Troubleshooting

Introduction to Troubleshooting

Troubleshooting the Element Installer comes down to knowing a little bit about kubernetes and how to check the status of the various resources. This guide will walk you through some of the initial steps that you'll want to take when things are going wrong.

Known issues

Installer fails and asks you to start firewalld

The current installer will check if you have firewalld installed on your system. It does expect to find firewalld started as a systemd service if it is installed. If it is not started, the installer will terminate with a failure that asks you to start it. We noticed some Linux distributions like SLES15P4, RHEL8 and AlmaLinux8 that have firewalld installed as a default package but not enabled, or started.

If you hit this issue, you don't need to enable and start firewalld. The workaround is to uninstall firewalld, if you are not planning on using it.

On SLES

```
zypper remove firewalld -y
```

On RHEL8

```
dnf remove firewalld -y
```

Airgapped installation does not start

If you are using element-enterprise-graphical-installer-2023-03.02-gui.bin and element-enterprise-installer-airgapped-2023-03.02-gui.tar.gz. You might run into an error looking like this:

```
Looking in links: ./airgapped/pip
```

> WARNING: Url './airgapped/pip' is ignored. It is either a non-existing path or lacks a specific scheme.
>
> ERROR: Could not find a version that satisfies the requirement wheel (from versions: none)
>
> ERROR: No matching distribution found for wheel

The workaround for it is to copy the pip folder from the airgapped directory to ~/.element-enterprise-server/installer/airgapped/pip

Failure downloading https://..., An unknown error occurred: "CustomHTTPSConnection" object has no attribute "cert_file"

Make sure you are using a supported operating system version. See https://ems-docs.element.io/books/element-on-premise-documentation-lts-2404/page/requirements-and-recommendations for more details.

install.sh problems

Sometimes there will be problems when running the ansible-playbook portion of the installer. When this happens, you can increase the verbosity of ansible logging by editing `.ansible.rc` in the installer directory and setting:

```
export ANSIBLE_DEBUG=true
export ANSIBLE_VERBOSITY=4
```

and re-running the installer. This will generate quite verbose output, but that typically will help pinpoint what the actual problem with the installer is.

Problems post-installation

Checking Pod Status and Getting Logs

- In general, a well-functioning Element stack has at it's minimum the following containers (or pods in kubernetes language) running:

```
[user@element2 ~]$ kubectl get pods -n element-onprem
kubectl get pods -n element-onprem
NAME                                                      READY   STATUS    RESTARTS   AGE
first-element-deployment-element-web-6cc66f48c5-lvd7w       1/1    Running   0          4d20h
first-element-deployment-element-call-c9975d55b-dzjw2      1/1    Running   0          4d20h
integrator-postgres-0                                      3/3    Running   0          4d20h
synapse-postgres-0                                         3/3    Running   0          4d20h
first-element-deployment-integrator-59bcfc67c5-jkbm6       3/3    Running   0          4d20h
adminbot-admin-app-element-web-c9d456769-rpk9l             1/1    Running   0          4d20h
auditbot-admin-app-element-web-5859f54b4f-8lbng            1/1    Running   0          4d20h
first-element-deployment-synapse-redis-68f7bfbdc-wht9m     1/1    Running   0          4d20h
first-element-deployment-synapse-haproxy-7f66f5fdf5-8sfkf  1/1    Running   0          4d20h
adminbot-pipe-0                                            1/1    Running   0          4d20h
auditbot-pipe-0                                            1/1    Running   0          4d20h
first-element-deployment-synapse-admin-ui-564bb5bb9f-87zb4 1/1    Running   0          4d20h
first-element-deployment-groupsync-0                       1/1    Running   0          20h
first-element-deployment-well-known-64d4cfd45f-l9kkr       1/1    Running   0          20h
first-element-deployment-synapse-main-0                    1/1    Running   0          20h
first-element-deployment-synapse-appservice-0             1/1    Running   0          20h
```

