



VELOCITY
S O F T W A R E

Case Study 2

Linux Servers Disconnecting From the Network

Velocity Software solves performance problems.

- **As a valued customer, we want to pass this knowledge on to you.**
- **The following is a case study of a solved real-life performance issue.**
- **This case study will show:**
 - **The problem as reported by users**
 - **The problem observations**
 - **What was found in the Velocity Software data**
 - **What was suggested to the customer**
 - **If provided, follow up from the customer**

The Problem:

Multiple Oracle servers were disconnecting from the network.

Problem Observations:

- On several days around the same time, multiple Oracle servers were disconnecting from the network/VSWITCH
- There was an error message – The QETH device driver failed to recover an error on the device

ESAUSSRC – User Configuration showed:

- Multiple Linux servers with two vCPUs that are not needed

```
Report: ESAUSSRC      User Configuration      Ver:
Monitor initialized: 07/07/22 at 01:00:00 on 3906 serial 03FCDB      Fi:
Monitor period:      3600 seconds ( 1:00:00)      La:
```

UserID	ClassID	ACI Grp Name	<CP POOL> PoolName	CPU Type	<-----SHARE----->				<---CPU		
					<Normal> Rel	<--MAX--> Abs	Typ	Shre	Lim -it	<Count> Def On	
LaaaP	TheUsrs	.	.	IFL	40	.	.	.	.	1	1
LbbbT	TheUsrs	.	.	IFL	80	.	.	.	.	2	2
LcccT	TheUsrs	.	.	IFL	50	.	.	.	.	1	1
LdddT	TheUsrs	.	.	IFL	70	.	.	.	.	1	1
LeeeT	TheUsrs	.	.	IFL	30	.	.	.	.	1	1
LfffT	TheUsrs	.	.	IFL	25	.	.	.	.	1	1
LgggT	TheUsrs	.	.	IFL	50	.	.	.	.	1	1
LhhhT	TheUsrs	.	.	IFL	100	.	.	.	.	1	1
LjjjC	TheUsrs	.	.	CP	80	.	.	.	.	1	1
LkkkT	TheUsrs	.	.	IFL	10	.	.	.	.	1	1
LmmmP	TheUsrs	.	.	IFL	30	.	.	.	.	2	2
LnnnT	TheUsrs	.	.	IFL	20	.	.	.	.	1	1
LpppT	TheUsrs	.	.	IFL	30	.	.	.	.	1	1
LqqqT	TheUsrs	.	.	IFL	20	.	.	.	.	1	1
LrrrT	TheUsrs	.	.	IFL	35	.	.	.	.	1	1
LsssT	TheUsrs	.	.	IFL	15	.	.	.	.	1	1
LtttT	TheUsrs	.	.	IFL	25	.	.	.	.	1	1
LuuuP	TheUsrs	.	.	IFL	100	.	.	.	.	2	2
LvvvC	TheUsrs	.	.	IFL	80	.	.	.	.	1	1
LwwwC	TheUsrs	.	.	IFL	.	25	Abs	25.0	Sft	2	2
LxxxC	TheUsrs	.	.	IFL	100	.	.	.	.	2	2
LyyyT	TheUsrs	.	.	IFL	50	.	.	.	.	1	1
LzzzC	TheUsrs	.	.	IFL	100	.	.	.	.	2	2
L111C	TheUsrs	.	.	IFL	30	.	.	.	.	1	1
L222T	TheUsrs	.	.	IFL	80	.	.	.	.	2	2
L333T	TheUsrs	.	.	IFL	80	.	.	.	.	2	2
L444T	TheUsrs	.	.	IFL	50	.	.	.	.	1	1
L555P	TheUsrs	.	.	IFL	200	.	.	.	.	2	2

ESAOPER – Operator System Log showed:

