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Benchmark Tests of Asterisk as a B2BUA

Astricon 2008

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Agenda

- Why
- Test Methodology
- Results
  - V1.4, 32 bit Fedora, Dual Xeon-Dual Core
  - V1.4, 64 bit Redhat, Xeon Quad Core
  - V1.6, 64 bit Redhat, Xeon Quad Core
- Economics
- Conclusions

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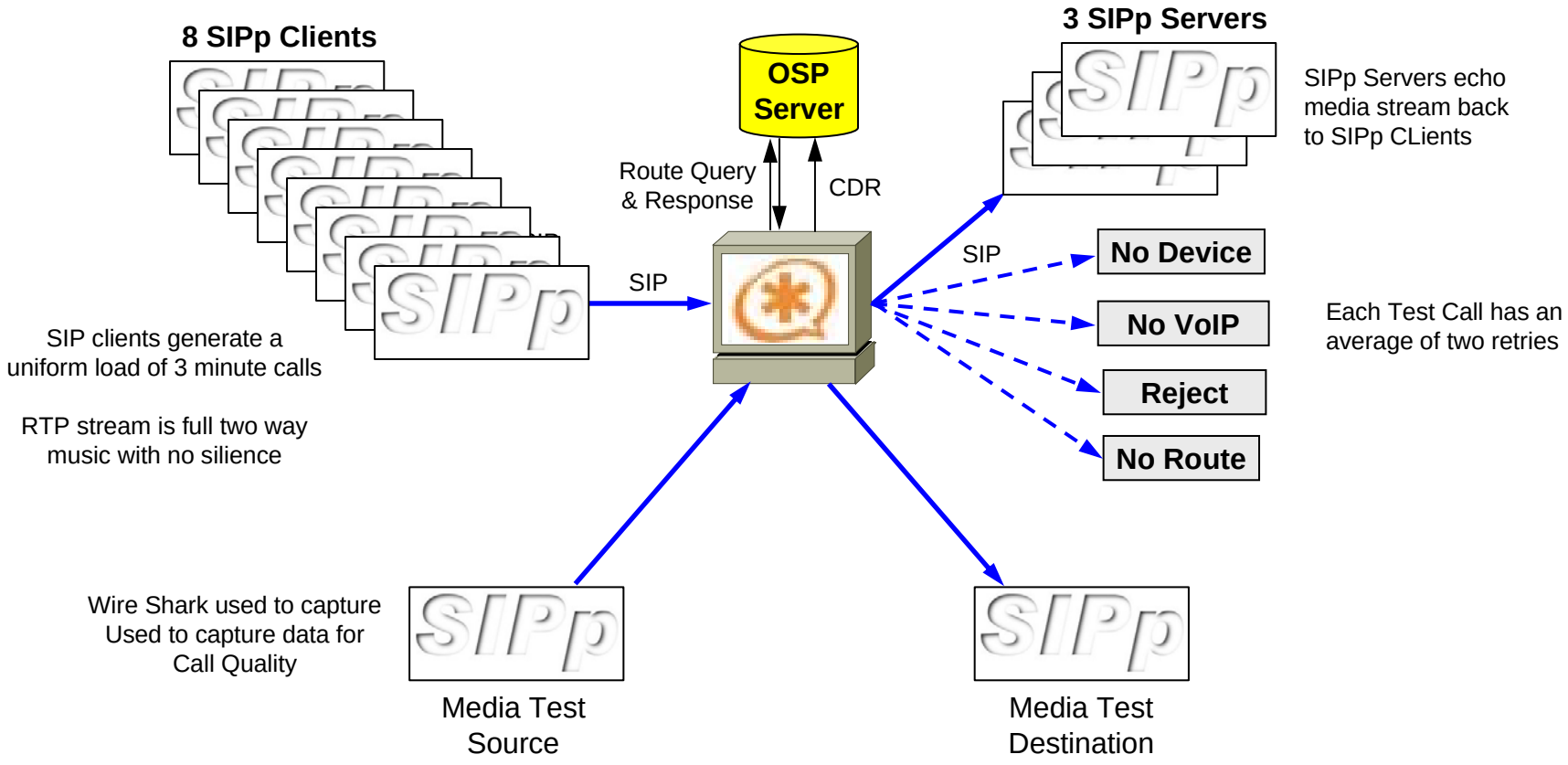
Why Test as a B2BUA?

- A Session Border Controller is a Critical VoIP Network Element
  - Enterprises need a demarcation between their private VoIP LAN and Public SIP network
  - Service providers need a VoIP Switch
- SIP Proxies are great, but they do not provide:
  - IP Masking
  - Transcoding
- Asterisk is a valuable low cost solution in a market of high cost session border controllers

Test Methodology



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Test One

Host Server for Asterisk V1.4.21.2

- Dell Precision 490
- Two Intel Xeon 5140 dual core 2.33 GHz CPUs
- 4 GB of RAM
- Onboard 1Gbit NIC
- Fedora 7, 32-bit
- Two Cases:
  - G.711 to G.711
  - G.711 to G.729

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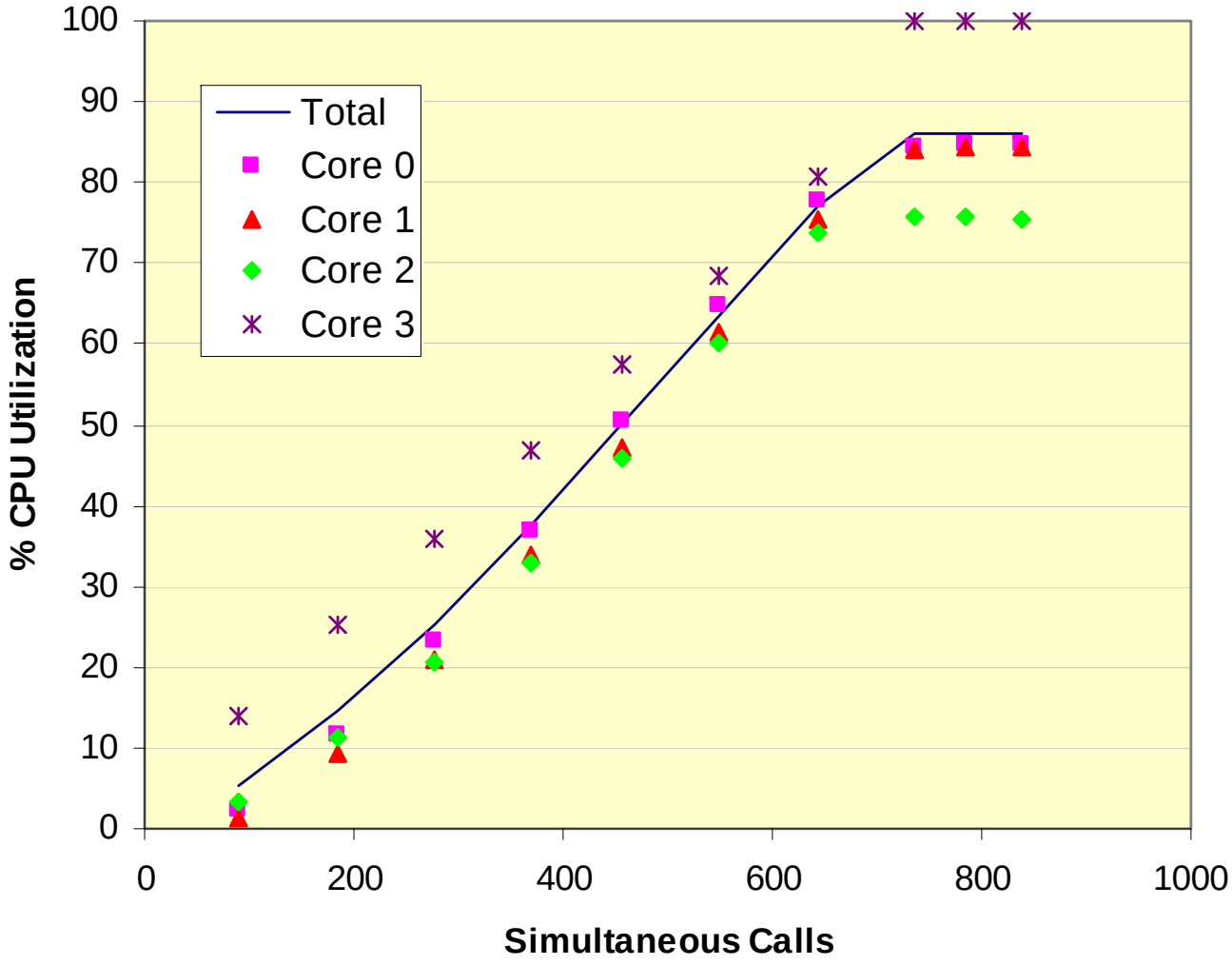
Calls vs CPU Utilization