The above `kubectl get pods -n element-onprem` is the first place to start. You'll notice in the above, all of the pods are in the `Running` status and this indicates that all should be well. If the state is anything other than "Running" or "Creating", then you'll want to grab logs for those pods. To grab the logs for a pod, run:

```
kubectl logs -n element-onprem <pod name>
```

replacing `<pod name>` with the actual pod name. If we wanted to get the logs from synapse, the specific syntax would be:

```
kubectl logs -n element-onprem first-element-deployment-synapse-main-0
```

and this would generate logs similar to:

```
2022-05-03 17:46:33,333 - synapse.util.caches.lrucache - 154 - INFO - LruCache._expire_old_entries-2887 -
Dropped 0 items from caches
2022-05-03 17:46:33,375 - synapse.storage.databases.main.metrics - 471 - INFO - generate_user_daily_visits-
289 - Calling _generate_user_daily_visits
2022-05-03 17:46:58,424 - synapse.metrics._gc - 118 - INFO - sentinel - Collecting gc 1
2022-05-03 17:47:03,334 - synapse.util.caches.lrucache - 154 - INFO - LruCache._expire_old_entries-2888 -
Dropped 0 items from caches
```

2022-05-03 17:47:33,333 - synapse.util.caches.lrucache - 154 - INFO - LruCache._expire_old_entries-2889 - Dropped 0 items from caches

2022-05-03 17:48:03,333 - synapse.util.caches.lrucache - 154 - INFO - LruCache._expire_old_entries-2890 - Dropped 0 items from caches

- Again, for every pod not in the `Running` or `Creating` status, you'll want to use the above procedure to get the logs for Element to look at.
- If you don't have any pods in the `element-onprem` namespace as indicated by running the above command, then you should run:

```
[user@element2 ~]$ kubectl get pods -A
NAMESPACE          NAME                              READY  STATUS   RESTARTS  AGE
kube-system        calico-node-2lznr                 1/1    Running  0        8d
kube-system        calico-kube-controllers-c548999db-s5cjm  1/1  Running  0     8d
kube-system        coredns-5dbccd956f-glc8f          1/1    Running  0        8d
kube-system        dashboard-metrics-scraper-6b6f796c8d-8x6p4  1/1  Running  0    8d
ingress            nginx-ingress-microk8s-controller-w8lcn  1/1  Running  0     8d
cert-manager       cert-manager-cainjector-6586bddc69-9xwkj  1/1  Running  0    8d
kube-system        hostpath-provisioner-78cb89d65b-djfq5  1/1  Running  0       8d
kube-system        kubernetes-dashboard-765646474b-5lhxp  1/1  Running  0      8d
cert-manager       cert-manager-5bb9dd7d5d-cg9h8     1/1    Running  0        8d
container-registry registry-f69889b8c-zkhm5          1/1    Running  0        8d
cert-manager       cert-manager-webhook-6fc8f4666b-9tmjb  1/1  Running  0      8d
kube-system        metrics-server-5f8f64cb86-f876p   1/1    Running  0        8d
jitsi              sysctl-jvb-vs9mn                  1/1    Running  0        8d
jitsi              shard-0-jicofo-7c5cd9fff5-qrzmk   1/1    Running  0        8d
jitsi              shard-0-web-fdd565cd6-v49ps       1/1    Running  0        8d
jitsi              shard-0-web-fdd565cd6-wmzpb       1/1    Running  0        8d
jitsi              shard-0-prosody-6d466f5bcb-5qsbb  1/1    Running  0        8d
jitsi              shard-0-jvb-0                     1/2    Running  0        8d
operator-onprem    element-operator-controller-manager-...  2/2  Running  0    4d
updater-onprem     element-updater-controller-manager-...   2/2  Running  0    4d
element-onprem     first-element-deployment-element-web-...  1/1  Running  0   4d
element-onprem     first-element-deployment-element-call-...  1/1  Running  0  4d
element-onprem     integrator-postgres-0             3/3    Running  0        4d
element-onprem     synapse-postgres-0                3/3    Running  0        4d
element-onprem     first-element-deployment-integrator-...  3/3  Running  0    4d
element-onprem     adminbot-admin-app-element-web-...  1/1    Running  0      4d
element-onprem     auditbot-admin-app-element-web-...  1/1    Running  0      4d
element-onprem     first-element-deployment-synapse-redis-...  1/1  Running  0  4d
element-onprem     first-element-deployment-synapse-haproxy-..  1/1  Running  0  4d
```

element-onprem	adminbot-pipe-0	1/1	Running	0	4d
element-onprem	auditbot-pipe-0	1/1	Running	0	4d
element-onprem	first-element-deployment-synapse-admin-ui-.	1/1	Running	0	4d
element-onprem	first-element-deployment-groupsync-0	1/1	Running	0	20h
element-onprem	first-element-deployment-well-known-...	1/1	Running	0	20h
element-onprem	first-element-deployment-synapse-main-0	1/1	Running	0	20h
element-onprem	first-element-deployment-synapse-appservice-0	1/1	Running	0	20h