- Virtual switch failures

```

Report: ESAOPER Operator/System Log Veloc
Monitor initialized: 07/07/22 at 00:00:01 on 3906 serial 03FCD8 First
-----
01:15:17 QDIO Device Deactivate:xx2C
01:15:17 QDIO Device Deactivate:xx6C
01:16:00 L111T vcpu stopped: 0
01:16:00 L111T : VM VCPU: 00 is in stop state
01:17:45 Virtual Switch Failure: VSW3 owned by: VSW3 DTCVSW1
01:17:45 Address: xxx6
01:17:45 QDIO Device Deactivate:xxx6
01:17:45 DETACH Device B0B6 FROM System
01:18:02 Virtual Switch Failure: VSW4 owned by: VSW4 DTCVSW1
01:18:02 Address: xxx0
01:18:02 DETACH Device B0B7 FROM System
01:18:23 DETACH Device B0B8 FROM System
01:17:00 L228T vcpu started: 0
01:18:52 QDIO Device activated:xx2C
01:20:10 QDIO Device activated:xx6C
.
.
.
01:17:00 VSIMAP1206 At 01:17:00, 122-second interval exceeds active
01:17:00 interval parameter value of 60.
01:19:00 VSIMAP1206 At 01:19:00, 122-second interval exceeds active
01:19:00 interval parameter value of 60.
.
.
.
01:22:05 QDIO Device activated:xxx6
01:22:05 Virtual Switch Recovery: VSW3 owned by: VSW3 DTCVSW1

```

ESALPARS – Logical Partition Analysis Summary showed:

- The %Assigned Total at the time of the issue was 100% or close to 100%

```

Report: ESALPARS Logical Partition Summary Velocity Software Corporate ZMAP 5.1.4 07/11/22 Pg
Monitor initialized: 07/07/22 at 01:00:00 on 3906 serial 03FCDB First record analyzed: 07/07/22 01:00:00
-----
Time <--Complex--> <-----Logical Partition-----> <-Assigned Shares-----> <LPAR Capping> Entit
Phys Dispatch Virt CPU <%Assigned> <---LPAR--> <VCPU Pct> Wait <-Thread-> On/ Capping CPU C
CPUs Slice Name Nbr CPUs Type Total Ovhd Weight Pct /SYS /CPU Comp Idle cnt Off Value
-----
07/07/22
01:13:00 11 Dynamic Totals: 00 16 IFL 398.7 0.3 1135 100
XXX4 03 2 IFL 178.2 0.0 60 44.4 22.2 88.9 No 0 2 No . 1.78
01:14:00 11 Dynamic Totals: 00 16 IFL 398.0 0.3 1135 100
XXX4 03 2 IFL 177.4 0.0 60 44.4 22.2 88.9 No 0 2 No . 1.78
01:15:00 11 Dynamic Totals: 00 16 IFL 391.5 1.1 1135 100
XXX4 03 2 IFL 179.9 0.1 60 44.4 22.2 88.9 No 0 2 No . 1.78
01:16:00 11 Dynamic Totals: 00 16 IFL 399.3 0.2 1135 100
XXX4 03 2 IFL 176.7 0.0 60 44.4 22.2 88.9 No 0 2 No . 1.78
01:17:00 11 Dynamic Totals: 00 16 IFL 399.6 0.2 1135 100
XXX4 03 2 IFL 176.5 0.0 60 44.4 22.2 88.9 No 0 2 No . 1.78
01:19:00 11 Dynamic Totals: 00 16 IFL 399.9 0.1 1135 100
XXX4 03 2 IFL 176.4 0.0 60 44.4 22.2 88.9 No 0 2 No . 1.78
01:21:00 11 Dynamic Totals: 00 16 IFL 400.0 0.1 1135 100
XXX4 03 2 IFL 176.2 0.0 60 44.4 22.2 88.9 No 0 2 No . 1.78
01:22:00 11 Dynamic Totals: 00 16 IFL 400.0 0.1 1135 100
XXX4 03 2 IFL 175.8 0.0 60 44.4 22.2 88.9 No 0 2 No . 1.78
*****Summary*****
Average: 11 Dynamic Totals: 00 16 IFL 394.2 0.8 1135 100
XXX4 03 2 IFL 167.7 0.5 60 44.4 22.2 88.9 No 29.08 2 No . 1.78

```

ESALPARS – Logical Partition Analysis Summary – Cont.:

- There are four total IFL processors shared over the 16 virtual processors (from the previous page)
- During the time of the issue, the 4 total IFL Processor busy was close to 100%

```
Totals by Processor type:
<-----CPU-----> <-Shared Processor busy->
Type Count Ded shared Total Logical Ovhd Mgmt
-----
CP      3    0    3  245.8   241.3   1.7   2.7
IFL     4    0    4  395.0   393.4   0.8   0.8
ICF     3    3    0    0.0     0     0     0.0
ZIIP    1    0    1   11.9   11.5   0.1   0.3
```

