Sentinel RMS SDK v9.4.0

Quick Start Guide for On-premise Served Standalone License Deployment

gemalto
security to be free

Document Revision History

Revision	Major Changes	Date
A	Created for the Sentinel RMS 9.3.0 release	June 2018
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About This Guide

This document provides step by step instructions for generating and consuming Sentinel RMS on-premise licenses.

Document Conventions

This document uses standard conventions for describing the user interface and for alerting you to important information.

Notes

Notes are used to alert you to important or helpful information. They use the following format:

> **Note:** Take note. Contains important or helpful information.

Cautions

Cautions are used to alert you to important information that may help prevent unexpected results or data loss. They use the following format:

> **CAUTION:** Exercise caution. Contains important information that may help prevent unexpected results or data loss.

Warnings

Warnings are used to alert you to the potential for catastrophic data loss or personal injury. They use the following format:

> **WARNING! Be extremely careful and obey all safety and security measures. In this situation you might do something that could result in catastrophic data loss or personal injury.**

Command Syntax and Typeface Conventions

Convention	Description
Bold lettering	Denotes keystrokes, menu items, window names or fields.
`Courier`	Denotes syntax, prompts, and code examples.
Italic lettering	Denotes file names and directory names. Else, used for emphasis.

Documentation Resources

The table below lists the various documents of the Sentinel RMS SDK. You can also access the online versions here:

Document	What's in it?	Who Should Read it?
Release Notes	Contains product overview, summary of new features introduced in this release, and product installation	Developers installing the RMS SDK
Sentinel RMS Developer's Guide	Contains the complete product overview, the necessary information for licensing and distributing the applications	Developers planning and implementing licensing
Sentinel RMS API Reference Guide	Contains details about all the API functions, including the licensing library, system initialization, and so on	Developers integrating the API functions in the code
WIscGen Help	Contains details about using the Windows License Generator	Developers generating licenses using WIscGen
Sentinel RMS License Generator API Reference Guide	Contains details about the license code generator and update API functions	Developers using the Sentinel RMS license generation API, an alternative to Sentinel EMS and RMS license generation utilities
Sentinel RMS System Administrator's Help	Contains details about using the system administration and License Manager configuration options	System Administrator and application users

Support Contacts

You can contact us using any of the following options:

Business Contacts

To find the nearest office or distributor, use the following URL:
https://sentinel.gemalto.com/contact-us-sm/

Technical Support

To obtain assistance in using Gemalto Sentinel Products, feel free to contact our Technical Support team:

- Customer Support Portal: (Preferred)
  - https://supportportal.gemalto.com/csm?id=sentinel
- Phone:
  - AMER: 800-545-6608 (US toll free), +1-410-931-7520 (International)
  - EMEA / APAC: https://supportportal.gemalto.com/csm?id=sentinel
    Click on “Contact us”
- E-mail (only if having issue submitting the technical issue via portal)
  technical.support@gemalto.com

Downloads

You may want to explore updated installers and other components here:
https://sentinelcustomer.gemalto.com/sentineldownloads/

Quick Start Guide for On-premise Served Standalone License Deployment

Introduction

This document provides step by step instructions for generating and consuming RMS licenses for the on-premise served standalone mode. The purpose of this document is to help the reader to become familiar with different aspects involved in the process of generating a license, installing the license, and executing a licensed application on Windows.

This document uses:

- Sentinel EMS for defining the Product catalog and generating Entitlements and Licenses.
- Code sample provided with the Sentinel RMS SDK to consume the Licenses.
- Sentinel RMS tools for generating License Fingerprints and installing the Licenses.

Sentinel EMS

Sentinel EMS is a web-based Entitlement Management System that enables software developers and device manufacturers to define and manage their product portfolio and the associated licensing policies. The Sentinel EMS platform includes out-of-the-box interfaces for license generation, activation, tracking, reporting, and back-office integration and customer self-service portals.

For more details, refer to the Sentinel EMS User Guide.

Sentinel RMS

Sentinel RMS provides a set of APIs and tools to be integrated with the software that needs to be licensed and protected. Licenses are generated by the Sentinel RMS license generator that is integrated with Sentinel EMS. Licenses generated are uniquely encrypted for each software vendor so that only the application licensed by the specific vendor can use the licenses.

For more details, refer to the Sentinel RMS Vendor's Guide.

What is On-Premise Served Stand-alone Licensing?

Sentinel RMS provides the following modes in which a protected application can be deployed and executed:

- **Standalone mode**: The protected application runs on a device or machine independently and has its own independent License.
- **Network mode**: Protected applications share the License from a common pool that is typically installed on a license server accessible over network. Optionally license servers can be setup in a redundant mode as well for

high availability.

For both modes licenses can be generated and activated in one of the following ways:

- **On-premise served mode**: In this mode licenses are activated and generated using EMS portal or EMS web services. License is then transferred to the target device for use. This guide focuses on this on-premise served mode.
- **Cloud served mode**: In this mode, licensed application connects to SCC (a component hosted and managed by Gemalto) to get licenses and any future updates.

Prerequisites

This section contains information on what is required for running the licensed application.

