MPE/iX 7.5 and HP e3000 PA-8700 performance update

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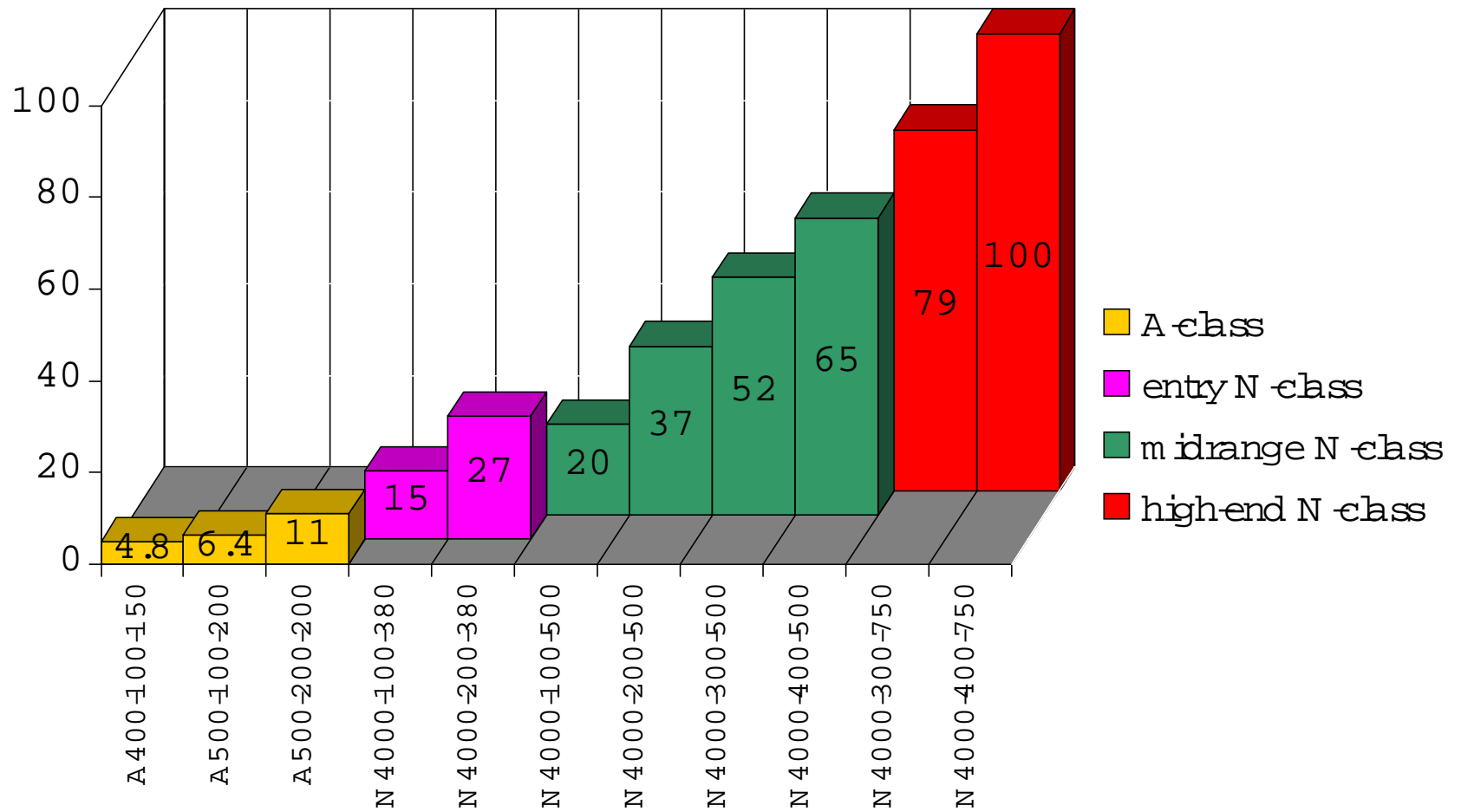kevin.cooper@hp.com

Overview

- New HP e3000 PA-8700 systems

- Recommended upgrade paths

- Memory "rules of thumb"

- New features of MPE/iX 7.5

- MPE/iX 6.5 and 7.0 performance patches

New HP e3000 PA-8700 systems

- New high-end N-class systems with 750 MHz processors, providing higher levels of both OLTP and batch performance.

