

VMware® VMmark™ V1.1.1 Results

Vendor and Hardware Platform: Fujitsu RX200 S6
 Virtualization Platform: VMware ESX 4.0 Update 2 (build 261974)

**VMmark V1.1.1 Score =
35.09 @ 27 Tiles**

Tested By: Fujitsu

Test Date: 07-24-2010

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Performance

	webserver		javaserver		mailserver		fileserver		database		
TILE_0	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1570.60	1.54	17648.42	1.06	1524.88	1.39	15.14	1.18	2094.22	1.40	1.30
p1	1591.67	1.56	18091.12	1.09	1576.97	1.44	15.18	1.18	2102.60	1.41	1.32
p2	1598.42	1.57	18142.20	1.09	1551.53	1.41	15.34	1.20	2101.78	1.41	1.32
TILE_1	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1459.28	1.43	18142.83	1.09	1149.65	1.05	14.97	1.17	2087.10	1.40	1.22
p1	1541.58	1.51	18141.58	1.09	1241.90	1.13	15.04	1.17	2093.70	1.40	1.25
p2	1538.65	1.51	17691.03	1.06	1189.97	1.08	15.16	1.18	2094.72	1.40	1.24
TILE_2	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1557.12	1.53	17727.33	1.07	1431.78	1.31	15.10	1.18	2086.40	1.40	1.28
p1	1584.42	1.55	18149.38	1.09	1609.47	1.47	14.99	1.17	2086.62	1.40	1.32
p2	1585.92	1.56	18137.40	1.09	1540.95	1.40	14.93	1.16	2085.50	1.40	1.31
TILE_3	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1549.88	1.52	18137.62	1.09	1495.12	1.36	15.22	1.19	2098.32	1.41	1.30
p1	1591.10	1.56	18107.22	1.09	1601.78	1.46	15.30	1.19	2096.65	1.40	1.33
p2	1588.85	1.56	17602.30	1.06	1578.67	1.44	15.27	1.19	2100.62	1.41	1.32
TILE_4	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1509.10	1.48	18067.25	1.09	1562.83	1.42	15.07	1.17	2089.50	1.40	1.30
p1	1537.92	1.51	17634.62	1.06	1571.40	1.43	15.31	1.19	2097.32	1.41	1.31
p2	1535.10	1.51	18116.47	1.09	1510.22	1.38	15.20	1.18	2092.15	1.40	1.30
TILE_5	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1499.75	1.47	18059.67	1.09	1503.10	1.37	14.79	1.15	2092.43	1.40	1.29
p1	1533.83	1.51	17619.85	1.06	1522.72	1.39	15.11	1.18	2093.82	1.40	1.30
p2	1533.45	1.50	18085.15	1.09	1516.40	1.38	15.05	1.17	2084.88	1.40	1.30

