource-service-557468dfb7-tw29x	1/1	Running	2 (4d23h ago)	5d	10.32.0.48	mgmt	<none>	<none>
keysight-wap	wap-db-diagnostics-6d7b5b7998-5sdmj	1/1	Running	4 (4d23h ago)	5d	10.32.0.37	mgmt	<none>	<none>
keysight-wap	wap-db-postgresql-0	1/1	Running	24 (4d23h ago)	33d	10.32.0.14	mgmt	<none>	<none>
keysight-wap	wap-ntp-server-787d5d9df7-amahq	1/1	Running	24 (4d23h ago)	33d	10.32.0.16	mgmt	<none>	<none>
keysight-wap	wap-storage-minio-7ff6d64d7d-blksp	1/1	Running	24 (4d23h ago)	33d	10.32.0.55	mgmt	<none>	<none>
keysight-wap	wap-tunnel-server-fc68f55ff-xjrbh	1/1	Running	1 (4d23h ago)	5d	10.32.0.51	mgmt	<none>	<none>
keysight-wap	wapui-78769df999-zkprx	1/1	Running	1	5d	10.32.0.60	mgmt	<none>	<none>
keysight-wap	websocket-service-65c4ccf75-28tqc	1/1	Running	1 (4d23h ago)	5d	10.32.0.47	mgmt	<none>	<none>
keysight-wap	wireless-data-model-647f9b74f8-7dwxl	1/1	Running	2 (4d23h ago)	5d	10.32.0.45	mgmt	<none>	<none>
kube-system	coredns-55995c9469-prp99	2/2	Running	48 (4d23h ago)	33d	10.32.0.9	mgmt	<none>	<none>
kube-system	etcd-mgmt	1/1	Running	25 (4d23h ago)	33d	192.168.99.1	mgmt	<none>	<none>
kube-system	kube-api-server-mgmt	1/1	Running	25 (4d23h ago)	33d	192.168.99.1	mgmt	<none>	<none>
kube-system	kube-controller-manager-mgmt	1/1	Running	25 (4d23h ago)	33d	192.168.99.1	mgmt	<none>	<none>
kube-system	kube-proxy-qhmvv	1/1	Running	24 (4d23h ago)	33d	192.168.99.1	mgmt	<none>	<none>
kube-system	kube-scheduler-mgmt	1/1	Running	25 (4d23h ago)	33d	192.168.99.1	mgmt	<none>	<none>
kube-system	weave-net-avk6t	3/3	Running	73 (4d23h ago)	33d	192.168.99.1	mgmt	<none>	<none>

It can be confirmed that all the pods are working, by checking their statuses, either running and all ready, or in completed status for the pods that are in charge of cronjobs. It is highly recommended after starting the MiddlewareVM , to leave it untouched for aprox. 5 minutes and then try to login to it.

NOTE

Even if the login browser page has loaded, it doesn't necessarily mean that all services are running.

Examples of useful kubectl commands:

- `kubectl cluster-info`
- `kubectl get configmaps -n keysight-wap` #displays the configmaps in the namespace
- `helm list --all-namespaces` #displays all helm charts
- `kubectl get pods -A -o wide`
- `kubectl top pod -n keysight-wap` #shows the CPU and RAM usage for the pods in the namespace
- `kubectl get svc -n keysight-wap`
- `kubectl logs -n keysight-wap es-cluster-0`
- `kubectl logs -n kcos-sso keycloak-0 -p` #previous log of the pod
- `kubectl describe pods -n keysight-wap nats-core-1`
- `kubectl get events -n kcos-sso` #displays events concerning the namespace
- `kubectl get pods -A -o custom-columns=NAMESPACE:metadata.namespace,POD:metadata.name,PodIP:status.podIP,READY:true:status.containerStatuses[*].ready`

```
kcos@kcos-5454007d7119:~$ kubectl get pods -A -o custom-columns=NAMESPACE:metadata.namespace,POD:metadata.name,PodIP:status.podIP,READY:true:status.containerStatuses[*].ready
NAMESPACE      POD                                                    PodIP      READY=true
kcos-deployment  kcos-deployment-service-v1-5c549cd8d9b-8brm3        10.32.0.58  true
kcos-framework  kcos-framework-shell-configuration-577b358884-hp7wp  10.32.0.30  true
kcos-framework  kcos-framework-shell-dbe08b97-1lrw2                10.32.0.50  true
kcos-framework  kcos-framework-v1-kcos-eula-54855b784-8j7nt         10.32.0.35  true
kcos-framework  kcos-framework-v1-naas-0                             10.32.0.46  true,true,true
kcos-framework  kcos-framework-v1-postgresql-0                     10.32.0.33  true
kcos-framework  kcos-framework-vital-6b6bd6d6d6-djx51              10.32.0.32  true
kcos-framework  kcos-ingress-v1-cmm-77444bb78-wm7j5                10.32.0.12  true
kcos-framework  kcos-ingress-v1-ingress-nginx-controller-dgma7      192.168.99.1 true
kcos-framework  kcos-local-storage-v1-6484c5469f-7ahdb             10.32.0.83  true
kcos-framework  kcos-logging-framework-798cd5948-89kxz              10.32.0.10  true
kcos-framework  kcos-logging-rotate-20by                             10.32.0.18  true
kcos-framework  kcos-system-diagnostics-55c7f886f-cwgpq             10.32.0.7   true
kcos-framework  nfs-server-provisioner-v2-0                         10.32.0.52  true
kcos-licensing   kcos-licensing-v1-74f4b4b4b-btrws                  10.32.0.57  true
kcos-metrica-service  kcos-metrica-service-v1-metrica-server-796c565596-t62x7  10.32.0.5  true
kcos-sso         authproxy-kcos-keycloak-764db47f85-bcmgr           10.32.0.25  true
kcos-sso         kcos-licensing-v1-thac-setup-job--1-csfsp            10.32.0.4   false
kcos-sso         keycloak-0                                           10.32.0.84  true
kcos-sso         keycloak-operator-f78888f4-tpgpm                    10.32.0.19  true
kcos-sso         keycloak-postgresql-56b595d5d8f-p6mhz               10.32.0.3   true
keysight-nimbusosaic  countermodule-54fdd56596-9dpdw                     10.32.0.27  true
keysight-nimbusosaic  sec-edit-mob-9d6d6c705-cqgmj                       10.32.0.28  true,true,true
keysight-nimbusosaic  gateway-756bd9f99c-vppmf                             10.32.0.44  true
keysight-nimbusosaic  perspective-bdd4f76bc9-wkfnf                       10.32.0.24  true
keysight-nimbusosaic  statconnector-576f8f6e-f9lbg                         10.32.0.26  true
keysight-nimbusosaic  agent-controller-6596b9767-1d4ag                    10.32.0.6   true
keysight-wap         agent-diagnostics-7d69d4d67-1w2bs                   10.32.0.36  true
keysight-wap         agent-diagnostics-clean-up-cronjob-28310760--1-99hmt  10.32.0.63  false
keysight-wap         config-service-6c947793-finef                       10.32.0.41  true
keysight-wap         dataseq-service-689f9d977-6ha5e                     10.32.0.4   true
keysight-wap         es-cluster-0                                          10.32.0.62  true
keysight-wap         es-creator-cronjob-28310580--1-5j5fy                  10.32.0.49  false
keysight-wap         fluent-bit-topol                                     10.32.0.43  true
keysight-wap         grafana-779f7fbc47-8c8rx                             10.32.0.31  true
keysight-wap         license-service-659c748d8-lqtbz                     10.32.0.39  true
keysight-wap         migration-service-3bcf6f9fb-vfngb                   10.32.0.22  true
keysight-wap         nats-0                                                10.32.0.61  true,true
keysight-wap         nats-1                                                10.32.0.11  true,true
keysight-wap         nats-2                                                10.32.0.84  true,true
keysight-wap         nats-http-proxy-service-7844f69bcb-bd9vf             10.32.0.42  true
keysight-wap         notification-service-6f549b5b6d-96aps                10.32.0.15  true
keysight-wap         notifications-clean-up-cronjob-28310580--1-1sthn9     10.32.0.64  false
keysight-wap         pdf-report-generator-service-df6d6d4c-tarpc           10.32.0.38  true
keysight-wap         rest-api-browser-helper-70c679bd4f-takpd             10.32.0.20  true
keysight-wap         rest-api-browser-v1-ui-745bfdd4d4-md8dw              10.32.0.8   true
keysight-wap         rest-stats-service-7b67d859d9-pmf5                   10.32.0.59  true
keysight-wap         result-service-1c74c7979c-xyjfb                      10.32.0.45  true
keysight-wap         results-clean-up-cronjob-28310580--1-6756f            10.32.0.65  false
keysight-wap         session-manager-64869cf8c-kfc85                     10.32.0.56  true
keysight-wap         stats-5d4dbbaf4-3m54s                                10.32.0.17  true
keysight-wap         stats-dashbaord-service-856f9dc679-p62gt             10.32.0.23  true
keysight-wap         system-monitor-service-bd4f44698-b55v4              10.32.0.13  true
keysight-wap         test-results-service-665895b76-dept5                 10.32.0.2   true
keysight-wap         traffic-controller-8449574dc6-tew9s                  10.32.0.40  true
keysight-wap         wap-appsec-data-model-5699b7767c-822vp               10.32.0.21  true
keysight-wap         wap-appsec-resource-service-557468dfb7-tw29x         10.32.0.48  true
keysight-wap         wap-db-diagnostics-6d7b3b7998-5adnj                   10.32.0.37  true
keysight-wap         wap-db-postgresql-0                                   10.32.0.14  true
keysight-wap         wap-ntp-server-787d59d9f7-amshq                      10.32.0.16  true
keysight-wap         wap-storage-minio-7f6d64d7d-b1ksp                    10.32.0.55  true
keysight-wap         wap-tunnel-server-cd8f5f1f-xytzb                     10.32.0.51  true
keysight-wap         wapui-78769d999-ikprx                                10.32.0.60  true
keysight-wap         websocket-service-65c44ccf75-28tgc                   10.32.0.47  true
keysight-wap         wiretap-data-model-647f5b74fc-7dval                  10.32.0.45  true
k8e-system        coredns-5599dc9468-9rqh6                             10.32.0.9   true,true
k8e-system        coredns-5599dc9468-pvp99                             10.32.0.28  true,true
k8e-system        etcd-mgmt                                              192.168.99.1 true
k8e-system        kube-apiserver-mgmt                                    192.168.99.1 true
k8e-system        kube-controller-manager-mgmt                          192.168.99.1 true
k8e-system        kube-proxy-qumny                                       192.168.99.1 true
k8e-system        kube-scheduler-mgmt                                    192.168.99.1 true
k8e-system        weave-net-awket                                         192.168.99.1 true,true,true
```

