

AN-013 Serial line & LAT terminal performance in CHARON-VAX

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The performance of serial line emulation in CHARON-VAX using LAT terminal servers was tested on a Windows 2000 system. The performance was measured with different numbers of lines and transfer speeds, with both single and dual CPU hosts.

Configuration used

Component	Description	Software
Base system	Intel P2 system 500 Mhz, 1CPU/2CPU's 64Mb RAM S3 video board SCSI adapter NCR FDD 3.5"	W2000 installed CHARON-VAX build 11778
Disks	IBM 9 GB IDE ATA	
Network	4 port card on Digital 143 chipset	
Peripherals	VT100 Terminal	
LAT devices	DECserver 90L DECserver 90L+	With loop-back connector

Test procedure

Two types of tests were each performed on two hardware configurations (A dual CPU system and a one CPU system) for 3 different speeds (38400bps, 19200bps and 9600bps) and a different number of lines (8,16 and 32) in loop-back mode. The first type sends files with a fixed size to the LAT terminals. The second type copies a number of 32 bytes blocks to the LAT terminals.

Test №	Test Title
1.1	Testing LAT terminals by copying a test file to each of the terminals with COPY command
1.2	Testing LAT terminals with TSTLAT utility (32 byte blocks)

The time for 1.1.test passes was found manually using the system clock; several measurements (usually 7-10) were done. The speed & time for them indicated in the following tables are averages. The 1.2 tests reported the time and performance automatically.

Test conclusion

1. LAT works well on both single and dual CPU host systems. Up to 32 terminal lines are handled without problems.
2. The LAT throughput is approximately 1.5-2 times larger on a dual CPU system compared to a single CPU host.

Test Results for a dual CPU system

LAT Terminal server; every port set at 38400 bps

No of lines	Test 1.1			Test 1.2		
	Bytes	Time (sec)	Speed (Bytes/s)	Bytes	Time (sec)	Speed (Bytes/s)
8	159232	49	3249.63	159232	50	3184.64
16	159232	67	2376.60	159232	72	2211.56
32	159232	72	2211.56	159232	150	1047.58

LAT Terminal server; every port set at 19200bps

No of lines	Test 1.1			Test 1.2		
	Bytes	Time (sec)	Speed (Bytes/s)	Bytes	Time (sec)	Speed (Bytes/s)
8	159232	92	1730.78	159232	85	1873.32
16	159232	103	1545.94	159232	85	1873.32
32	159232	103	1545.94	159232	154	1033.97

LAT Terminal server; every port set at 9600bps

No of lines	Test 1.1			Test 1.2		
	Bytes	Time (sec)	Speed (Bytes/s)	Bytes	Time (sec)	Speed (Bytes/s)
8	159232	172	925.77	159232	170	936.66
16	159232	172	925.77	159232	170	936.66
32	159232	191	833.68	159232	170	936.66

Test Results for a single CPU system

LAT Terminal server; every port set at 38400 bps

No of lines	Test 1.1			Test 1.2		
	Bytes	Time (sec)	Speed (Bytes/s)	Bytes	Time (sec)	Speed (Bytes/s)
8	159232	82	1941.85	159232	86	1851.53
16	159232	127	1253.80	159232	145	1098.15
32	159232	155	1027.90	159232	250	632.92

LAT Terminal server; every port set at 19200bps

No of lines	Test 1.1			Test 1.2		
	Bytes	Time (sec)	Speed (Bytes/s)	Bytes	Time (sec)	Speed (Bytes/s)
8	159232	93	1712.17	159232	88	1809.45
16	159232	122	1305.18	159232	149	1068.67
32	159232	155	1027.30	159232	240	663.47

LAT Terminal server; every port set at 9600bps

No of lines	Test 1.1			Test 1.2		
	Bytes	Time (sec)	Speed (Bytes/s)	Bytes	Time (sec)	Speed (Bytes/s)
8	159232	174	915.13	159232	176	904.73
16	159232	173	920.42	159232	174	915.13
32	159232	225	707.70	159232	248	642.06

Note: The difference between the Tests 1.1 and 1.2 is a result of the VMS processing of "submit" requests, impact of VMS internal queues, etc. Because of that, the test 1.2 gives a more realistic result. At 32 ports @ 9600 bps, the port speed is still the limiting factor for a dual CPU host.