TILE_6	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1514.22	1.49	18122.50	1.09	1408.67	1.28	14.88	1.16	2100.18	1.41	1.28
p1	1542.30	1.51	17685.50	1.06	1450.65	1.32	14.95	1.17	2099.70	1.41	1.28
p2	1541.78	1.51	18161.97	1.09	1429.62	1.30	15.14	1.18	2099.40	1.41	1.29
TILE_7	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1578.28	1.55	17643.03	1.06	1409.90	1.29	15.16	1.18	2091.28	1.40	1.28
p1	1598.42	1.57	18098.08	1.09	1410.12	1.29	15.16	1.18	2091.40	1.40	1.29
p2	1598.28	1.57	18127.50	1.09	1443.47	1.32	15.35	1.20	2087.00	1.40	1.30
TILE_8	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1524.47	1.50	18155.03	1.09	1519.55	1.39	15.27	1.19	2103.57	1.41	1.31
p1	1539.25	1.51	17588.70	1.06	1471.53	1.34	15.21	1.19	2100.60	1.41	1.29
p2	1546.78	1.52	18073.83	1.09	1449.70	1.32	15.16	1.18	2106.03	1.41	1.29
TILE_9	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1564.55	1.54	18082.03	1.09	1409.33	1.28	15.03	1.17	2096.35	1.40	1.29
p1	1593.55	1.56	18119.70	1.09	1495.38	1.36	15.05	1.17	2092.60	1.40	1.31
p2	1599.62	1.57	17666.60	1.06	1562.80	1.42	14.98	1.17	2090.72	1.40	1.31
TILE_10	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1448.35	1.42	18090.80	1.09	1384.15	1.26	14.68	1.14	2107.57	1.41	1.26
p1	1543.28	1.51	18098.25	1.09	1513.28	1.38	14.84	1.16	2099.55	1.41	1.30
p2	1536.20	1.51	17638.35	1.06	1527.67	1.39	14.84	1.16	2101.53	1.41	1.29
TILE_11	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1483.35	1.46	18058.45	1.09	1394.70	1.27	14.92	1.16	2101.12	1.41	1.27
p1	1541.03	1.51	18115.95	1.09	1528.95	1.39	15.21	1.19	2098.53	1.41	1.31
p2	1547.35	1.52	17678.95	1.06	1531.80	1.40	15.12	1.18	2091.43	1.40	1.30
TILE_12	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1547.90	1.52	18161.78	1.09	1335.75	1.22	14.86	1.16	2107.15	1.41	1.27
p1	1594.53	1.56	17620.97	1.06	1583.78	1.44	15.08	1.18	2103.05	1.41	1.32
p2	1599.10	1.57	18125.60	1.09	1569.30	1.43	15.17	1.18	2099.65	1.41	1.32
TILE_13	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1488.28	1.46	18116.85	1.09	1360.40	1.24	15.25	1.19	2093.03	1.40	1.27
p1	1528.72	1.50	17683.62	1.06	1478.00	1.35	15.26	1.19	2086.07	1.40	1.29
p2	1547.05	1.52	18116.80	1.09	1496.00	1.36	15.29	1.19	2082.30	1.40	1.30
TILE_14	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1525.10	1.50	18138.88	1.09	1349.47	1.23	15.14	1.18	2097.43	1.41	1.27
p1	1586.95	1.56	18140.38	1.09	1514.40	1.38	15.13	1.18	2086.80	1.40	1.31
p2	1588.25	1.56	17713.78	1.07	1508.30	1.38	15.18	1.18	2086.45	1.40	1.30

TILE_15	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1537.67	1.51	18084.80	1.09	1321.22	1.20	15.04	1.17	2097.60	1.41	1.27
p1	1604.25	1.57	18095.90	1.09	1501.30	1.37	15.28	1.19	2087.97	1.40	1.31
p2	1599.60	1.57	17673.40	1.06	1493.00	1.36	15.19	1.18	2089.03	1.40	1.30
TILE_16	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1535.47	1.51	18088.92	1.09	1299.67	1.18	14.85	1.16	2093.50	1.40	1.26
p1	1607.05	1.58	17696.85	1.07	1508.83	1.38	15.04	1.17	2084.25	1.40	1.30
p2	1607.22	1.58	18123.35	1.09	1451.05	1.32	14.97	1.17	2079.10	1.39	1.30
TILE_17	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1462.67	1.44	18066.00	1.09	1277.78	1.17	14.94	1.16	2104.65	1.41	1.24
p1	1540.47	1.51	18121.05	1.09	1381.88	1.26	15.17	1.18	2091.68	1.40	1.28
p2	1536.78	1.51	17686.65	1.06	1429.67	1.30	15.16	1.18	2092.35	1.40	1.28
TILE_18	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1558.62	1.53	18116.70	1.09	1200.85	1.09	15.26	1.19	2098.80	1.41	1.25
p1	1600.28	1.57	17691.33	1.06	1476.50	1.35	15.12	1.18	2093.45	1.40	1.30
p2	1592.97	1.56	18130.90	1.09	1506.40	1.37	15.21	1.19	2092.80	1.40	1.31
TILE_19	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1527.78	1.50	18136.35	1.09	1209.58	1.10	15.22	1.19	2089.68	1.40	1.25
p1	1597.17	1.57	17698.17	1.07	1427.15	1.30	15.09	1.18	2080.45	1.39	1.29
p2	1593.75	1.56	18117.40	1.09	1495.70	1.36	15.05	1.17	2078.65	1.39	1.31
TILE_20	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1491.95	1.46	18055.53	1.09	1274.10	1.16	15.14	1.18	2112.68	1.42	1.25
p1	1529.12	1.50	18078.85	1.09	1486.12	1.35	15.11	1.18	2105.65	1.41	1.30
p2	1521.10	1.49	18100.75	1.09	1505.15	1.37	15.04	1.17	2105.55	1.41	1.30
TILE_21	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1560.17	1.53	18100.00	1.09	1221.45	1.11	15.00	1.17	2100.90	1.41	1.25
p1	1589.92	1.56	18127.78	1.09	1463.90	1.33	15.23	1.19	2097.47	1.41	1.31
p2	1594.10	1.56	18156.83	1.09	1508.22	1.38	15.03	1.17	2097.45	1.41	1.31
TILE_22	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1509.25	1.48	18108.20	1.09	1189.12	1.08	15.14	1.18	2094.75	1.40	1.24
p1	1531.42	1.50	18114.05	1.09	1465.60	1.34	15.31	1.19	2091.62	1.40	1.30
p2	1528.00	1.50	18110.85	1.09	1549.80	1.41	15.16	1.18	2088.85	1.40	1.31
TILE_23	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1537.12	1.51	18082.53	1.09	1216.72	1.11	14.96	1.17	2012.33	1.35	1.23
p1	1597.75	1.57	18086.33	1.09	1418.08	1.29	15.13	1.18	2012.20	1.35	1.29
p2	1598.30	1.57	18107.10	1.09	1524.55	1.39	15.09	1.18	2004.45	1.34	1.30

