Task Activity Analysis
Page application
Tue, Feb 17, 1998

Task activity diagnostics can be optionally collected and recorded into a data stream. (See the document Task Timing for IRMs for more details on this.) This note describes a page application designed to present the data so collected for analysis.

Page layout for TASK

```
6 TASK EXECUTION   02/17/98 1408
NODE<0562> #RCVD=  64 LIST<0576>
TASK=0000 – ETIM=   0 TIME=0000
UPDT   0000    .1  1407:35–14+ 5
QMON   0000    .07 1407:35–14+ 5
IDLE   0000  34.83 1407:35–14+ 5
CONS   0000    .07 1407:35–14+40
SERV   0000    .07 1407:35–14+40
IDLE   0000  26.54 1407:35–14+40
QMON   0000    .05 1407:36–00+ 0
UPDT   0000   2.68 1407:36–00+ 0
QMON   0001    .15 1407:36–00+ 3
DTIM   0000    .08 1407:36–00+ 3
ALRM   0000   1.21 1407:36–00+ 3
```

Operation of TASK

This page design is similar to several others that display the contents of diagnostic data streams, such as that which shows recent network frame activity. The user specifies on rows 2 and 3 the data to be displayed and optionally printed to a serial port. Enter the node# whose task activity diagnostics are to be captured. Enter the node whose serial port is to be targeted for printing. Interrupt on that line to initiate data collection and display. Normally, the request for task data is made for 4K bytes, which includes about 250 records. But one can request a 1K byte short sample by interrupting on row 2 at the cursor position immediately following the first > sign and before the # sign. In either case, the records collected are the most recently written, as of the time that the request is fulfilled.

On row 3 are the parameters that can be used to filter the output. One can select which tasks are to be included in the listing, the elapsed time of task execution, and the time-of-day. (Normally the time-of-day option would not be useful, because the data stream wraps very quickly under normal conditions of task activity.) One may want to dosplay only tasks whose elapsed time of execution exceeds a certain time, for example. But the most likely filter option is that which includes only a certain set of tasks. Here is the (short) listing without filtering:

```
6 TASK EXECUTION   02/17/98 1407
NODE<0562> #RCVD=  64 LIST<0576>
TASK=0000 – ETIM=   0 TIME=0000
Task   Evnt   ETim HrMn:Sc–Cy+ms
IDLE   0000  35.74 1407:35–10+ 4
Cons   0000    .07 1407:35–10+40
```

```
Serv    0000      .07  1407:35-10+40
IDLE    0000    26.53  1407:35-10+40
QMon    0000      .05  1407:35-11+ 0
Updt    0000     3.18  1407:35-11+ 0
QMon    0001      .22  1407:35-11+ 3
DTim    0000      .08  1407:35-11+ 3
Alrm    0000     1.17  1407:35-11+ 3
Appl    0000      .13  1407:35-11+ 4
Alrm    0000      .04  1407:35-11+ 5
Updt    0000      .09  1407:35-11+ 5
QMon    0000      .07  1407:35-11+ 5
IDLE    0000    34.97  1407:35-11+ 5
Cons    0000      .06  1407:35-11+40
Serv    0000      .07  1407:35-11+40
IDLE    0000    26.54  1407:35-11+40
QMon    0000      .05  1407:35-12+ 0
Updt    0000     2.54  1407:35-12+ 0
QMon    0001      .15  1407:35-12+ 2
DTim    0000      .08  1407:35-12+ 3
Alrm    0000     1.19  1407:35-12+ 3
Appl    0000      .13  1407:35-12+ 4
Alrm    0000      .04  1407:35-12+ 4
Updt    0000      .09  1407:35-12+ 4
QMon    0000      .07  1407:35-12+ 4
IDLE    0000    35.67  1407:35-12+ 4
Cons    0000      .07  1407:35-12+40
Serv    0000      .09  1407:35-12+40
IDLE    0000    26.52  1407:35-12+40
QMon    0000      .05  1407:35-13+ 0
Updt    0000     2.52  1407:35-13+ 0
QMon    0001      .15  1407:35-13+ 2
DTim    0000      .08  1407:35-13+ 2
Alrm    0000     1.17  1407:35-13+ 2
Appl    0000      .12  1407:35-13+ 4
Alrm    0000      .03  1407:35-13+ 4
Updt    0000      .09  1407:35-13+ 4
QMon    0000      .07  1407:35-13+ 4
IDLE    0000    16.46  1407:35-13+ 4
SNAP    0000      .16  1407:35-13+20
Clas    0000      .16  1407:35-13+20
IDLE    0000    18.96  1407:35-13+21
Cons    0000      .08  1407:35-13+40
Serv    0000      .07  1407:35-13+40
IDLE    0000    26.5   1407:35-13+40
QMon    0000      .05  1407:35-14+ 0
Updt    0000     2.54  1407:35-14+ 0
QMon    0001      .16  1407:35-14+ 2
DTim    0000      .08  1407:35-14+ 2
Alrm    0000     1.16  1407:35-14+ 3
Appl    0004      .97  1407:35-14+ 4
Alrm    0000      .04  1407:35-14+ 5
Updt    0000      .1   1407:35-14+ 5
```

```
QMon    0000      .07 1407:35-14+ 5
IDLE    0000    34.83 1407:35-14+ 5
Cons    0000      .07 1407:35-14+40
Serv    0000      .07 1407:35-14+40
IDLE    0000    26.54 1407:35-14+40
QMon    0000      .05 1407:36-00+ 0
Updt    0000     2.68 1407:36-00+ 0
QMon    0001      .15 1407:36-00+ 3
DTim    0000      .08 1407:36-00+ 3
Alrm    0000     1.21 1407:36-00+ 3
```