How to collect logs manually from Middleware (or License Server)

In case the UI is not working, or generating diagnostics does not work, it is possible to collect logs manually.

Login as `root` (`root` key/procedure needed), copy/paste the following script (as text) and run it. Make sure enough privileges are given to the script before running it.

```
#!/bin/bash

kubectl describe nodes mgmt > mgmt.out
kubectl get pods -A -o wide > pods.out
kubectl top pods -A > top_pods.out
helm list -A > helm.out
df -h > df.out
for i in $(kubectl get namespaces | grep -v NAME | awk '{print $1}'); do
  for j in $(kubectl get pods -n $i | grep -v NAME | awk '{print $1}'); do
    kubectl logs -n $i $j > "$j.out"
    kubectl logs -p -n $i $j > "$j.out"
  done
done
for j in $(kubectl get pods -A | awk '{ print $1 }' | uniq | tail -8); do
  for i in $(kubectl get pods -n $j | awk '{ print $1 }' | grep -v NAME); do
    kubectl describe pods -n $j $i | grep 'Image:' >> pod_images.out
  done
done
tar cvzf logs.tar.gz ./* --remove-files
```

An archive file `logs.tar.gz` will result from the script and will contain most of the needed logs. This file can be then downloaded from Middleware with any SCP service.

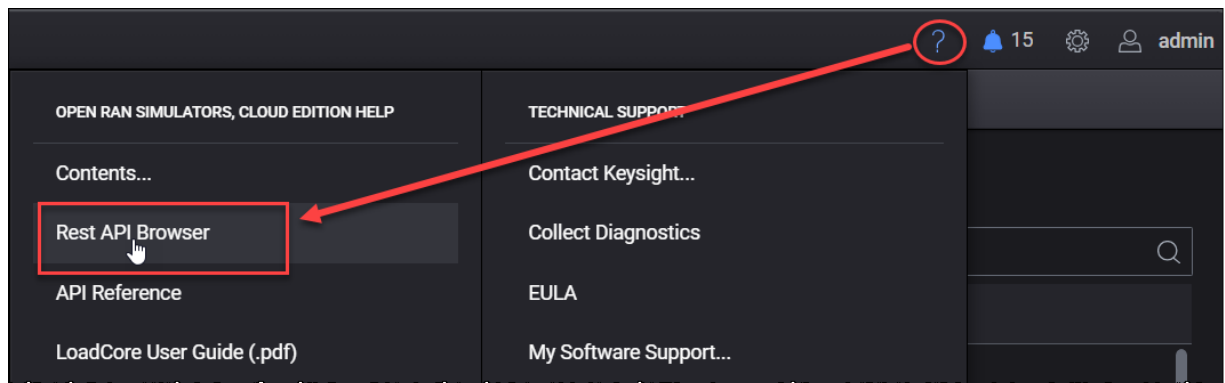
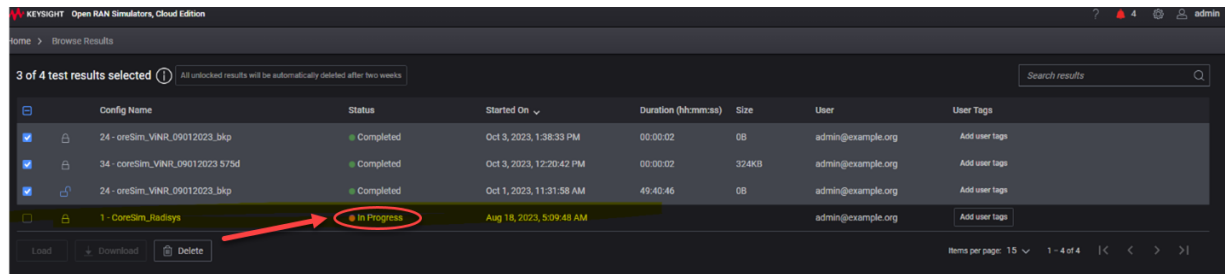
NOTE

