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Section 3: POSIX Open System Environment

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The POSIX Open System Environment (OSE) is a collection of concepts that provide a context for user requirements and standards specification. It provides a minimum, standard set of conceptual information system building blocks with associated interfaces and functionality. The POSIX OSE consists of a reference model, service definitions, standards, and profiles.

These OSE concepts are also intended to be conventional within computer science. The intention is not to break new ground, but to establish a minimum and unambiguous terminology and set of concepts for identification and resolution of portability and interoperability issues.

The POSIX Open System Environment is defined in five parts:

(1) General requirements are identified that apply to the POSIX OSE as a whole in 3.1.

(2) A reference model is developed that unambiguously identifies the system under consideration for purposes of specification. The POSIX OSE reference model described in 3.2 defines system elements to identify interfaces across which service requirements should be satisfied. The elements are chosen to expose those interfaces that are significant to the profile writer or user.

(3) Using the interfaces identified in the reference models, each subclause of Section 4 categorizes and describes the basic services available to users across each interface. The services are defined in a generic way, based on the reference model, user requirements, and current industry practice, rather than any given implementation.

Definition of the service requirements is not constrained by the availability of standards. Service requirements that are not currently satisfied via standards are discussed in either the Emerging Standards subclause, or under Gaps.

Each clause of Section 4 begins with a more detailed and specialized version of the reference model to provide a context for service specification. After defining the interfaces and services, each of the Section 4 clauses concludes with a discussion of standards that are related to the services.

(4) Section 5 discusses issues and requirements that directly affect all of the service categories, such as internationalization, security, and

administration.

(5) Section 6 provides guidelines for creating profiles that address various application domains. This is a brief description of how the reference model and services are applied to a variety of existing types of systems. Section 7 describes current POSIX profiles and profiling activities.

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3.1 POSIX Open System Environment — General Requirements

The POSIX Open System Environment should satisfy the requirements in the following list:

(1) Application Portability at the Source Code Level

The POSIX OSE shall enable application software portability at the source code level.

Rationale: Comprehensive and consistent source code level service specifications allow porting of applications among processors (ideally without modification). Binary portability requires too tight a coupling with the processor implementation.

(2) System Interoperability

The POSIX OSE shall enable application software and system service interoperability.

Rationale: Communications services and format specifications allow two entities participating in a distributed system to exchange and make mutual use of data, including:

— Homogeneous systems

— Heterogeneous systems (i.e., a wide variety of hardware/software platforms)

— POSIX-OSE-based and non-OSE-based systems

(3) User Portability

The POSIX OSE shall enable human users to operate on a wide range of systems without retraining.

Rationale: Standard methods and services for supporting human/computer interaction are a key aspect of the definition of an open system (see Section 2). Elimination of gratuitous differences in the interface that the application platform presents to the user via standards is a significant aspect of this task.