- This is the output from a healthy system, but if you have any of these pods not in the `Running` or `Creating` state, then please gather logs using the following syntax:

```
kubectl logs -n <namespace> <pod name>
```

- So to gather logs for the kubernetes ingress, you would run:

```
kubectl logs -n ingress nginx-ingress-microk8s-controller-w8lcn
```

and you would see logs similar to:

```
I0502 14:15:08.467258       6 leaderelection.go:248] attempting to acquire leader lease ingress/ingress-controller-leader...
I0502 14:15:08.467587       6 controller.go:155] "Configuration changes detected, backend reload required"
I0502 14:15:08.481539       6 leaderelection.go:258] successfully acquired lease ingress/ingress-controller-leader
I0502 14:15:08.481656       6 status.go:84] "New leader elected" identity="nginx-ingress-microk8s-controller-n6wmk"
I0502 14:15:08.515623       6 controller.go:172] "Backend successfully reloaded"
I0502 14:15:08.515681       6 controller.go:183] "Initial sync, sleeping for 1 second"
I0502 14:15:08.515705       6 event.go:282] Event(v1.ObjectReference{Kind:"Pod", Namespace:"ingress", Name:"nginx-ingress-microk8s-controller-n6wmk", UID:"548d9478-094e-4a19-ba61-284b60152b85", APIVersion:"v1", ResourceVersion:"524688", FieldPath:""}): type: 'Normal' reason: 'RELOAD' NGINX reload triggered due to a change in configuration
```

Again, for all pods not in the `Running` or `Creating` state, please use the above method to get log data to send to Element.

Default administrator

The installer creates a default administrator `onprem-admin-donotdelete` The Synapse admin user password is defined under the synapse section in the installer

Error: UPGRADE FAILED: another operation (install/upgrade/rollback) is in progress

Delete the updater namespace and Deploy again.

```
kubectl delete namespaces updater-onprem
```

microk8s takes a logn time to become ready after system boot

See https://ems-docs.element.io/link/109#bkmrk-kernel-modules

Node-based pods failing name resolution

```
05:03:45:601 ERROR [Pipeline] Unable to verify identity configuration for bot-auditbot: Unknown errcode
Unknown error
05:03:45:601 ERROR [Pipeline] Unable to verify identity. Stopping
matrix-pipe encountered an error and has stopped Error: getaddrinfo EAI_AGAIN synapse.prod.ourdomain
    at GetAddrInfoReqWrap.onlookup [as oncomplete] (node:dns:84:26) {
  errno: -3001,
  code: 'EAI_AGAIN',
  syscall: 'getaddrinfo',
  hostname: 'synapse.prod.ourdomain'
}
```

To see what Hosts are set, try:

```
kubectl exec -it -n element-onprem <pod name> getent hosts
```

So to do this on the adminbot-pipe-0 pod, it would look like:

```
kubectl exec -it -n element-onprem adminbot-pipe-0 getent hosts
```

and return output similar to:

```
127.0.0.1      localhost
127.0.0.1      localhost ip6-localhost ip6-loopback
10.1.241.27    adminbot-pipe-0
192.168.122.5  ems.onprem element.ems.onprem hs.ems.onprem adminbot.ems.onprem auditbot.ems.onprem
integrator.ems.onprem hookshot.ems.onprem admin.ems.onprem eleweb.ems.onprem
```

Node-based pods failing SSL

```
2023-02-06 15:42:04 ERROR: IrcBridge Failed to fetch roomlist from joined rooms: Error: unable to verify the first
certificate. Retrying
MatrixHttpClient (REQ-13) Error: unable to verify the first certificate
at TLSSocket.onConnectSecure (_tls_wrap.js:1515:34)
at TLSSocket.emit (events.js:400:28)
at TLSSocket.emit (domain.js:475:12)
at TLSSocket. finishInit (_tls_wrap.js:937:8),
at TLSWrap.ssl.onhandshakedone (_tls_wrap.js:709:12) {
code: 'UNABLE TO VERIFY LEAF SIGNATURE
```