If, when displaying kubernetes pods or the `mgmt` node, *"The connection to the server 192.168.99.1:6443 was refused - did you specify the right host or port?"* error message appears, disable swap memory, and make this setting permanent:

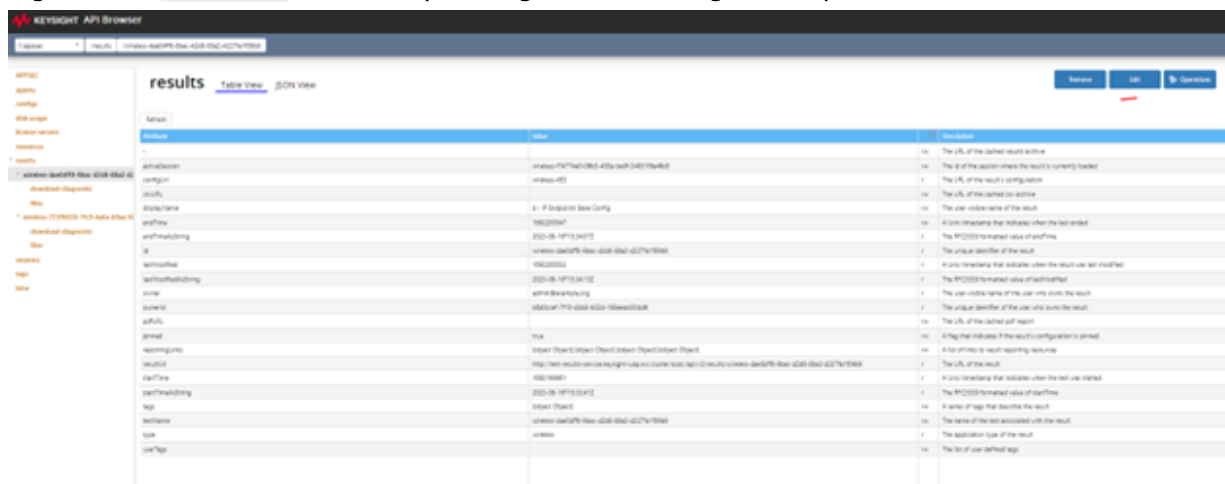
```
swapoff -a
sed -i '/ swap / s/^(.*)$/#\1/g' /etc/fstab
```

How to remove a test result that was stuck *In Progress*

1. Go to REST API Browser, to results table and click on the one with 0 in `ItemEndTime`, which means it did not end (also in tags still showing *Running*).



2. Edit the test result by changing `activeSession` to `""`, pinned to `false`, and `endTime` to a number value higher than `startTime` and modify the tags from *Running* to *Completed*.

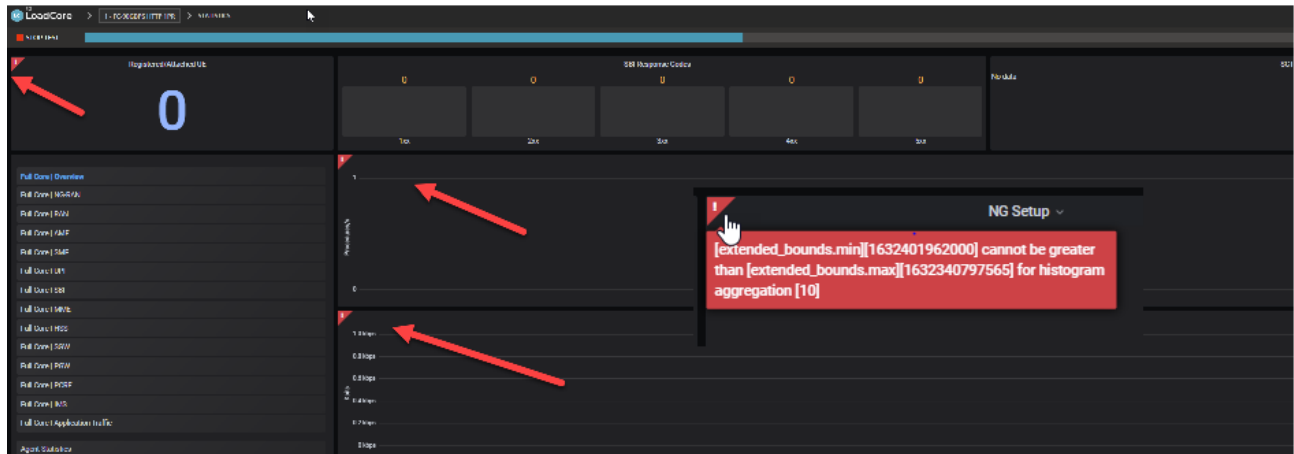


3. Back in Middleware UI, save the config from the session, delete the session and then a new working session can be created from the saved config.

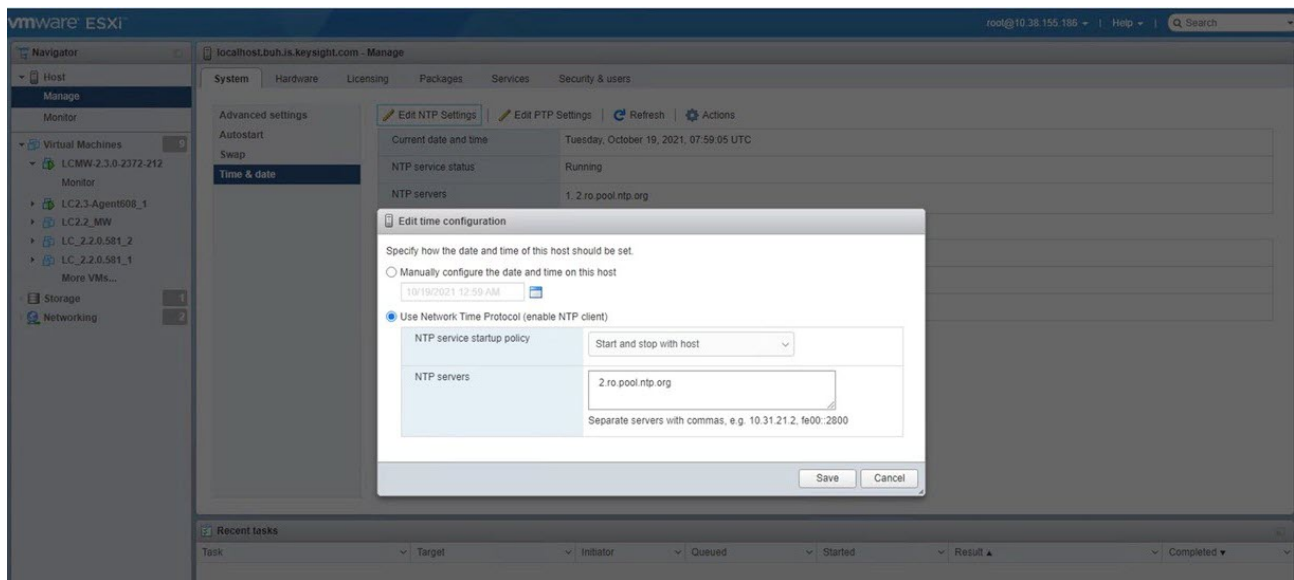
How to troubleshoot statistics not being displayed properly or not at all in Middleware UI