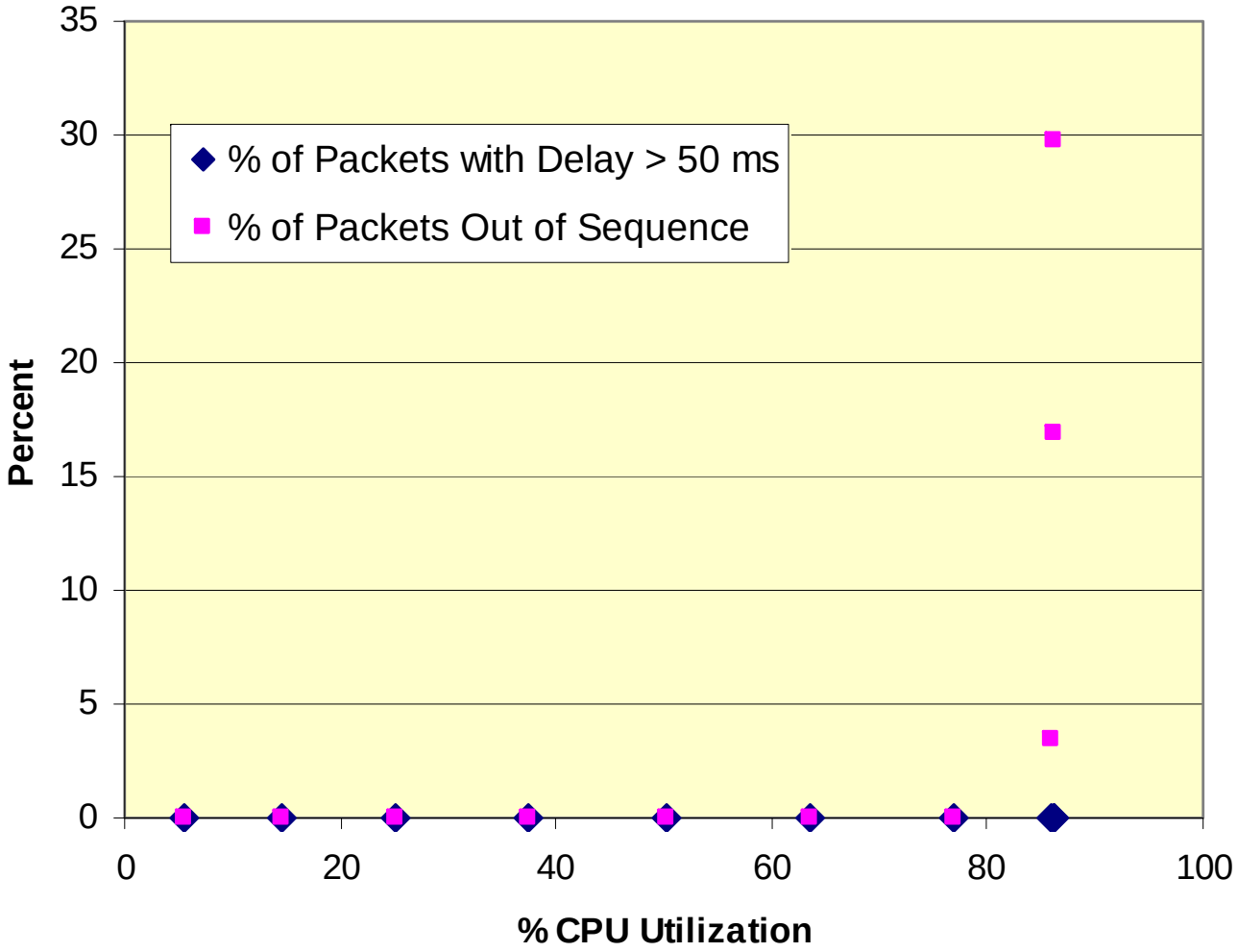
G.711 to G.711



Test One
2 Dual Core Xeon
2.33 GHz CPUs
4 GB RAM
Fedora 7, 32-bit

Packets vs CPU Utilization

G.711 to G.711



Test One
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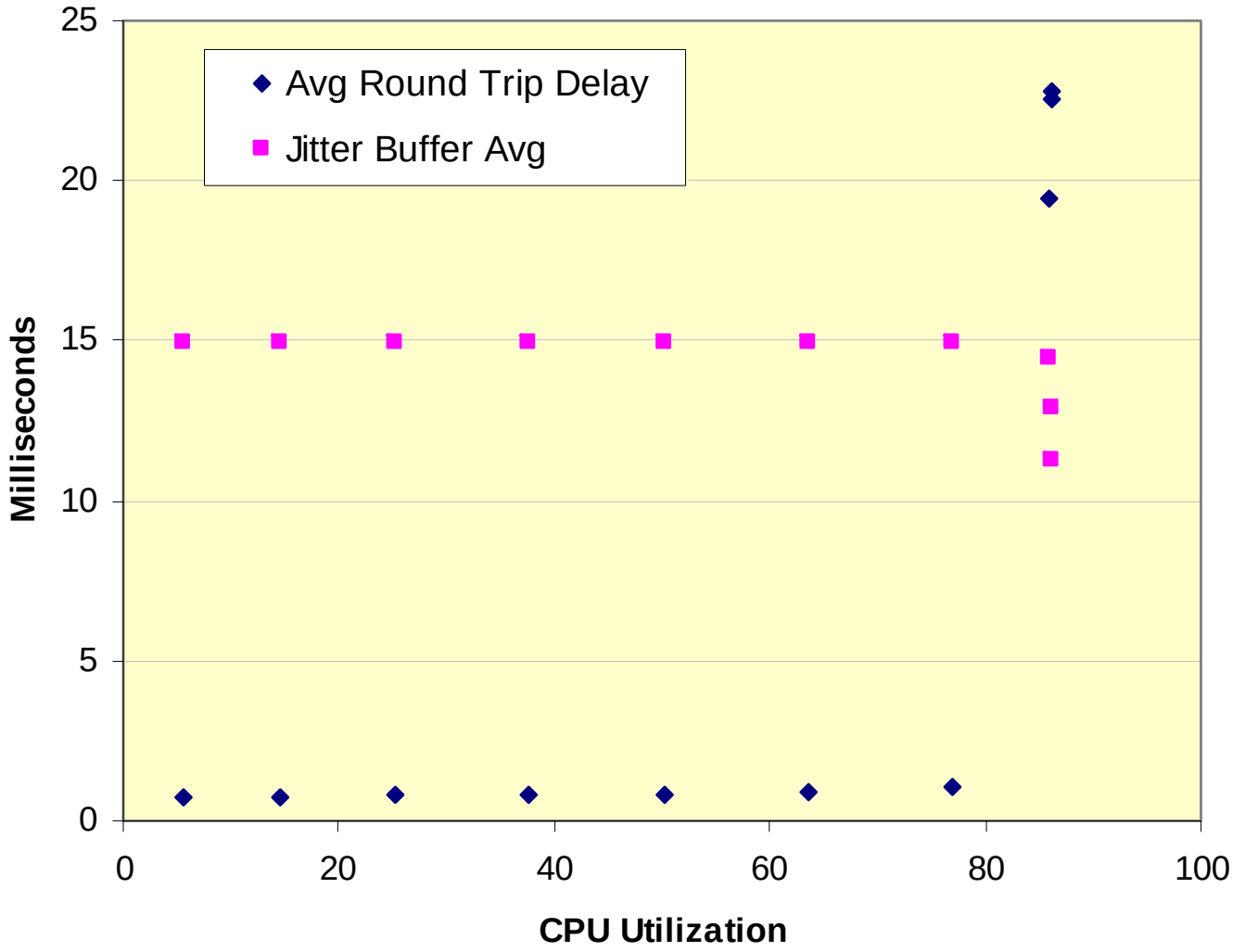
Packet Delay vs CPU Utilization

