

## M5T Mgmt-IX SAFE

M5T Mgmt-IX SAFE stands for Management Information eXchange. M5T Mgmt-IX SAFE is a C++ based set of classes that provides the provisioning glue required by application modules. Mgmt-IX primary goal is to establish and enhance information exchange capabilities between multiple entities.

In Mgmt-IX, two types of entities exist: Owners and Users. The Owners are application modules that receive requests from Users through Mgmt-IX. They are responsible for the execution of the operation contained within the requests on the associated managed variable. The Users are entities that use Mgmt-IX to access variables managed by Owners. The user interfaces such as the SNMP agents and the CLI.

The SNMP adaptors do the conversion of SNMP requests into Mgmt-IX requests and convert back the responses into SNMP responses. The CLI adaptor provides a useful command line interface that also gives access to the provisioned Owner variables. Another important User module is the Persistence Manager. It provides long-term persistence by querying all variables and saving them within a file. In order to fulfill its goals, Mgmt-IX must have information on the internal representation of the variables managed by all Owners. To accomplish this, the client must provide a map of all existing variables with their relations and constraints.

A standard MIB file, which stands for Management Information Base, is the format used to describe the variables. For performance reasons, Mgmt-IX does not parse these files each time the application starts. Instead, it uses a pre-processed form of the MIB generated with a specialized tool. This tool is called MixGen and it is a compiler that browses the MIB and generates the pre-processed information. In addition, MixGen also generates helper classes for each variable. A client may use those helper classes to manage the variables from an Owner context and to access them from a User context.

## ARCHITECTURE ENTITIES

Mgmt-IX architecture is composed of multiple components:

- MIX Manager knows all Owners and all their variables, sees all requests sent to them and does the basic validations; it is the center piece of the Mgmt-IX architecture.
- MIB Information contains all the information extracted from the pre-processed MIB.
- Persistence Manager provides the long-term persistence of variables.
- NetSnmp 5.0.x adaptor is supported under Linux and Windows environments.
- Envoy 9.x adaptor is supported under VxWorks environment.
- Command Line Interface (CLI).



## KEY FEATURES

- Minimized coding and integration time: Implements much of the generic provisioning code functionality usually contained in the applications.
- Support for additional modules is thereby reduced, and so is the developer's time dedicated to this task. With Mgmt-IX, a MIB compiler named MixGen is provided that generates classes to simplify the integration of Mgmt-IX within an application.
- Flexible and extensible API: Offers a high level of flexibility, allowing applications to implement new adaptors or to adapt and modify the variable management operations.
- MIB dynamic tables: Supports for AUGMENTS and INDEX is well integrated within Mgmt-IX, which provides automation of the table link management. For instance, if a row is removed from an augmented table, the associated row will also be deleted from the augmenting table; likewise for the insertion.
- Integration in current code base: Generates, with MixGen, all the classes required for easy variable management. An Owner may then instantiate and initialize these variables and make them automatically available to Users.
- SNMP/MIB simplification: Hides complexity associated with SNMP.
- Multiple interface adaptors: Supports more than just SNMP; while being loosely coupled to MIB, MGMT-IX does not have to support SNMP. In fact, many more user interface adaptors could be created such as Web-based or CLI adaptors.

## REQUIREMENTS

M5T Mgmt-IX SAFE requires the following:

- ANSI C++ Compiler with support of templates, placement new and placement delete operators, and support of the "mutable" keyword.
- Multi-threaded operating system with mutexes, semaphores, or other synchronization objects.

M5T Mgmt-IX SAFE is already ported to the following operating systems:

- Linux
- VxWorks
- Windows
- Windows CE

Additional operating systems can easily be supported, provided the above requirements are met.



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