Petter Smart's lille hjelper: Lille Logger

Programmeringsnettverksmøtet

Sten Ruben Strandheim

Data Engineer

Telenor Norge

+47 90740338

Email: sten-ruben.strandheim@telenor.no

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«Lille logger»: Milestone Timestamps in Viya

When you have no time or possibilities to correlate specific runtime reports after program has ended - have scheduled many programmes in several flows - then you need:

1. A visual and numeric status on current progress in the running program's

2. Compare current status to history: sectional performance over time and overall performance over time

Sensitivity: Internal

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The following current process

- For each code section, the logger keeps track of:
  - Last system error text
  - Last warning message

- The timestamp at each milestone in the code is recorded, and metrics are extracted by several ways of requesting different parameters during the run.

- The logger just throws on-line tables into a CASLIB, in order to avoid race conditions in memory and disk, in case many loggers write simultaneously.

- Another single, scheduled process scoops up all one-liners and append into one historic table and creates extra statistical features.

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Last_TS_on_session ▼	Session ▲	Programme ▲	Session_start ▼	User ▲	Status_timestamp ▼	Status_ID ▼	Spent_Time ▲	Status_desc ▲	Last_Warning_Message ▲	Last_System_Error_Text ▲
					kl. 05:50:58 lørdag 10. februar 2024	11	0:00:01	...then remove data in memory, and reload from disk	The variable endtimeyear in the DROP, KEEP, or RENAME list has never been referenced.	The action stopped due to errors.
					kl. 05:50:57 lørdag 10. februar 2024	10	0:00:01	Avoid disk cache: First save to disk,	The variable endtimeyear in the DROP, KEEP, or RENAME list has never been referenced.	The action stopped due to errors.
					kl. 05:50:54 lørdag 10. februar 2024	09	0:00:03	Create extra features	(missing)	The action stopped due to errors.
			kl. 01:11:49 lørdag 10. februar 2024	svc_bdp_ran_d	kl. 05:50:53 lørdag 10. februar 2024	08	0:00:01	Drop HIVE External table	(missing)	The action stopped due to errors.
					kl. 05:50:52 lørdag 10. februar 2024	07	0:00:01	Create labels on table from HIVE	(missing)	The action stopped due to errors.
					kl. 02:18:30 lørdag 10. februar 2024	06	3:32:22	Load data with session caslib with nCharMultiplier = 1	(missing)	(missing)
					kl. 01:12:44 lørdag 10. februar 2024	05	1:05:46	Start to create external table in HIVE	(missing)	(missing)
kl. 03:04:55 mandag 11. mars 2024	UPLOAD_MC_HIVEEXTERNAL	MACRO - Upload_MC_hiveExternal.s			kl. 01:12:41 lørdag 10. februar 2024	04b	0:00:03	Found EVENT_DATE, TIMEZONE_OFFSET and VAR_CDS	(missing)	(missing)
					kl. 01:12:28 lørdag 10. februar 2024	03	0:00:13	Calculate period level based on HOUR	(missing)	(missing)
					kl. 01:12:10 lørdag 10. februar 2024	01	0:00:18	Before macro starts	(missing)	(missing)

Sensitivity: Internal

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Case: The underlying problem - CAS resources

- Time in-between important milestone timestamps may indicate how each section of the code performs.

- In this particularly heavy process, we see that certain sections tend to use more time. But not at every run.

- However, we also see that sometimes, entire sections are not even completed or started

- We do manual fix, but this situation must be prevented in the future

Session

- ☐ CASAUTO
- ☐ CELL_DEV_SUBSCR
- ☐ FILERETENTION
- ☑ FWAROWRETENTI...
- ☐ IMEI_POP_AND_U...
- ☐ IMSI_OPERATOR
- ☑ IMSI_POPULATION
- ☐ LOAD_HAT
- ☐ LOAD_MASTERCL...
- ☐ LOAD_SUBSCRIPT...
- ☑ MC_SORTED
- ☐ MCC_MNC_OPER...
- ☐ MEASAURESQH
- ☑ MSISDN_HOUR
- ☐ NGNSIP_FROM_HI...
- ☐ OUTER_JOIN_KPI...
- ☑ RA_RAN_NEIGHB...
- ☑ RAN_SIGNALING_...
- ☑ ROWRETENTION
- ☑ STATIONARY_IMSI
- ☐ TACDAY
- ☐ TACWEEK
- ☑ UPLOAD_MC_HIV...