G.711 to G.711



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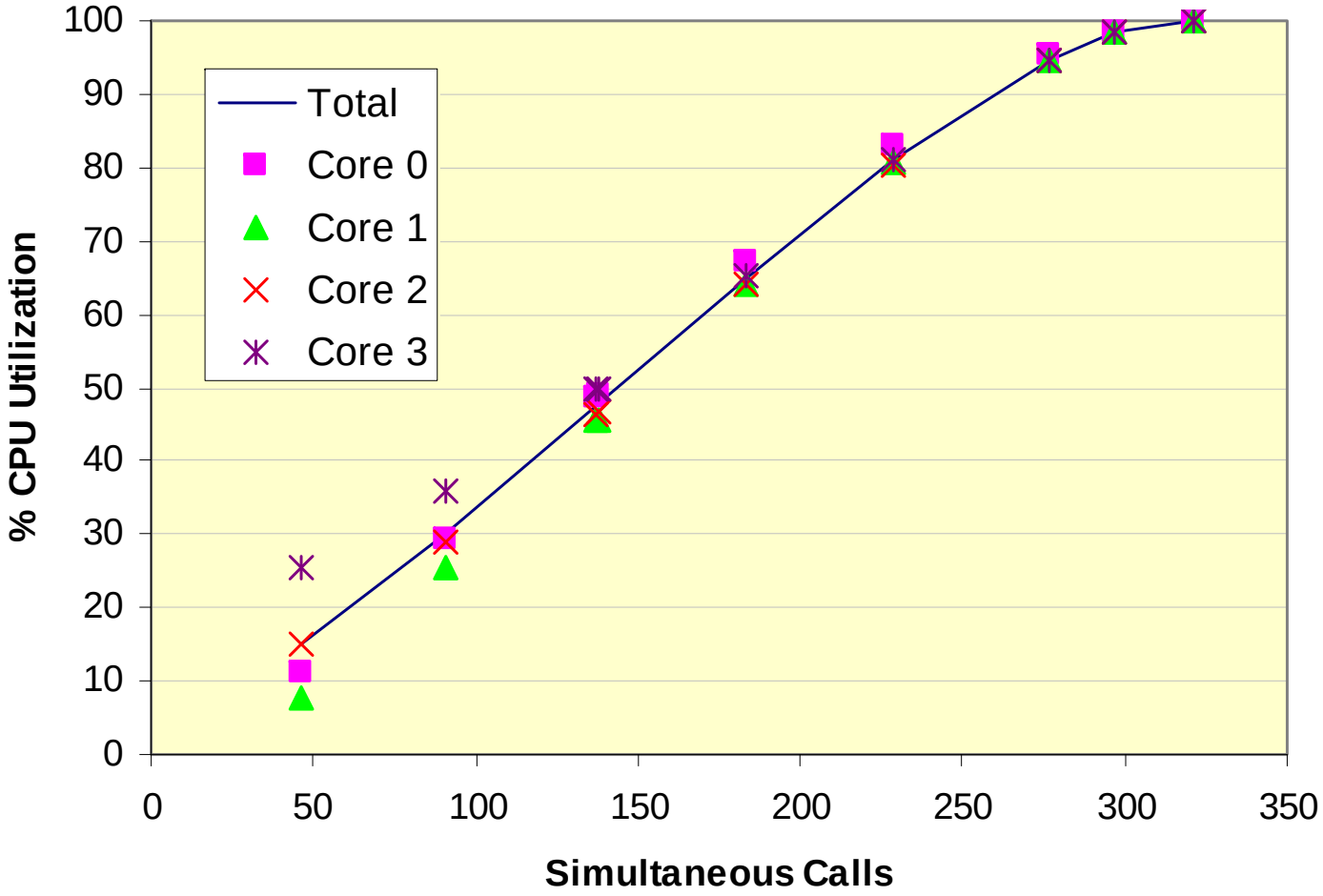
Calls vs CPU Utilization

G.711 to G.729



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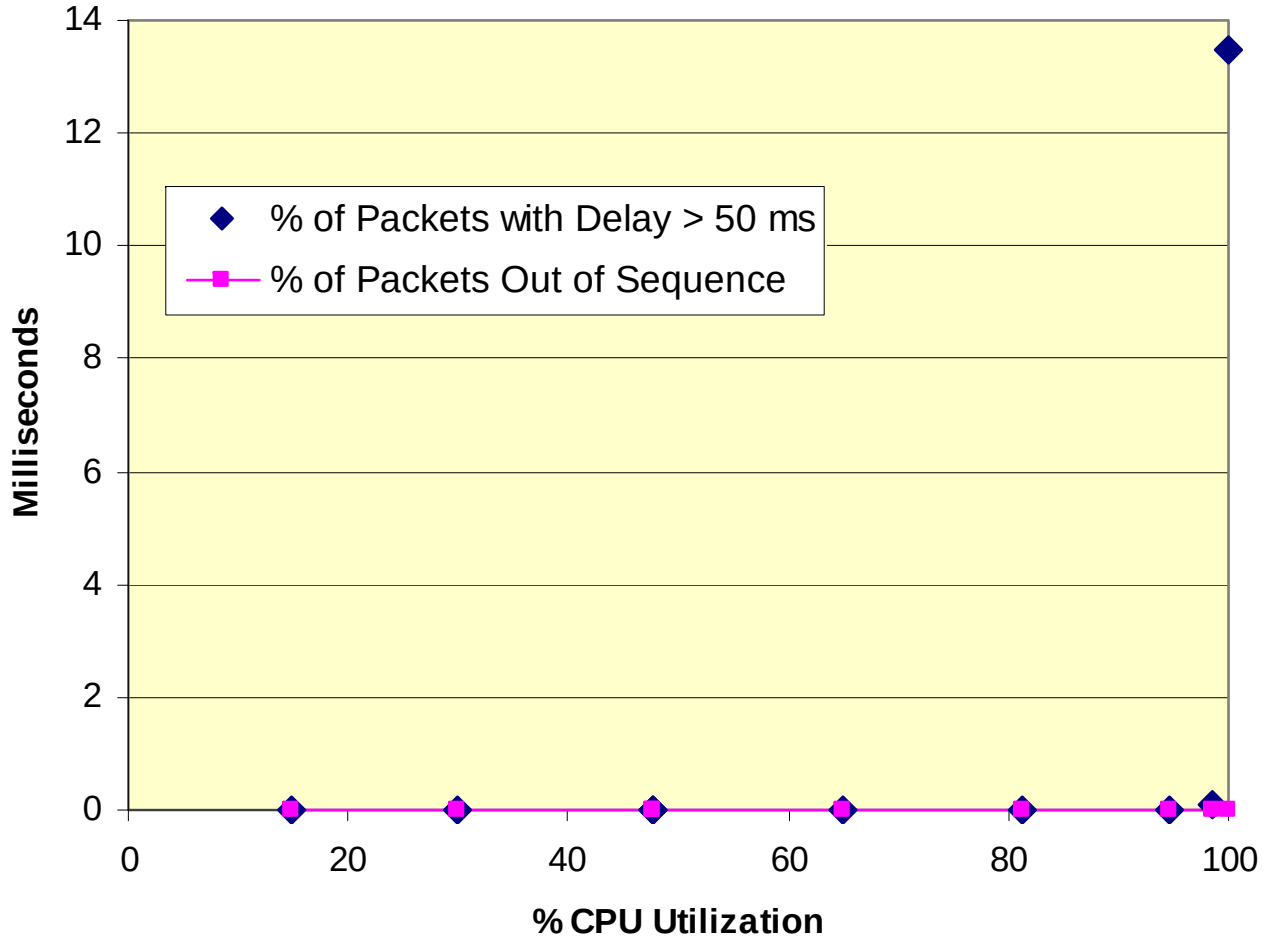
Packets vs CPU Utilization G.711 to G.729



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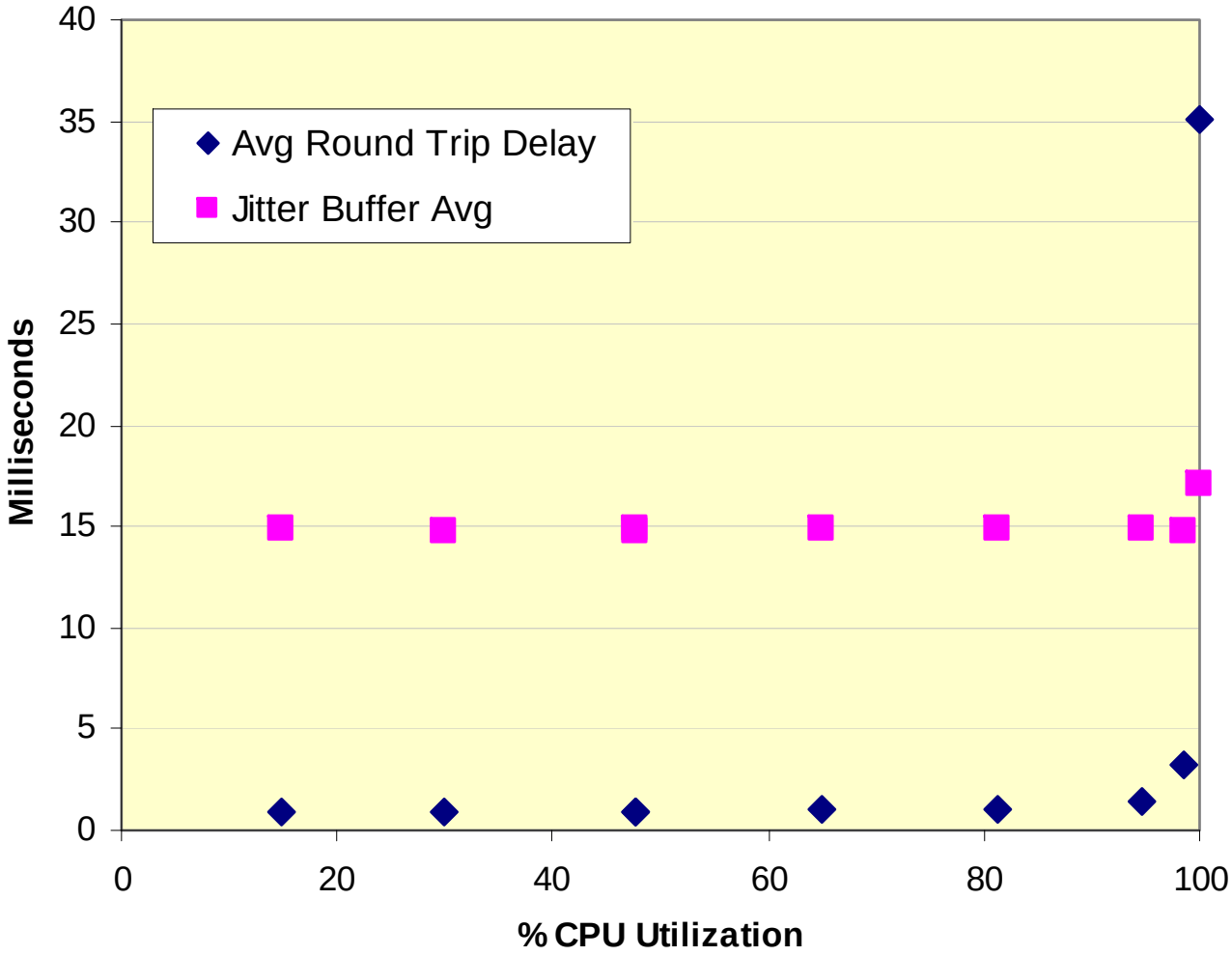
Packet Delay vs CPU Utilization G.711 to G.729



