

The **SC.EIR** (Equipment Identity Register) platform is a software and hardware suite for the registration of subscribers and their terminals immediately after they appear on the network. To perform these functions, the platform is integrated with MNO switching equipment and processes CheckIMEI queries from it.

The main purpose of such systems is to block devices on the black list from operating on the network. The **SC.EIR** platform supports this function and noticeably extends it.

- Support for the required lists (IMEI, IMSI, MSISDN, their bundles, etc.). Logic of their use is adjusted according to the required blocking and unblocking cases
- Synchronization of lists with Central EIR (CEIR) or other databases
- Outgoing API to transfer IMSI status to other MNO systems (for example, for partial blocking)
- Sending notifications to subscribers

Moreover, EIR can be used for the following purposes:

- Storing device change history for each subscriber
- Detecting a new subscriber/terminal immediately after it appears on the network
- Tracking various events (device change, device model change, etc.) for particular subscribers
- Sending triggers on tracked events to external systems

These options allow considerably extending and optimizing the functionality of other MNO systems and even implementing new B2B and B2C services. Let's consider some examples.

If EIR is integrated with a DMS system:

- DMS registers new subscribers or device changes immediately after their registration in the network and automatically sends them automatic data transfer configuration settings. This significantly increases the infiltration of such services and decreases the load on the subscriber service and SMSC
- It also makes it possible to no longer rely on specialized software on SIM cards for automatic configuration requests
- In DMS, it is possible to accumulate and structure data on devices of the entire MNO subscriber base. It allows to get extended set of analytic reports for business development

Upon integration with the **SC.Campaign Management** platform, you can conduct marketing campaigns based on automatic service activation for subscribers who meet certain requirements (use of a promo device, change to nonpromo device, etc.). Available functions are provided below in the **SC.Campaign Management** platform description (**EIR Bonus** module description).

Upon integration with the subscriber event monitoring system (see the **SC.Subscriber Control** platform description below), device change events can be tracked.

In cooperation with the M2M platform the problem of control over the legal usage of devices can be solved (the optional **EIR M2M** module should be installed). Since special rates are often offered for M2M SIM cards, users can abuse an operator's confidence by using these SIM cards with other devices. The **EIR M2M** module instantly detects such a situation and informs the M2M platform about it. The module supports several modes for sending events to the M2M platform:

- IMSI list tracking:
  - An event is sent every time it is detected
  - An event is sent if no events on this IMSI took place within a given period before the
  - time of detection

- Bundles tracking and sending an event if:
  - IMSI changed a device
  - IMSI changed a device model
  - IMSI appeared on the network with an IMEI different from the initial one
  - IMSI appeared on the network with an IMEI that does not coincide with the previous one

## Key features

- Receipt of CheckIMEI events over MAP, S13 (Diameter) and other protocols
- Response generation to switching equipment (whitelisted/greylisted/ blacklisted)
- Detection of new IMEI-IMSI-MSISDN triplets on the network
- Loading IMSI-MSISDN lists from billing (if necessary)
- Support for various tracking lists
- Generation of queries to external systems when new triplets or an event on the tracking list is detected
- Ability to delete detections. Automatic deletion of outdated detections
- Preparation of IMEI-IMSI-MSISDN triplets cache upon initial startup

## Benefits & advantages

### Operation modes

The **SC.EIR** platform has two operation modes.

1. Operation in the EIR emulator mode.  
The platform first always replies 'whitelisted' to switching equipment and then performs all other functions. Its main function is to quickly detect a device on the network corresponding to certain conditions and to generate triggers to external systems.
2. Real EIR operating mode.  
The main function here is to not to admit unauthorized equipment in the network. Integration with CEIR can also be performed for this function. If a device is registered in the network, further additional checks are performed.

In both these modes, it is possible to proxy CheckIMEI traffic to another system in the MNO network.

## High Productivity

The company portfolio has installations with the following peak capacity:

- storage of 200 million unique triplets
- 10000 MAP\_CHECK\_IMEI operations received per second
- capability to sent up to 1000 triggers per second to external systems
- reception of files or HTTP queries from the billing with updated IMSI-MSISDN bundle, limited to the half of the daily active subscriber base

The actual performance of the solution depends on the MNO network conditions, and may be linearly increased through horizontal scaling of the system.

## Unique Solution

In addition to the standard capabilities, the **SC.EIR** platform offers the following additional advantages:

- The registration event processing logic, both for the real EIR and EIR emulator, is rather flexible for adjustments based upon customer requirements
- The creation of a database on all subscribers and their terminals as well as keeping it up to date for further processing, analysis, and report generation
- Fast detection of new IMEI-IMSISISDN triplets appearing on the network (up to 10 seconds after their appearance)
- Ability to use the platform in many regions, where each EIR processes local subscriber detections and sends detected subscribers from other regions to their home EIR
- Ability to receive CheckIMEI events over a number of protocols: MAP, S13 (Diameter), SOAP, HTTP, SMPP
- Ability to perform integration via MAP protocol both over SS7 network and through SIGTRAN
- Ability to supplement triplets by subscriber location

### **Integration and extension options**

**SC.EIR** can be easily integrated with the solutions of any vendor. The platform also has a module structure allowing deploying separate system program components on dedicated hardware for scaling purposes to increase the degree of performance and integration with the MNO's network.

Options for functionality extension are as follows:

- Installation of the **EIR M2M** module
- Redesigning of interfaces to external systems to send them triggers
- Extension by functions of the **SC.SMS-Settings** platform (DMS system)
- Extension by functions of the **SC.LBS** platform (Location Based Services)
- Extension by functions of the **SC.Welcome SMS** platform