- **Sentinel RMS SDK:**You must meet the software and hardware requirements for installing the **Sentinel RMS SDK**. For details, refer to the section “Installation Information” in the Sentinel RMS SDK Release Notes.
- **Compiler**: For compiling the sample application on Windows (32-bit and 64-bit), you need to install Microsoft Visual Studio (any version from 2008 to 2015). We have used Microsoft Visual Studio 2015 to explain the procedures in this document.

Download and Install Sentinel RMS SDK

Before you can execute the sample, you need to install the Sentinel RMS SDK.

- If you are a production customer, refer to the Gemalto’s Order emails for links to download the RMS SDK. Alternatively, you can login to your Gemalto’s support account and use the available links to download the SDK.
- If you are an evaluation/trial customer, SDK download links are present in the trial portal. URL and credentials for trial portal are shared in the trial access details email that was sent to you.

To download and install the Sentinel RMS SDK:

1. Open the Gemalto Sentinel Order Credential email. In the **Download Details** table, click the **Download** link corresponding to the **Sentinel RMS SDK (Windows)** field.
2. For trial licenses, clicking the link will directly start the SDK download. For all other licenses, you will be redirected to the Gemalto Support Portal.
3. Extract *RMSSDK9.xWindows.zip* downloaded in the step above.
4. Run the self-extracting *StartHere.exe* file and follow the instructions provided with the graphical installation wizard. Note the following:
   - One of the screens displayed during the installation is **Customer Information** dialog box. In this dialog box, type your name, organization name, and the Sentinel Serial Number. You can copy and paste the Sentinel Serial Number from the Gemalto Sentinel Order Credential email. This serial number is unique for each customer.
   - The default Sentinel RMS installation directory is: *C:\Program Files (x86)\SafeNet Sentinel\Sentinel RMS Development Kit\9.x*

Steps for Licensing

A typical process of licensing an application involves the following steps:

1. "Define Product Catalog" on the next page: This step involves defining the License Models, Features, and

Products. A License Model is associated with a Feature and a Product is a collection of Features. The Product is used at the time of creating an Entitlement.

2. "Create Entitlement" on page 13: This step involves creating an Entitlement for a customer. The Entitlement contains the Products, Features, and associated License Model that the customer is entitled to use.
3. "Generate License " on page 15: This step involves activating the License the end user is entitled to. Users are required to generate the Fingerprint of the machine on which the license will be installed to perform the activation.
4. "Install and Consume License " on page 17: The License generated after activation must be installed on the device/machine where the licensed application will run. During the License consumption, the licensed application uses the RMS APIs to validate the Licenses.

Define Product Catalog

This includes the following steps:

1. "Log on to the Sentinel EMS Portal" below
2. "Create Namespace" below
3. "Customize the Flexible License Model" on the next page
4. "Create Feature" on page 11
5. "Create Product" on page 12

Log on to the Sentinel EMS Portal

To log on to EMS, you need a user ID and password assigned by the administrator. The default user ID and password are shared in the Gemalto Sentinel Order Credential email.

Navigate to the URL on which your EMS instance is running, and enter the user ID and password to login to the portal.

Note:

- If you are an EMSaaS customer, use the URL sent by Gemalto in email for login to EMS portal.
- If you host EMS yourself, use the URL on which you are hosting EMS.
- If you are an evaluation/trial customer, the EMS access URL is present in the trial portal. URL and credentials for trial portal are shared in the trial access details email.

To create a product catalog, you need to use the **Catalog** menu from the Sentinel EMS main menu.

Create Namespace

A Namespace acts as a logical partition for your Sentinel EMS workspace. If you have different Product lines, you can maintain a different Namespace for each and define multiple Products in each Namespace. For details, refer to the Sentinel EMS User Guide.

1. Under **Catalog**, click **Namespaces**. The Namespaces page is displayed.
2. Click **New**. The **Create Namespace** page is displayed.
3. In the **Name** field, type *SampleStandalone*.

4. Click **Save**. The "Successfully saved the data" message is displayed, and the SampleStandalone namespace is displayed in the main pane of the Namespaces page.

