



Portable Product Sheets – Routing Performance

Router Switching Performance in Packets Per Second (PPS)

Numbers are given with 64 byte packet size, IP only, and are only an indication of *raw* switching performance. These are testing numbers, usually with FE to FE, GigE to GigE or POS to POS, no services enabled. As you add ACL's, encryption, compression, etc - performance will decline significantly from the given numbers, unless it is a hardware-assisted platform, such as the ASR 1000, 7600 or 12000, which process QoS, ACL's, and other features in hardware (or when a hardware assist is installed, for instance an AIM-VPN in a 3745 will offload the encryption from the CPU). Every situation is different - please simulate the true environment to get applicable performance values.

Knowing the performance for a specific router platform is not a good indication of how well a specific feature will perform. If a feature is supported in the CEF path, for instance, and we know the feature-free CEF throughput in a specific configuration, then we only know the platform's "never-to-exceed" performance but we do not know the actual performance of any given feature, which will always be less.

All numbers are for IP packets only - no IPX/AT/DEC, etc. - Mbps calculated by pps * 64bytes * 8bits/byte; **except for 12000 (Engines 0, 1, 2, 3 & 5) where these numbers represent the maximum mbps forwarding rates when packets are greater than 64 bytes. Please see inserted comments in this field.**

Table 1. Router Performance Matrix

| Platform | Process Switching | | Fast/CEF Switching | | EOS? |
|---------------|-------------------|--------|--------------------|--------|-----------|
| | PPS | Mbps | PPS | Mbps | |
| 801,805 | 1,000 | | | 0.51 | 15-Apr-07 |
| 806 | | | 7,000 | 3.58 | 30-Apr-04 |
| 830 | | | 8,500 | 4.35 | 5-Jul-06 |
| 850 | | | 10,000 | 5.12 | No |
| 860 | | | 25,000 | 12.80 | No |
| 870 | | | 25,000 | 12.80 | No |
| 880 | | | 50,000 | 25.60 | No |
| 890 | | | 100,000 | 51.20 | No |
| 14xx | 600 | 0.3072 | 4,000 | 2.05 | 31-Aug-00 |
| 160x(-R) | 600 | 0.3072 | 4,000 | 2.05 | 28-Feb-03 |
| 1701 | 1,700 | 0.8704 | 12,000 | 6.14 | 27-Mar-07 |
| 1710 | 1,300 | 0.6656 | 7,000 | 3.58 | 30-Jul-04 |
| 1711-1712 | 1,700 | 0.8704 | 13,500 | 6.91 | 27-Mar-07 |
| 1720 | 1,400 | 0.7168 | 8,500 | 4.35 | 1-Aug-03 |
| 1721 | 1,700 | 0.8704 | 12,000 | 6.14 | 27-Mar-07 |
| 1750 | 1,400 | 0.7168 | 8,500 | 4.35 | 31-May-02 |
| 1751 | 1,500 | 0.768 | 12,000 | 6.14 | 27-Mar-07 |
| 1760 | 1,700 | 0.8704 | 16,00 | 8.19 | 27-Mar-07 |
| ISR 1801-1812 | | | 70,000 | 35.84 | No |
| ISR 1841 | | | 75,000 | 38.40 | No |
| ISR 1861 | | | 146,142 | 74.82 | No |
| ISR G2 1941 | | | 299,000 | 153.08 | No |
| 2500 | 800 | 0.4096 | 4,400 | 2.25 | 30-Apr-02 |
| 261X | 1,500 | 0.768 | 15,000 | 7.68 | 26-Apr-03 |