NTP issue

If you are experiencing issues with UI statistics appearing delayed or not showing at all, the cause might be related to NTP.



If you are using ESX make sure the NTP server is set:



To check if the time is in sync on the Middleware and agents, you can run the following commands:

- on agents:

```
date
ntpq -p
sudo systemctl status ntp
```

- on middleware:

```
date
```

```
kcos date-time time-zone show
```

```
kcos date-time ntp-servers show
```

You can also try to disable and enable NTP settings on the middleware:

```
kcos date-time ntp disable kcos date-time ntp enable
```

The default NTP for LoadCore Middleware is `ntp.ubuntu.com`. If you are using a local or another NTP server it is best to change it with:

```
kcos date-time ntp-servers set (it should also be the same as the one set in ESX)
```

NOTE

On Middleware, logged in as root, the NTP server can be double-checked with:

```
timedatectl timesync-status
```

IMPORTANT

Start the NTP service on the agents (usually done when `agent-setup.sh` is run) only after setting the clock/NTP server on the middleware. Setting the clock on the middleware after the `btpservice` started on the agents can lead to it panicking (agent side) on big adjustments on sync. Restarting `ntp` agent side (`sudo systemctl restart ntp`) should fix this.

If NTP was already configured properly and VMs were synchronized, but the statistics are still not displayed while the test is still running, check that the agents are generating statistics.

This can be done by accessing the agent REST API browser page (type the agent IP in the browser window), then select statistics from the menu. Use the first query from the list, GET statistics and click **Execute**. If the response has accurate values it means the problem is not with the agent.

10.14.91.177/doc/api.html?Statistics.yaml

GET /statistics Retrieve list of stats from all publishers

Parameters Cancel

No parameters

Execute Clear

Responses

Curl

```
curl -X GET "http://10.14.91.177/api/v1/statistics" -H "accept: application/json"
```

Request URL

```
http://10.14.91.177/api/v1/statistics
```

Server response

Code	Details
200	<p>Response body</p> <pre>{ "publisher": "amf-nudg-over-udp", "stats": [{ "name": "Control Packets Rx", "value": 3358 }, { "name": "Control Packets Tx", "value": 3358 }, { "name": "Data Packets Rx", "value": 0 }, { "name": "Data Packets Tx", "value": 23323020 }] }</pre>

Download the CSVs at the end of the test, and, if these are empty, there is a problem with the statistics service on the Middleware. Collect diagnostics from Middleware and, while no test is running, connect as `root` and delete the stats pod (change the stats pod name accordingly):

```
kubect1 delete pods -n keysight-wap stats-55d4bbbf4-5ht54
```

Once the pod is back up, run a new test and statistics should be showing.

How to generate a certificate in case Middleware UI does not open

It is a rare occurrence, but sometimes the browser does not accept the certificate from the Middleware.

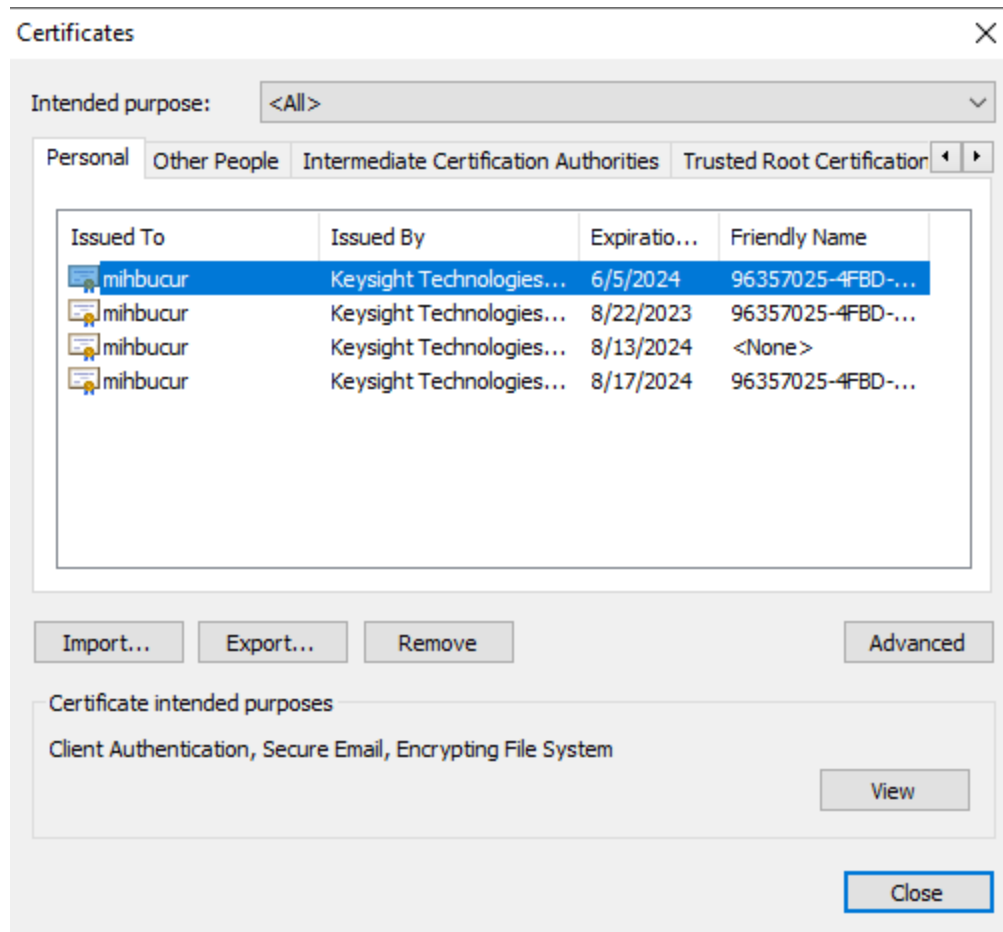
In this case, logged in as `root`, add the following script in a file and run it.

```
#!/bin/bash

export vital_IP=$(kubectl get svc -A | grep vital | awk '{print $4}')
export TMPHOST=$(curl -s $vital_IP/v1/hostname | jq -r '.name')
openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout ca.key -out ca.crt -subj
"/CN=${TMPHOST}"
export CERT_DATA=$(base64 -w 0 ca.crt)
export KEY_DATA=$(base64 -w 0 ca.key)
curl -v -X POST "$vital_IP/v1/certs/ingress/upload/file" -F "cert=@ca.crt" -F
"key=@ca.key" -H "Content-Type: multipart/form-data"
```

```
root@kcos-5254007d7119:~# ./cert_vital_2.sh
Generating a RSA private key
.....+++++
.....+++++
writing new private key to 'ca.key'
-----
Note: Unnecessary use of -X or --request, POST is already inferred.
* Trying 192.168.250.2:80...
* TCP_NODELAY set
* Connected to 192.168.250.2 (192.168.250.2) port 80 (#0)
> POST /v1/certs/ingress/upload/file HTTP/1.1
> Host: 192.168.250.2
> User-Agent: curl/7.68.0
> Accept: */*
> Content-Length: 3188
> Content-Type: multipart/form-data; boundary=-----cc2d5dda4353086d
> Expect: 100-continue
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 100 Continue
* We are completely uploaded and fine
* Mark bundle as not supporting multiuse
* HTTP 1.0, assume close after body
< HTTP/1.0 201 CREATED
< Content-Type: application/json
< Content-Length: 87
< Server: Werkzeug/1.0.1 Python/3.9.7
< Date: Mon, 30 Oct 2023 14:04:06 GMT
<
{"message": "File <ca.crt> successfully uploaded\nFile <ca.key> successfully uploaded"}
* Closing connection 0
```