ESAXACT – Transaction Delay Analysis showed:

- Multiple servers were waiting on CPU

```

Report: ESAXACT           Transaction Delay Analysis           Velocity Software C
Monitor initialized: 07/07/22 at 01:00:00 on 3906 serial       First record analyz
-----
                                <-----Percent non-dormant (Wait states)----->
UserID  <-Samples->
/Class  Total  In Q Run Sim CPU SIO Pag SVM SVM SVM  CF Idl I/O Pag Ldg Oth Lst Elig
-----
*****Totals*****
System:  3306  2340  7.7  1.1  34  0 0.0  0  0 0.1 0.1  57 0.1  .  .  0  0  0
Hi-Freq: 237K  145K  8.0  1.9  31  0.0 0.0  0  0.8 0.1 0.3  59 0.1 0.0 0.0 0.1  0  0
*****User Summary*****
LaaaT    3598  3598  43  6.9  40  0 0.1  0  0  0  0  10 0.2  0  0  0  0  0
LbbbT    3598  3598  41  4.5  36  0 0.1  0  0  0  0  19  0  0  0  0.1  0  0
LcccT    7196  7196  15  2.9  44  0 0.0  0  0  0  0  38 0.1  0  0  0.0  0  0
LdddT    3598  3598  20  1.9  43  0 0.2  0  0  0  0  35 0.2  0.0  0  0  0  0
LeeeT    3598  3598  18  0.1  32  0 0.4  0  0  0  0  50 0.0  0  0  0  0  0
LfffC    7196  7196  8.3  0.7  21  0 0.0  0  0  0  0  70 0.2  0  0.0  0  0  0
LgggT    3598  3588  15  2.1  44  0  0  0  0  0  3.6  34 0.1  0  0  0  1.8  0  0
LhhhT    7196  7196  5.3  2.3  42  0.0 0.0  0  0  0  0  49 0.4  0.0  0.0  0.0  0  0
LjjjC    3598  3598  11  1.1  36  0 0.1  0  0  0  0  51 0.1  0  0  0  0  0
LkkkT    7196  7196  3.6  0.1  26  0  0  0  0  0  0  70  0  0  0  0  0  0
LmmmT    3598  3598  10  2.0  40  0 0.2  0  0  0  0  47 0.1  0  0  0  0  0
LnnnC    3598  3598  10  6.4  34  0 0.1  0  0  0  0  48 0.4  0  0  0.0  0  0
LpppC    3598  3598  8.3  1.9  46  0  0  0  0  0  0  43 0.2  0  0  0  0  0
  
```


ESANIC – Virtual NIC Activity showed:

- The network lock information (wait times) rose from zero
- The rate of discards during the problem period rose from zero

```
Report: ESANIC Virtual NIC Activity Report Velocity Software Corporate ZMAP 5.1.4 07/11/22
Monitor initialized: 07/07/22 at 01:00:00 on 3906 serial 03FCD8 First record analyzed: 07/07/22 01:00:00
```

