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

Kevin Cooper
Hewlett-Packard
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
New highest-performing HP e3000 OLTP system

• The new N 4000-400-750 delivers 100 M PE/ iX Relative Performance Units.

• Over 35% gain in OLTP system throughput compared to the previous high-end system, the N 4000-400-550 (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 800MB 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

- **N 4000-100-380** delivers **15** M PE/ iX relative performance units.

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

- **N 4000-100-500** delivers **20** M PE/ 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
Recommended upgrades to the N4000-400-750

- **New system:**
  - N 4000 400-750 100

- **Upgrade from:**
  - N 4000 400-550 72
  - N 4000 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 N 4000-300-500

• New system:
  N 4000-300-500  52

• Upgrade from:
  N 4000-200-440  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 N 4000 750 MHz systems

• **1 GB** per processor
  for N 4000 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 O LTP environments
New features of MPE/ iX 7.5 – TurboIMAGE Scalability II

- Enhanced High Water Mark (EHWM) 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 “BIG PIN” 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:
  - M PELXH8 (Memory Manager)
  - M PELXH3 (TurboSTOR E)

- 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:**
  - M LELXQ 5, which superseded M PELXH8, and
  - M PELXY4, which superseded M PELXH3.

- **7.0 Power Patch 2 includes:**
  - M PEM XB2, which superseded M PELXH8, and
  - M PEM X64, which superseded M PELXH3.