

SAM Supervisor

Management system for CALYPSO SAM

The **SAM Supervisor** is an important part of the security of the ticketing systems complying with the CALYPSO Specification.

The *SAM Supervisor* controls the Secure Application Modules (SAM) and reloads the SAM used for sales operations.

SECURITY MANAGEMENT OF A CALYPSO CONTACTLESS TICKETING SYSTEM

Contactless ticketing systems allow the owner or a contactless smartcard with the proper rights (transport contracts) to enter and travel in the transit networks.

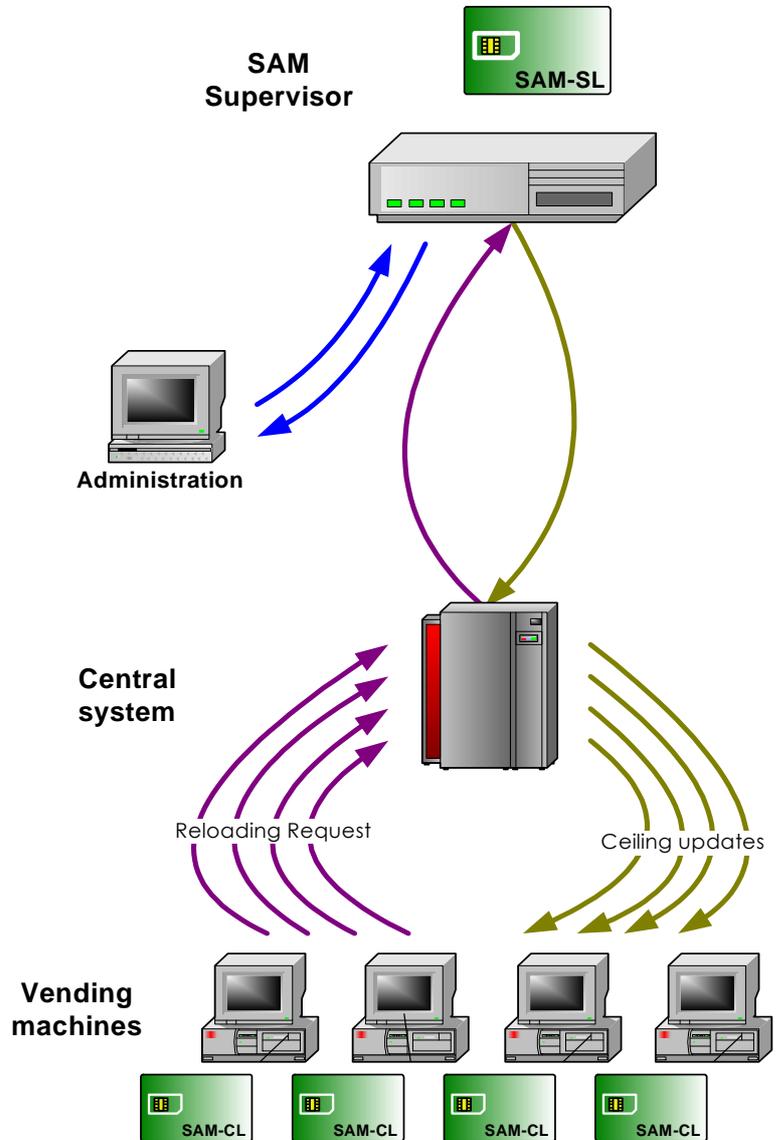
These contracts have previously been bought, or in specific cases are granted without payment.

To prevent the fraudulent loading of a contract in a card, the contracts are protected by Security Application Modules (SAM) present in all terminals issuing transport contracts. These SAM contain the cryptographic keys necessary for the sale operations.

To prevent the use of stolen SAM, the keys are linked to a counter and a ceiling. Every time a key is used, its counter is incremented by one. Once the counter has reached the ceiling value, the SAM rejects the loading commands.

The vending machines therefore need to be regularly reloaded (increasing of the ceiling value) to ensure the continuity of service. This operation is secured with an upper level SAM (SAM-SL).

The **SAM Supervisor** is the central system equipment that reloads all vending SAM.