Drop into a shell on the pod

```
kubectl exec -it -n element-onprem adminbot-pipe-0 -- /bin/sh
```

Check it's ability to send a request to the Synapse server

```
node

require=("http")
request(https://synapse.server/)
```

Reconciliation failing / Enable enhanced updater logging

If your reconciliation is failing, a good place to start is with the updater logs

```
kubectl --namespace updater-onprem logs \
   "$(kubectl --namespace updater-onprem get pods --no-headers \
```

```
    --output=custom-columns="NAME:.metadata.name" | grep controller)" \
  --since 10m
```

If that doesn't have the answers you seek, for example

```
TASK [Build all components manifests] *******************************
fatal: [localhost]: FAILED! => {"censored": "the output has been hidden due to
the fact that 'no_log: true' was specified for this result"}
```

You can enable debug logging by editing the updater deployment

```
kubectl --namespace updater-onprem edit \
  deploy/element-updater-controller-manager
```

In this file, search for `env` and add the this variable to all occurrences

```
    - name: DEBUG_MANIFESTS
      value: "1"
```

Wait a bit for the updater to re-run and then fetch the updater logs again. Look for `fatal` or to get the stdout from Ansible, look for `Ansible Task StdOut`. See also [Unhealthy deployment](#) below.

Click for a specific example

I had this "unknown playbook failure"

```
      state. file
      uid: 1001
META: role_complete for localhost

TASK [Ensure Matrix Authentication Service marker] ****************************
task path: /home/twilight/.element-enterprise-server/installer/ansible/install.yml:279
skipping: [localhost] => changed=false
  skip_reason: Conditional result was False
META: ran handlers
META: ran handlers


PLAY RECAP **********************************************************************
localhost                  : ok=201  changed=10   unreachable=0    failed=0    skipped=141  rescued=0
ignored=0
```

Current Deployment Status

Failure unknown playbook failure

Running C Running reconciliation

Reconciling C Some Components are reconciling

Cancel   Start Deployment

The host path where to store the persistent volumes. They will be hosted as subfolders of

After enabling debug logging for the updater, I found this error telling me that my Telegram bridge is misconfigured

```
-------------------------- Ansible Task StdOut ------------------------------

 TASK [Build all components manifests] ********************************
fatal: [localhost]: FAILED! => {"msg": "The task includes an option with an
undefined variable. The error was: 'dict object' has no attribute
'telegramApiId'. 'dict object' has no attribute 'telegramApiId'. 'dict object'
has no attribute 'telegramApiId'. 'dict object' has no attribute
'telegramApiId'. 'dict object' has no attribute 'telegramApiId'. 'dict object'
has no attribute 'telegramApiId'. 'dict object' has no attribute
'telegramApiId'. 'dict object' has no attribute 'telegramApiId'\n\nThe error
appears to be in '/element.io/roles/elementdeployment/tasks/prepare.yml': line
21, column 3, but may\nbe elsewhere in the file depending on the exact syntax
problem.\n\nThe offending line appears to be:\n\n\n- name: \"Build all
components manifests\"\n  ^ here\n"}
```

Unhealthy deployment

```
kubectl get elementdeployment --all-namespaces --output yaml
```

In the status you will see which component is having an issue. You can then do

```
kubectl --namespace element-onprem get `<kind>`/`<name>` --output yaml
```

And you would see the issue in the status.

Other Commands of Interest

Some other commands that may yield some interesting data while troubleshooting are:

Check list of active kubernetes events

```
kubectl get events -A
```

You will see a list of events or the message `No resources found`.

