PTR/INT Oracle Solaris 11 Internals

Oracle Solaris 11 Operating System: Introduction

- Kernel layering
- Process Structures
- Hardware and software interrupts
- New features of the Solaris 11 OS
- Using tools such as mdb, kmdb, and DTrace to examine kernel data structures

Multithread Architecture

- Symmetrical multiprocessing (SMP) and asymmetrical multiprocessing (ASMP)
- Kernel Threads
- Kernel Lightweight Process Structure
- Interrupts, Interrupt Threads, and Interrupt Threads Priorities
- Mutex locks
- Semaphores

Hardware Memory Management

- Process Address Space
- System Memory Model
- Virtual-to-Physical Address Translation
- x86 - 32-Bit MMU
- Spitfire Memory Management Unit (SFMMU)
- Virtual Address and Physical Address Cache
- Direct-Mapped and Set-Associative Cache
- Hardware Address Translation Layer

Software Memory Management

- SunOS VM1: Features
- Process Address Space
- Virtual Memory System Layers
- Address Space Layer
- Mapping structures

VM2

- Motivation for VM2
- VM2 Virtual Memory System Layers
- Criteria for Memory Selection: mnodes
- Criteria for Memory Selection: Tiles
- Criteria for Memory Selection: tilelets and tilechunks
- Kernel Cage
- Bounds Predictor

Paging and Swapping

- Page Replacement and Page Daemon
- Defaults for SunOS 5.5.1 Through SunOS 5.8
- Paging Parameters
- Swapper
- Virtual Address Lookup

The swapfs File System

- Anonymous Memory in SunOS 5.x
- Swap Management Structures
- Swap Space Management
- Advantages of swapfs File Systems

Scheduling

- Scheduling Features
- Pre-Emptible Kernel
- Interactive Scheduling Class
- Fixed Priority Scheduling Class (FX)
- Fair Share Scheduling Class (FSS)
- System Duty Cycle (SDC) Scheduling Class
- Dispatch Priorities
- Kernel Mode Priority Assignment

Process Lifetime

- Process Creation Routines
- Executable and Linking Format (ELF)
- Process Segments
- Auxiliary Vector
- The Initial Process Stack

Signals

- Kernel Signal Bitmasks
- Signal Delivery and Signal Actions
- Signal Mask Routines