- New mid-range N-class systems with effective clock speeds of 380 and 500 MHz.

- New option for a second 380MHz processor.

- New entry-level A-class systems at DOUBLE the performance of the existing A-class - now based on 650 MHz processors.

New HP e3000 A-class and N-class performance range

Chart showing performance range values:
- A-class: A400-100-150 = 4.8, A500-100-200 = 6.4, A500-200-200 = 11
- entry N-class: N4000-100-380 = 15, N4000-200-380 = 27
- midrange N-class: N4000-100-500 = 20, N4000-200-500 = 37, N4000-300-500 = 52, N4000-400-500 = 65
- high-end N-class: N4000-300-750 = 79, N4000-400-750 = 100

Legend:
- A-class
- entry N-class
- midrange N-class
- high-end N-class

New highest-performing HP e3000 OLTP system

- The new N4000-400-750 delivers 100 MPE/iX Relative Performance Units.

- Over 35% gain in OLTP system throughput compared to the previous high-end system, the N4000-400-550 (72 units).

- Almost double the OLTP throughput of the Series 997/1200 (52.3 units).

- Can be configured with 3 or 4 processors.

New highest-performing HP e3000 batch system

CPU time to sort an 800 MB file
  (10 million 80-byte records):

- 997   13 minutes
- 989/x50   8 minutes
- N4000-550   4 minutes
- N4000-750   3+ minutes
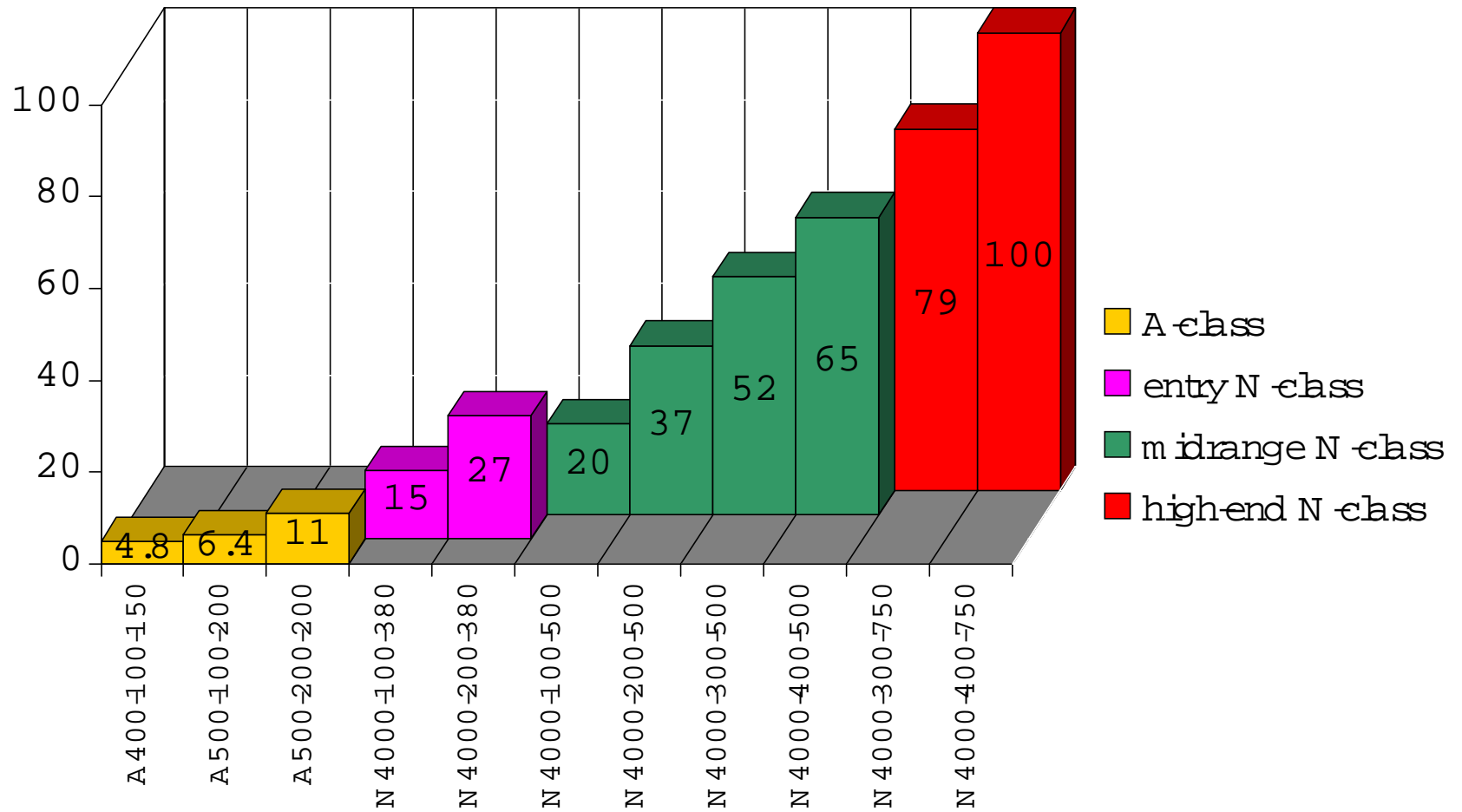
New mid-range N-class systems