- Show the state of services in the `element-onprem` namespace:

```
kubectl get services -n element-onprem
```

This should return output similar to:

```
NAME                          TYPE       CLUSTER-IP      EXTERNAL-IP   PORT(S)                    AGE
postgres                      ClusterIP  10.152.183.47   <none>        5432/TCP                   6d23h
app-element-web               ClusterIP  10.152.183.60   <none>        80/TCP                     6d23h
server-well-known             ClusterIP  10.152.183.185  <none>        80/TCP                     6d23h
instance-synapse-main-headless ClusterIP None            <none>        80/TCP                     6d23h
instance-synapse-main-0       ClusterIP  10.152.183.105  <none>        80/TCP,9093/TCP,9001/TCP   6d23h
instance-synapse-haproxy      ClusterIP  10.152.183.78   <none>        80/TCP                     6d23h
```

Export logs from all Synapse pods to a file

This will export logs from the last 5 minutes.

```
for pod in $(kubectl --namespace element-onprem get pods --no-headers \
    --output=custom-columns="NAME:.metadata.name" | grep '\-synapse')
```

```
  do
    echo "$pod" >> synapse.log
    kubectl --namespace element-onprem logs "$pod" --since 5m >> synapse.log
  done
```

Grep all configmaps

```
for configmap in $(kubectl --namespace element-onprem get configmaps --no-headers --output=custom-
columns="NAME:.metadata.name"); do
    kubectl --namespace element-onprem describe configmaps "$configmap" \
    | grep --extended-regex '(host|password)'
done
```

List Synapse pods, sorted by pod age/creation time

```
kubectl --namespace element-onprem get pods --sort-by 'metadata.creationTimestamp' | grep --extended-regex
'(NAME|-synapse)'
```

Redeploy the micro8ks setup

It is possible to redeploy microk8s by running the following command as root:

```
snap remove microk8s
```

This command does remove all microk8s pods and related microk8s storage volumes. **Once this command has been run, you need to reboot your server** - otherwise you may have networking issues. Add `--purge` flag to remove the data if disk usage is a concern.

After the reboot, you can re-run the installer and have it re-deploy microk8s and Element Enterprise On-Premise for you.

Show all persistent volumes and persistent volume claims for the `element-onprem` namespace

```
kubectl get pv -n element-onprem
```

This will give you output similar to:

```
NAME                          CAPACITY  ACCESS MODES  RECLAIM POLICY  STATUS
CLAIM                             STORAGECLASS     REASON   AGE
pvc-fc3459f0-eb62-4afa-94ce-7b8f8105c6d1   20Gi      RWX         Delete        Bound    container-
registry/registry-claim                microk8s-hostpath         8d
integrator-postgres                5Gi      RWO        Recycle       Bound    element-onprem/integrator-
postgres                   microk8s-hostpath         8d
synapse-postgres                 5Gi      RWO        Recycle       Bound    element-onprem/synapse-
postgres                   microk8s-hostpath         8d
hostpath-synapse-media             50Gi      RWO        Recycle       Bound   element-onprem/first-
element-deployment-synapse-media   microk8s-hostpath         8d
adminbot-bot-data                10M       RWO        Recycle       Bound    element-onprem/adminbot-bot-
data                    microk8s-hostpath         8d
auditbot-bot-data                10M       RWO        Recycle       Bound    element-onprem/auditbot-bot-
data                    microk8s-hostpath         8d
```

Show deployments in the `element-onprem` namespace

```
kubectl get deploy -n element-onprem
```

This will return output similar to:

```
NAME                 READY  UP-TO-DATE  AVAILABLE  AGE
app-element-web          1/1    1          1       6d23h
server-well-known         1/1    1          1       6d23h
instance-synapse-haproxy   1/1    1          1       6d23h
```

Show hostname to IP mappings from within a pod

Run:

```
kubectl exec -n element-onprem <pod_name> -- getent hosts
```

and you will see output similar to:

```
127.0.0.1       localhost
127.0.0.1       localhost ip6-localhost ip6-loopback
10.1.241.30     instance-hookshot-0.instance-hookshot.element-onprem.svc.cluster.local instance-hookshot-0
192.168.122.5   ems.onprem element.ems.onprem hs.ems.onprem adminbot.ems.onprem auditbot.ems.onprem
integrator.ems.onprem hookshot.ems.onprem admin.ems.onprem eleweb.ems.onprem
```

This will help you troubleshoot host resolution.