TILE_24	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1509.28	1.48	18076.88	1.09	1146.62	1.05	14.87	1.16	2103.32	1.41	1.22
p1	1536.08	1.51	18079.65	1.09	1424.70	1.30	15.02	1.17	2106.12	1.41	1.29
p2	1537.03	1.51	18117.22	1.09	1426.72	1.30	15.21	1.19	2102.97	1.41	1.29
TILE_25	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1494.60	1.47	18105.90	1.09	1145.83	1.04	15.07	1.17	2103.30	1.41	1.23
p1	1538.22	1.51	18140.00	1.09	1449.40	1.32	15.10	1.18	2101.12	1.41	1.29
p2	1534.15	1.51	18114.75	1.09	1511.10	1.38	15.14	1.18	2102.93	1.41	1.30
TILE_26	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	Actual	Ratio	GM
p0	1540.92	1.51	18076.20	1.09	1175.88	1.07	15.18	1.18	2106.85	1.41	1.24
p1	1589.85	1.56	18111.80	1.09	1427.30	1.30	15.14	1.18	2105.32	1.41	1.30
p2	1591.55	1.56	18157.35	1.09	1599.67	1.46	15.09	1.18	2102.10	1.41	1.33
p0_score:	34.13										
p1_score:	35.09										
p2_score:	35.17										
Unreviewed_VMmark_Score:	35.09										

Configuration

Server and Network	
Server Manufacturer and Model	Fujitsu RX200 S6
Processor Vendor and Model	Six-core Intel Xeon X5680
Processor Speed (GHz)	3.33
Total Sockets/Total Cores/Total Threads	2 Sockets / 12 Cores / 24 Threads
Primary Cache	32KB I + 32KB D on chip per core
Secondary Cache	256KB I+D on chip per core
Other Cache	12MB I+D on chip per chip L3
BIOS Version	Rev R1.02.3031
Memory Size (in GB, Number of DIMMs)	192GB, 12
Memory Type and Speed	16GB per DIMM, 1066MHz quad rank registered ECC DDR3(running at 800MHz)
Disk Subsystem Type	FC SAN
Number of Disk Controllers	1 (unused)
Number of Host Bus Adapters	1
Host Bus Adapter Vendors and Models	1 dual-channel Emulex LPe12002
Number of Network Controllers	2

Network Controller Vendors and Models	One integrated Intel 82575EB dual port 1GbE Adapter, one Intel 10 Gigabit X520-DA2 dual port server adapter
Network Switch Vendors and Models	3xBX600 GbE Switch Blade 30/12, 1xCISCO 4900M
Network Speed	10Gbps for all webserver, database and fileserver VMs, 1Gbps for all remaining VMs and SUT
Other Hardware	None
Other Software	None
Hardware Availability Date (MM-DD-YYYY)	05-20-2010
Software Availability Date (MM-DD-YYYY)	05-20-2010