Test One
2 Dual Core Xeon
2.33 GHz CPUs
4 GB RAM
Fedora 7, 32-bit

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Feedback on Test One

- Test Plan makes sense.
- Why are you using an Ancient Operating System (Fedora 7)?
- A few changes suggested that did not impact our “out-of-the-box” performance test results.
- Impact of OSP functionality?
  - About 2% of CPU utilization

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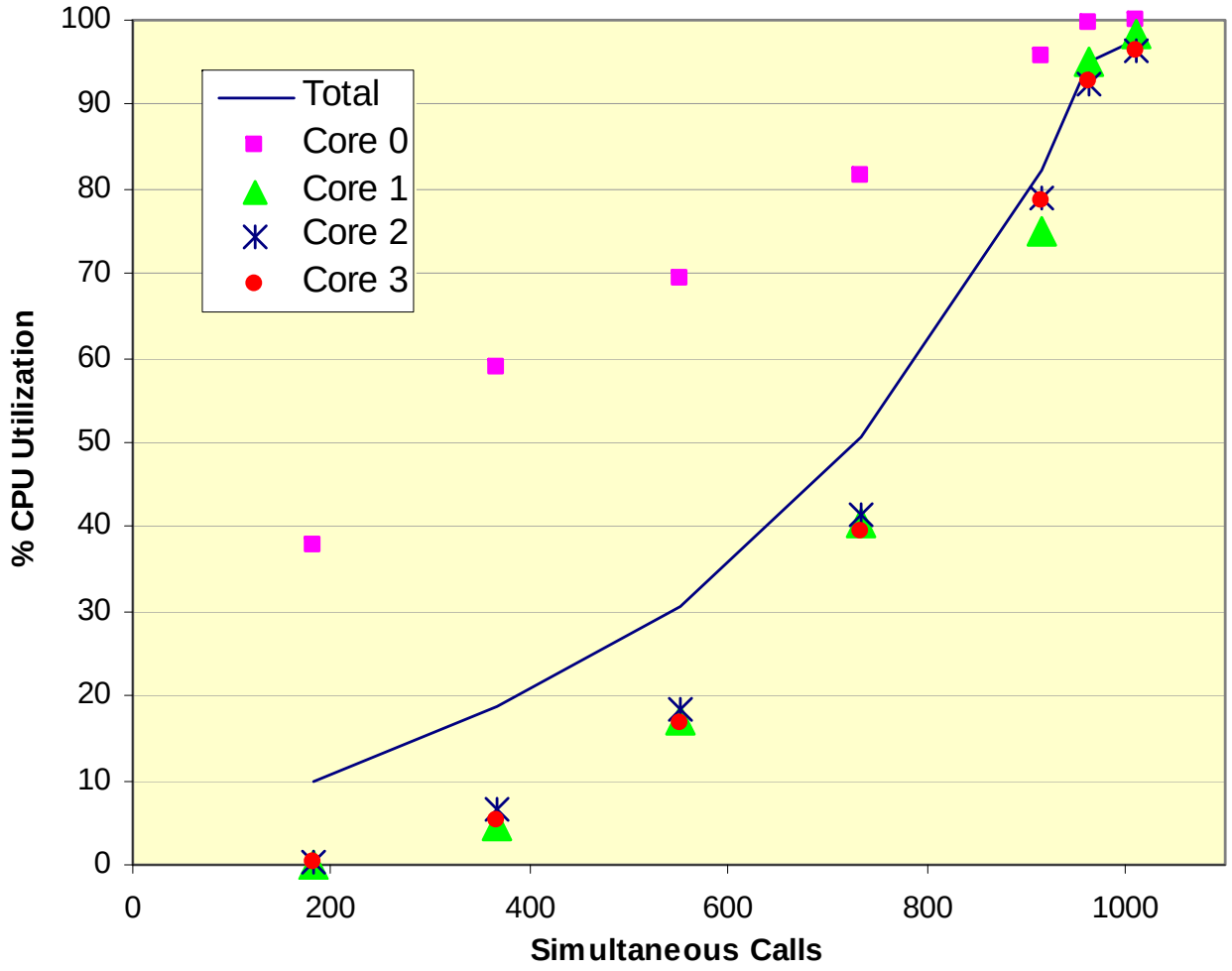
Test Two

Host Server for Asterisk V1.4.21.2

- Dell Power Edge 840 (Total cost $1,000)
- 1 Intel Xeon X3222 quad core, 2.40 GHz CPU 1066 MHz FSB, 2x4M cache
- 4 GB of RAM
- Onboard 1 Gbit NIC
- Redhat 5.1 64-bit
- Two Cases:
  - G.711 to G.711
  - G.711 to G.729