- N4000-100-380 delivers
  15 MPE/iX relative performance units.

- New option to add a second processor
  takes this up to 27 units.

- N4000-100-500 delivers
  20 MPE/iX relative performance units.

- Up to three additional processors can take
  this up to 37, 52, or 65 units.

New entry-level A-class systems

- A400-100-150 delivers
      4.8 MPE/iX relative performance units –
  that's MORE THAN DOUBLE the performance
      of the previous A400 (at 2.2 units).

- A500-100-200 delivers 6.4 units –
      DOUBLE the previous A500 (3.2).

- An optional second processor in the A500 can take it
  up to 11 performance units –
      DOUBLE the previous A500 2-way (5.4).

New HP e3000 A-class and N-class performance range

A-class, entry N-class, midrange N-class, high-end N-class performance chart:

Model	Value	Class
A400-100-150	4.8	A-class
A500-100-200	6.4	A-class
A500-200-200	11	A-class
N4000-100-380	15	entry N-class
N4000-200-380	27	entry N-class
N4000-100-500	20	midrange N-class
N4000-200-500	37	midrange N-class
N4000-300-500	52	midrange N-class
N4000-400-500	65	midrange N-class
N4000-300-750	79	high-end N-class
N4000-400-750	100	high-end N-class

Recommended upgrades to the N4000-400-750

- New system:

  N4000-400-750   100

- Upgrade from:

  N4000-400-550   72

  N4000-400-440   57

  Series 997/1200   52.3

Recommended upgrades to the N4000-300-750

- New system:

  N4000-300-750   79

- Upgrade from:

  N4000-300-550   58

  N4000-300-440   46

  Series 997/1000   48

Recommended upgrades to the N4000-400-500

- New system:
    N4000-400-500   65

- Upgrade from:
    N4000-300-440   46
    Series 989/650   43.8
    Series 997/800   39

Recommended upgrades to the N4000-300-500

- New system:

  N4000-300-500   52

- Upgrade from:

  N4000-200-440   33
  Series 989/450   35.2
  Series 989/600   33.2
  Series 997/600   32.2

Recommended upgrades to the N4000-200-500

- New system:
  N4000-200-500   37

- Upgrade from:
  N4000-100-440   18
  Series 989/250   21.3
  Series 989/300   24.4
  Series 997/400   23.7
  Series 979/400   24.4

Recommended upgrades to the N4000-100-500

- New system:
  N4000-100-500   20

- Upgrade from:
  N4000-100-330   13
  Series 989/150   11.1
  Series 997/200   13.2
  Series 969/220   12.4

Recommended upgrades to the N4000-200-380

- New system:

  N4000-200-380   27

- Upgrade from:

  Series 989/200   17.2
  Series 979/200   14.6
  Series 969/400   16.4
  Series 959/400   14.3

Recommended upgrades to the N4000-100-380

- New system:

N4000-100-380	15

- Upgrade from:

N4000-100-220	9
Series 989/100	9.1
All older 9x9/100	4.6 – 7.9
All 929, 939	3.3 – 5.4

Recommended upgrades to the A500-200-200

- New system:
  - A500-200-200   11

- Upgrade from:
  - A500-200-140   5.4
  - Series 988   5.1
  - Series 987/150   5.9
  - Series 987/200   7.8

Recommended upgrades to the A500-100-200

- New system:
  A500-100-200   6.4

- Upgrade from:
  A500-100-140   3.2
  Series 977, 978   3.4
  Series 987/100   4.2

Recommended upgrades to the A400-100-150

- New system:
  A400-100-150   4.8

- Upgrade from:
  A400-100-110   2.2
  Series 967, 968   2.6 – 2.8
  Smaller 9x7, 9x8   1.3 – 2.1

Memory "rules of thumb" – PA-8700 system minimums

- **1.5 – 2 GB** per processor
  for N4000 750 MHz systems

- **1 GB** per processor
  for N4000 380 or 500 MHz systems

- **512 MB** per processor
  for the new A500 system

- **256 MB**
  for the new A400 system

Memory "rules of thumb" – when to add more

- For memory-intensive applications (such as those using 4GLs)

- For heavy batch processing

- For a high number of online user sessions

- When adding processors to a system

New features of MPE/iX 7.5 — FibreChannel

- Native FibreChannel PCI I/O cards are now supported in N-class and A-class systems, allowing FibreChannel disks to be directly connected to these systems.

- Provides greater I/O bandwidth than Ultra SCSI or Fast/Wide SCSI, which can help greatly on systems with heavy disk I/O.

New features of MPE/iX 7.5 — FibreChannel

- FibreChannel benchmarks show big performance gains for disk-intensive processing.

- Six new system processes were added to MPE/iX 7.5 for FibreChannel, so the Transaction Manager (XM) Checkpoint Processor now starts with System Process 17, instead of Process 11.

New features of MPE/iX 7.5 – TurboIMAGE large file datasets

- Can now use a single large file (128GB) instead of a jumbo dataset with chunks

- Supports Dynamic Dataset Expansion

- Avoids POSIX-style names for DB files

- Jumbos may perform better during XM checkpoints in big OLTP environments

New features of MPE/iX 7.5 – TurboIMAGE Scalability II

- Enhanced High Water Mark (E H W M) may provide improved concurrency for DBPUT and DBDELETE on busy OLTP systems.

- Can provide even greater scalability than the existing DSEM and Prefetch options.

- Disabled by default; enabled with DBUTIL.

- Best performance improvement is seen on systems with six or more processors.

New features of MPE/iX 7.5 — PLFD Expansion

- A process can open more files and/or sockets, up from 1024 to 4096.

- A new hashing algorithm provides better performance when a process has more than 512 files and/or sockets open.

Other new features of MPE/iX 7.5

- The number of users that can connect to a single user logging process has been increased from 1140 to 2851.

- LDEV 1 can now be greater than 4 GB in size. MPE/iX system files must still reside in the first 4 GB on this disk.

Review of some recent high-end features

- An N4000 system can now have up to 12000 processes, by enabling the "BIGPIN" feature in SYSGEN (introduced in 7.0 Express 1).

- Systems needing additional processes can replace the :RUN command with the :NEWCI command, to eliminate one process per user (introduced in 6.5).

MPE/iX 6.5 and 7.0 performance patches

- Two patches were released in 2001, which may improve performance on some larger systems running MPE/iX 6.5 or 7.0:
  - MPELXH8 (Memory Manager)
  - MPELXH3 (TurboSTORE)

- Both patches are included in MPE/iX 7.5.

MPE/iX 6.5 and 7.0 performance patches

- The latest 6.5 and 7.0 Power Patch releases also contain these patches.

- 6.5 Power Patch 3 includes:
  - MLELXQ5, which superseded MPELXH8, and
  - MPELXY4, which superseded MPELXH3.

- 7.0 Power Patch 2 includes:
  - MPEMXB2, which superseded MPELXH8, and
  - MPEMX64, which superseded MPELXH3.