Virtualization Software

Vendor, Product, Version, and Build	VMware ESX 4.0 Update 2 (build 261974)
Virtualization Type	Hardware
Supplemental Software	None
Virtualization Software Availability Date (MM-DD-YYYY)	06-10-2010

Storage

Array Vendors, Models, and Firmware Versions	9xFujitsu ETERNUS DX80, Firmware version V10L20-0000
Fibre Channel Switch Vendors and Models	Brocade 5100
Disk Space Used	Total 2874GB: 1839GB for VMs, 11GB for Host-OS, 1TB for VM-config and swap
Array Cache Size	2GB
Total Number of Physical Disks Used	196
Total Number of Enclosures/Pods/Shelves Used	17
Total Number of Physical Disks per Enclosures/Pods/Shelves Used	12 except first ETERNUS DX80 with only 4 disks
Total Number of Storage Groups Used	9
Number LUNs Used	Total 41: 39 LUNs for VMs, 1 LUN for Host-OS, 1 LUN for VM-config and swap
LUN Size and Number of Disks Per LUN	11x31GB/6 Disks (Database VMs), 14x18GB/12 Disks (Fileserver VMs), 14x89GB/12 Disks, 1x11GB/4 Disks, 1x1TB/4 Disks
RAID Type	0
Number of Members per RAID Set	ETERNUS DX80[0]: 2, ETERNUS DX80[1-7]: 2/2, ETERNUS DX80[8]: 3/3/3/2

Disk Vendors, Models, and Speeds	192xSeagate, ST3300656SS, 15krpm 4xSeagate, ST3450856SS, 15krpm
Clients	
Number of Clients	27
System Model(s)	BX620 S4
Processor Vendor(s) and Model(s)	Intel Xeon 5130
Processor Speed(s) (GHz)	2
Total Sockets/Total Cores/Total Threads	2 Sockets / 4 Cores / 4 Threads
Memory per Client	3GB
Network Controller Vendors and Models	Broadcom NetXtreme
Operating System, Version, and Service Pack	Microsoft(R) Windows(R) Server 2003 R2 Enterprise Edition, Service Pack 2
Other Hardware	none
Other Software	none

Notes for Workload

Server and Network Notes

- Server BIOS settings:
 - Turbo Boost Technology: Enabled (Intel Turbo Boost up to 3.6GHz, default enabled)
 - Adjacent Cache Line Prefetch: Disabled (default enabled)
 - Hardware Prefetch: Disabled (default enabled)
 - DCU Streamer Disabled (default enabled)
 - Data Reuse Optimizations: Disabled (default enabled)
 - Serial: Disabled (default Auto)
- Emulex HBA BIOS settings:
 - defaults
- vSwitch Configuration:
 - vSwitch0 for Service Console on vmnic2
 - vSwitch1 for all Java/Standby/Mail VMs on vmnic3
 - vSwitch1 configured for 120 Ports (default 56)
 - vSwitch2 for all Database/File VMs on vmnic0
 - vSwitch3 for all Web VMs on vmnic1
- Storage Configuration:
 - ETERNUS DX80[0]
 - RAID set 0, LUN 0: Boot/Console OS
 - RAID set 0, LUN 1: VM-config and swap
 - ETERNUS DX80[1]

RAID set 0, LUN 1: Fileservers for tiles 0 and 2
RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tiles 0 and 2
RAID set 1, LUN 3: Fileserver for tiles 1 and 3
RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 1 and 3

○ ETERNUS DX80[2]

RAID set 0, LUN 1: Fileservers for tiles 4 and 6
RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tiles 4 and 6
RAID set 1, LUN 3: Fileserver for tiles 5 and 7
RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 5 and 7

○ ETERNUS DX80[3]

RAID set 0, LUN 1: Fileservers for tiles 8 and 10
RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tiles 8 and 10
RAID set 1, LUN 3: Fileserver for tiles 9 and 11
RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 9 and 11

○ ETERNUS DX80[4]

RAID set 0, LUN 1: Fileservers for tiles 12 and 14
RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tiles 12 and 14
RAID set 1, LUN 3: Fileserver for tiles 13 and 15
RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 13 and 15

○ ETERNUS DX80[5]

RAID set 0, LUN 1: Fileservers for tiles 16 and 18
RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tiles 16 and 18
RAID set 1, LUN 3: Fileserver for tiles 17 and 19
RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 17 and 19