Calls vs CPU Utilization

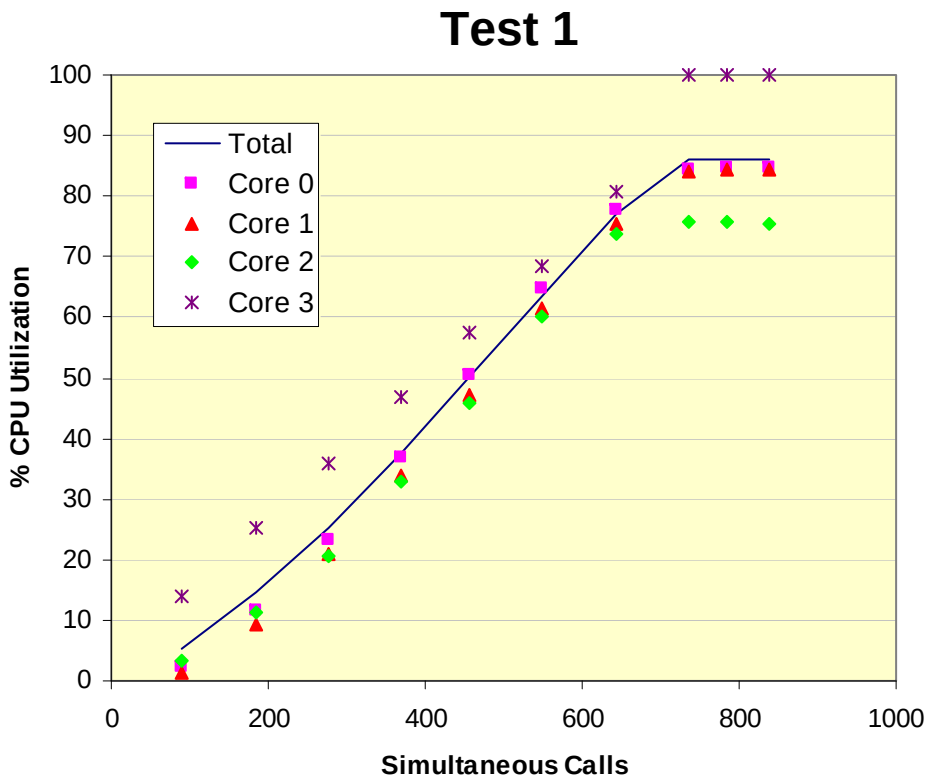
G.711 to G.711



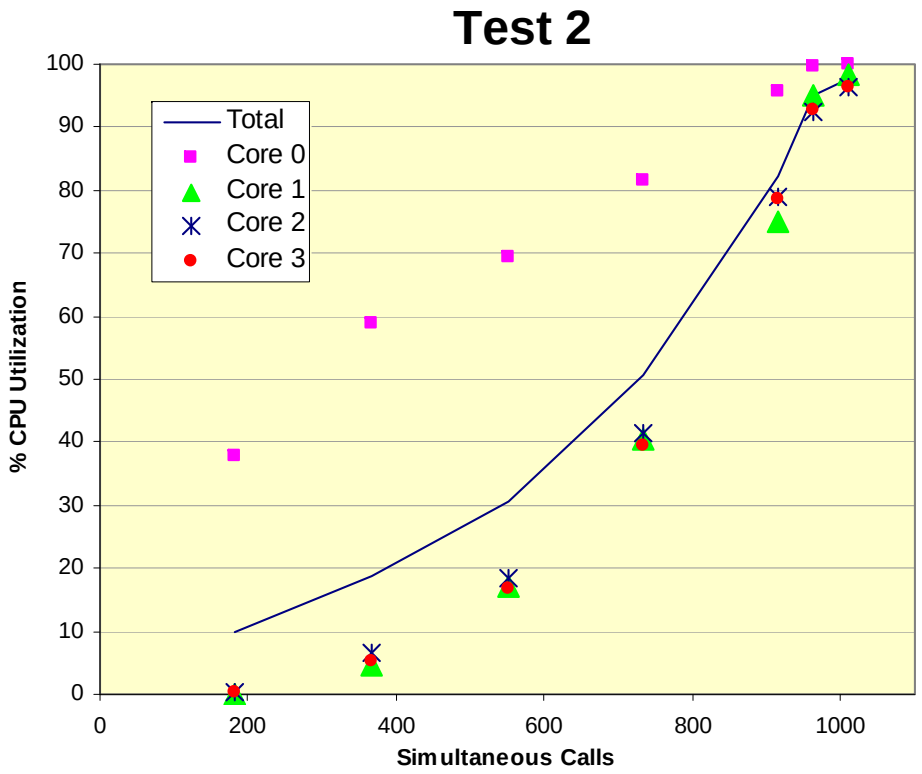
Test Two
1 Quad Core Xeon
2.40 GHz CPU
1066 MHz FSB
2x4M cache
4 GB RAM
Redhat 5.1, 64-bit

Test 1 vs Test 2

G.711 to G.711



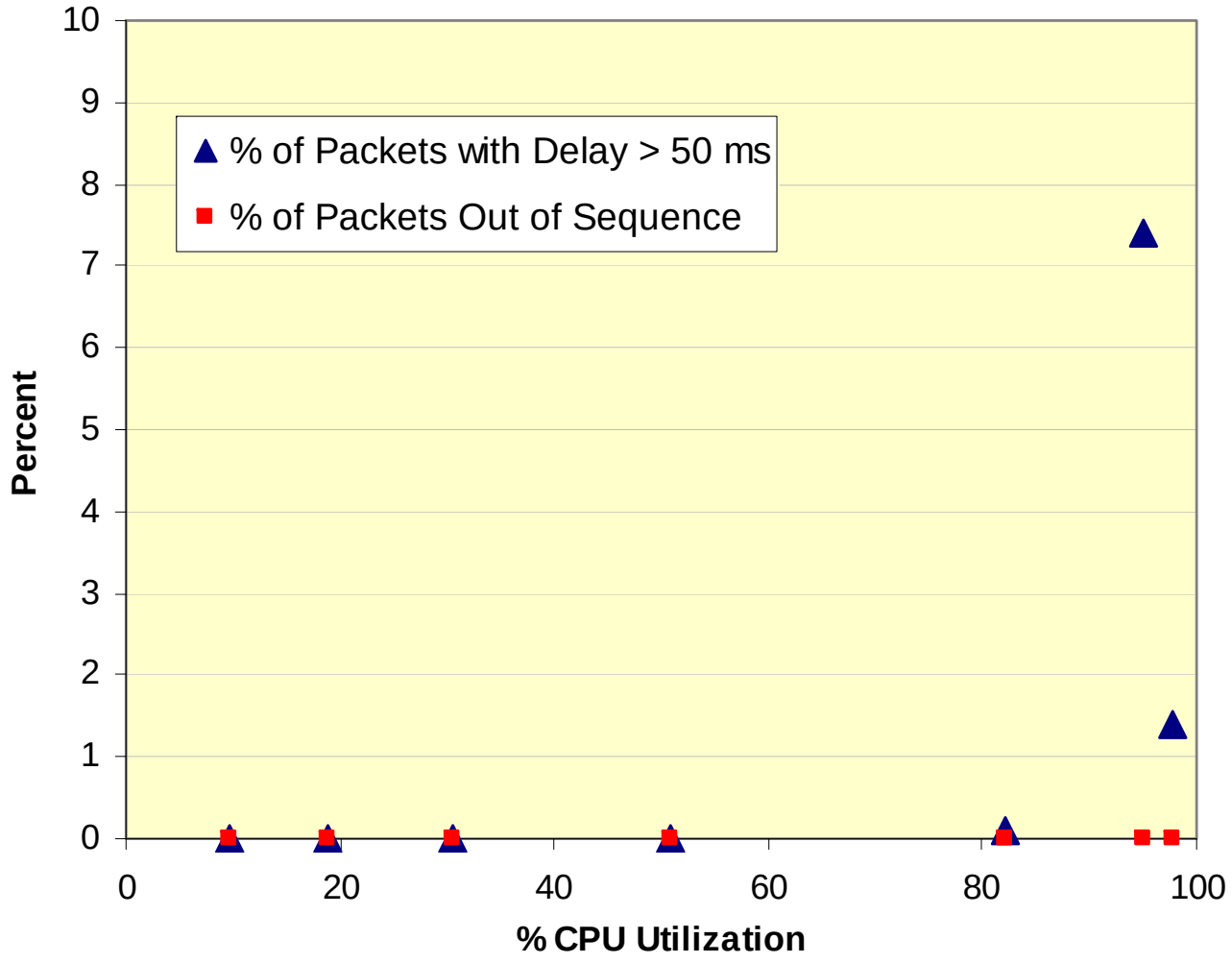
750 Calls



1000 Calls

Packets vs CPU Utilization

G.711 to G.711



Test Two
1 Quad Core Xeon
2.40 GHz CPU
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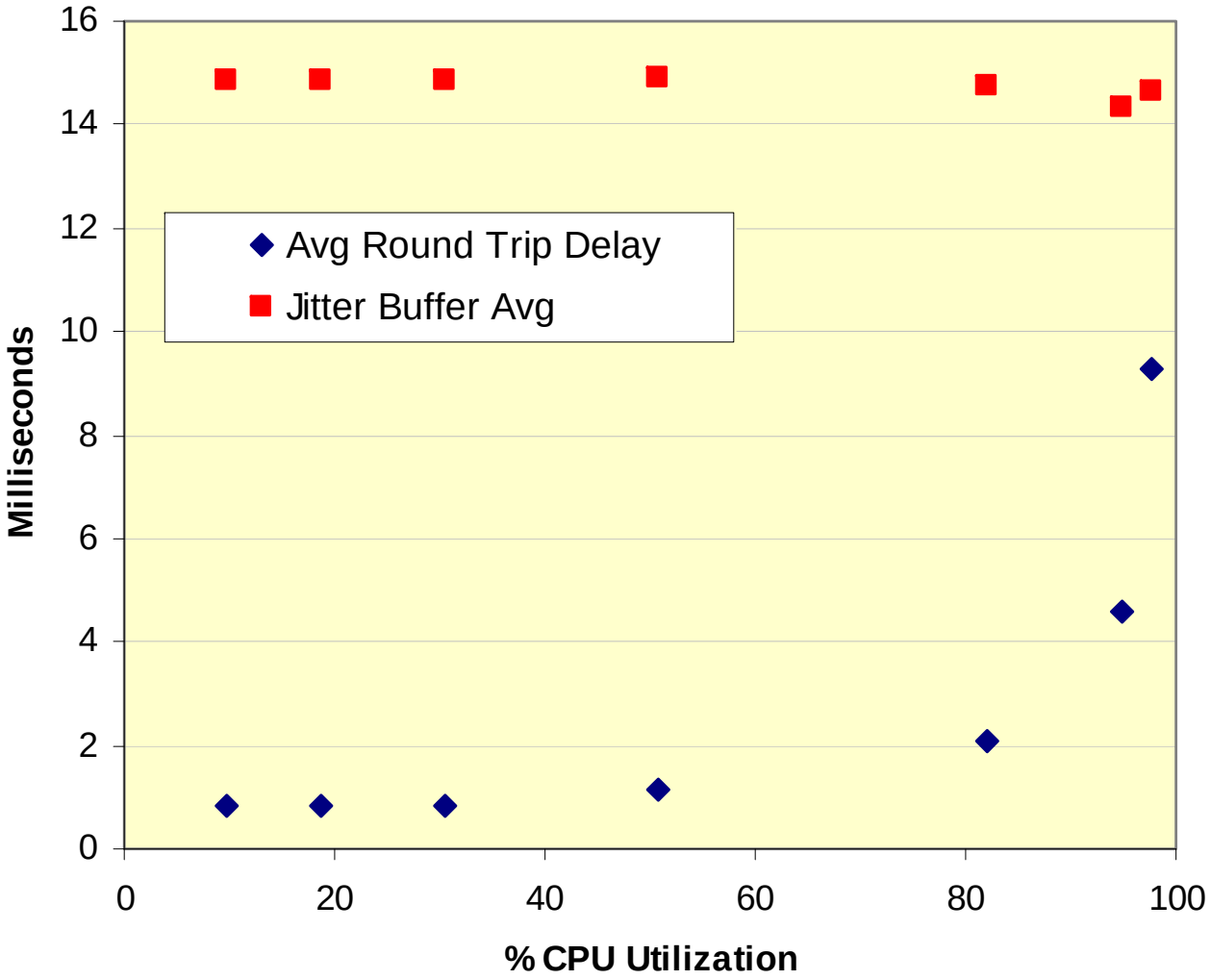
2x4M cache
4 GB RAM
Redhat 5.1, 64-bit

