

SOLARIS™ WBEM SERVICES 2.3

Solaris™ Web-Based Enterprise Management (WBEM) Services is a core element of the Solaris 8 Operating Environment that makes it manageable by tools from other enterprise vendors. It is based on an extensible schema and open Internet standards. With the Sun™ WBEM Software Development Kit (SDK), Sun delivers a comprehensive set of Java™ tools and services for the development of management applications and instrumentation to manage Solaris software as well as other platforms.

THE SOLARIS OPERATING ENVIRONMENT

Today's explosive levels of growth — in terms of bandwidth, networks, and digital devices — have created the phenomenon known as the Net Effect. It's forcing organizations to rethink how they create, manage, extend, and ultimately deliver information technology (IT) services. Yet at the same time, it's creating massive opportunities for innovation with regard to service and functionality.

For more than 15 years, Sun has been telling the world that The Network Is The Computer™, and has led the way in helping our customers harness the transforming power of the Net Effect. As the foundation for Sun systems, the Solaris Operating Environment enables your IT organization to deliver on the promise of massive scale, continuous real-time computing, and secure systems — while increasing service levels, reducing risk, and decreasing costs. With Solaris 8 software, you can efficiently manage resources and provide a higher level service. It also helps reduce complexity by providing easy-to-use interfaces and comprehensive administration tools — all designed to help lower your IT risk. And, by optimizing your resources and enabling them to scale to meet demand, the Solaris 8 Operating Environment helps you to minimize costs and lower your total cost of ownership.

- Web-based enterprise management
- Leverages XML and CIM
- Complete set of development tools
- Compatible with major protocols
- Provider programs
- CIM Object Manage (CIM) — a proven Java agent framework
- Solaris schema — an extension of the DTMF common model
- Managed Object Format (MOF) Compiler — a tool to add other vendors or customers' models
- Manageable by tools from other enterprise vendors

WEB-BASED ENTERPRISE MANAGEMENT

A major issue facing information technology (IT) staff and line-of-business managers is the increasing cost of ownership of a heterogeneous network consisting of hardware, software, and storage from multiple vendors. A significant portion of these costs can be reduced if:

- Vendor-specific information can be described using a standard schema or model that allows management information from different vendors to be combined, analyzed, and shared.
- There is a standard mechanism of access by common applications to management information.

The Distributed Management Task Force (DMTF) industry group has developed the Web-Based Enterprise Management (WBEM) model, a new standard that unifies the management of enterprise environments with a set of management- and Internet-standard technologies. Through WBEM, companies can develop and deliver a set of standards-based management tools that leverage new technologies, such as the eXtensible Markup Language (XML) and the Common Information Model (CIM), operating over HTTP.

SOLARIS WBEM SERVICES

As an active participant in both the DMTF and the WBEM initiative, Sun has developed Solaris WBEM Services software — Sun's implementation of the WBEM/CIM standards and a core technology of the Solaris 8 Operating Environment. In addition, Sun also offers the Sun WBEM SDK, a set of key application development tools. Together with Sun's proven Java technology-based services, the Sun WBEM SDK makes it easier for software developers to create applications based on the CIM schema and XML/HTTP communication standards. This helps developers build robust, agile applications to manage

Solaris software systems and administer the Solaris Operating Environment. It also enables them to write provider applications — programs that supply information and events for managed objects specific to their domains. Based on Java technology, Solaris WBEM Services software allows the Solaris Operating Environment to be managed by tools from other enterprise vendors.