After date

05/02/2024 ▼

Before date

11/03/2024 ▼

		Sequence_in_Session ▲	1	2	3	4	5	6	7	8	9	10
Last_TS_on_session ▼	Session ▲	Session_start ▼	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time
		kl. 05:22:57 mandag 11. mars 2024	0:02:30	0:01:58	0:05:05	0:02:50	0:03:19	1:24:15	0:01:57	0:00:02	—	—
		kl. 05:19:39 søndag 10. mars 2024	0:03:22	0:02:25	0:05:07	0:03:07	0:03:43	1:58:23	0:00:22	0:00:12	—	—
		kl. 05:49:42 lørdag 9. mars 2024	0:03:55	0:02:58	0:08:24	0:04:26	0:05:37	9:24:28	0:00:02	0:00:01	—	—
		kl. 05:57:48 fredag 8. mars 2024	0:11:26	0:08:01	0:24:53	0:05:12	0:05:19	4:34:42	0:01:10	0:00:00	—	—
		kl. 05:46:43 torsdag 7. mars 2024	0:03:46	0:02:23	0:05:29	0:02:54	0:06:26	2:39:21	0:00:15	0:00:03	—	—
		kl. 07:25:30 onsdag 6. mars 2024	0:09:31	0:04:36	0:09:20	0:03:48	0:03:35	1:16:32	0:00:25	0:00:10	—	—
		kl. 05:38:46 tirsdag 5. mars 2024	0:03:26	0:02:05	0:06:14	0:02:06	0:02:58	3:10:48	0:00:05	0:00:06	—	—
		kl. 05:28:43 lørdag 2. mars 2024	0:03:02	0:04:32	0:07:31	0:02:50	0:03:05	5:45:08	0:01:31	0:00:01	—	—
		kl. 05:35:56 fredag 1. mars 2024	0:04:08	0:03:31	0:06:58	0:03:00	0:03:04	2:32:37	0:01:04	0:00:01	—	—
		kl. 05:27:10 torsdag 29. februar 2024	0:03:00	0:04:03	0:06:01	0:01:57	0:02:37	2:47:02	0:00:08	0:00:12	—	—
		kl. 05:34:55 tirsdag 27. februar 2024	0:04:47	0:02:31	0:04:39	0:01:57	0:02:34	2:13:11	0:00:02	0:00:00	—	—
		kl. 05:03:42 mandag 26. februar 2024	0:03:08	0:02:35	0:04:44	0:01:47	0:01:59	0:26:35	0:00:11	0:00:06	—	—
		kl. 05:30:17 søndag 25. februar 2024	0:04:03	0:03:07	0:04:35	0:01:44	0:02:42	1:08:03	0:00:08	0:00:02	—	—
		kl. 06:00:12 lørdag 24. februar 2024	0:09:06	0:08:48	0:15:29	0:06:20	0:10:09	1:49:40	0:02:08	0:00:01	—	—
		kl. 05:51:45 fredag 23. februar 2024	0:05:16	0:01:40	0:06:49	0:02:57	0:03:45	7:00:10	0:01:30	0:00:00	—	—
kl. 07:04:57 mandag 11. mars 2024	MSISDN_HOUR	kl. 20:21:48 torsdag 22. februar 2024	0:07:40	0:04:41	0:09:44	0:03:11	0:04:18	0:42:38	0:00:21	0:00:07	—	—
		kl. 06:53:05 onsdag 21. februar 2024	1:45:26	0:28:01	2:00:49	0:19:50	0:07:12	−8900...	—	—	—	—
		kl. 05:56:46 tirsdag 20. februar 2024	0:05:09	0:04:53	0:05:47	0:10:41	0:06:37	2:17:44	0:01:09	0:00:01	—	—
		kl. 05:20:44 mandag 19. februar 2024	0:02:52	0:01:48	0:02:53	0:01:26	0:02:11	0:21:18	0:00:02	0:00:00	—	—
		kl. 05:12:53 lørdag 17. februar 2024	0:04:05	0:02:38	0:03:53	0:02:07	0:02:47	1:52:31	0:00:04	0:00:00	—	—
		kl. 05:46:20 fredag 16. februar 2024	0:03:56	0:03:03	0:04:27	0:02:25	0:05:02	3:06:59	0:00:02	0:00:01	—	—
		kl. 05:51:43 torsdag 15. februar 2024	0:02:39	0:03:33	0:09:31	0:03:15	0:06:30	−1188...	—	—	—	—
		kl. 09:34:38 onsdag 14. februar 2024	0:19:11	0:05:27	0:18:27	0:03:19	0:03:50	6:43:18	0:00:41	0:00:01	—	—
		kl. 05:45:51 tirsdag 13. februar 2024	0:04:56	0:01:57	0:03:41	0:01:53	0:04:17	3:23:44	0:01:26	0:00:01	—	—
		kl. 13:44:00 mandag 12. februar 2024	0:02:38	0:02:25	0:03:44	0:01:34	0:04:02	0:45:39	0:00:16	0:00:13	—	—
		kl. 05:45:43 fredag 9. februar 2024	0:02:43	0:02:03	0:06:12	0:02:00	0:04:23	−4778...	—	—	—	—
		kl. 05:43:35 torsdag 8. februar 2024	0:02:36	0:02:50	0:04:17	0:02:31	0:02:17	1:47:45	0:00:02	0:00:02	—	—
		kl. 09:08:06 onsdag 7. februar 2024	0:42:42	0:02:32	0:11:10	0:04:24	0:04:36	2:30:52	0:00:15	0:00:02	—	—
		kl. 05:41:56 tirsdag 6. februar 2024	0:02:45	0:06:41	0:06:38	0:03:40	0:08:40	3:19:19	0:02:21	0:00:01	—	—
		kl. 05:19:58 mandag 5. februar 2024	0:03:39	0:01:36	0:04:52	0:02:55	0:03:23	0:17:50	0:00:02	0:00:00	—	—