Packet Delay vs CPU Utilization

G.711 to G.711



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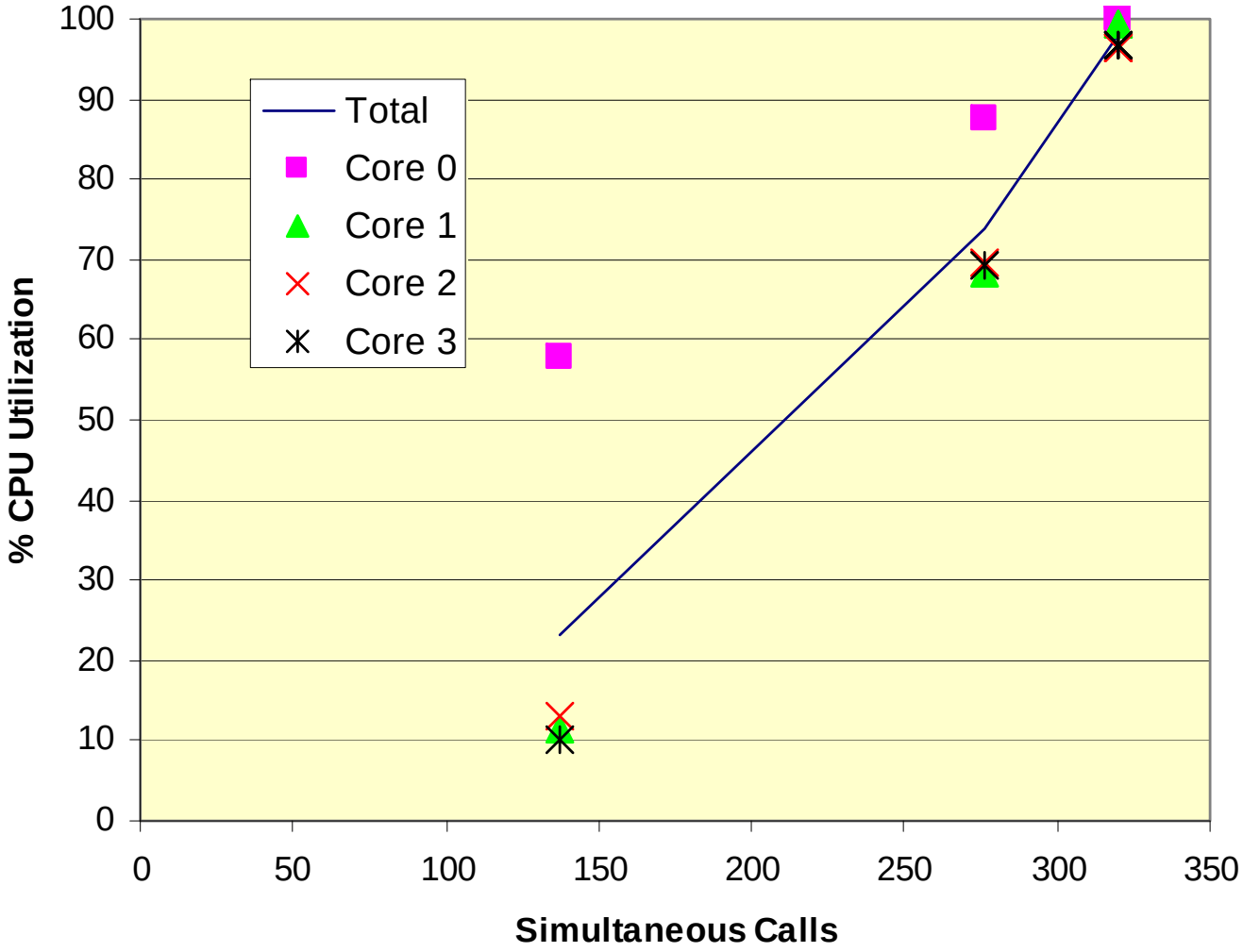
Calls vs CPU Utilization

G.711 to G.729



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Calls vs CPU Utilization
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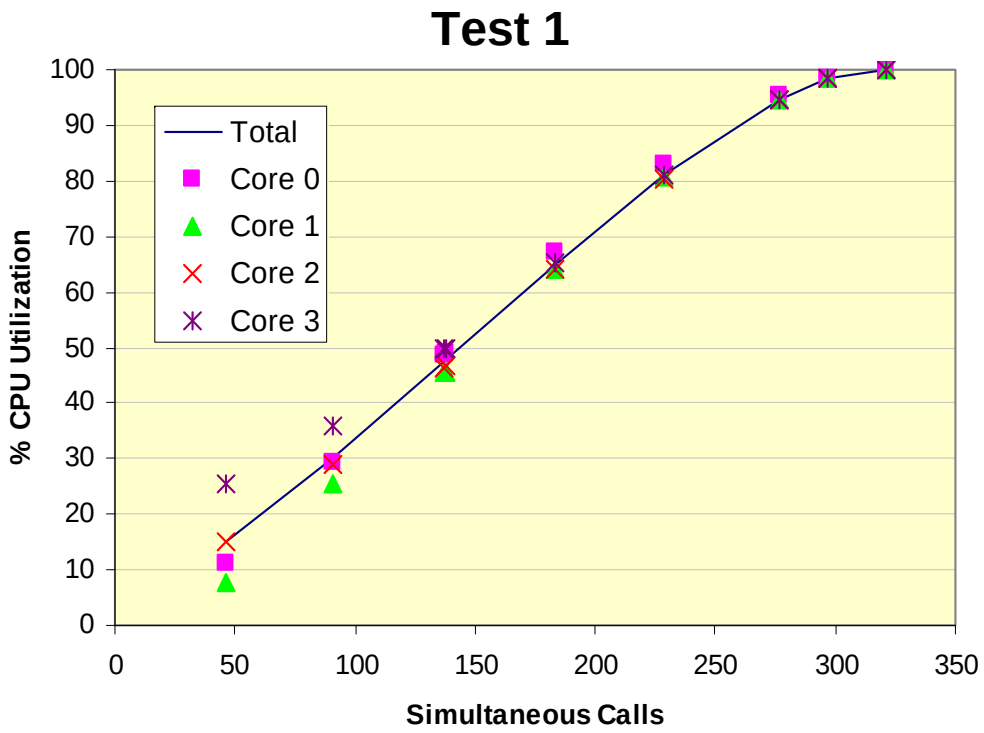
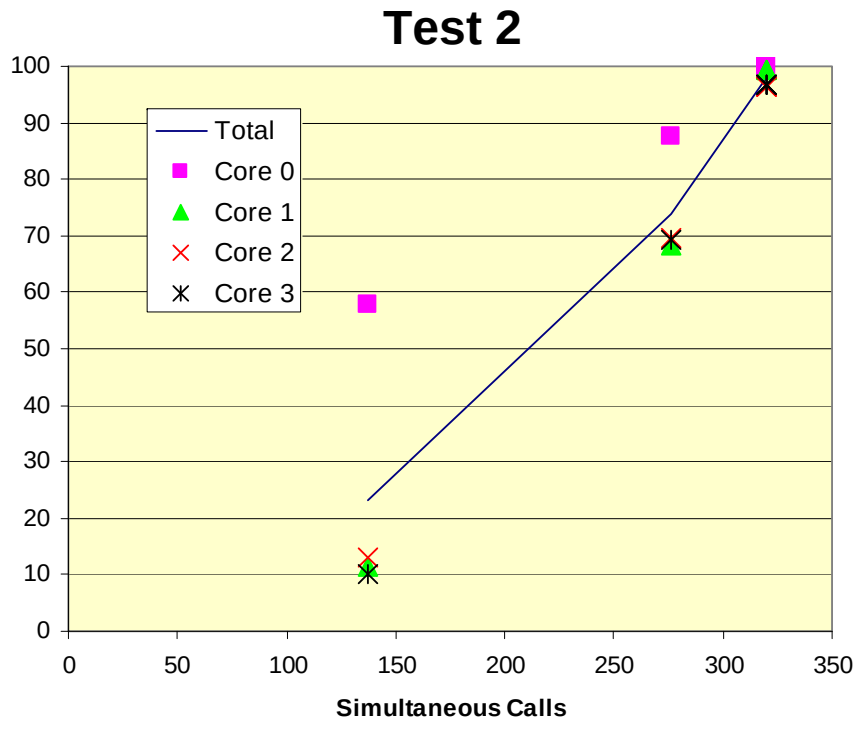