SOLARIS WBEM SERVICES SOFTWARE OFFERS:

- CIM Object Manager (CIMOM) — *a proven Java agent framework*. Integrated into the Solaris Operating Environment, the CIMOM is a reference Java implementation of the CIM repository and object manager. It supports the XML/CIM interface and CIM operations over HTTP and RMI. The CIMOM handles all CIM operations, authentication, authorization, retrieval and storage of schema information from the CIM repository, and request routing with the relevant providers.
- Managed Object Format (MOF) compiler — *a tool to add other vendors' or customers' models*. This is a program that parses MOF statements in an ASCII text file and adds compiled classes and instances to the CIM repository.
- Solaris software schema — *a public model of Solaris software resources*. This extension of the common model specifically describes the Solaris Operating Environment and is a comprehensive object model of managed objects on the Solaris platform. It is the basis for implementing a collection of Java software classes in providers.
- Solaris software providers — *the focus for the Solaris platform instrumentation effort*. Solaris software providers are programs that communicate information between the Solaris Operating Environment and the CIMOM. They are implemented as Java software classes and provide “dynamic” data. Solaris software providers have been developed for a variety of areas: users, groups, aliases, roles, file systems, disks, processes, cron tool, and network configuration. Because of the incremental development capabilities of the WBEM instrumentation framework, additional providers for more Solaris software services and Sun software products can be progressively and consistently added.

A COMPLETE SET OF DEVELOPMENT TOOLS

Solaris WBEM Services is complemented by the Sun WBEM SDK, an extensive set of tools and ser-

vices for developing management applications and providers.

The Sun WBEM SDK provides:

- A set of Java APIs for WBEM — *the Open Interfaces*. Sun has developed WBEM APIs as a collection of Java software classes. Sun provides them to its customers and partners as part of the Sun WBEM SDK. To ensure openness and standardization, these Java APIs have been proposed — through a group of industry experts — for standardization through the Java Community Process (www.java.sun.com/aboutjava/communityprocess/jsr/jsr_048_WBEM.html). Sun is also evaluating, with other vendors and industry groups, the open sourcing of its implementation, underlining Sun’s vision in this area.

The main packages are:

- CIM API — common classes and methods used by applications to represent all basic CIM elements
- Client APIs — methods used by applications to transfer data to and from the CIMOM
- Provider APIs — interfaces used by the CIM Object Manager and object providers to communicate with each other
- CIM workshop — a Java application using a GUI that enables developers to create, delete, and browse CIM classes and instances representing objects on their systems
- Sample programs — sample source code that uses client and provider APIs, demonstrating their typical usage
- Comprehensive documentation

EASY ADMINISTRATION

Solaris WBEM Services software helps seamlessly integrate the Solaris Operating Environment into a network comprised of a variety of components — hardware, printers, storage devices, operating systems, application software — managed by third-party applications from a number of different vendors. This is achieved through access to network management information in a standard, consistent, and coherent form. By combining information from diverse applications, objects from different vendors can be managed as if they were from one vendor, greatly reducing the complexity and cost of managing a heterogeneous system. All of this is accomplished by standardizing the management platform and making it

independent of the many platforms that comprise any given system. The result is the ability to transparently manage a heterogeneous system as a unified one.

PROTECTING CURRENT INVESTMENTS

The compatibility of Solaris WBEM Services software with existing major protocols, such as Simple Network Management Protocol (SNMP), Desktop Management Interface (DMI), and Common Management Information Protocol (CMIP), is feasible by mapping management information and protocols through adapters or converters. This enables Solaris software tools to manage existing heterogeneous networks. WBEM-enabled Solaris software can be administered by legacy management applications. Developers can write agents or providers to convert information from these protocols to WBEM/CIM, or they can write adapters to convert WBEM/CIM information into these protocols.

OPEN AND EXTENSIBLE

Applications developed using the Sun WBEM SDK conform to many open standards, including:

- Common Information Model
- Managed Object Format
- eXtensible Markup Language
- Hypertext Transport Protocol

The extensibility and agility of these standards to create new classes, objects, and applications means that customers will be able to manage networks based on open protocols and communication, without being locked into a closed and proprietary management schema.

REQUIREMENTS

- Solaris 8 Operating Environment on SPARC™ or Intel Architecture platforms

- 25 Mbytes of disk space for installation of all components
- Java 2 Platform, Standard Edition (J2SE™) (Formerly called JDK™ 1.2 technology)

FOR MORE INFORMATION

Solaris WBEM Services 2.3 is available as part of the Solaris 8 Operating Environment. To learn more, please visit our Web site at www.sun.com/solaris/wbem/.