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Case: The underlying problem- CAS resources

- After reducing big tables in CAS at March 5th, the Engineer see less stress/variance in how each code section performs

- The process that we see here, is not the same, and is not interconnected with the prior process in this presentation

Last_TS_on_session ▼	Session ▲	Session_start ▼	Sequence_in_Session ▲ 1 Spent_Time	2 Spent_Time	3 Spent_Time	4 Spent_Time	5 Spent_Time	6 Spent_Time	7 Spent_Time	8 Spent_Time	9 Spent_Time	10 Spent_Time
		kl. 08:04:17 mandag 11. mars 2024	0:00:01	0:01:25	0:00:29	0:00:16	0:00:15	0:00:02	0:00:28	0:00:33	—	—
		kl. 08:07:05 søndag 10. mars 2024	0:00:01	0:01:06	0:00:23	0:00:14	0:00:10	0:00:02	0:00:10	0:00:15	—	—
		kl. 15:41:51 lørdag 9. mars 2024	0:00:15	0:01:50	0:00:11	0:00:24	0:00:14	0:00:02	0:00:25	0:00:17	—	—
		kl. 11:38:16 fredag 8. mars 2024	0:00:16	0:01:36	0:00:14	0:00:25	0:00:16	0:00:03	0:00:36	0:00:23	—	—
		kl. 08:55:07 torsdag 7. mars 2024	0:00:01	0:01:38	0:00:06	0:00:24	0:00:20	0:00:07	0:00:32	0:00:33	—	—
		kl. 09:33:50 onsdag 6. mars 2024	0:00:07	0:01:24	0:00:09	0:00:39	0:00:32	0:00:08	0:00:41	0:00:22	—	—
		kl. 09:12:04 tirsdag 5. mars 2024	0:00:00	0:01:46	0:00:05	0:00:48	0:00:59	0:00:14	0:00:48	0:00:30	—	—
		kl. 14:07:15 lørdag 2. mars 2024	0:00:01	1:22:58	0:15:49	0:13:04	0:08:30	0:00:10	0:00:41	0:11:41	—	—
		kl. 11:14:17 fredag 1. mars 2024	0:00:01	0:22:51	0:05:44	0:14:53	0:09:28	0:00:39	0:01:44	0:13:30	—	—
		kl. 08:40:25 torsdag 29. februar 2024	0:00:02	1:08:31	0:32:46	0:16:53	0:09:04	0:00:29	0:01:01	0:10:25	—	—
		kl. 19:18:26 tirsdag 27. februar 2024	0:00:01	1:24:44	0:36:11	0:18:00	0:08:53	0:00:22	0:23:38	0:13:10	—	—
		kl. 06:38:09 mandag 26. februar 2024	0:00:19	0:01:40	0:00:09	0:00:53	0:00:40	0:00:26	0:00:31	0:00:23	—	—
		kl. 10:23:35 søndag 25. februar 2024	0:00:01	0:00:02	0:24:16	0:08:42	0:05:44	0:00:09	0:00:40	0:08:23	—	—
kl. 08:07:52 mandag 11. mars 2024	RAN_SIGNALING_ENHANCED	kl. 15:13:56 lørdag 24. februar 2024	0:00:01	0:30:38	0:00:31	0:06:12	0:00:47	0:00:15	0:01:05	0:09:39	—	—
		kl. 13:18:32 fredag 23. februar 2024	0:00:01	1:31:05	0:23:25	0:13:19	0:07:43	0:00:08	0:00:33	0:09:50	—	—
		kl. 22:06:01 torsdag 22. februar 2024	0:00:10	0:01:27	0:00:17	0:00:30	0:00:14	0:00:01	0:00:19	0:00:20	—	—
		kl. 11:40:06 tirsdag 20. februar 2024	0:00:11	0:03:04	0:00:09	0:00:41	0:00:53	0:00:07	0:01:01	0:01:47	—	—
		kl. 08:45:05 mandag 19. februar 2024	0:00:00	0:02:20	0:08:45	0:03:20	0:02:04	0:00:06	0:00:32	0:02:19	—	—
		kl. 07:24:41 lørdag 17. februar 2024	0:00:03	1:30:19	0:46:58	0:15:45	0:09:39	0:00:09	0:00:30	0:12:22	—	—
		kl. 12:29:41 fredag 16. februar 2024	0:00:08	1:17:54	0:30:43	0:11:53	0:07:26	0:00:11	0:00:19	0:15:25	—	—
		kl. 17:48:01 onsdag 14. februar 2024	0:00:02	0:28:56	0:00:54	0:11:07	0:08:15	0:00:36	0:01:12	0:01:51	—	—
		kl. 09:59:19 tirsdag 13. februar 2024	0:00:01	0:41:54	0:05:38	0:08:34	0:05:48	0:00:08	0:00:41	0:08:36	—	—
		kl. 15:19:11 mandag 12. februar 2024	0:00:01	0:00:52	0:00:11	0:00:21	0:00:26	0:00:10	0:00:28	0:00:15	—	—
		kl. 11:07:16 torsdag 8. februar 2024	0:00:08	0:03:59	0:02:23	0:01:32	0:00:36	0:00:05	0:00:41	0:00:56	—	—
		kl. 13:56:29 onsdag 7. februar 2024	0:00:05	0:16:51	0:06:48	0:03:57	0:03:21	0:00:12	0:00:43	0:02:47	—	—
		kl. 11:25:22 tirsdag 6. februar 2024	0:00:01	0:04:22	0:02:36	0:01:49	0:01:39	0:00:38	0:01:21	0:01:35	—	—
		kl. 08:52:22 mandag 5. februar 2024	0:00:19	0:03:03	0:00:46	0:14:55	0:09:12	0:01:01	0:01:26	0:13:25	—	—

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Case: The underlying problem - CAS resources

- After reducing big tables in CAS, at February 5th, the Engineer see that other processes on the same CAS are more stable and completes every time.