Customize the Flexible License Model

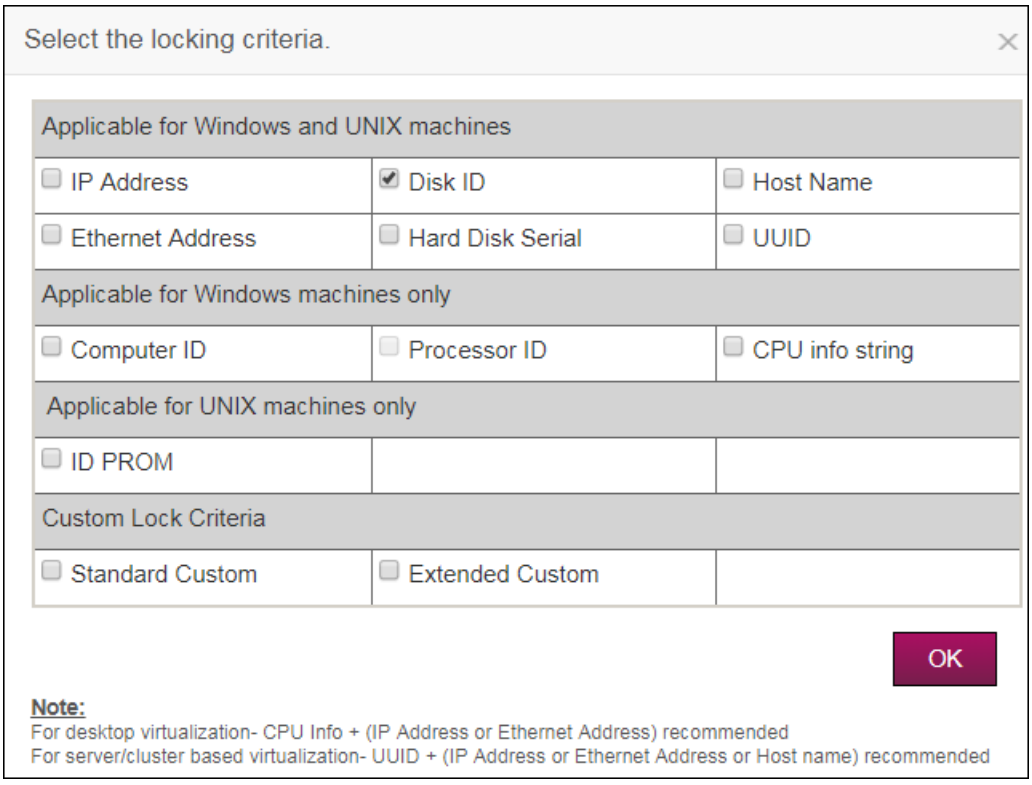
A License Model is a combination of various parameters that define how a Product/Suite can be used by an end user. Sentinel EMS provides you with the flexibility to add multiple License Models to your Product/Suite so that you can protect your Product once and generate different types of licenses according to your requirement. For details, refer to the Sentinel EMS User Guide.

Sentinel EMS provides various out of the box License Models that can be further customized as per requirements. For the purpose of this guide, we will use "Flexible License Model".

1. Under **Catalog**, click License Model. The License Model page is displayed.
2. In the left pane, use the **License Model Name** search criteria to search for the **Flexible License Model**. When selected, the License Model details are displayed in the right pane.
3. Click **Copy**. The Add License Model page is displayed.
4. In the **License Model Name** field, type *StandaloneLM*.
5. From the **Deployment Type** drop-down, select **On-premise Served**.
6. From the **License Type** drop-down, select **Standalone**.
7. Expand the **Policy** section, and clear the **Enforce Clock Tampered** check box to disable time tampering detection.

> **Note:** If you want to enable the time tampering, you will need set up the persistence information on the standalone machine by using the sntlInitStandaloneSystem API. For API details, refer to the Sentinel RMS SDK API Reference Guide. For the C interface, you can set up the persistence information by executing the initdemo sample. This sample is available in the Samples folder of the standard RMS installation.

8. Expand the **Locking** section, and select the desired locking Criteria by clicking **Change**.



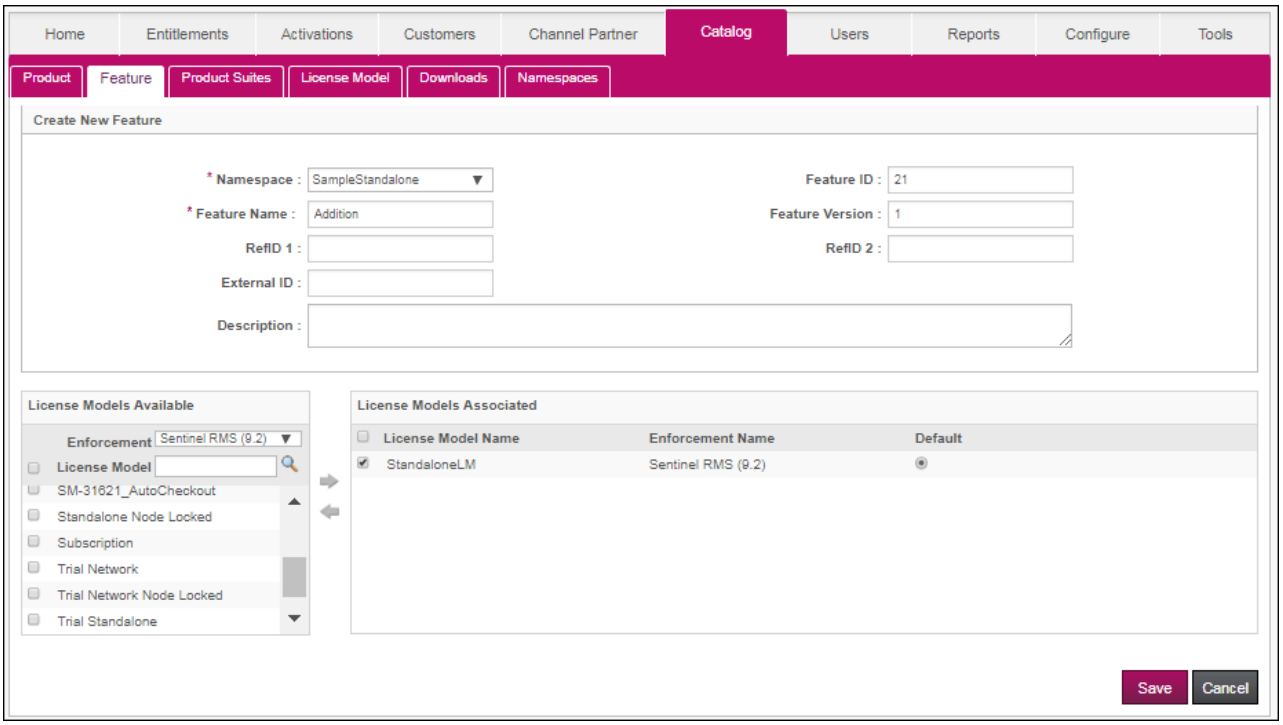
For the purpose of this guide, let us use **Disk ID** as the Locking Criteria.