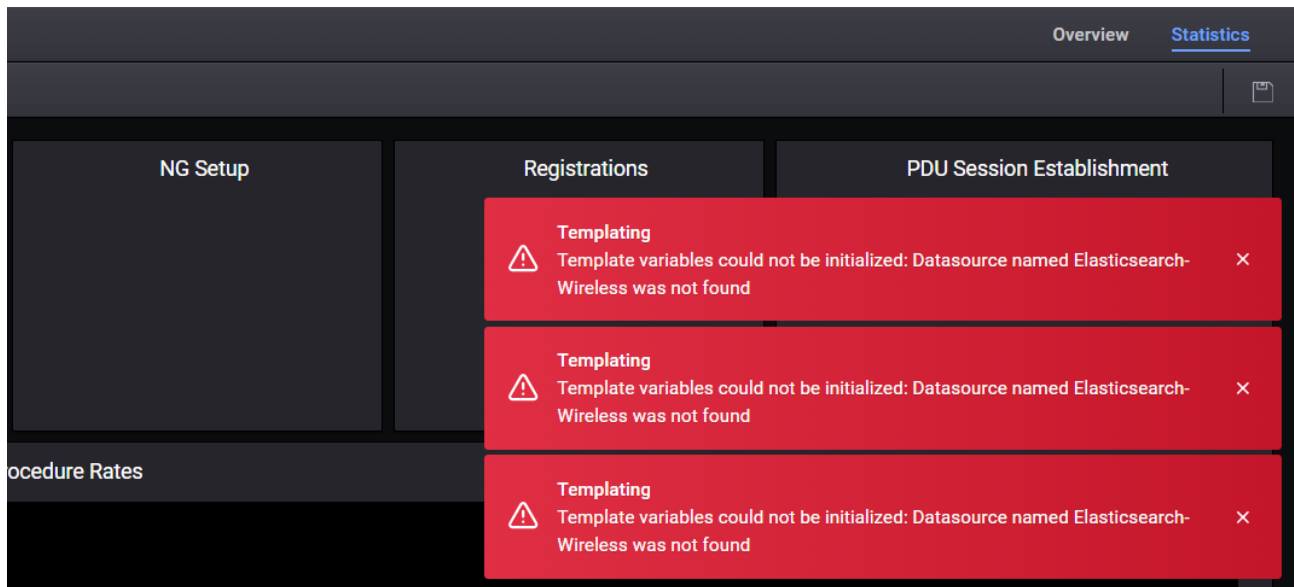
If this still does not solve the problem, download the `ca.crt` file just generated from Middleware (with any SCP program) and upload it to the browser. As shown in the example below, the web browser should have a Manage certificate page and there the `ca.crt` could be imported.



Refresh the page after the certificate is loaded.

How to solve "*Template variables could not be initialized: Datasource named Elasticsearch-Wireless was not found*" error

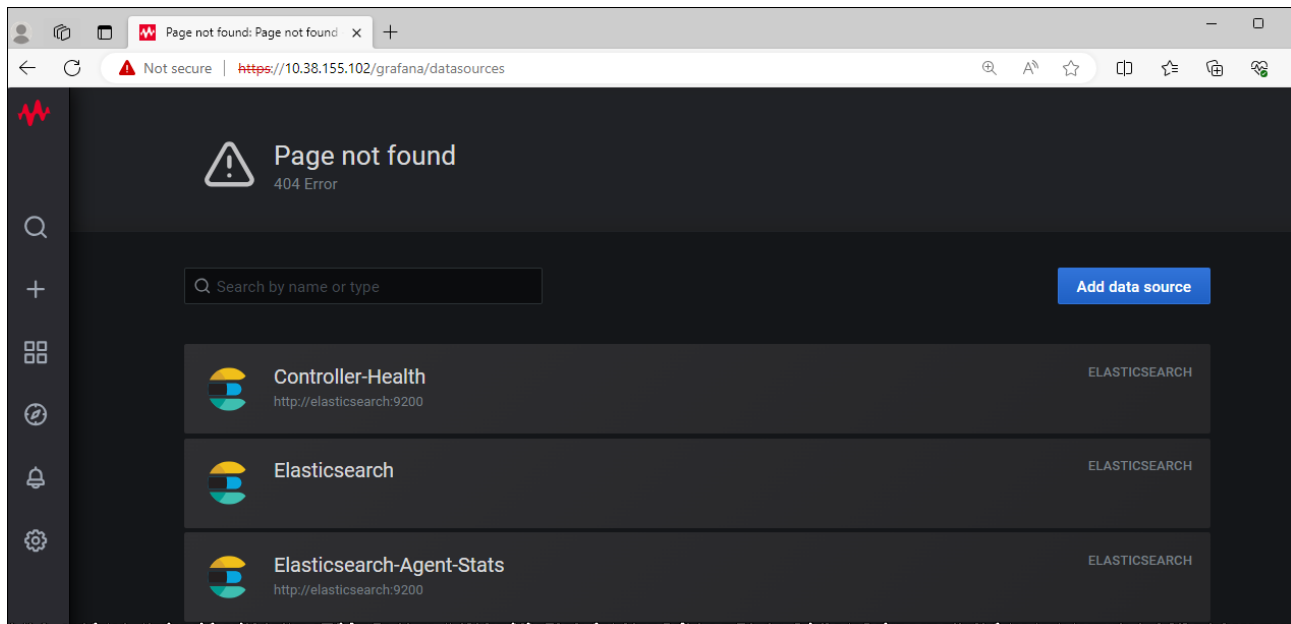
It is possible that after an upgrade has been applied to the ORAN SIM CE MW, the following error will be displayed in the UI (statistics screen): *Template variables could not be initialized: Datasource named Elasticsearch-Wireless was not found*.