- The process that we see here, need data from several other huge processes, and thus it acts as our canary bird in the mines

	Sequence_in_Session ▲	1	2	3	4	5	6	7	8	9	10
on ▲	Session_start ▼	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time
	kl. 05:00:07 mandag 11. mars 2024	0:00:01	0:00:35	0:01:08	0:00:03	0:00:05	0:02:12	——	——	——	——
	kl. 05:00:09 søndag 10. mars 2024	0:00:01	0:00:42	0:01:02	0:00:04	0:00:06	0:02:02	——	——	——	——
	kl. 05:00:08 lørdag 9. mars 2024	0:00:01	0:00:43	0:01:09	0:00:13	0:00:05	0:03:30	——	——	——	——
	kl. 05:00:04 fredag 8. mars 2024	0:00:00	0:00:44	0:01:27	0:00:02	0:00:02	0:01:21	——	——	——	——
	kl. 05:00:08 torsdag 7. mars 2024	0:00:05	0:00:55	0:01:17	0:00:03	0:00:04	0:03:04	——	——	——	——
	kl. 05:00:12 onsdag 6. mars 2024	0:00:01	0:00:43	0:01:21	0:00:10	0:00:15	0:03:33	——	——	——	——
	kl. 05:00:09 tirsdag 5. mars 2024	0:00:01	0:00:41	0:01:24	0:00:04	0:00:03	0:02:40	——	——	——	——
	kl. 05:00:11 mandag 4. mars 2024	0:00:01	−4872...	——	——	——	——	——	——	——	——
	kl. 05:00:07 søndag 3. mars 2024	0:00:01	−4991...	——	——	——	——	——	——	——	——
	kl. 05:00:11 lørdag 2. mars 2024	0:00:01	0:00:39	0:00:59	0:00:02	0:00:03	0:02:24	——	——	——	——
	kl. 05:00:09 fredag 1. mars 2024	0:00:01	0:00:40	0:01:28	0:00:11	0:00:15	0:01:15	——	——	——	——
	kl. 05:00:07 torsdag 29. februar 2024	0:00:01	0:00:43	0:01:16	0:00:05	0:00:05	0:02:16	——	——	——	——
	kl. 05:00:08 onsdag 28. februar 2024	0:00:08	−1440...	——	——	——	——	——	——	——	——
	kl. 05:00:05 tirsdag 27. februar 2024	0:00:00	0:00:42	0:01:27	0:00:03	0:00:15	0:01:17	——	——	——	——
	kl. 05:00:06 mandag 26. februar 2024	0:00:01	0:01:02	0:00:55	0:00:01	0:00:03	0:00:48	——	——	——	——
IGHBOURS	kl. 05:00:07 søndag 25. februar 2024	0:00:04	0:00:41	0:00:55	0:00:02	0:00:03	0:00:52	——	——	——	——
	kl. 05:00:10 lørdag 24. februar 2024	0:00:01	0:01:03	0:01:04	0:00:01	0:00:03	0:00:40	——	——	——	——
	kl. 05:00:11 fredag 23. februar 2024	0:00:01	0:00:42	0:01:31	0:00:08	0:00:07	0:03:00	——	——	——	——
	kl. 05:00:09 torsdag 22. februar 2024	0:00:00	−3984...	——	——	——	——	——	——	——	——
	kl. 05:00:08 onsdag 21. februar 2024	0:00:01	0:00:53	0:01:04	0:00:09	0:00:03	0:00:35	——	——	——	——
	kl. 05:00:07 tirsdag 20. februar 2024	0:00:01	0:00:38	0:00:57	0:00:02	0:00:02	0:00:28	——	——	——	——
	kl. 05:00:08 mandag 19. februar 2024	0:00:01	0:00:42	0:01:04	0:00:05	0:00:05	0:01:42	——	——	——	——
	kl. 05:00:09 søndag 18. februar 2024	0:00:01	0:03:18	0:00:58	0:00:02	0:00:02	0:00:42	——	——	——	——
	kl. 05:00:09 lørdag 17. februar 2024	0:00:03	0:00:43	0:01:04	0:00:02	0:00:03	0:00:20	——	——	——	——
	kl. 05:00:09 fredag 16. februar 2024	0:00:01	0:01:14	0:01:42	0:00:09	0:00:06	0:00:14	——	——	——	——
	kl. 05:00:08 torsdag 15. februar 2024	0:00:01	0:00:39	0:00:57	0:00:01	0:00:03	0:01:59	——	——	——	——
	kl. 05:00:08 onsdag 14. februar 2024	0:00:06	0:03:28	0:01:35	0:00:33	0:00:47	0:04:48	——	——	——	——
	kl. 05:00:06 tirsdag 13. februar 2024	0:00:01	0:00:39	0:01:01	0:00:02	0:00:03	0:01:40	——	——	——	——
	kl. 05:00:07 mandag 12. februar 2024	0:00:02	−3431...	——	——	——	——	——	——	——	——

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Case: The underlying problem - CAS resources

- Available space on CAS has been reduced over time, that leads to more and more serious problems for the large data import processes.