Date/Time	Virtual	Virt	NIC	Tranp	<---network lock requests--->				<--stack-->		<-bytes-->		<-----Packets per Second----->							
Userid	LanName	Devc	BASE	/type	<---Per Second-->		wait	time	rqst	dfrd	Sent	Rcvd	Sent	Rcvd	Discard	InError				
		ADDR	ADDR		Ntwrk	send	rcv	sec	sec											
01:16:00	LaaaI	VSW3	0380	0380	01/02	110.2	110	51.7	0	0	0	0	460K	6288	310	79.1	0	110	0	0
	LbbbI	VSW3	0380	0380	01/02	178.6	179	41.7	0	0	0	0	741K	10K	502	128	0	80.2	0	0
	LcccC	VSW3	0380	0380	01/02	8.6	8.6	110	0	0	0	0	598	14K	8.6	174	0	0	0	0
	LdddI	VSW3	0380	0380	01/02	313.8	314	39.6	0	0	0	0	97K	5760	376	72.3	0	132	0	0
	LeeeP	VSW4	0360	0360	02/02	4.5	4.4	2.7	0	0.0	0.1	0	2026	765	6.5	5.9	0	0.1	0	0
	LfffI	VSW4	0360	0360	02/02	3.4	3.3	8.0	0	0	0.1	0	899	1136	3.9	19.2	0	0	0	0
	LgggI	VSW4	0360	0360	02/02	12.5	12.4	5.5	0	0.0	0.1	0	4719	2853	15.6	10.2	0	0	0	0
	LhhhI	VSW4	0360	0360	02/02	2.9	2.8	4.1	0	0.0	0.1	0	417	733	2.9	6.8	0	0.2	0	0
	LbbbI	VSW4	0360	0360	02/02	1.1	1.0	2.3	0	0.0	0.2	0	272	2117	2.2	29.0	0	0	0	0
	LjjjI	VSW4	0360	0360	02/02	1.3	1.2	1.6	0	0.0	0.1	0	190	316	1.4	4.3	0	0	0	0
	LkkkI	VSW4	0360	0360	02/02	19.3	19.2	13.0	0	0.0	0.2	0	5232	3930	21.2	16.0	0	0.0	0	0
	LmmmI	VSW4	0360	0360	02/02	8.7	8.6	3.2	0	0	0.2	0	2503	1366	10.9	11.2	0	0	0	0
	LnnnI	VSW4	0360	0360	02/02	7.2	7.2	0.5	0	0	0.1	0	2676	1047	9.8	10.6	0	0	0	0
	LpppI	VSW4	0360	0360	02/02	7.1	7.0	2.8	0	0.0	0.2	0	2002	963	8.6	8.8	0	0	0	0
	LqqqC	VSW4	0360	0360	02/02	8.8	8.6	5.9	0	0	0.3	0	1342	1256	8.9	8.6	0	0	0	0
	LrrrI	VSW4	0360	0360	02/02	18.8	18.7	7.9	0	0.0	0.1	0	6551	3606	25.0	14.0	0	0.9	0	0
	LsssC	VSW4	0360	0360	02/02	8.2	8.2	13.9	0	0.0	0.0	0	1737	2449	8.8	28.8	0	1.0	0	0
	LtttI	VSW4	0360	0360	02/02	6.0	6.0	3.6	0	0.0	0.2	0	3421	2481	6.8	5.9	0	0	0	0
	LuuuI	VSW4	0360	0360	02/02	3.7	3.7	4.1	0	0.0	0.1	0	736	639	3.9	7.2	0	0	0	0
	LvvvP	VSW4	0360	0360	02/02	30.5	30.5	17.7	0.0	0.0	0.2	0	7056	5568	31.5	24.1	0	0.3	0	0
	LwwwI	VSW4	0360	0360	02/02	15.5	15.5	9.7	0	0.0	0.2	0	2285	1641	16.0	12.5	0	0.1	0	0
	LxxxC	VSW4	0360	0360	02/02	7.8	7.8	5.4	0	0.0	0.1	0	1214	908	8.1	7.1	0	0	0	0
	LyyyI	VSW3	0380	0380	01/02	3.8	3.8	53.5	0	0	0	0	270	6201	3.8	75.9	0	94.3	0	0
	LqqqC	VSW3	0380	0380	01/02	4.0	4.0	69.9	0	0	0	0	292	6291	4.2	77.2	0	89.6	0	0
	LzzzC	VSW3	0380	0380	01/02	3.8	3.8	48.4	0	0	0	0	286	11K	4.7	141	0	30.9	0	0
01:17:00	LaaaI	VSW3	0380	0380	01/02	156.8	157	60.7	0	0	0	0	873K	7782	588	98.1	0	64.3	0	0
	LbbbI	VSW3	0380	0380	01/02	319.8	320	71.9	0	0	0	0	955K	11K	647	136	5.3	75.5	0	0
	LcccC	VSW3	0380	0380	01/02	7.8	7.8	80.1	0	0	0	0	405	11K	6.1	130	4.5	0	0	0
	LdddI	VSW3	0380	0380	01/02	2.0	2.0	32.5	0	0	0	0	20K	4271	13.3	53.2	0	64.9	0	0
	LhhhI	VSW3	0380	0380	01/02	4.7	4.7	72.7	0	0	0	0	301	2986	4.3	35.6	1.0	92.8	0	0
	LqqqC	VSW3	0380	0380	01/02	2.7	2.7	60.7	0	0	0	0	192	3102	2.8	37.8	0	87.9	0	0

ESAPLDV – Processor Local Dispatch Vector Activity showed:

- The dispatch rate during the problem period was suddenly extremely high

```

Report: ESAPLDV      Processor Local Dispatch Vector Activity      Velocity Software Corporate      ZMAP 5.1.4 07/11/22
Monitor initialized: 07/07/22 at 01:00:00 on 3906 serial 03FCD8      First record analyzed: 07/07/22 01:00:00
-----
<----Load---->
<-Users-> Tran      <VMBDK Moves/sec>      <-----PLDV Lengths----->      Dispatcher      <-CPU Steals from Other CPUs->
Time      Actv In Q /sec CPU Steals      To Master      Avg      Max      Mstr      MstrMax      %Empty      Long Paths      Same      NL1      NL2      NL3      NL4      NL5
-----
01:16:00      43 41.0  0.5  0  33.6      0.3      0  0.0  0  1.8  0  9562.7  33.6  0  0  0  0  0
              1  33.2      0  0  0.0  .  .  0  16614.2  33.2  0  0  0  0  0
              2  39.1      0  0  20.3  .  .  0  69624.5  39.1  0  0  0  0  0
              3  41.1      0  0  20.4  .  .  0  20874.5  41.1  0  0  0  0  0
System:      147.0      0.3      0  40.8  .  .  0  116675.8  147  0  0  0  0  0
-----
01:17:00      37 40.0  0.6  0  31.6      0.6      0  0.0  0  1.8  0  61488.6  31.6  0  0  0  0  0
              1  31.6      0  0  0.0  .  .  0  38082.6  31.6  0  0  0  0  0
              2  36.0      0  0  23.4  .  .  0  11892.1  36.0  0  0  0  0  0
              3  37.2      0  0  23.4  .  .  0  24317.3  37.2  0  0  0  0  0
System:      136.5      0.6      0  46.9  .  .  0  135780.4  136  0  0  0  0  0
-----
01:19:00      43 43.0  0.6  0  32.5      0.9      0  0.1  0  1.8  0  96738.4  32.5  0  0  0  0  0
              1  34.2      0  0  0.1  .  .  0  53972.1  34.2  0  0  0  0  0
              2  34.8      0  0  23.4  .  .  0  35320.3  34.8  0  0  0  0  0
              3  33.7      0  0  23.4  .  .  0  44696.5  33.7  0  0  0  0  0
System:      135.2      0.9      0  47.0  .  .  0  230727.3  135  0  0  0  0  0
-----
01:21:00      42 40.0  0.6  0  30.3      0.9      0  0.1  0  1.8  0  37784.0  30.3  0  0  0  0  0
              1  30.2      0  0  0.1  .  .  0  75857.8  30.2  0  0  0  0  0
              2  36.9      0  0  23.6  .  .  0  50984.8  36.9  0  0  0  0  0
              3  38.5      0  0  23.6  .  .  0  51062.0  38.5  0  0  0  0  0
System:      135.9      0.9      0  47.3  .  .  0  215688.6  136  0  0  0  0  0
-----
01:22:00      37 40.0  0.5  0  33.3      2.6      0  0.1  0  1.8  0  1593.2  33.3  0  0  0  0  0
              1  32.0      0  0  0.1  .  .  0  1442.6  32.0  0  0  0  0  0
              2  39.6      0  0  23.9  .  .  0  685.5  39.6  0  0  0  0  0
              3  39.7      0  0  23.9  .  .  0  772.7  39.7  0  0  0  0  0
System:      144.6      2.6      0  47.9  .  .  0  4493.9  145  0  0  0  0  0
-----

```

ESACPUA – CPU Utilization Analysis (Part 2) showed:

- There were a high amount of spin locks during the time of the issue
- It shows 4 threads (SMT on, 2 vCPUs), 2 100% busy

```

Report: ESACPUA          CPU Utilization Analysis          Velocity Software Corp
Monitor initialized: 07/07/22 at 01:00:00 on 3906 serial 03FCD8      First record analyzed:
-----
<----Load---->      <CPU percents><--Internal (per second)--> SIGP <--Spin Locks-->
<--Ursr--> Tran      Totl Ovrhead Diag Inst      SIE Fast Page Rate Proc ms/ rate
Time  Actv In Q /sec CPU Util  Usr Sys nose Sim intrcp path fault /sec Pct spin /sec
-----
01:19:00  43 43.0  0.6  0   100 3.1 3.6  95K  95K  96427 0.08 232.5  0 0.01 0.00 117.0
          1   100 1.7 1.6  53K  53K  53716 9.01 164.1  0.0 0.00 0.00  98.4
          2   76.4 1.2 1.0  35K  35K  35157 0.02 144.4  0.0 0.18 0.03  55.07
          3   76.4 1.4 1.4  44K  44K  44524 0.08  0.9  0.0 0.17 0.03  65.27
System:                353 7.5 7.6 227K 228K 229824 9.20 542.0  0.0 0.37 0.01 335.7
-----
01:21:00  42 40.0  0.6  0   100 1.3 2.1  37K  37K  37745 0.05  3.6  0 0.03 0.00  2852
          1   100 2.5 2.4  75K  75K  75839 0.16  4.8  0.0 0.02 0.00  548.3
          2   76.1 1.9 1.8  51K  51K  50966 0.02  7.1  0.0 0.57 0.03  198.9
          3   76.1 1.8 1.8  51K  51K  51003 0.05  1.5  0.0 0.40 0.02  223.3
System:                352 7.5 8.1 213K 214K 215552 0.28  17.1  0.0 1.02 0.00  3823
-----
01:22:00  37 40.0  0.5  0   100 0.5 1.2 55.3  516 1756.0 0.08  60.5  0 0.00 0.00  6.236
          1   100 0.5 0.3 45.2  443 1626.9 0.13  56.5  0.0 0.00 0.00  7.003
          2   75.7 0.2 0.2  149 303  622.8 0.05  17.4  0.0 0.15 0.31  4.702
          3   75.7 0.3 0.2  26.9 341  807.9 0.10  56.9  0.0 0.13 0.28  4.652
System:                352 4.0 3.7  165 3049  11306 0.43 219.9  3.0 0.01 0.00 281.9
-----
01:23:00  37 42.0  0.4  0   100 1.4 1.8 60.6  986 3989.1 0.07  90.3  0.8 0.00 0.00  85.82
          1   100 1.2 0.8 36.6  817 3580.2 0.05  47.0  1.8 0.00 0.00  82.28
          2   76.1 0.6 0.5 38.2  389 1536.0 0.13  45.1  0.2 0.00 0.00  55.17
          3   76.1 0.8 0.6 30.1  857 2200.7 0.18  37.5  0.2 0.00 0.00  58.60
System:                352 4.0 3.7  165 3049  11306 0.43 219.9  3.0 0.01 0.00 281.9

```

ESAUSR3 – User Resource Utilization showed:

- The dispatch rates for TheUsrs group (containing the Linux servers)
- The dispatch rate during the problem period was suddenly extremely high

```
Report: ESAUSR3      User Resource Utilization - Part 2  Velocity Software Corp  ZMAP 5.1.
Monitor initialized: 07/07/22 at 01:00:00 on 390rst record analyzed: 07/07/22 01:00:00
```

UserID /Class	DASD		MDisk		Virt		Cache		<--Messages Queued-->			<Message-->		<Dispatch-->	
	I/O	Block I/O	Cache Hits	Disk I/O	Hit Pct	<Transfers> IUCV	VMCF	Send	Recv	Reply	VMCF	IUCV	VMCF	Rate/Sec	Disp Waits

07/07/22															
01:16:00	24742	0	6	100	0.4	5680	6	0	19	0	1	0	0	115K	115K
TheUsrs	24662	0	0	100	0.4	32	0	0	0	0	0	0	0	115K	115K

01:17:00	19247	0	33	1089	5.5	3412	6	0	19	0	1	0	0	134K	134K
TheUsrs	19169	0	0	1089	5.4	152	0	0	0	0	0	0	0	134K	134K

01:18 - data missing															

01:19:00	12105	0	16	764	6.1	6365	12	9	19	0	1	0	0	230K	230K
TheUsrs	12037	0	0	764	6.0	87	0	9	0	0	0	0	0	230K	230K

01:21:00	14040	0	12	299	2.2	6371	12	14	19	0	1	0	0	216K	216K
TheUsrs	13986	0	0	299	2.1	55	0	14	0	0	0	0	0	215K	215K

ESADIAG – User Resource Utilization showed:

- The amount of DIAG 44 instructions
- The rate during the problem was suddenly extremely high

```

Report: ESADIAG          Diagnose Rate Report          Velocity Software Corporate  ZMAP 5.1.4
Monitor initialized: 07/07/22 at 01:00:00 on 3906 serial 03FCDS  First record analyzed: 07/07/22 01:00:00
-----
Date      CPU <--Total-->  <-----Diagnose Counts per Second-----
/Time     <Diags/Sec>    DIAG: Rate DIAG:Rate  DIAG: Rate  DIAG: Rate  DIAG: Rate  DIAG: Rate  DIAG: Rate  DIAG:
      User  IBM
-----
07/07/22
01:16:00  0    0  7381  000C:  0.1 0024:  0.0 0044: 7354 005C:   0 0068:  0.0 009C: 20.1 00A4:  1.3
           1    0 14657  000C:   0 0024:   0 0044:  14K 005C:   0 0068:   0 009C:  170 00A4:   0
           2    0 68079  000C:  0.0 0024:   0 0044:  68K 005C:  0.0 0068:  0.1 009C: 30.5 00A4:   0
           3    0 19679  000C:   0 0024:   0 0044:  20K 005C:   0 0068:   0 009C: 41.7 00A4:   0
-----
01:17:00  0    0 57705  0024:  0.0 0040:  0.0 0044:  58K 0064:  0.0 0068:  0.0 009C: 20.4 00A4:  1.1
           1    0 36436  0024:   0 0040:   0 0044:  36K 0064:   0 0068:  0.0 009C:  166 00A4:  0.1
           2    0 10198  0024:   0 0040:   0 0044:  10K 0064:   0 0068:   0 009C:  92.8 00A4:   0
           3    0 22992  0024:   0 0040:   0 0044:  23K 0064:   0 0068:  0.0 009C: 18.1 00A4:   0
-----
01:19:00  0    0 95197  0008:  0.0 000C:   0 0024:  0.1 0044:  95K 005C:  0.0 0068:  0.0 009C: 11.4
           1    0 53125  0008:   0 000C:   0 0024:   0 0044:  53K 005C:   0 0068:  0.0 009C:   3.9
           2    0 34665  0008:  0.0 000C:  0.0 0024:   0 0044:  35K 005C:  0.0 0068:   0 009C: 10.1
           3    0 44118  0008:   0 000C:   0 0024:   0 0044:  44K 005C:   0 0068:  0.0 009C: 15.6
-----
01:21:00  0    0 36983  0008:  0.0 000C:  0.1 0024:  0.1 0044:  37K 005C:  0.0 0068:  0.0 009C: 13.2
           1    0 74968  0008:   0 000C:   0 0024:   0 0044:  75K 005C:   0 0068:  0.0 009C: 21.6
           2    0 50531  0008:  0.0 000C:  0.0 0024:   0 0044:  51K 005C:  0.0 0068:  0.0 009C:   5.3
           3    0 50666  0008:   0 000C:   0 0024:   0 0044:  51K 005C:   0 0068:   0 009C: 82.2
-----
01:22:00  0    0  55.3  0024:  0.0 0044:  0.0 005C:  0.6 0068:  0.0 0098:  0.1 009C: 36.3 00A4:  0.8
           1    0  45.2  0024:   0 0044:   0 005C:   0 0068:  0.1 0098:  0.0 009C: 29.4 00A4:   0
           2    0 149.0  0024:   0 0044:   0 005C:   0 0068:   0 0098:   0 009C:  141 00A4:   0
           3    0  26.9  0024:   0 0044:   0 005C:   0 0068:  0.0 0098:  0.0 009C: 23.6 00A4:   0
-----

```

Performance Enhancement Suggestions:

1 - Add another engine

- The affected LPAR had only two IFL's running
 - Each IFL was running 95-100%
 - This caused the top Linux servers to wait on CPU

Performance Enhancement Suggestions:

2 – Change the engine count for the Linux servers

- Each of the Linux servers has two vCPUs
 - Only one vCPU is needed per server
 - Having two vCPUs per server caused unnecessary cache contention
 - Possibly update the SHARE for each server, if needed

Performance Enhancement Suggestions:

3 – Upgrade Linux servers to change DIAG 44 to DIAG 9C

- The Linux server group was doing a large amount of DIAG 44 instructions for locking - (Shown on ESADIAG and ESAPLDV)
 - Older Linux systems use DIAG 44 – those systems need to be upgraded to take advantage of DIAG 9C
 - DIAG 9C is a much more efficient and safe way to do locking

What the customer reported:

- Several of the Linux servers that were doing DIAG 44 instructions were decommissioned
- A third IFL was added to the LPAR
- No more issues were reported