| Platform | Process Switching | | Fast/CEF Switching | | EOS? |
|--------------|-------------------|--------|-------------------------------|----------------|-----------|
| | PPS | Mbps | PPS | Mbps | |
| 262X | 1,500 | 0.768 | 25,000 | 12.80 | 26-Apr-03 |
| 265X | 2,000 | 1.024 | 37,000 | 18.94 | 26-Apr-03 |
| 261X(XM) | 1,500 | 0.768 | 20,000 | 10.24 | 27-Mar-07 |
| 262X(XM) | 1,500 | 0.768 | 30,000 | 15.36 | 27-Mar-07 |
| 265X(XM) | 2,000 | 1.024 | 40,000 | 20.48 | 27-Mar-07 |
| 2691 | 7,400 | 3.7888 | 70,000 | 35.84 | 27-Mar-07 |
| ISR 2801 | 3,000 | 1.536 | 90,000 | 46.08 | No |
| ISR 2811 | 3,000 | 1.536 | 120,000 | 61.44 | No |
| ISR 2821 | 11,500 | 5.888 | 170,000 | 87.04 | No |
| ISR 2851 | 15,000 | 7.68 | 220,000 | 112.64 | No |
| 3620 | 2,000 | 1.024 | 20,000 – 40,000 | 10 - 20 | 31-Dec-03 |
| ISR G2 2901 | | | 327,000 | 167.42 | No |
| ISR G2 2911 | | | 353,000 | 180.73 | No |
| ISR G2 2921 | | | 480,000 | 245.76 | No |
| ISR G2 2951 | | | 580,000 | 296.96 | No |
| 3640/3640A | 4,000 | 2.048 | 50,000 – 70,000 | 25.6 – 36 | 31-Dec-03 |
| 3660 | 12,000 | 6.144 | 100 - 120,000 | 51.2 – 61.4 | 31-Dec-03 |
| 3631 | 4,000 | 2.048 | 50 – 70,000 | 25.6 – 36 | 2-Aug-04 |
| 3725 | | | 100 – 120,000 | 51.2 – 61.4 | 27-Mar-07 |
| 3745 | | | 225 – 250,000 | 115.2 – 128 | 27-Mar-07 |
| MC3810 | 2,000 | 1.024 | 8,000 | 4.10 | 14-Dec-01 |
| MC3810-V3 | 3,000 | 1.536 | 15,000 | 7.68 | 13-Dec-02 |
| ISR 3825 | 25,000 | 12.8 | 350,000 | 179.20 | No |
| ISR 3845 | 35,000 | 17.92 | 500,000 | 256.00 | No |
| ISR G2 3925 | | | 833,000 | 426.49 | No |
| ISR G2 3945 | | | 982,000 | 502.78 | No |
| IAD2400 | 3,000 | 1.536 | 15,000 | 7.68 | No |
| 4000 | 1,800 | 0.9216 | 14,000 | 7.17 | 10-Jul-98 |
| 4500 | 3,500 | 1.792 | 45,000 | 23.04 | 25-Nov-00 |
| 4700 | 4,600 | 2.3552 | 75,000 | 38.40 | 25-Nov-00 |
| 7120 | 13,000 | 6.656 | 175,000 | 89.60 | 30-Nov-01 |
| 7140 | 20,000 | 10.24 | 300,000 | 153.60 | 30-Nov-01 |
| 7200-NPE100 | 7,000 | 3.584 | 100,000 | 51.20 | 30-Apr-00 |
| 7200-NPE150 | 10,000 | 5.12 | 150,000 | 76.80 | 30-Apr-00 |
| 7200-NPE175 | 9,000 | 4.608 | 177,848 | 91.06 | 15-Jul-00 |
| 7200-NPE200 | 13,000 | 6.656 | 200,000 | 102.40 | 1-Jan-02 |
| 7200-NPE225 | 13,000 | 6.656 | 233,170 | 119.38 | 23-Jul-07 |
| 7200-NPE300 | 20,000 | 10.24 | 353,000 | 180.74 | 31-Dec-01 |
| 7200-NPE400 | 20,000 | 10.24 | 420,000 | 215.04 | No |
| 7200-NPE-G1 | 79,000 | 40.448 | 1,018,000 | 521.22 | No |
| 7200-NPE-G2 | | | 2,000,000 | 1,024.00 | No |
| 7200-NSE-1 | 20,000 | 10.24 | 300,000(RP) | 153.6 | 2-Mar-04 |
| 7304-NSE-100 | | | 3,500,000(PXF) 450,000(RP) | 1,792 230.4 | 31-Mar-08 |