○ ETERNUS DX80[6]

RAID set 0, LUN 1: Fileservers for tiles 20 and 22
RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tiles 20 and 22
RAID set 1, LUN 3: Fileserver for tiles 21 and 23
RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 21 and 23

○ ETERNUS DX80[7]

RAID set 0, LUN 1: Fileservers for tiles 24 and 26
RAID set 0, LUN 2: Javaser/Mailserver/Standby/Webserver for tiles 24 and 26
RAID set 1, LUN 3: Fileserver for tiles 25
RAID set 1, LUN 4: Javaser/Mailserver/Standby/Webserver for tiles 25

○ ETERNUS DX80[8]

RAID set 0, LUN 1: Database for tiles 0, 4 and 8
RAID set 0, LUN 2: Database for tiles 12, 16 and 20
RAID set 0, LUN 3: Database for tiles 24
RAID set 1, LUN 4: Database for tiles 1, 5 and 9
RAID set 1, LUN 5: Database for tiles 13, 17 and 21
RAID set 1, LUN 6: Database for tiles 25
RAID set 2, LUN 7: Database for tiles 2, 6 and 10
RAID set 2, LUN 8: Database for tiles 14, 18 and 22
RAID set 2, LUN 9: Database for tiles 26

RAID set 3, LUN 10: Database for tiles 3, 7 and 11
RAID set 3, LUN 11: Database for tiles 15, 19 and 23

Virtualization Software Notes

- All VMs were upgraded to hardware version 7
- Virtualized MMU was set to full hardware support for all VMs (default automatic)
- Ethernet adapter type set to vmxnet3 for all VMs
- Logging disabled for all VMs (default enabled)
- Floppy and CDROM removed for all VMs (default enabled)
- Firewall disabled for the Console OS (default enabled)
- CPU.HaltingIdleMsecPenalty = 1929 (default 100)
- CPU.HaltingIdleMsecPenaltyMax = 1961 (default 800)
- CPU.Quantum = 85 (default 50)
- IRQ.RoutingPolicy = 0 (default 2)
- Mem.BalancePeriod was set to 0 (default 15)
- Mem.SamplePeriod was set to 0 (default 60)
- Mem.ShareScanGHz was set to 0 (default 4)
- Net.MaxNetifRxQueueLen=300 (default 100)
- Net.MaxNetifTxQueueLen=1000 (default 500)
- Net.vmxnetThroughputWeight=255 (default 0)
- Numa.PageMigEnable was set to 0 (default 1)
- VGA buffer for all Windows VMs was set to 1310720 Bytes
- VGA buffer for all Linux VMs was set to 1572864 Bytes
- One dedicated LUN(ETERNUS DX80[0]/LUN 1) for the VM configuration/swap files
- /vmkernel/module/ixgbe.o/options = "VMDQ=1,1 InterruptThrottleRate=3000,3000" (defaults 8,8 / 16000,16000)
- /vmkernel/module/lpfc820.o/options = "lpfc_lun_queue_depth=64 lpfc_cr_count=5 lpfc_cr_delay=1" (defaults 31,1,0)
- Used the VMmark AutoPart utility to expand all mailserver data partitions
- Used the new VMmark harness file 'fileservr_functions.xml' from 02/16/2010

Operating System Notes

- Microsoft Windows Server 2003 R2 VMs were updated with Service Pack 2
- Standby server and mail server were updated with KB955839

Software Notes

- none

Client Notes

- Microsoft Windows Server 2003 R2 Clients were updated with Service Pack 2 and KB955839

Other Notes

- Memory speed with 2 quad rank DIMMs per channel is limited to 800 MHz
- The following parameters were altered from their default values in VMMARK.CONFIG
 - Database/DELAYTIME=20 (default 360)
 - Fileservr/DELAYTIME=0 (default 450)

JavaServer/DELAYTIME=10 (default 540)
MailServer/DELAYTIME=15 (default 5)
Standby/DELAYTIME=0 (default 170)
TILEDELAY=120 (default 600)
WebServer/DELAYTIME=25 (default 180)

This is a full disclosure report for a VMmark benchmark result. All published VMmark results must be from fully-compliant tests for which a full disclosure report is publicly available.

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