- Even after reducing the amount of promoted data on CAS, the Engineer see sporadic but less frequent delays in given code sections.

- But overall performance is stable

Sequence_in_Session ▲		1	2	3	4	5	6	7	8	9	10
Session ▲	Session_start ▼	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time	Spent_Time
	kl. 01:11:56 mandag 11. mars 2024	0:00:17	0:00:17	0:00:19	0:57:55	0:27:39	0:00:13	0:00:05	0:25:58	0:00:00	0:00:01
	kl. 01:11:24 søndag 10. mars 2024	0:00:06	0:00:02	0:00:02	0:54:34	0:31:28	0:00:04	0:00:02	0:22:15	0:00:01	0:00:01
	kl. 01:11:00 lørdag 9. mars 2024	0:00:01	0:00:01	0:00:01	1:01:33	0:28:05	0:00:05	0:00:12	0:27:34	0:00:01	0:00:01
	kl. 01:11:22 fredag 8. mars 2024	0:00:04	0:00:12	0:00:10	0:54:17	0:31:22	0:00:05	0:00:01	0:31:45	0:00:01	0:00:01
	kl. 01:11:03 torsdag 7. mars 2024	0:00:02	0:00:01	0:00:04	0:46:54	0:33:51	0:00:01	0:00:04	0:29:18	0:00:02	0:00:03
	kl. 01:12:24 onsdag 6. mars 2024	0:00:22	0:00:34	0:00:15	1:26:25	0:37:34	0:00:03	0:00:06	0:34:16	0:00:02	0:00:01
	kl. 01:11:17 tirsdag 5. mars 2024	0:00:06	0:00:04	0:00:07	0:54:28	0:31:34	0:00:01	0:00:01	0:23:04	0:00:01	0:00:00
	kl. 01:11:46 mandag 4. mars 2024	0:00:16	0:00:18	0:00:15	0:56:48	5:48:35	0:00:02	0:00:01	2:29:10	0:00:08	0:00:09
	kl. 01:11:17 søndag 3. mars 2024	0:00:02	0:00:07	0:00:14	0:48:38	1:17:10	0:00:00	0:00:01	−3169...	——	——
	kl. 01:11:37 lørdag 2. mars 2024	0:00:05	0:00:06	0:00:14	0:51:42	0:27:04	0:00:01	0:00:00	0:22:15	0:00:02	0:00:01
	kl. 01:11:34 fredag 1. mars 2024	0:00:08	0:00:05	0:00:05	0:54:38	0:28:20	0:00:02	0:00:01	0:27:58	0:00:02	0:00:01
	kl. 01:11:41 torsdag 29. februar 2024	0:00:14	0:00:13	0:00:16	0:48:17	0:25:35	0:00:01	0:00:00	0:21:10	0:00:02	0:00:01
	kl. 01:10:56 onsdag 28. februar 2024	0:00:01	0:00:01	0:00:02	1:24:09	2:06:08	0:00:01	0:00:02	−9771...	——	——
