

LVV-T2338

March 2, 2025

1 For LDM-503-EFDb

Initialize EFDs Summit and USDF

```
[26]: from lsst_efd_client import EfdClient, resample

client = EfdClient('summit_efd')
client.output = 'dataframe'
cl=client.influx_client

#usdf_client = EfdClient('summit_efd_copy')
usdf_client = EfdClient('usdf_efd')
usdf_client.output = 'dataframe'
usdf_cl=usdf_client.influx_client
```

1.1 Pick five topics

```
[27]: import random
      async def selectTopics(pick):
          topics = await client.get_topics()

          selected_topics = []
          loc = "summit"

          day = '2024-01-01'

          # want to select topics randomly but with messages so randomize all indexes
          randoms = random.sample(range(0,len(topics)),len(topics))
          for r in randoms:
              topic = topics[r]
              if ('Test' in topic):
                  next
              result = []
              if len(selected_topics) < 5:
```

```

        query=f'''SELECT * FROM "{topic}" WHERE time > '{day}T00:00:00.
↪000Z' and time < '{day}T00:00:30.000Z' '''
        result = await cl.query(query)

        if len(result) > 20:
            print (f"{topic} had {len(result)} messages in first 30 min of ↪
↪{day}")
            selected_topics.append(topic)
            if len(selected_topics) > 4:
                break
        print(f"Random selction of five '{loc}' topics {selected_topics} with ↪
↪messages on {day}")
        return selected_topics

```

1.2 Utility function to compare reusults

```

[33]: def cmp(topic, result, sresult):
        print (f"Compare {topic}")
        problems = 0
        if len(result) != len(sresult):
            print (f"\033[91m {topic} does not have the same number of results ↪
↪{len(result)} - summit had {len(sresult)}\033[0m")
            problems = problems + 1
        else:
            for k in sresult.keys():
                if result[k].all() != sresult[k].all():
                    print (f"\033[91m {topic} {key} does not match \033[0m")
                    problems = problems + 1

```

```

[30]: selected_topics = await selectTopics(5) # do this once at least

```

```

lsst.sal.MTDomeTrajectory.logevent_heartbeat had 30 messages in first 30 min of
2024-01-01
lsst.sal.ATMonochromator.logevent_heartbeat had 29 messages in first 30 min of
2024-01-01
lsst.sal.MTM1M3.logevent_heartbeat had 30 messages in first 30 min of 2024-01-01
lsst.sal.ESS.lightningStrikeStatus had 30 messages in first 30 min of 2024-01-01
lsst.sal.Watcher.logevent_heartbeat had 30 messages in first 30 min of
2024-01-01
Random selction of five 'summit' topics
['lsst.sal.MTDomeTrajectory.logevent_heartbeat',
'lsst.sal.ATMonochromator.logevent_heartbeat',
'lsst.sal.MTM1M3.logevent_heartbeat', 'lsst.sal.ESS.lightningStrikeStatus',
'lsst.sal.Watcher.logevent_heartbeat'] with messages on 2024-01-01