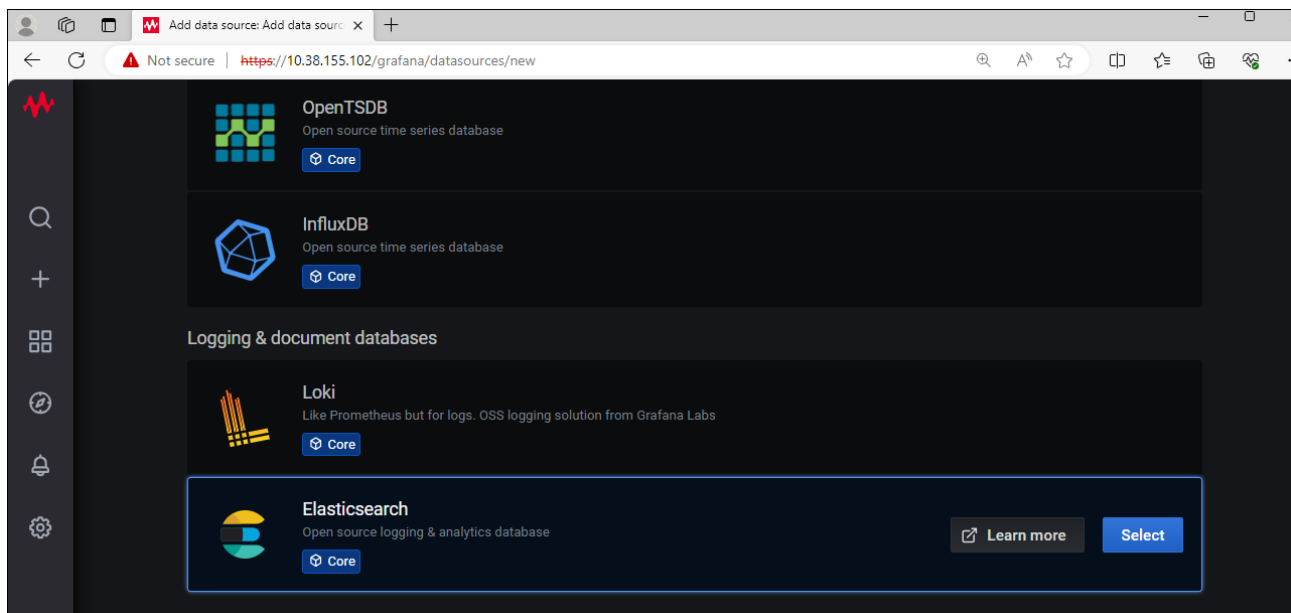
Go to <https://<IP>/grafana/datasources> (replace **IP** with the appropriate MW IP address) and select **Add data source**.

NOTE

The user must have *admin* permissions to access this section.



Scroll down and select **Elasticsearch**.



Fill in the **Name** and **URL** as shown below.

The screenshot shows the Grafana web interface for editing a data source. The browser address bar shows the URL `https://10.38.155.102/grafana/datasources/edit/12/`. A notification at the top right states "Document was last saved: Just now". The page title is "Data Sources / Elasticsearch-1" with the subtitle "Type: Elasticsearch". A left sidebar contains navigation icons. The main content area has a "Settings" tab selected. Under "Settings", the "Name" field is "Elasticsearch-Wireless" and the "Default" toggle is off. The "HTTP" section contains a "URL" field with "http://elasticsearch:9200", an "Access" dropdown set to "Server (default)" with a "Help" link, and a "Whitelisted Cookies" section with an "Add" button. The "Auth" section has several toggle switches: "Basic auth" (off), "With Credentials" (off), "TLS Client Auth" (off), "With CA Cert" (off), "Skip TLS Verify" (off), and "Forward OAuth Identity" (off).

Document was last saved: Just now

Data Sources / Elasticsearch-1

Type: Elasticsearch

Settings

Name Default ☐

HTTP

URL

Access [Help >](#)

Whitelisted Cookies

Auth

Basic auth	<input type="checkbox"/>	With Credentials	<input type="checkbox"/>
TLS Client Auth	<input type="checkbox"/>	With CA Cert	<input type="checkbox"/>
Skip TLS Verify	<input type="checkbox"/>		
Forward OAuth Identity	<input type="checkbox"/>		

Then, fill the **Index name** and **Time field name** and select **Save & Test**.

Elasticsearch details

Index name	wireless_stats	Pattern	No pattern ▾
Time field name	timestamp		
Version	5.x ▾		
Min time interval ⓘ	10s		

Logs

Message field name	_source
Level field name	

Data links

Add links to existing fields. Links will be shown in log row details next to the field value.

+ Add

Save & Test

Delete

Back

Now the MW UI should display the statistics without any issues.

The `lizard-agent.log` shows similar messages that can be correlated to those in service log, but may include other useful information, for example the percentage of empty disk space on the agent:

[illegible]

The syslog files are found in `/var/log`. They contain messages concerning *portmanager*, in charge of the agent's connection to the Middleware. Heartbeats are sent to the Middleware every 10 seconds:

```

Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >>>>>>>>>>---Sent Message Start----->>>>>>>>>>>>
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: api: HEARTBEAT
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: heartbeatFromNode: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: nodeId: "d9baa883-a63b-4823-89ba-947ef218e2b1"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: nodeSessionId: 1
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mgmtInterface: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: name: "ens3"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mac: "52:54:00:9a:55:dd"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: gateway: "10.38.152.1"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: state: UP
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: ipMask: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: ip: "10.38.155.120"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: netmask: 22
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mtu: 1500
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: agentStatuses: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: agentId: 1
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: testStatus: STOPPED
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: testInterfaces: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: name: "ens9"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mac: "52:54:00:a6:15:63"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: state: UP
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mtu: 1500
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: testInterfaces: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: name: "ens10"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mac: "52:54:00:2c:27:44"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: state: UP
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mtu: 1500
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: testInterfaces: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: name: "ens11"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mac: "3c:ec:ef:32:c1:1c"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: state: UP
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: mtu: 1500
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: ntpInfo: <
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: nodeId: "d9baa883-a63b-4823-89ba-947ef218e2b1"
Oct 30 09:21:34 LC agent_17_4 portmanager[3047]: >>>>>>>>>>---Sent Message End----->>>>>>>>>>>>
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: Heartbeat Timer Fired...
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: Number of ARP entries for interface ens9 = 0
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: Number of ARP entries for interface lo = 1
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: ARP Entry - IP: 0.0.0.0 MAC: 00:00:00:00:00:00
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: Default Gateway IP 0.0.0.0 MAC is set to: 00:00:00:00:00:00
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: Number of ARP entries for interface ens3 = 5
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: ARP Entry - IP: 10.38.155.102 MAC: 52:54:00:03:0c:f3
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: ARP Entry - IP: 10.38.152.1 MAC: ac:78:d1:96:95:e0
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: Default Gateway IP 10.38.152.1 MAC is set to: ac:78:d1:96:95:e0
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: ARP Entry - IP: 10.38.154.175 MAC: 3c:ec:ef:57:09:94
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: ARP Entry - IP: 10.38.153.226 MAC: 3c:ec:ef:57:0d:5c
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor: ARP Entry - IP: 10.38.153.48 MAC:
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: GetNetInterfaceRecord() ens3
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor.GetNetInterfaceRecord() successful. Found other interface ens10 detail
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: nicmonitor.GetNetInterfaceRecord() successful. Found other interface ens11 detail
Oct 30 09:21:44 LC agent_17_4 portmanager[3047]: Failed to fetch network stats about interface ens11