Show the Element Web configuration

```
kubectl describe cm -n element-onprem app-element-web
```

and this will return output similar to:

```
config.json:
----
{
  "default_server_config": {
    "m.homeserver": {
      "base_url": "https://synapse2.local",
      "server_name": "local"
    }
  },
  "dummy_end": "placeholder",
  "integrations_jitsi_widget_url": "https://dimension.element2.local/widgets/jitsi",
  "integrations_rest_url": "https://dimension.element2.local/api/v1/scalar",
  "integrations_ui_url": "https://dimension.element2.local/element",
  "integrations_widgets_urls": [
    "https://dimension.element2.local/widgets"
  ]
}
```

Show the nginx configuration for Element Web: (If using nginx as your ingress controller in production or using thPoC installer.)

```
kubectl describe cm -n element-onprem app-element-web-nginx
```

and this will return output similar to:

```
server {
  listen      8080;

  add_header X-Frame-Options SAMEORIGIN;
  add_header X-Content-Type-Options nosniff;
```

```
    add_header X-XSS-Protection "1; mode=block";
    add_header Content-Security-Policy "frame-ancestors 'self'";
    add_header X-Robots-Tag "noindex, nofollow, noarchive, noimageindex";


    location / {
       root   /usr/share/nginx/html;
       index  index.html index.htm;


       charset utf-8;
    }
  }
```

Show the status of all namespaces

```
kubectl get namespaces
```

which will return output similar to:

```
NAME             STATUS   AGE
kube-system         Active   20d
kube-public         Active   20d
kube-node-lease     Active   20d
default             Active   20d
ingress             Active   6d23h
container-registry  Active   6d23h
operator-onprem     Active   6d23h
element-onprem      Active   6d23h
```

Show the status of the stateful sets in the `element-onprem` namespace

```
kubectl get sts -n element-onprem
```

This should return output similar to:

```
NAME              READY   AGE
postgres             1/1     6d23h
instance-synapse-main  1/1     6d23h
```

Show the Synapse configuration

For installers prior to 2022-05.06, use:

```
kubectl describe cm -n element-onprem first-element-deployment-synapse-shared
```

For the 2022-05.06 installer and later, use:

```
kubectl -n element-onprem get secret synapse-secrets -o yaml 2>&1 | grep shared.yaml | awk -F
'shared.yaml: ' '{print $2}' - | base64 -d
```

For the 2023-05.05 installer and later, use:

```
kubectl --namespace element-onprem get \
    secrets first-element-deployment-synapse-main --output yaml | \
    grep instance_template.yaml | awk '{print $2}' | base64 --decode
```

Verify DNS names and IPs in certificates

In the `certs` directory under the configuration directory, run:

```
for i in $(ls *crt); do echo $i && openssl x509 -in $i -noout -text | grep DNS; done
```

This will give you output similar to:

```
local.crt
        DNS:local, IP Address:192.168.122.118, IP Address:127.0.0.1
synapse2.local.crt
        DNS:synapse2.local, IP Address:192.168.122.118, IP Address:127.0.0.1
```

and this will allow you to verify that you have the right host names and IP addresses in your certificates.

View the MAU Settings in Synapse

```
kubectl get  -n element-onprem secrets/synapse-secrets -o yaml | grep -i shared.yaml -m 1| awk -F ': ' '{print $2}' - | base64 -d
```

which will return output similar to:

```
# Local custom settings
mau_stats_only: true


limit_usage_by_mau: False
max_mau_value: 1000
mau_trial_days: 2


mau_appservice_trial_days:
  chatterbox: 0


enable_registration_token_3pid_bypass: true
```

Integration issues

GitHub not sending events

You can trace webhook calls from your GitHub application under `Settings` / `developer settings` / `GitHub Apps`

Select your GitHub App

Click on `Advanced` and you should see queries issues by your app under `Recent Deliveries`

Updater and Operator in `ImagePullBackOff` state

Check EMS Image Store Username and Token

Check to see if you can pull the Docker image:

```
kubectl get pods -l app.kubernetes.io/instance=element-operator-controller-manager -n operator-onprem  -o yaml |
grep 'image:'
```

grab the entry like `image: gitlab-registry.matrix.org/ems-image-store/standard/kubernetes-operator@sha256:305c7ae51e3b3bfbeff8abf2454b47f86d676fa573ec13b45f8fa567dc02fcd1`

Should look like

```
microk8s.ctr image pull gitlab-registry.matrix.org/ems-image-store/standard/kubernetes-operator@sha256:305c7ae51e3b3bfbeff8abf2454b47f86d676fa573ec13b45f8fa567dc02fcd1  -u <EMS Image Store usenamer>:<EMS Image Store token>
```