Glossary of Shore Terms[1]

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anonymous object A Shore object that does not have a name in the Shore name space.

cross reference An object whose contents are a serial number. A cross reference combines features of hard and symbolic links in Unix, but is somewhat different from either. Like a symbolic link, a cross reference is a separate object, independent of the object to which it refers. Unlike a symbolic link, the reference points to the object, not to its name; the object need not even have a name. Unlike a hard link, a cross reference can dangle (be pointing to no object at all). If the target object is destroyed, the cross reference will dangle forever, until it is destroyed, even it had pointed to a named object (a registered object) and a new registered object of the same name is created.

directory Shore's analog of a Unix directory. A directory is a Shore object.

file A file is a Storage Manager concept. A file is a area on a disk in which records are created. In a sense, it is a home for an object. Files have certain properties that control how their updates are logged and whether records within the files are movable. At the Shore VAS level, a pool is implemented as file.

file system The Unix-like hierarchy of objects that resides on a volume. A file system may be linked to other file systems in the global Shore name space by way of a mount point.

frozen A frozen interface (type) cannot be changed, and therefore can have instances. A type is frozen by freezing the module that contains it. Freezing modules is done by the SDL editing programs.

index A persistent mapping of keys to values: may be a B-tree, R-tree, or any other index type supported by the SSM. An index is not an object. It is an attribute of an object, if it is a manual index. It is embedded in a set (an attribute of an object), if it is an automatic index.

interface In SDL, the construct that describes a complete abstract data type, of which instances (objects) can be created.

language binding The source code generated by the SDL compiler to support convenient access to OC objects from the C++ programming language.

LB See language binding.

link Shore's analog of a Unix hard link.

logical OID index An index on a volume that maps *logical* object identifiers to *physical* object identifiers.

metatype object Objects that are part of the type system, but which cannot be instantiated directly by users. Metatype objects are combined in various ways by the Shore type system to form types.

module A pool whose contents are types and metatype objects. Once a module is frozen, the types it contains can be instantiated.

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mount point Shore's analog of an AFS mount point: a persistent, cross-volume, link to the root directory of a volume.

object A Shore object as seen by users of the SVAS, OC, or SDL. An object is an instance of an abstract data type. While the SVAS does not interpret the structure or abstract data type of an object, it recognizes that an object has a type and system properties.

object cache The component of the Shore software that caches objects in the the application's address space.

OC See object cache.

object identifier A bit pattern that unambiguously identifies an object. OIDs can be *logical* or *physical*. A logical OID consists of a volume ID and a serial number. A physical OID consists of a volume ID, a page number on that volume, and a slot number on that page. The SVAS deals only in logical OIDs. A logical OID index maps logical to physical IDs. In these documents, *OID* is intended to mean *logical OID* unless its alternative meaning is made explicit.

OID See object identifier.

pool A Shore object that is associated with a file that contains anonymous objects. A pool is a registered object, whose contents identify the file associated with the pool.

record A Shore object as viewed by the SSM: an untyped sequence of bytes, without system properties.

reference A reference is an SDL concept. It is an abstract data type that can be used to manipulate an object in the object cache. It is implemented as an OID.

registered object A Shore object that has a name in the Shore file system name space.

root volume The volume on which the root file system is located.

root file system The file system whose root directory is "/".

root directory A highest directory in the hierarchy of directories that composes a file system. The root directory of exactly one file system is named "/"; the root directories of other file systems can be linked into the Shore name space through mount points.

SDL The Shore Data Language, a language for defining abstract data types, from which source code can be generated for various programming languages (currently only C++).

serial number A bit pattern that unambiguously can identify an SSM entity (record, file, or index) within the context of the volume on which the entity resides. A serial number is not always associated with a Shore entity. Serial numbers, once used to identify an entity, are never reused. If an entity is destroyed, its serial number is never reassigned. The SVAS and SSM enforce this rule; all value-added servers should do the same.

Shore Value-Added Server The Shore value-added server. The SVAS builds on the SSM to provide applications with typed objects, a file system, and access to data managed by the SSM.

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SSM See storage manager.

storage manager The Storage Manager component of Shore. The SSM provides persistent storage of untyped data and indexes by managing disks and caches.

SVAS See Shore Value-Added Server.

symbolic link Shore's analog of a Unix symbolic link. A symbolic link is a registered object containing the name of another registered object.

sysprops See system properties.

system properties A set of properties of each object, including an owner, group, and a set of bits controlling read, write, and execute access to the object, size, and modification time. These properties are analogous to the Unix properties of directories and files.

TEXT attribute An optional attribute in an SDL interface that is a sequence of uninterpreted, unsigned bytes, and which serves to contain the Unix-world's view of an instance of the interface. An SDL interface can contain at most one TEXT attribute.

transaction A sequence of Shore operations that together have the ACID properties (atomicity, consistency, independence, and durability).

type An object or group of metatype objects that describe abstract data types, which are visible to Shore users and applications. Such an abstract data type corresponds to an SDL interface, and can be instantiated as Shore objects.

VAS See value-added server and Shore Value-Added Server.

value-added server A server that enhances the capabilities of the Shore storage manager. An important example is the Shore Value-Added Server.

volume A physical device (e.g., a disk). A volume may contain any number of files. It may also contain a logical OID index. (All volumes that are used by the SVAS contain such an index.) Future versions of Shore may extent the concept, allowing more than one volume to exist on a device and/or allowing a volume to span devices.

volume ID A sequence of bits that identifies a volume.