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Action (previously Ingres), Architect, Performance Engineering 2/07 – 3/12

Ingres Corporation was spun out of Computer Associates in March of 2005 (after being bought by ASK years earlier). The technology has its origins from the University of California at Berkeley as the first (and open source!) relational database released some 30 years ago. A dedicated performance group was formed to determine the product's competitiveness and help guide its improvement in all areas of performance. Since 2008 most of the work has centered on VectorWise a new columnar based vector processing engine developed originally at CWI in Amsterdam, which has been integrated into the product. Using this system we have published record breaking TPC-H results. I have also been the chair of the TPC-H technical subcommittee for 2010 and 2011. Ingres changed its name to Actian in late 2011 to reflect a product emphasis on enabling business actions rather than only nice graphs from business analytics. Work has also continued around the standard Ingres product usually in a consulting mode (or last line of defense) for customer POCs.

PalmSource, Performance Lead 1/06 - 1/07

PalmSource was the software division responsible for the PalmOS spun out of Palm, then bought by Access (Japan) and now with groups (from acquisitions) in France and China. As announced at 3GSM in March 2006, Access is building a new system for handheld devices and phones providing a PalmOS like user experience supporting PDAs and smartphones but using a common Linux/Open-source base plus custom middleware. I was hired as Performance Lead, but changing company plans required my assistance on more general development and I ended up designing and implementing volume management (bridging the PalmOS world with Linux HAL/udev) as well as contributing to global settings mgt, power mgt, and a host of other odds and ends, while also keeping an eye on performance.

Toasterfish, Founder 11/03 – 11/05

Toasterfish was a self-funded garage startup that failed to launch. The idea was to bring a set of high level robotic modules and infrastructure components (power mgt, drives, processors, arms, knees, hips, wheels, sensors, etc) to allow developers to focus on the application software that is so badly needed to achieve the robotics revolution. Robotics is really in the same state as the early 80s computer industry offering only the two extremes of collections of parts or fully complete vertical systems. What is needed is the same explosion of software development that open systems and low cost hardware made possible with mini-computers & unix and PCs & windows. Alas a lack of funding has allowed this opportunity to slip by. (<http://www.toasterfish.com>).

Zambeel, Senior Principal Engineer, Fremont CA 9/01 – 4/03 - then as Storad – 703

Zambeel (now Agami) developed a fully autonomous policy based cluster NAS built from commodity components and Linux. This system offered the first provisionable (ops/s, MB/s, and capacity) NAS product using a highly scalable fully fault tolerant architecture. I lead the group that designed and implemented the Network Data Management Protocol (backup/recovery), which had to not only achieve high performance but adjustable performance in keeping with the policy based management of the overall product. Before during and after NDMP I also made major contributions to network time protocol support, cluster coordination, messaging, disk failure analysis, and customer support. I walked away when the company was intentionally imploded to shed debt and reincarnated as Storad then as Agami which eventually folded a few years later.

Independent Consultant – San Jose, CA 11/87 – 9/99

A contract to rework the bottom half of the Informix database engine to exploit the Sequent SMP architecture started a unique relationship as a consultant for Informix core development. During this period major work was done on many versions of single and multi node Informix with a focus on storage management, logging, performance, scalability, and concurrency. The core I/O, scheduling, and OS layers were the primary focus, but significant work was also done on utility applications and their interaction with the database. Work for other groups was done as well including porting, benchmarks (TPC-B/C/D and customer specific) QA, and on-site support (for the Municipal Court of Seattle, the largest Informix installation of its day).

The contract nature of the work with Informix also allowed OEM relationships to form and contracts were done for MIPS, Siemens, Sequent, Data General and others typically focusing on performance investigations and enhancements usually to exploit the features of a newly released model.

During the last four years of this period I formed a two-person company (Database Engines) to continue essentially the same work I had been doing but with a somewhat broader scope. Work with the major DMBS vendors and their OEMs continued including Informix, Oracle, Sequent, Sun, and Tandem. Contract content was expanded to include CORBA infrastructure and application server technology (at Oracle).

Opus Systems - Cupertino, CA 9/86 - 10/87

Opus built Unix-coprocessor boards that plug into PCs, turning the PC into a Unix workstation. I was responsible for the graphics package, which involved porting new versions of the X Window system to the Opus dual processor architecture (PC plus coprocessor). The system was successful in small niche markets requiring the (then) higher performance CPUs, but lost favor once PCs caught up with the workstation vendors.

AIT – Santa Clara, CA 10/85 - 4/86

American Information Technology was founded to build a computer family based on a proprietary 64 bit microprocessor. I was part of a team that designed a micro-kernel dealing with memory, processor, and process management as a service layer under several operating systems (initially Unix). Several developers, including myself, left less than a year after joining when we realized that the founders were not capable of creating a corporate structure to match the technical one we were chartered with delivering

Independent Consultant & NASA SBIR - San Jose, CA 8/83 - 9/85

During this period I did a major project for GE-Calma in addition to a small project for Synapse and took an extended vacation in Nepal. The Calma project was to redefine and then implement (a port of) their proprietary user level network package on Data General systems. Binary compatibility was maintained with both old (16 bit) and new (32 bit) users concurrently on the same system. The system worked well and was implemented on several platforms.

In 1984 I received a \$50k NASA SBIR grant for research into a new file system architecture (what today would be termed a disk level object store). The prototype work went well and verified excellent performance and reliability gains, but required too much memory for current DRAM prices and required a significant departure from SCSI, which did not seem achievable in 1984.

Synapse Computer – Milpitas, CA 7/81 - 7/83

Synapse Computer was founded to build and market systems developed specifically for the OLTP market. The system pioneered a microprocessor based cache coherent symmetric shared memory design very much like today's Sequent Symmetry series. I was a major contributor to the overall architecture and designed and implemented the kernel file system and associated memory mapped file I/O system. The system was particularly innovative in its SMP hardware and layered software. The later which placed a RDBMS below the user visible OS layer. Thus the kernel file system was essentially the I/O subsystem of the database. An initial revision of the system was completed and performed extremely well but targeting mission critical OLTP as our first market proved to be a poor choice and the company never gained sufficient traction to sustain itself.

Data General – Westboro MA 11/75 - 6/81

At DG I worked on 3 operating systems and a new architecture. I started by writing device drivers but quickly became one of the senior members of a group developing the Advanced Operating System. I was primarily responsible for all aspects of I/O (controller interface definition, file systems, user libraries, etc).. After AOS I joined a team developing a new 32 bit architecture & OS (a precursor to the eventual MV line) and completed my five years at DGC as the technical lead of a group doing a new realtime OS for a new line of microprocessors.

Case Institute of Technology – Cleveland OH 9/71 - 8/75

At Case I declined to follow the conventional Computer Engineering curriculum. Instead I entered the Undergraduate Scholars program which essentially allowed me to complete a masters level of courses and projects in about a 60/40 HW/SW mix while getting only a BS in return (it seemed like a good idea at the time!). Then of course I went into software not hardware.