Display filtering

Task filtering is done by specifying a mask, where each bit selects a specific task. Here is the list of tasks and their associated mask bits. They are the same masks used for lighting up the task LEDs.

```
IDLE   0000   Idle Task (when no other task needs to run)
Clas   0001   Classic Protocol Task
Alrm   0002   Alarms Scanning Task
Cons   0004   Console Task (for little console data or Page G access)
Appl   0008   Page Application Task
SDmp   0010   Small Memory Dump Task (last line of page display)
DTim   0020   Date and Time Task
Updt   0040   Update Task (updates data pool, sends replies, flushes net.
QMon   0080   Queue Monitor Task (system housekeeping)
Serv   0100   Data Server Task (sends server replies)
Serl   0200   Serial Task (handles serial port input)
ANet   0400   Acnet Protocols Task
DZRq   0800   D0 Protocol Task
ACRq   1000   Acnet RETDAT/SETDAT Task
SNAP   2000   SNAP Task (supports Internet Protocol family)
       4000   spare
       8000   spare
```

If filtering were used on the above data, in order to select the SNAP, Serv, Updt, Appl, and Clas tasks, one would use a mask of 2149 and would therefore get the following abbreviated listing:

```
6 TASK EXECUTION  02/17/98 1509
NODE<0562> #RCVD=  64 LIST<0576>
TASK=2149 - ETIM=   0 TIME=0000
Task    Evnt    ETim HrMn:Sc-Cy+ms
Serv    0000      .07 1407:35-10+40
Updt    0000     3.18 1407:35-11+ 0
Appl    0000      .13 1407:35-11+ 4
Updt    0000      .09 1407:35-11+ 5
Serv    0000      .07 1407:35-11+40
Updt    0000     2.54 1407:35-12+ 0
Appl    0000      .13 1407:35-12+ 4
Updt    0000      .09 1407:35-12+ 4
Serv    0000      .09 1407:35-12+40
```

```
Updt    0000    2.52 1407:35–13+ 0
Appl    0000     .12 1407:35–13+ 4
Updt    0000     .09 1407:35–13+ 4
SNAP    0000     .16 1407:35–13+20
Clas    0000     .16 1407:35–13+20
Serv    0000     .07 1407:35–13+40
Updt    0000    2.54 1407:35–14+ 0
Appl    0004     .97 1407:35–14+ 4
Updt    0000     .1  1407:35–14+ 5
Serv    0000     .07 1407:35–14+40
Updt    0000    2.68 1407:36–00+ 0
```

The filtering on elapsed time specifies a decimal 4-digit value of raw units of time. For IRMs, the time units are microseconds. For the 133-based VME stations, the time units are half-milliseconds. The user just has to know which is which, although the values of elapsed time displayed on the listing should provide a major hint. The microseconds are rounded to the nearest 10 microsecond value and displayed in milliseconds. The VME station elapsed time values are also shown in milliseconds.

When making such measurements, one must be aware that the entire 4K-byte data stream queue typically wraps in about one second. To get task data for s given experimental setup, one has to be very quick in issuing the request by an interrupt on row 2 of this page. If one chooses the short request option of only 1K bytes, one may have to be even quicker.