	kl. 01:11:26 tirsdag 27. februar 2024	0:00:01	0:00:04	0:00:05	0:40:44	0:27:25	0:00:01	0:00:00	0:27:52	0:00:01	0:00:00
	kl. 01:11:25 mandag 26. februar 2024	0:00:11	0:00:13	0:00:11	0:48:59	0:25:21	0:00:02	0:00:01	0:18:31	0:00:01	0:00:00
UPLOAD_MC_HIVEEXTERNAL	kl. 01:12:08 søndag 25. februar 2024	0:00:04	0:00:15	0:00:18	0:47:23	0:31:40	0:00:18	0:00:04	0:26:23	0:00:01	0:00:00
	kl. 01:11:36 lørdag 24. februar 2024	0:00:11	0:00:10	0:00:02	0:59:44	0:31:31	0:00:01	0:00:02	0:30:04	0:00:00	0:00:01
	kl. 01:11:31 fredag 23. februar 2024	0:00:13	0:00:07	0:00:11	0:53:23	0:27:23	0:00:04	0:00:04	0:25:35	0:00:01	0:00:00
	kl. 01:11:54 torsdag 22. februar 2024	0:00:18	0:00:18	0:00:13	1:00:46	4:42:12	0:00:04	0:00:01	2:25:09	0:00:17	0:00:13
	kl. 01:11:43 onsdag 21. februar 2024	0:00:17	0:00:12	0:00:15	1:10:52	0:31:01	0:00:01	0:00:00	0:27:20	0:00:09	0:00:02
	kl. 01:11:25 tirsdag 20. februar 2024	0:00:08	0:00:12	0:00:07	0:54:27	0:29:22	0:00:02	0:00:01	0:26:51	0:00:00	0:00:01
	kl. 01:11:36 mandag 19. februar 2024	0:00:04	0:00:06	0:00:11	0:50:17	0:27:01	0:00:01	0:00:00	0:19:58	0:00:01	0:00:01
	kl. 01:10:52 lørdag 17. februar 2024	0:00:02	0:00:00	0:00:01	0:39:59	0:26:39	0:00:01	0:00:00	0:19:27	0:00:01	0:00:01
	kl. 01:10:53 fredag 16. februar 2024	0:00:02	0:00:01	0:00:00	0:45:34	0:33:25	0:00:01	0:00:00	0:28:14	0:00:01	0:00:01
	kl. 01:11:35 torsdag 15. februar 2024	0:00:07	0:00:02	0:00:12	0:59:48	0:29:59	0:00:10	0:00:01	0:26:52	0:00:00	0:00:01
	kl. 01:11:52 onsdag 14. februar 2024	0:00:07	0:00:09	0:00:02	1:17:27	0:38:11	0:00:02	0:00:01	0:33:37	0:00:01	0:00:01
	kl. 01:12:07 tirsdag 13. februar 2024	0:00:02	0:00:06	0:00:16	1:07:24	0:30:55	0:00:01	0:00:01	0:25:27	0:00:01	0:00:01
	kl. 01:12:21 mandag 12. februar 2024	0:00:16	0:00:17	0:00:17	0:56:15	0:08:02	0:00:02	0:00:01	0:00:03	0:00:01	0:00:01
	kl. 01:12:01 søndag 11. februar	0:00:19	0:00:17	0:00:22	0:59:39	−1513					