9. Click **Save**. The *StandaloneLM* license model is displayed in the main pane of the License Model page.

Create Feature

A Feature is a functional part of an application that can be independently licensed. Features are the basic building blocks of a Product. For details, refer to the Sentinel EMS User Guide.

1. Under **Catalog**, click **Feature**. The Feature page is displayed.
2. Click **New**. The Create Feature page is displayed.

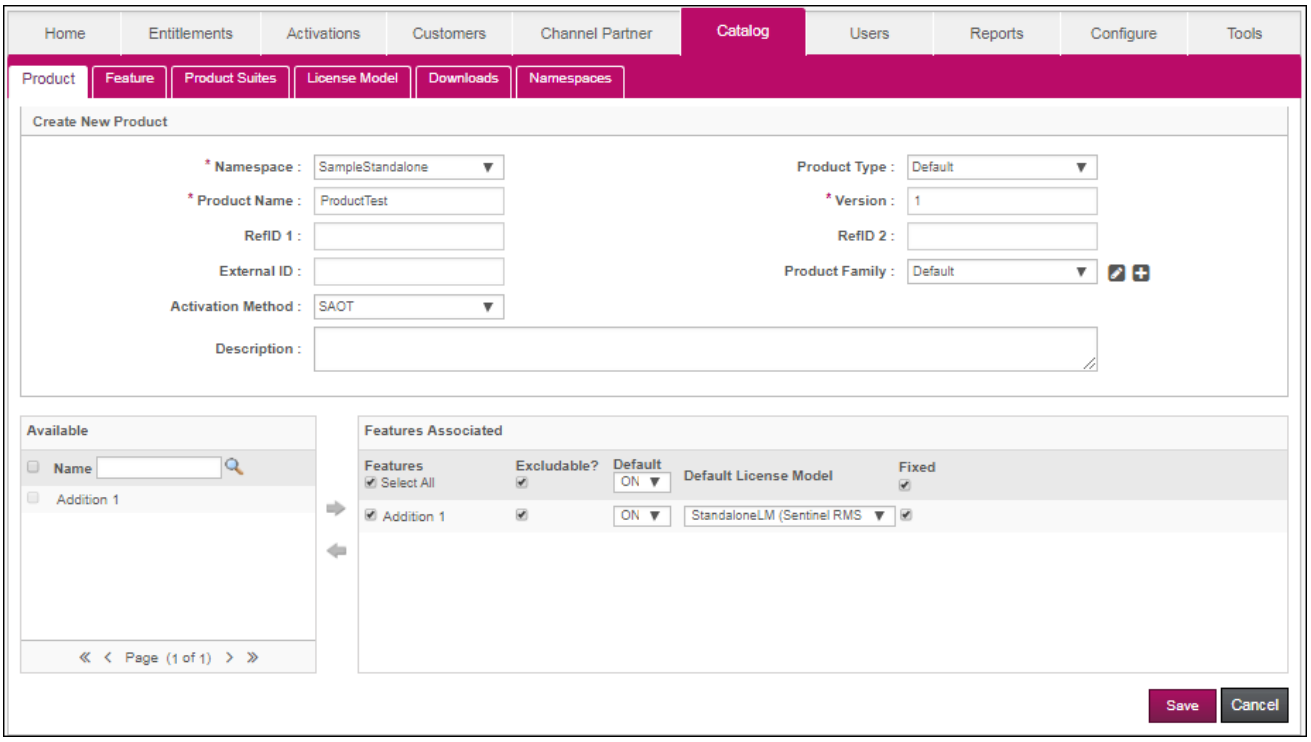


3. From the **Namespace** drop-down, select **SampleStandalone**.
4. In the **Feature Name** field, type *Addition*.
5. In the **Feature Version** field, type *1*.
6. From the **License Models Available** list, select the **StandaloneLM** license model, and click the right arrow.
7. Click **Save**. The "Successfully saved the data" message is displayed, and the feature is displayed in the main pane of the Feature page.

Create Product

A Product is a combination of individual Features and is associated with one or more License Models. One or more Features are bundled into a Product as defined by your sales and marketing model. For details, refer to the Sentinel EMS User Guide.