```

1.3 Get dataframes and compare summit and USDF

Doing this day by day

```
[34]: # test gives large window 6 days

# May topics

data = {}
for d in range(1,7):
    if d < 10:
        day = f"2024-01-0{d}"
    else:
        day = f"2024-01-{d}"

    day2 = day
    print(f" Checking {day}")
    for topic in selected_topics:
        query=f'''SELECT * FROM "{topic}" WHERE time >  '{day}T00:00:00.000Z' _
↳and time <  '{day2}T23:59:59.000Z' limit 1300000  '''
        # could GROUP BY time(1h) maybe ??
        result = await cl.query(query)
        usdf_result = await usdf_cl.query(query)
        cmp(topic, usdf_result, result)
        data[topic] = usdf_result
```

```
Checking 2024-01-01
Compare lsst.sal.MTDomeTrajectory.logevent_heartbeat
Compare lsst.sal.ATMonochromator.logevent_heartbeat
Compare lsst.sal.MTM1M3.logevent_heartbeat
Compare lsst.sal.ESS.lightningStrikeStatus
Compare lsst.sal.Watcher.logevent_heartbeat
Checking 2024-01-02
Compare lsst.sal.MTDomeTrajectory.logevent_heartbeat
Compare lsst.sal.ATMonochromator.logevent_heartbeat
Compare lsst.sal.MTM1M3.logevent_heartbeat
Compare lsst.sal.ESS.lightningStrikeStatus
Compare lsst.sal.Watcher.logevent_heartbeat
Checking 2024-01-03
Compare lsst.sal.MTDomeTrajectory.logevent_heartbeat
Compare lsst.sal.ATMonochromator.logevent_heartbeat
Compare lsst.sal.MTM1M3.logevent_heartbeat
Compare lsst.sal.ESS.lightningStrikeStatus
Compare lsst.sal.Watcher.logevent_heartbeat
Checking 2024-01-04
Compare lsst.sal.MTDomeTrajectory.logevent_heartbeat
Compare lsst.sal.ATMonochromator.logevent_heartbeat
Compare lsst.sal.MTM1M3.logevent_heartbeat
```

```

Compare lsst.sal.ESS.lightningStrikeStatus
Compare lsst.sal.Watcher.logevent_heartbeat
  Checking 2024-01-05
Compare lsst.sal.MTDomeTrajectory.logevent_heartbeat
Compare lsst.sal.ATMonochromator.logevent_heartbeat
Compare lsst.sal.MTM1M3.logevent_heartbeat
Compare lsst.sal.ESS.lightningStrikeStatus
Compare lsst.sal.Watcher.logevent_heartbeat
  Checking 2024-01-06
Compare lsst.sal.MTDomeTrajectory.logevent_heartbeat
Compare lsst.sal.ATMonochromator.logevent_heartbeat
Compare lsst.sal.MTM1M3.logevent_heartbeat
Compare lsst.sal.ESS.lightningStrikeStatus
Compare lsst.sal.Watcher.logevent_heartbeat

```

[32]: `## Reliability`

```

[35]: for topic in selected_topics:
    seqnum = data[topic]['private_seqNum']
    count = 0
    i = 1 # see if the sequence increases mostly
    prev = seqnum[0]
    while i < len(seqnum):
        if (seqnum[i] < prev):
            #print (f"Reset at {i} seqnum : {prev}, {seqnum[i]}")
            count = count + 1
        i = i + 1
    percent = 100 * ((len(seqnum) - count) / len(seqnum))
    print(f"{topic} private_seqNum increases {percent}% of the sequence")

```

```

/tmp/ipykernel_713/336143790.py:5: FutureWarning: Series.__getitem__ treating
keys as positions is deprecated. In a future version, integer keys will always
be treated as labels (consistent with DataFrame behavior). To access a value by
position, use `ser.iloc[pos]`

```

```

    prev = seqnum[0]

```

```

/tmp/ipykernel_713/336143790.py:7: FutureWarning: Series.__getitem__ treating
keys as positions is deprecated. In a future version, integer keys will always
be treated as labels (consistent with DataFrame behavior). To access a value by
position, use `ser.iloc[pos]`

```

```

    if (seqnum[i] < prev):

```

```

lsst.sal.MTDomeTrajectory.logevent_heartbeat private_seqNum increases 100.0% of
the sequence

```

```

lsst.sal.ATMonochromator.logevent_heartbeat private_seqNum increases 100.0% of
the sequence

```

```

lsst.sal.MTM1M3.logevent_heartbeat private_seqNum increases 100.0% of the
sequence

```

```

lsst.sal.ESS.lightningStrikeStatus private_seqNum increases 100.0% of the

```

sequence
lsst.sal.Watcher.logevent_heartbeat private_seqNum increases 100.0% of the
sequence