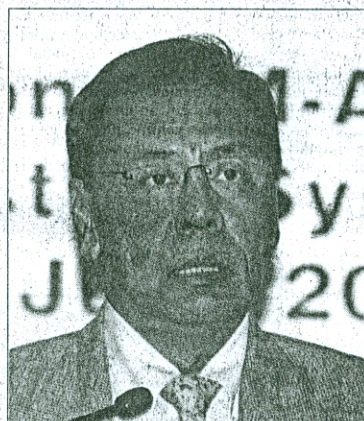


JOB FOR A SUPERCOMPUTER

The Asia Disaster Preparedness Centre (ADPC) has taken delivery of an IBM supercomputer

Story by DON SAMBANDARAKSA



Dr Bhichit Rattakul, executive director of the ADPC, which takes meteorological data and provides information to 23 governments.



Jeffery Dunn, IBM's deep computing business unit manager: "A lot of the work here is relevant in building high performance databases for business".

The Asia Disaster Preparedness Centre (ADPC), located at the Asian Institute of Technology, has taken delivery of a new IBM P575 supercomputer for use in weather and disaster modelling in a region that stretches from the Middle East to most of Asia.

The system, as configured for the ADPC, consists of eight nodes, each with eight dual-core IBM Power5+ CPUs running at 1.9GHz. Together that means a 128-core system delivering just under one teraflop of processing power. Each node is configured with 32GB of memory. This particular system runs AIX, IBM's flavour of Unix.

Jeffery Dunn, IBM Singapore's business unit executive for deep computing in Asia Pacific, explained that the configuration of the P575 is "where clustered computing meets SMP."

Traditional SMP (symmetrical multiprocessing) usually uses more sophisticated nodes than the 8/16 way nodes in this case, while traditional clusters are somewhat bigger than eight nodes. This configuration — where IBM both builds up and builds out — has proven very successful in the high performance com-

puting arena.

Today, IBM is the leader in weather forecasting and the P575 is also the mainstay of other industries such as computational fluid dynamics and dynamic elements (physics).

"If you asked me two years ago, I'd say that it [the technology] is not really relevant to business. However, today, we are working with various database vendors, not just [IBM] DB2 but also our competitors, to take a look at how to process very large database sizes," Dunn said. "This means rewriting database software to make better use of a clustered system. With this clustered technology we can build much larger and better performing databases than in a single large memory system. This is the future for very large systems," he added.

Dr Bhichit Rattakul, ADPC executive director, explained how the centre's role has evolved over the past 21 years of operation. Many of its tasks involve training and education of officials of each of the 23 member governments. These include Laos, Myanmar, Vietnam, Thailand, Pakistan, Sri Lanka, up to the Philippines on the Pacific and India and some of the Middle East countries on the Indian Ocean side.

Most of the centre's predictions depend on data fed in from meteorological departments of each of the member countries. It processes it holistically and then makes the resulting information and models available in a meaningful format.

This multilateral approach is necessary. For instance most of the mudslides in Bangladesh arise from rain falling not in Bangladesh, but on the Himalayas in India.

Today there are at least six buoys off the Andaman coast, two belonging to Myanmar and four to Thailand, of which two are deep sea buoys. Together, these inputs help to predict the possibility of a tsunami occurring after a major earthquake.

"Our [Thailand's] Meteorological Department does not have any information on the Tang Kia bay off Vietnam, but through the network, we now have it and they can create better models," Dr Bhichit said. Such tsunami prediction

modelling can take mere minutes to process. Other predictions, such as rain, can take much longer depending on the resolution (up to 3x3 kilometres in the most detailed cases).

Another important example of the ADPC's role is in preparing against mudslides. Dr Bhichit explained how today the Ministry of Natural Resources and Environment issues hillside villages with a container with a mark. If rain collected in the container over a given timeframe reaches the mark, then the villagers are to evacuate.

However, this is far from a precise science as different hillsides in different seasons have different tipping points as to when a mudslide will occur. Using the new supercomputer, the ADPC will soon analyse individual hills and mountainsides and come up with a tailored "safe" water level and evacuation plan for each village.

Dr Bhichit said that a lot of the ADPC's work was in coordinating relief efforts. In the aftermath of the Boxing Day tsunami, forensics expert Khunying Dr Pornpit Rojanasunand made a request for syringes, and was soon inundated with mountains of syringes — far too many — while suffering from a lack of other equipment. To help prevent this, the ADPC conducts community based disaster risk management (CBDRM), which essentially is a training programme for villagers to come up with a hierarchy and centralised data management for requests in the event of a disaster.

IBM Thailand country general manager, Suphaje Suthumpun, explained how IBM now has a 49.6 per cent market share of the high performance computing sector as measured by teraflops. She also stressed the importance of disaster preparedness through better computer modelling.

"Thailand suffers from six billion baht of damage a year from natural disasters. Mudslides alone cause 157 million baht of damage. It's not just about predicting the weather and rain, it's about major social and economic impact," she said.



IBM country general manager Suphaje Suthumpun has a lot to smile about with a new supercomputer in place: "Disasters cost the economy 6 billion baht a year."



IBM's P575 supercomputer, which is used for weather and disaster modelling for a region that stretches from the Middle East to Asia.

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