1. Under **Catalog**, click **Product**. The Product page is displayed.
2. Click **New**. The Create Product page is displayed.



3. From the **Namespace** drop-down, select **SampleStandalone**.
4. In the **Product Name** field, type *ProductTest*.
5. In the **Version** field, type *1*.
6. From the **Available** list, select the **Addition** feature and click the right arrow.
7. Click **Save**. The "Successfully saved the data" message is displayed, and the Product is displayed in the main pane of the Product page.
8. Click **Complete**. This changes the product's Lifecycle Stage to Complete and makes the product available for distribution.

With this step, you have successfully created a Product catalog.

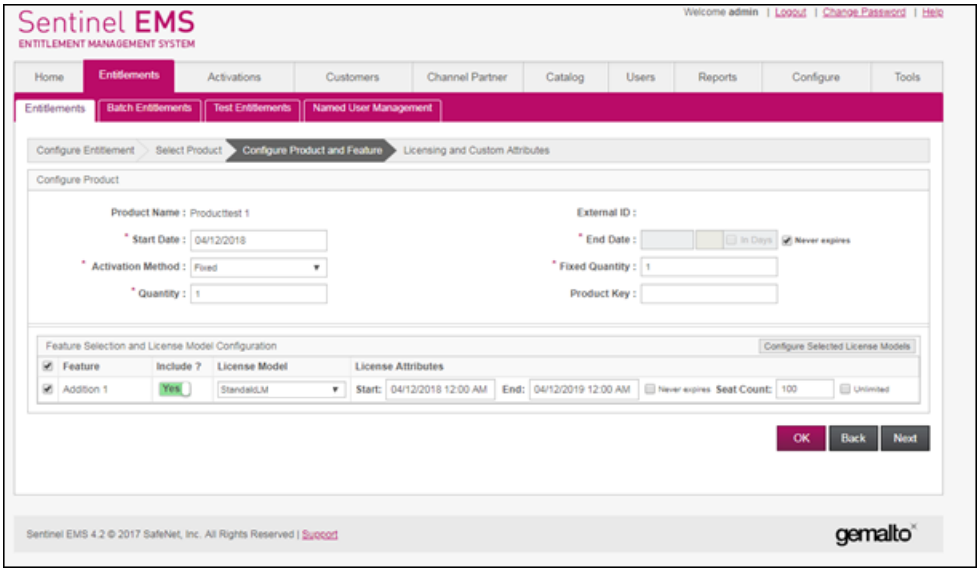
Create Entitlement

An Entitlement refers to the rights of an end-user to use a software package. It includes information like who can use it and for what duration. After the end-user obtains these rights he can activate, which generates a license to use the software conforming to the defined terms. After Features and Products have been defined in Sentinel EMS, Entitlements can be generated for the Products. In simple terms, Entitlement generation means producing orders for the given Products. For details, refer to the Sentinel EMS User Guide.

1. Under **Entitlements**, click **Entitlements**. The Entitlements page is displayed.
2. Click **New**. The Configure Entitlement page is displayed.
3. Place the cursor in the **Customer Name** field and press any key. Click the **Add New** drop-down option that appears.

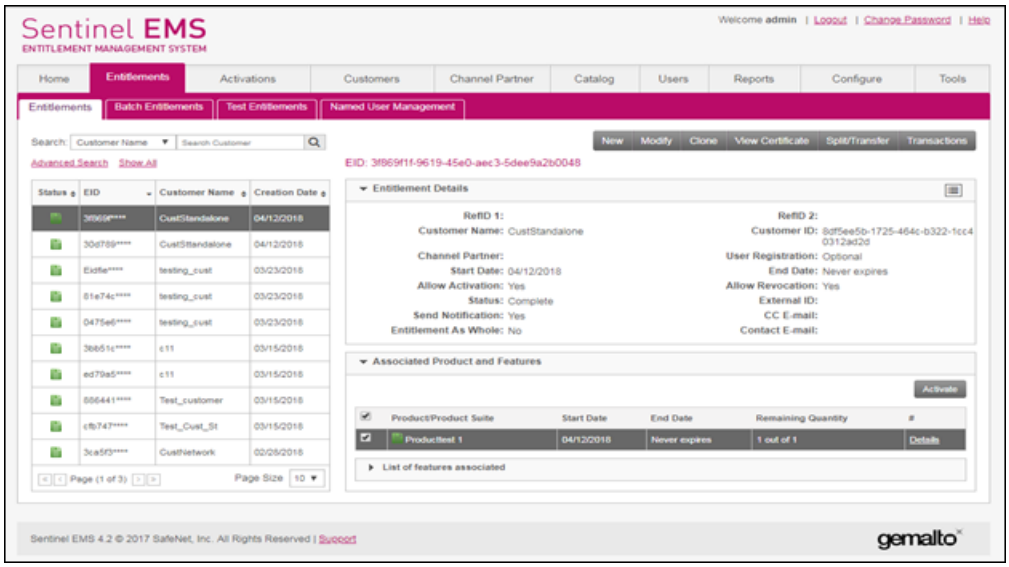
4. The **Create New Customer** pop-up is displayed.