Main functions

- Management of a database of all SAM
- Reloading of the SAM of the vending machines (SAM-CL)
- Securing all operations with a central SAM (SAM-SL)
- Loading of new keys or parameters in the SAM (option)
- Recording all the operations done
- Secured remote administration through a web browser
- Alerts (email, RSS, SMS)

TECHNICAL FEATURES

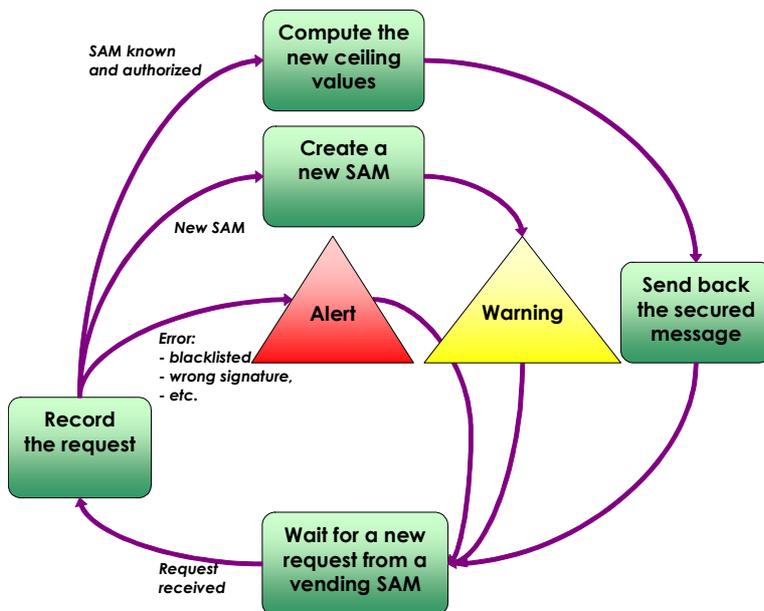
SAM reloading process

When the Supervisor receives a reloading request from a vending machine, it checks the message authenticity (with its SAM-SL), that the SAM is not blacklisted, and other error conditions.

If the SAM is known and not blacklisted, a message is generated, signed and sent back to the vending machine.

If an error is detected, an alert is generated for the administrator.

A simplified diagram of operations is illustrated below:



Administration Functions

All administrative tasks are managed with a web browser using HTTPS.

Once securely identified, the administrator may:

- Parameter the maximum number of vending operations authorized (per SAM or per equipment type).
- Create a SAM.
- Modify the parameters of an existing SAM, including its activation or blacklisting.
- Survey and respond to alerts (new SAM, new equipment, blacklisted SAM, etc.).
- Generates status reports.

Various parameters ease the initial creation of the data and allow a large flexibility in the system management.

The parameters should be set to allow 3 to 5 days of sales without connection of the vending equipments to allow for possible network shutdown.

The Supervisor parameters may be easily adjusted from the reports generated by the Supervisor.

Terminal Requirements

The SAM Supervisor may be adapted to specific terminal message formats.

The suggested terminal management allows a large flexibility of operations (SAM reloading, new key loading, remote SAM administration, etc.) with a simple terminal mechanism.

Product Range

The SAM Supervisor is available in three forms: stand-alone network appliance, software package or as a web service:

NETWORK APPLIANCE

- Rack mountable PC under Linux
- Fully automated and stand-alone
- Plug and Play

SOFTWARE PACKAGE

- Windows XP application
- The package includes MySQL and all necessary software tools for operation

WEB SERVICE

- Remote server operated by Spiritech
- Located on a secure site
- Lowers installation and maintenance costs

Detailed Characteristics

INTERFACES

- USB: PC/SC smartcard reader(s)
- TCP/IP, HTTPS, XML or native

VOLUMETRY

- Up to 100,000 SAM
- Up to 400,000,000 records

DATA BASE CONTENT

All the operation done and the list of known SAM:

- All operations.
- All messages received.
- All operations are logged.
- SAM information (identifier, parameters, ceilings and counters values, etc.)

ASSOCIATED PRODUCTS

- SAM-S1 Secure Application Module



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