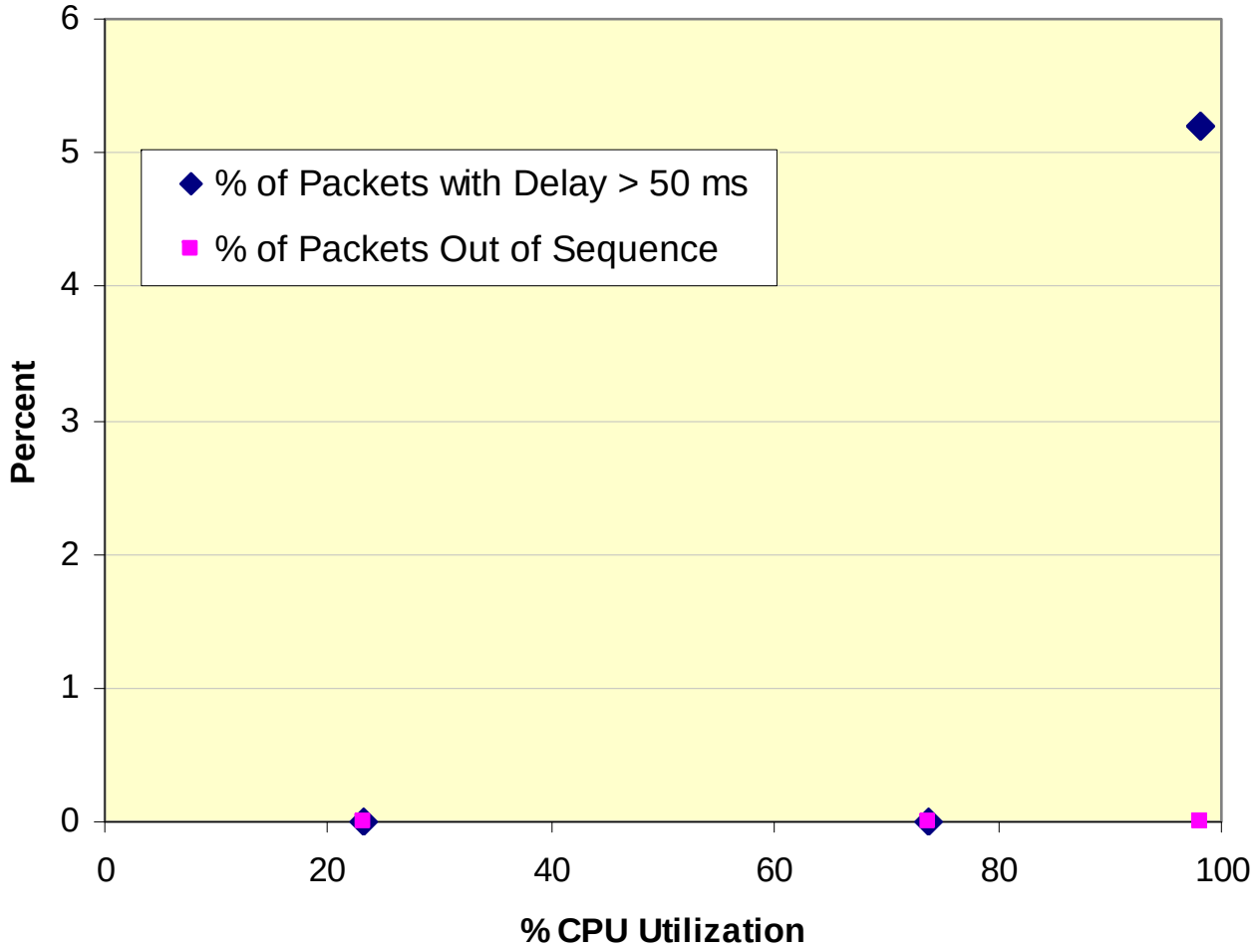
320 Calls



320 Calls

Packets vs CPU Utilization

G.711 to G.729



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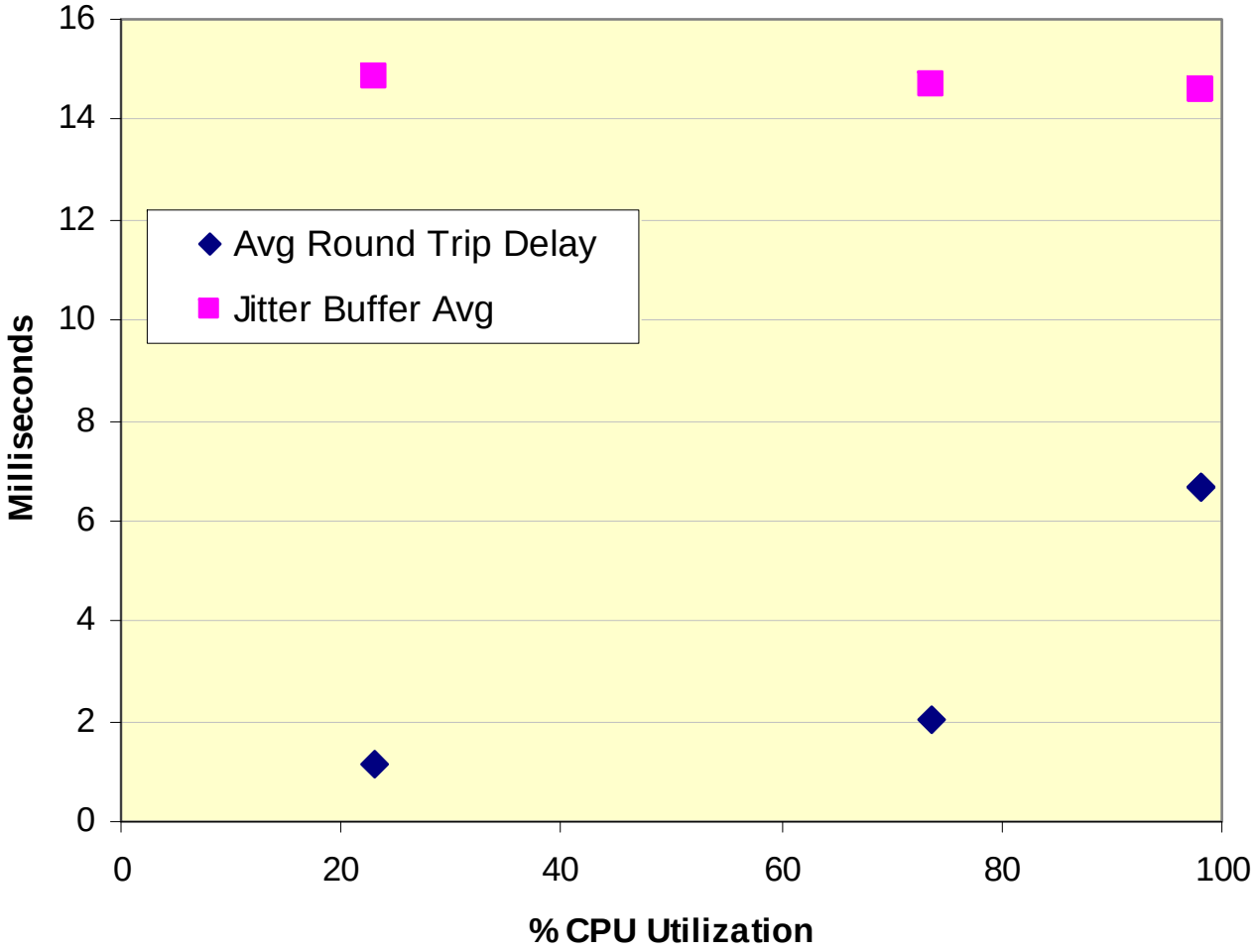
Packet Delay vs CPU Utilization