5. In the **Customer Name** field, type *CustStandalone*.
6. In the **Customer ID** field, type *CustStandalone*.
7. Click **Save** to close the Create New Customer pop-up.
8. In the **Contact E-mail**, add your email ID to receive the entitlement certificate.
9. Click **Add Product**. The Select Product page is displayed.
10. Select the *ProductTest* product, and click **Add**. The Configure Product and Feature page is displayed.



11. In the **Quantity** field, the default value is set to 1. Change the value if you want to generate more than 1 licenses; otherwise, skip this step.
12. Click **OK**. The Configure Entitlement page is displayed again showing details of the Customer and the selected Product.
13. Click **Save** to save the Entitlement in the draft state. A pop-up appears asking to confirm the operation. You can add remarks about the operation.
14. Click **Yes**. The Entitlements page is displayed again. .
15. Click **Commit**. A pop-up appears asking to confirm the operation.

16. Click **Yes**. The “Successfully saved the data” message is displayed, and the Entitlement details are displayed in the main pane of the Entitlements page. An Entitlement Certificate e-mail is sent to the email address that you specified in the **Contact E-mail** field while creating the Entitlement.



Generate License

Licenses can be locked or unlocked. Licenses generated for RMS in this guide must be bound to the Fingerprint of the device on which the License is going to be used. Steps required are:

1. "Generate Fingerprint " below
2. "Activate Product" on page 17

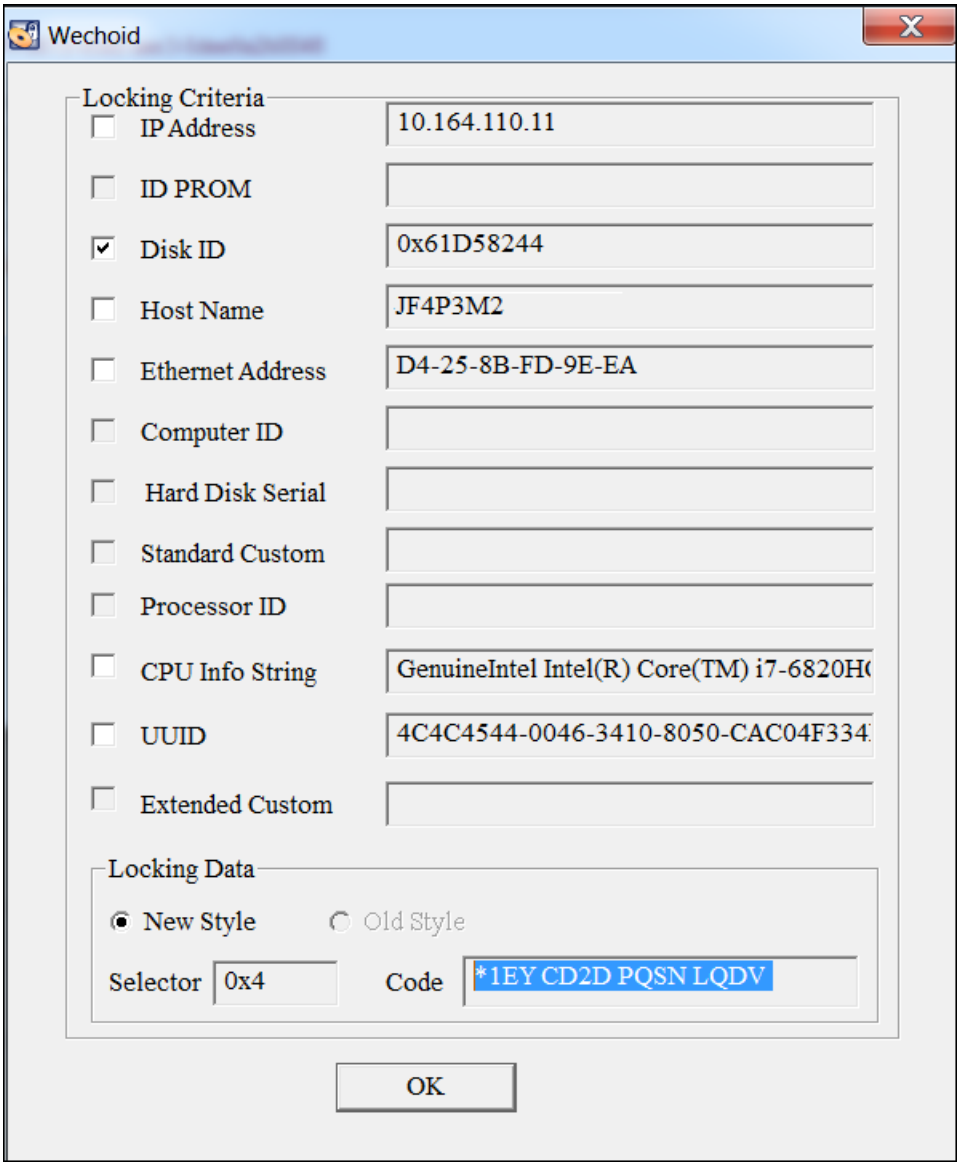
Generate Fingerprint

Fingerprint generation is a client-side operation. Sentinel EMS provides an out-of-the-box tool that can be used by your End Customer to generate the Fingerprint to be used for License activation. This tool is called “wechoid”. To download the tool, use the following steps:

1. Click **Activate** on the Entitlement screen shown above. The Activate Product (s) pop-up is displayed.

2. Click the **Wechoid** link to download the *Wechoid.exe*.

3. Run the *Wechoid.exe* on the device on which you want to run the sample with the license.



4. Under **Locking Criteria**, ensure that none of the fields except **Disk ID** is selected. This is because for the purpose of this guide we are using only Disk ID as the Locking Criteria. See Step 8 of the section "Customize the Flexible License Model" on page 10

> **Note:** The Locking Criteria must be the same as specified in the license model associated with the entitlement; otherwise, the fingerprints in the license will not match the fingerprint on the machine/device.

5. The **Code** field automatically displays the Fingerprint based on the selected criteria. Select and copy it.

Note: The terms “Locking Criteria”, “Primary criteria”, and “Locking Selector” are used interchangeably throughout this guide and within Sentinel EMS, tools, and documentation. Likewise, the terms “Locking Code”, “Client info”, and “Fingerprint” are used interchangeably. The former are used to define what machine characteristics the latter will be based on. Combined, the ‘criteria’ and ‘fingerprint’ are referred to as the ‘Locking Data’.

For details of these terms, refer to Sentinel RMS Vendor's Guide.

Activate Product

Product activation refers to a method by which the machine-specific lock code of a computer is used to generate a license code or file specific to that computer or device. The license code ensures that the Product can be used only on the system(s) to which it is locked. For details, refer to the Sentinel EMS User Guide.

1. After obtaining the Fingerprint from the **wechoid** tool, return to the Activate Product (s) pop up in Sentinel EMS.
2. Paste the Fingerprint generated above into the **Client 1 info** field.
3. Click **Activate** to generate the License string.
4. Click **Save To File** to create a *lservrc* file that contains the generated license string.

Install and Consume License

To consume the license, you need to compile the sample, install the license, and run the sample.

Note:
- Before compiling and running the sample, ensure to complete the prerequisites.
- Microsoft Visual Studio 2015 has been used to explain the steps in this section.
- In the steps below, change 9.x to the RMS version you are using where path is referring to the location of sample or output.

Compile Sample (MSVS 2015)

You need to compile the *sntl_demo.c* sample to get the executable application, which can be run to consume the license.

To compile the *sntl_demo.c* sample:

1. Open Microsoft Visual Studio as Administrator.
2. Open the *Samples32.MSVS2008.sln* solution file in Visual Studio. This file is available in the *C:\Program Files (x86)\SafeNet Sentinel\Sentinel RMS Development Kit\9.x\Samples\C* folder.
3. Edit the *sntl_demo.c* file:
   a. In the **Solution Explorer**, navigate to the **sntl_demo** folder, expand **Source Files** and double-click the *sntl_demo.c* file to open it.
   b. Change `#define CONTACT_SERVER` to `no-net` from localhost.
   c. (Optional) By default, the feature name is **Addition** and feature version is **1** in the sample source file. However, if you have created a feature in EMS by a different name and version, you can change the defaults in the sample. In the source file, change the feature name and feature version to the values defined in EMS.

4. Before building the sample, you need to change the properties of the **sntl_demo** project. To do so, right-click the **sntl_demo** folder in the **Solution Explorer**, click **Properties**, and perform the following changes:
   a. Add the library *ws2_32.lib* (Configuration properties > Linker > Input > Additional Dependencies).
   b. Change the library path (Configuration properties > Linker > General > Additional Library Directories) to the following:

      C:\Program Files (x86)\SafeNet Sentinel\Sentinel RMS Development Kit\9.x\Development\C\Lib\MSVS2015\x86\Static\MT
   c. Change the output file path (Configuration properties > Linker > General > Output File) to the following:

      C:\Program Files (x86)\SafeNet Sentinel\Sentinel RMS Development Kit\9.x\Samples\C\Out\MSVS2015\x86\Debug\sntl_demo.exe
5. Build the sample. To do so, right-click the **sntl_demo** folder in the **Solution Explorer**, and click **Build**. The output is the sample application executable created in the path that you have set in the step above.

Install License

For stand-alone applications, the license file (*lservrc*) containing the license strings should be in the same directory as the licensed application.

Copy the *lservrc* file generated in the step "Generate License " on page 15 in the folder containing the compiled sample.

> **Note:** You can use a different file name (other than *lservrc*) through the environment variables, licensing library API functions, and command-line switches.

Run Sample

Next, you need to run the sample application executable (*.exe*) to consume licenses. To run the *sntl_demo.exe* file:

1. Open the command prompt as Administrator.
2. Change the directory to the output folder by running the following command:

   cd C:\Program Files (x86)\SafeNet Sentinel\Sentinel RMS Development Kit\9.x\Samples\C\Out\MSVS2015\x86\Debug
3. Execute the *sntl_demo.exe* file.