| Platform | Process Switching | | Fast/CEF Switching | | EOS? |
|---------------------|--------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|
| | PPS | Mbps | PPS | Mbps | |
| 7304-NSE-150 | | | 3,500,000(PXF) 800,000(RP) | 1,792 409.6 | No |
| 7304-NPE-G100 | | | 1,099,000 | 562.69 | No |
| 7301 | 79,000 | 40.448 | 1,018,000 | 521.22 | No |
| 7401 | 20,000 | 10.24 | 300,000 (Also has PXF) | 153.6 | 30-Dec-04 |
| 7000-RP | 2,500 | 1.28 | 30,000 | 15.36 | 31-Jul-97 |
| 7500-RSP2 | 5,000 | 2.56 | 220,000 | 112.64 | 16-Feb-03 |
| 7500-RSP4/4+ | 8,000 | 4.096 | 345,000 | 176.64 | 15-Dec-07 |
| 7500-RSP8 | 22,000 | 11.264 | 470,000 | 240.64 | 15-Dec-07 |
| 7500-RSP16 | 29,000 | 14.848 | 530,000 | 271.36 | 15-Dec-07 |
| 7500-VIP2/40 | Punts to RSP ¹ | | 60,000 – 95,000 | 30.7 – 48.6 | 30-Apr-04 |
| 7500-VIP2/50 | Punts to RSP ¹ | | 90,000 – 140,000 | 46.1 – 71.7 | 15-May-03 |
| 7500-VIP4/50 | Punts to RSP ¹ | | 90,000 – 140,000 | 46.1 – 71.7 | 15-Dec-07 |
| 7500-VIP4/80 | Punts to RSP ¹ | | 140,000 – 210,000 | 71.7 – 107.5 | 15-Dec-07 |
| 7500-VIP6/80 | Punts to RSP ¹ | | 140,000 – 219,000 | 71.7 – 112.1 | 15-Dec-07 |
| 7600-MSFC2(Sup2) | 20,000 (500,000 for software-switched CEF) | 10.24 (256.00) | 30,000,000 for central forwarding of non-DFC traffic - 15,000,000 for central forwarding on non-DFC traffic with classic line cards ² | 15,360.00 or 7,680.00 | 1-Mar-07 |
| 7600-MSFC2A(Sup32) | | | 15,000,000 ² | 7,680.00 | No |
| 7600-MSFC3(Sup720) | 20,000 (500,000 for software switched CEF) | 10.24 (256.00) | 30,000,000 for central forwarding of non-DFC traffic – 15,000,000 for central forwarding on non-DFC traffic with classic line cards ² | 15,360.00 or 7,680.00 | No |
| 7600-CEF256 | | | 15,000,000 per slot ² | 7,680.00 | No |
| 7600-dCEF256 (6816) | | | 24,000,000 per slot ² | 12,288.00 | No |
| 7600-dCEF720(6724) | | | 24,000,000 per slot ² | 12,288.00 | No |
| 7600-dCEF720(67xx) | | | 48,000,000 per slot ² | 24,576.00 | No |
| (ASR1002-F)-ESP2.5 | | | 4,420,000 | 2,263.04 | No |
| ASR1000-ESP5 | | | 8,840,000 | 4,526.08 | No |
| ASR1000-ESP10 | | | 17,690,000 | 9,057.28 | No |
| ASR1000-ESP20 | | | 25,430,000 | 13,020.16 | No |
| 10000-PRE1 | | | 2,800,000 (Also has 2xPXF) | 1,433.60 | 17-Aug-06 |
| 10000-PRE2 | | | 6,200,000 (Also has a 4xPXF) | 3,174.40 | 1-Jan-10 |
| 10000-PRE3 | | | 9,500,000 (Also has a 4xPXF) | 4,864.00 | No |
| 10000-PRE4 | | | 10,000,000(Also has a 4xPXF) | 5,120.00 | No |
| 10720 | 50,000 | 25.6 | 2,000,000 (Also has a 2xPXF) | 1,024.00 | No |
| 12000 (Engine 0) | | | 400,000 | 622.00 | No |
| 12000 (Engine 1) | | | 700,000 | 2,500.00 | No |
| 12000 (Engine 2) | | | 4,000,000 | 2,500.00 | No |
| 12000 (Engine 3) | | | 4,000,000 | 2,500.00 | No |
| 12000 (Engine 4/4+) | | | 25,000,000 | 10,000.00 | No |



| Platform | Process Switching | | Fast/CEF Switching | | EOS? |
|------------------|-------------------|------|--------------------|-----------|------|
| | PPS | Mbps | PPS | Mbps | |
| 12000 (Engine 5) | | | 16,000,000 | 10,000.00 | No |
| 12000 (Engine 6) | | | 50,000,000 | 20,000.00 | No |
| CRS-1 LC | | | 80,000,000 | 40,960.00 | No |
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¹ "Punts to RSP" means that when a VIP cannot process the packets in a distributed manner (for instance, when doing MLPPP across different PA's instead of keeping the bundles on the same PA), it must push that forwarding decision and packet flow to the RSP. In these cases, use the RSP switching numbers.

² The 7600 only slows centralized forwarding when a classic line card is installed, and then only for flows that must be centrally forwarded. For instance, a system with a Sup720 with two 6748 DFC3A equipped cards has a legacy gigabit switching module installed - the 6148-GE-TX, for instance. Flows going to or originating from that card operate at 15Mpps, but flows going between the 6748's operate at full 48Mpps per slot. Therefore, distributed forwarding is unaffected by the insertion of a legacy card.