Sensitivity: Internal

SAS Visual Analytics: Highlighting the spenders!

- Use the object's Display Rules for the selected metric.

- Define as many categories that you want, without creating some parallel grouping of data

Sensitivity: Internal

Code examples: Find system messages

The macro should act almost as a ghost, so that it won't put much text into the main programme's log:

/ Remove all writing to log from this macro */*

options nonotes;

Find system messages:

      %let SystemError = &sysErr.;

      %let SystemErrorText = %superq(sysErrorText);

      %let SystemWarningText = %superq(sysWarningText);

Code examples: Find the Session_UUID

Find session's name and start timestamp: First you need to find the Session_UUID:

- https://documentation.sas.com/doc/en/pgmsascdc/v_048/caspg/p1dncbfclotuc2n13f4cxht9ei07.htm

- https://documentation.sas.com/doc/en/pgmsascdc/v_048/caspg/p1otv5srkp9wlmn12yws0lbsr2t0.htm

```
DATA &Stats_libName..SessionUUID; length Session_ID $40.; Session_ID="random"; run;


proc cas;

  function getActionStatus(sessname); uuid = uuid(sessname); return uuid; end;
run;

  table.update / table = {caslib="&Stats_caslib.", name="SessionUUID"}

    set= {{ var="Session_ID", value=quote(getActionStatus("&_sessref_.")) }};
quit;


PROC SQL NOPRINT; SELECT quote(strip(Session_ID)) INTO : Session_UUID FROM
libName_STATS.SessionUUID; QUIT;

%PUT Session_UUID = &Session_UUID.;
```