Once the sample compiles and runs, the Console window displays the execution results.

1. First, an application context is created.
2. The login call is executed to consume the license. Errors are thrown, if the license is not present (error 210018) or if the existing license on the machine has expired (error 214109).
3. When a valid license is present, information about the **Addition** feature is displayed as shown in the figure below:


```
Setting "no-net" as contact server in Application Context attribute object : Suc
cessful
Setting remote session remote control as "allow-terminal-allow-rdp" in Applicati
on Context attribute object : Successful
Setting Auto Refresh  as "no" in Application Context attribute object : Successf
ul
Setting Enable Local Renewal as "no" in Application Context attribute object : S
uccessful
Creating Application Context object : Successful
Getting information for feature {name-> "Addition", version-> "1"} : Successful

Feature Information:
===============
<?xml version="1.0" encoding="UTF-8" standalone="no"?>

<sentinelInfo>
  <feature>
    <featureName>Addition</featureName>
    <featureVersion>1</featureVersion>
    <licType>0</licType>
    <trialDaysCount>0</trialDaysCount>
    <numLicenses>100</numLicenses>
    <totalResv>0</totalResv>
    <licFromResv>0</licFromResv>
    <qlicFromResv>0</qlicFromResv>
    <licFromFreePool>0</licFromFreePool>
    <qlicFromFreePool>0</qlicFromFreePool>
    <isNodeLocked>3</isNodeLocked>
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    <lockingCrit>0</lockingCrit>
    <holdingCrit>0</holdingCrit>
    <numSubnets>0</numSubnets>
    <siteLicenseInfo>*.*.*.*</siteLicenseInfo>
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    <sharingLimit>0</sharingLimit>
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    <isRedundant>0</isRedundant>
    <majorityRule>0</majorityRule>
    <numServers>1</numServers>
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    <avgQueueTime>-1</avgQueueTime>
    <queueLength>0</queueLength>
```



```
    <isCommuter>0</isCommuter>
    <logEncryptLevel>0</logEncryptLevel>
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    <queueLength>0</queueLength>
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    <commutedKeys>0</commutedKeys>
    <commuterKeysLeft>0</commuterKeysLeft>
    <serverLockingInfo>$$$0$$$</serverLockingInfo>
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    <trialElapsedPeriodLeft>0</trialElapsedPeriodLeft>
    <trialExecutionsLeft>0</trialExecutionsLeft>
    <trialCurrentStatus>0</trialCurrentStatus>
    <vmDetection>0</vmDetection>
    <birthTime>1523491200</birthTime>
    <deathTime>1555027200</deathTime>
    <eid></eid>
    <pid>0</pid>
    <fid>21</fid>
    <aid></aid>
    <cloudUsageFlag>1</cloudUsageFlag>
    <licSource>0</licSource>
    <trialDays>0</trialDays>
    <trialSeconds>0</trialSeconds>
    <trialDaysLeft>0</trialDaysLeft>
    <trialSecondsLeft>0</trialSecondsLeft>
    <activationBirthTime>0</activationBirthTime>
    <activationExpiryTime>0</activationExpiryTime>
  </feature>
</sentinelInfo>
===============

press ENTER to continue
```

4. Press **Enter** to call the login API. This requests the license for the Addition feature, as shown in the figure below:


```
</sentinelInfo>
===============

press ENTER to continue

Creating attribute object for feature login : Successful
Setting feature version as "1" in feature login attribute object : Successful
Login to a feature {name-> "Addition", version-> "1"} : Successful
Get session information : Successful

Session Information:
===============
<?xml version="1.0" encoding="UTF-8" standalone="no"?>

<sessionInfo>
  <featureName>Addition</featureName>
  <featureVersion>1</featureVersion>
  <serverName>no-net</serverName>
  <lastErrorStatus>0</lastErrorStatus>
  <keyTimeLeftInSecs>300</keyTimeLeftInSecs>
  <tokensInUse>1</tokensInUse>
  <driftTime>0</driftTime>
  <refreshStatus>SNTL_NO_REFRESH_SO_FAR</refreshStatus>
</sessionInfo>
===============
Session refresh cycle 0 : Successful

Session refresh cycle 1 : Successful

Session refresh cycle 2 : Successful

Session refresh cycle 3 : Successful

Session refresh cycle 4 : Successful

Session refresh cycle 5 : Successful

Session refresh cycle 6 : Successful

Logout from feature {name-> "Addition", version-> "1"} : Successful


press ENTER to close the sample.
```

5. The session information is displayed, which is the information for the current license session. Note that a successful license request creates a license session. For example, <tokensInUse> is shown as 1 because one license has been used with the call to the login API.
6. Afterward, the logout call is executed to release licenses.
7. Press **Enter** to close the sample.

Error Code

Refer to the Sentinel RMS SDK API Reference Guide for information about errors and status codes.

Documentation Resources

Refer to the following online pages to access Sentinel product documentation:

- Sentinel RMS: http://sentinelrms.gemalto.com/
- Sentinel EMS: http://sentinelems.gemalto.com/Default.htm