```

In case a test keeps failing because of an agent, and the above logs do not display the cause, it is also worth checking (`systemctl status 5GCTE`) or restarting the 5GCTE service (`systemctl restart 5GCTE`). This is the service responsible for running the tests on the agent.

```

root@LC_agent_17_4:/var/log# systemctl status 5GCTE
● 5GCTE.service - 5G Core Test Engine Service
   Loaded: loaded (/etc/systemd/system/5GCTE.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-10-30 07:49:47 UTC; 5h 58min ago
   Main PID: 2214 (5GTestEngineSer)
     Tasks: 144 (limit: 4915)
    CGroup: /system.slice/5GCTE.service
            └─2214 /opt/5gc-test-engine/5GTestEngineService /http-port=80 /https-port=443

Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: len = 1
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: kmem_cache_flags: 0 total_size 1392 base_size 208
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: __appsim2_l4_start
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: Skip calling ixstack_l4_init from tiger/activity when running with external controller or internal control plane
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: ixtcp_init: RETURNED
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: Tput Constrained? 0
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: kmem_cache_flags: 0 total_size 1232 base_size 208
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: Tput Constrained? 0
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: IN [kone_activity_reset] activity [range-0-traffic-0-dnn-1]
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: [kone_activity_reset] achieve_cc_first_flag 0

```

Detailed information about 5GCTE status can be found with `journalctl` command:

```

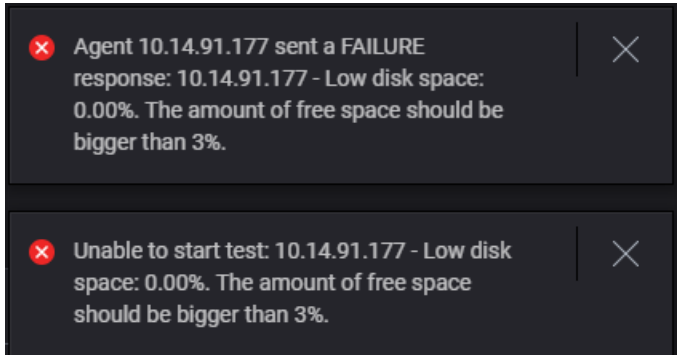
root@LC_agent_17_4:/var/log# journalctl -u 5GCTE | tail -20
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: setting TigerProcessUserIoEventsCb since ssl_async event flag is always true
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: appsim2_tcp_get_group
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: appsim2_tcp_get_group: calling appsim2_tcp_config_update
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: setting TigerProcessUserIoEventsCb since ssl_async event flag is always true
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: appsim2_tcp_get_group
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: appsim2_tcp_get_group: calling appsim2_tcp_config_update
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: setting TigerProcessUserIoEventsCb since ssl_async event flag is always true
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: num_segments = 2
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: len = 1
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: num_segments = 2
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: len = 4
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: kmem_cache_flags: 0 total_size 1392 base_size 208
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: >>> DEBUG: __appsim2_l4_start
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: Skip calling ixstack_l4_init from tiger/activity when running with external controller or internal control plane
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: ixtcp_init: RETURNED
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: Tput Constrained? 0
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: kmem_cache_flags: 0 total_size 1232 base_size 208
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: Tput Constrained? 0
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: IN [kone_activity_reset] activity [range-0-traffic-0-dnn-1]
Oct 30 10:00:33 LC_agent_17_4.0 5GTestEngineService[2214]: [kone_activity_reset] achieve_cc_first_flag 0

```

All files on the agent can be downloaded manually with an SCP service. Agent log files can also be downloaded from the Middleware UI (from Browse Results or Collect Diagnostics menus).

How to free and increase disk space on the agent

In case at the start or during a test errors about low disk space or offline agents are encountered, it is worth checking the space on the agents and clearing it.



First it is worth to check and disable from the test any debug log or capture.

Then, check and delete any big files from:

- /opt/5gc-test-engine/logs
- /opt/5gc-test-engine/logs-backup
- /opt/5gc-test-engine/captures

Delete extra syslog files from:

- /var/log

If you want to increase the disk space on the agent, from ESXi, Edit Virtual Machine settings, then select the storage and expand it, for example from 16 GB (default for agent) to 64 GB.

After the VM space is increased from ESXi, login on the LC agent and do the following commands.

- `lsblk` shows the disk and partition size.
- `growpart` increases the partition size to occupy the disk.
- `resize2fs` increases the filesystem size to occupy the partition.

```
lsblk
```

```
sudo growpart /dev/vda 1
```

```
lsblk df -hT
```

```
sudo resize2fs /dev/vda1
```

```
df -hT
```

IMPORTANT `growpart` command has a space between `vda` and `1` and `resize2fs` is issued without this space (`/dev/vda1` in a single line).

When increasing agent storage size on a KVM setup, turn off the VM, `ssh` to the hypervisor and issue the below commands. This will show the location of the LC_agent VM:

```
virsh domblklist --domain LC_agent
```

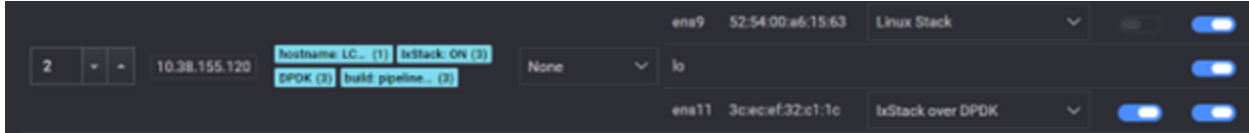
The following command will increase the size of the VM agent, by 48GB, so from 16GB to 64GB:

```
qemu-img resize /home/admin/Downloads/LoadCore-Agent-3.2.0.6-eb1d63b274-20220419T172201Z.qcow2 +48G
```

After this is done, start the agent the next commands are the same as for the ESXi setup.