Sensitivity: Internal

Code examples: Use Session_UUID to find session's name and start timestamp

Find session's name and start timestamp: First you need to find the Session_UUID

```
proc cas;

   session.listSessions result = Session_List;

   saveresult Session_List dataout=work.SessionList;
quit;


PROC SQL NOPRINT;

      SELECT quote(strip(SessionName)) INTO : Session_TS SEPARATED BY ','

      FROM work.SessionList

      where find(UUID, &Session_UUID.)>0;
QUIT;

%PUT Session_TS = &Session_TS.;

%LET SessionName = %scan(&Session_TS., 1 , ":");
```
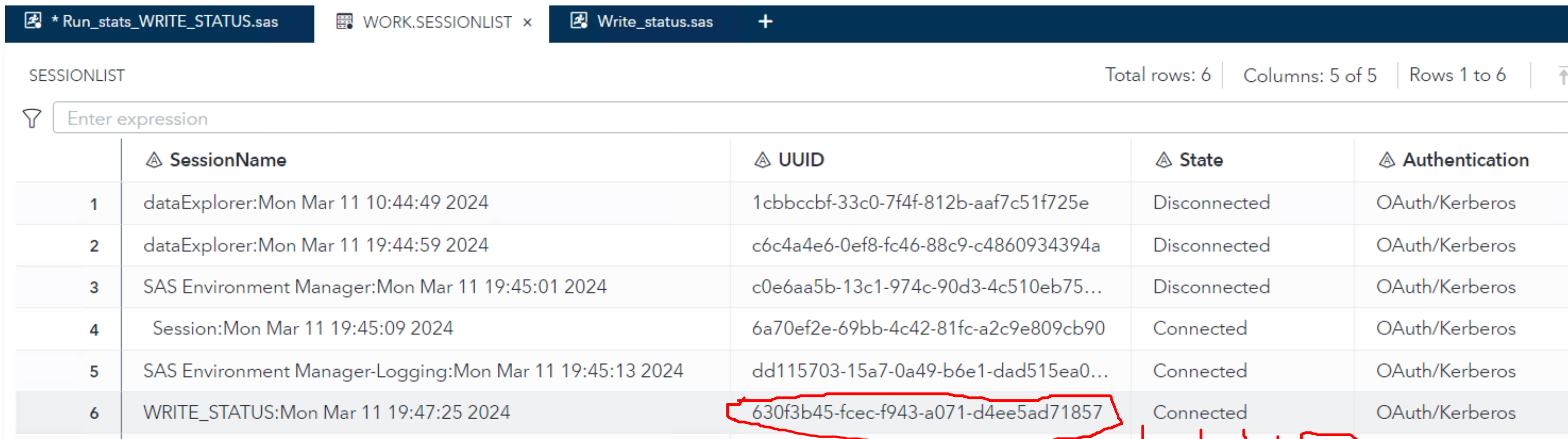
Code examples: Use Session_UUID to find session's name and start timestamp

Find session's name and start timestamp: First you need to find the Session_UUID

```
proc cas;

   session.listSessions result = Session_List;

   saveresult Session_List dataout=work.SessionList;

quit;
```


SESSIONLIST			Total rows: 6	Columns: 5 of 5	Rows 1 to 6	

	SessionName	UUID	State	Authentication
1	dataExplorer:Mon Mar 11 10:44:49 2024	1cbbccbf-33c0-7f4f-812b-aaf7c51f725e	Disconnected	OAuth/Kerberos
2	dataExplorer:Mon Mar 11 19:44:59 2024	c6c4a4e6-0ef8-fc46-88c9-c4860934394a	Disconnected	OAuth/Kerberos
3	SAS Environment Manager:Mon Mar 11 19:45:01 2024	c0e6aa5b-13c1-974c-90d3-4c510eb75…	Disconnected	OAuth/Kerberos
4	Session:Mon Mar 11 19:45:09 2024	6a70ef2e-69bb-4c42-81fc-a2c9e809cb90	Connected	OAuth/Kerberos
5	SAS Environment Manager-Logging:Mon Mar 11 19:45:13 2024	dd115703-15a7-0a49-b6e1-dad515ea0…	Connected	OAuth/Kerberos
6	WRITE_STATUS:Mon Mar 11 19:47:25 2024	630f3b45-fcec-f943-a071-d4ee5ad71857	Connected	OAuth/Kerberos

Sensitivity: Internal