G.711 to G.729



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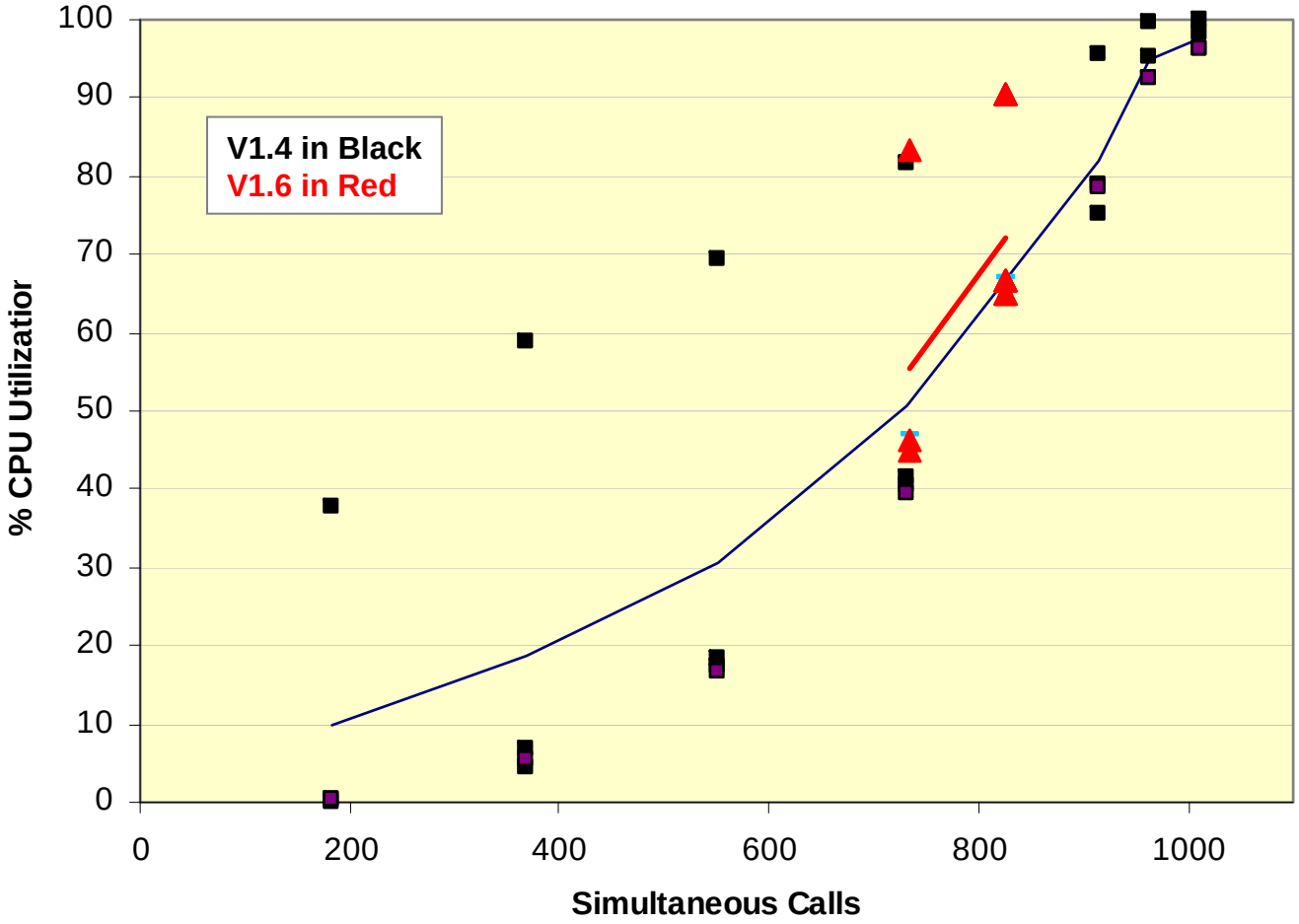
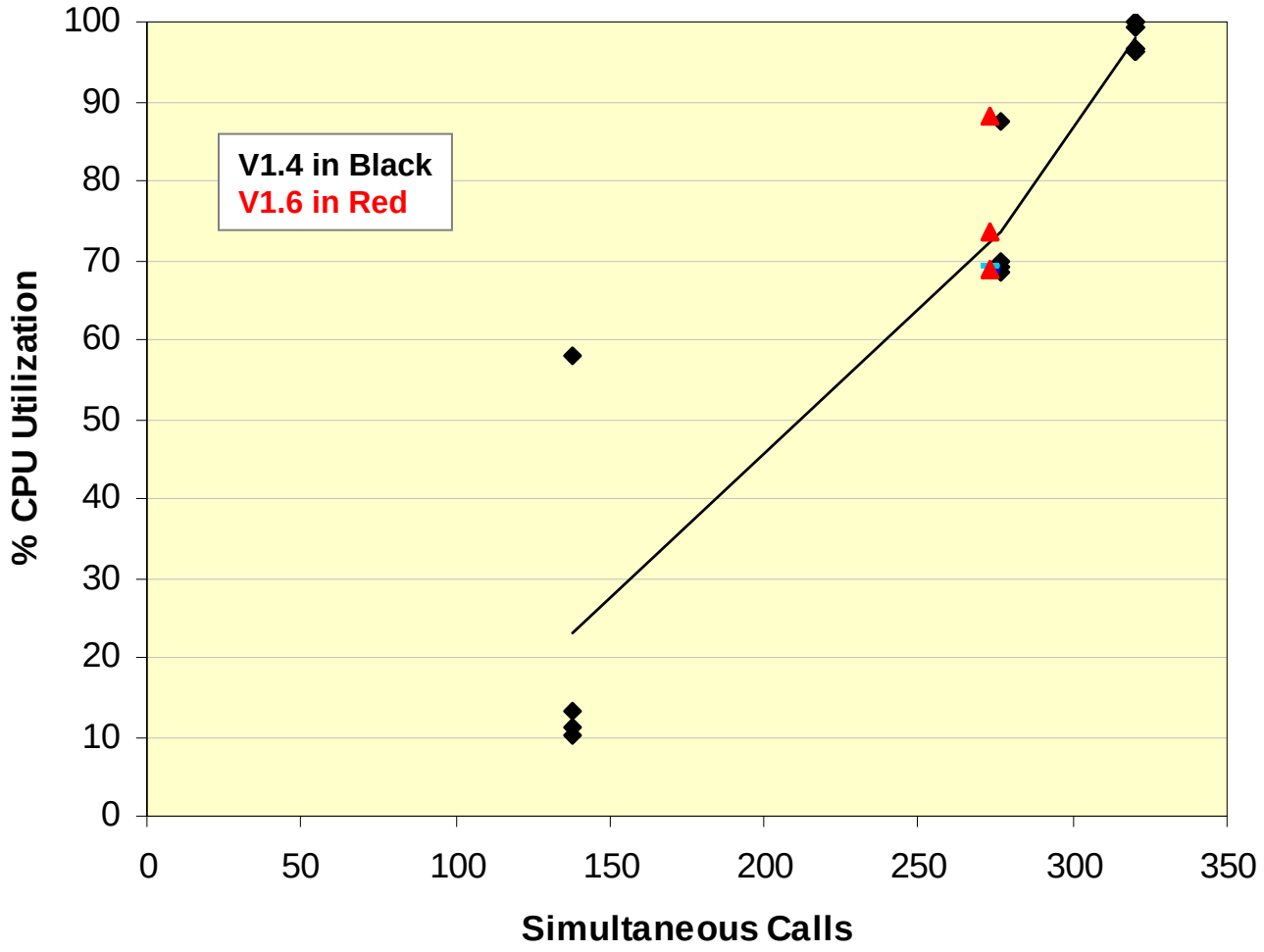
Calls vs CPU Utilization

G.711 to G.711



Test Three
V1.4 vs V1.6
1 Quad Core Xeon
2.40 GHz CPU
1066 MHz FSB
2x4M cache
4 GB RAM
Redhat 5.1, 64-bit

Calls vs CPU Utilization
G.711 to G.729



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V1.4 vs V1.6
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Redhat 5.1, 64-bit

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Economics

- Commercial Session Border Controllers cost between $120 and $15 per port depending on number of ports.
- Cost of Asterisk as a B2BUA:
  - $1 per port for G.711 to G.711
    - $1000 server / 1000 simultaneous calls
  - $13.25 per port for G.711 to G.720
    - ($1000 server + $3200 G.729 license)/320 calls

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Conclusions

- Asterisk as a B2BUA offers great value.
- Guideline for B2BUA Server Sizing
  - 100 Simultaneous calls per GHz of CPU capacity
    - Quad Core CPU, 64-bit
    - RedHat V5
    - 1 GB RAM
  - GHz capacity = Number of CPU * Clock Speed
  - For Example, Quad Core 2.4 GHz CPU has a total of 4 cores * 2.4 GHz = 9.6 GHz capacity