How to ping from and check an IxStack interface

An interface is configured to be used with IxStack during the test from the Network Management section.



While the test is running, that interface will no longer appear with normal linux networking commands.

```
root@LC_agent_17_4:/var/log# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 52:54:00:a6:15:63 brd ff:ff:ff:ff:ff:ff
    inet 20.0.2.10/16 scope global ens9
        valid_lft forever preferred_lft forever
    inet 20.0.26.10/16 scope global secondary ens9
        valid_lft forever preferred_lft forever
    inet 20.0.11.10/16 scope global secondary ens9
        valid_lft forever preferred_lft forever
    inet6 fe80::5054:ff:fea6:1563/64 scope link
        valid_lft forever preferred_lft forever
4: ens3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 52:54:00:9a:55:dd brd ff:ff:ff:ff:ff:ff
    inet 10.38.155.120/22 brd 10.38.155.255 scope global dynamic ens3
        valid_lft 25184sec preferred_lft 25184sec
    inet6 fe80::5054:ff:fe9a:55dd/64 scope link
        valid_lft forever preferred_lft forever
8: ens10: <BROADCAST,MULTICAST,ALLMULTI,PROMISC,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 52:54:00:2c:27:44 brd ff:ff:ff:ff:ff:ff
    inet6 fe80::5054:ff:fe2c:2744/64 scope link
        valid_lft forever preferred_lft forever
```

Instead, the IxStack can be accessed by first typing `telnet localhost`. Then to show the interfaces and the assigned IPs type:

```
cat /proc/net/ixstack/subnets
```

```
root@LC_agent_17_4:/var/log# telnet localhost
Trying ::1...
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
# # # # ixrte shell # # # #
# cat /proc/net/ixstack/subnets
subnet=0, port=0, parser="ixstack:eth-range"
start=3c:ec:ef:32:c1:1c, incr=00:00:00:00:00:01, count=1, MTU=1500, eth_flags=0x0
-----
subnet=1, port=0, parser="ixstack:ip-range"
ipver=IPv4, ip_start=20.0.3.10, ip_incr=0.0.0.1, net_mask=16, count=1, gw_start=0.0.0.0, gw_incr=0.0.0.0, MSS=1460, ip_flags=0x1
-----
subnet=2, port=0, parser="lizard:udp"
-----
subnet=3, port=0, parser="ixstack:udp-lite"
-----
subnet=4, port=0, parser="lizard:gtpu"
-----
subnet=6, port=0, parser="ixstack:ipsec"
-----
subnet=5, port=0, parser="ixstack:ip-map"
ipver=IPv4, count=2, max_vlans=0, ip_flags=0x0
-----
subnet=7, port=0, parser="tiger:rtp"
-----
Pre RX hooks: { name="lizard_capture", priority=UNFILT_PCAP_PRIO(-20) }
Post RX hooks: <None>
TX hooks: { name="lizard_capture", priority=UNFILT_PCAP_PRIO(-20) }
```

Here *subnet 1* will be seen, which has IP *20.0.3.10*. You can ping by typing the destination IP and the source subnet id, in this case 1.

```
# ping 20.0.30.10 1
ping 20.0.3.10 => 20.0.30.10: sending 59(87) bytes of data
[ press Enter to stop ]
59 bytes from 20.0.30.10: icmp_seq=0 ttl=64 time=0ms
59 bytes from 20.0.30.10: icmp_seq=1 ttl=64 time=0ms
59 bytes from 20.0.30.10: icmp_seq=2 ttl=64 time=0ms
59 bytes from 20.0.30.10: icmp_seq=3 ttl=64 time=0ms
```

Some extra info regarding the IPs assigned to the IxStack interfaces (in this case *172.16.0.11* and *172.16.0.21* are UE IPs) can be found with the command:

```
cat /proc/net/ixstack/ifaces
```

```
# cat /proc/net/ixstack/ifaces
subnet=0, port=0, parser="ixstack:eth-range"
start=3c:ec:ef:32:c1:1c, incr=00:00:00:00:00:01, count=1, MTU=1500, eth_flags=0x0
-----
iface=0, mac=3c:ec:ef:32:c1:1c
=====
subnet=1, port=0, parser="ixstack:ip-range"
ipver=IPv4, ip_start=20.0.3.10, ip_incr=0.0.0.1, net_mask=16, count=1, gw_start=0.0.0.0, gw_incr=0.0.0.0, MSS=1460, ip_flags=0x1
-----
iface=0, parent_iface=0, IP=20.0.3.10, GW=0.0.0.0
=====
subnet=2, port=0, parser="lizard:udp"
-----
subnet=3, port=0, parser="ixstack:udp-lite"
-----
subnet=4, port=0, parser="lizard:gtpu"
-----
subnet=6, port=0, parser="ixstack:ipsec"
-----
subnet=5, port=0, parser="ixstack:ip-map"
ipver=IPv4, count=2, max_vlans=0, ip_flags=0x0
-----
iface=0, parent_iface=0, bound_iface=0, IP=172.16.0.11, state=0x3, net_mask=32, MSS=1416
iface=1, parent_iface=1, bound_iface=0, IP=172.16.0.21, state=0x3, net_mask=32, MSS=1416
=====
subnet=7, port=0, parser="tiger:rtp"
-----
Pre RX hooks: { name="lizard_capture", priority=UNFILT_PCAP_PRIO(-20) }
Post RX hooks: <None>
TX hooks: { name="lizard_capture", priority=UNFILT_PCAP_PRIO(-20) }
```

Information regarding the interface, like the driver, and the number of packets received can be found using the command:

```
cat /proc/net/ixnam/<if-name>
```

```
# cat /proc/net/ixnam/ens11
Device name      : ens11          Port ID          : 0
Dev info         : 8086:1583      Driver           : net_i40e
MTU              : 1500          Caps             : 0x300000009f
RX queues        : 15            TX queues        : 16
RX packets       : 2538          TX packets       : 2533
RX packet rate   : 0             TX packet rate   : 0
RX bytes         : 408774        TX bytes         : 408659
RX bit rate      : 0             TX bit rate      : 0
KNI RX packets   : 0            KNI TX packets   : 0
KNI RX errors    : 0
ierrors         : 0             oerrors         : 0
imissed          : 0            rx_nombuf        : 0
```

To quit the IxStack command line, type `exit`.

How to avoid duplicate node id problems caused by cloning an agent VM

On some setups it is easier to deploy the first agent VM and make clones out of it, instead of defining the VM configuration/parameters each time. This is specifically useful in case that more than a few agents are needed, and they all have the same resource/network configuration.

However, all the agents will have the same node id and will lead to agent reservation errors or other conflicts when tests are initiated from the Middleware.

To solve this, `ssh` to each of the cloned agents, and rename the `node_id.txt` (or remove it since it is the same on all clones):

```
sudo mv /etc/portmanager/node_id.txt /etc/portmanager/node_id_old.txt
```

Then, restart the *portmanager* service and the `node_id.txt` file will be generated with a new id:

```
sudo systemctl restart port-manager
```

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