Free Purpose Fields

This memory area can be used for storing any data required for application protection, including: hardware algorithm descriptors, license tables, key words, data sets, constants, code blocks, etc.

You can create fields of various types, edit their contents and delete them.

Important information

All models of available modern Guardant dongles contain several default hardware algo-rithm descriptors and protected items.

From within an application data stored in the area of free purpose fields is accessed using the Guardant API functions.

Types and main properties of free purpose fields:

Field type		Size, bytes	Contents	Hardware locks	Working with field from within the application (Guardant API)
Algorithm		Field size is defined by the size of algorithm descriptor	Hardware algorithm descriptor	Mandatory read/write locks	1. GrdTransform, GrdCrypt, GrdHash, GrdCodeInit 2. GrdPI_Activate, GrdPI_Deactivate, GrdPI_Read, GrdPI_Update 3. GrdTRU_DecryptQuestion, GrdTRU_EncryptAnswer, GrdTRU_ApplyAnswer
Protected item		Arbitrary size into the modern dongles; 1 – 255 + service fields into the old models	Protected item descriptor	Mandatory read/write locks	GrdPI_Activate, GrdPI_Deactivate, GrdPI_Read, GrdPI_Update
License table	Guardant Sign Net/ Time Net/ Net III	1 or 2 per ele-ment+ service fields (not more than 254 bytes)	1. Actual license resource 2. Information on the software modules number and license limit of each module	Mandatory read/write locks	GrdPI_Activate, GrdPI_Deactivate, GrdPI_Read, GrdPI_Update
	Guardant Net II / Net	1 or 2 per element 127 modules maximum	Information on the software modules number and license limit of each module	Mandatory write locks	GrdRead
Integer		1, 2, 4, 8	Integer or unsigned integer	Write locks (when necessary)	GrdRead, GrdWrite
String		Random size	Character sequence in ANSI or Unicode encoding	Write locks (when necessary)	GrdRead, GrdWrite
Counter		1, 2, 4, 8	Unsigned integer. Increments automatically on each operation of writing a mask into the dongle memory	Write locks (when necessary)	GrdRead, GrdWrite
Dump		Random size	Binary dump	Write locks (when necessary)	GrdRead, GrdWrite

There is a certain order of free purpose fields. This is because there are fields which require mandatory protection by hardware restrictions. Moreover, a special thing about hardware restrictions is that they can only be placed in the beginning of the free purpose fields area (starting with 14UAM address) and form a continuous block.

Thus,

- The fields protected by hardware algorithms with default read and write locks are grouped in the beginning of free purpose fields' area: hardware algorithms, protected items and license table of Net III format *(Fields of two last types can be created only in Guardant Stealth III / Net III dongles).* Whereas GrdUtil.exe does not allow for inserting fields of different type between them.
- The fields protected by write locks are allocated after fields protected by read and write locks. For example, license table of Guardant Net II/ Net format.

- Further, fields of other types can be placed in random order: integer, string, dump, and counter. Whereas GrdUtil.exe does not allow for inserting fields between them, which must be protected by hardware restrictions by default.

New field is added into mask before the field selected from the list.

To create a new field select a **Free memory** field from the list (or any other created field from the area of free purpose ones) and select **Edit | Add new field**.

Add new field dialog box will appear. Select a field type and specify its name and size.

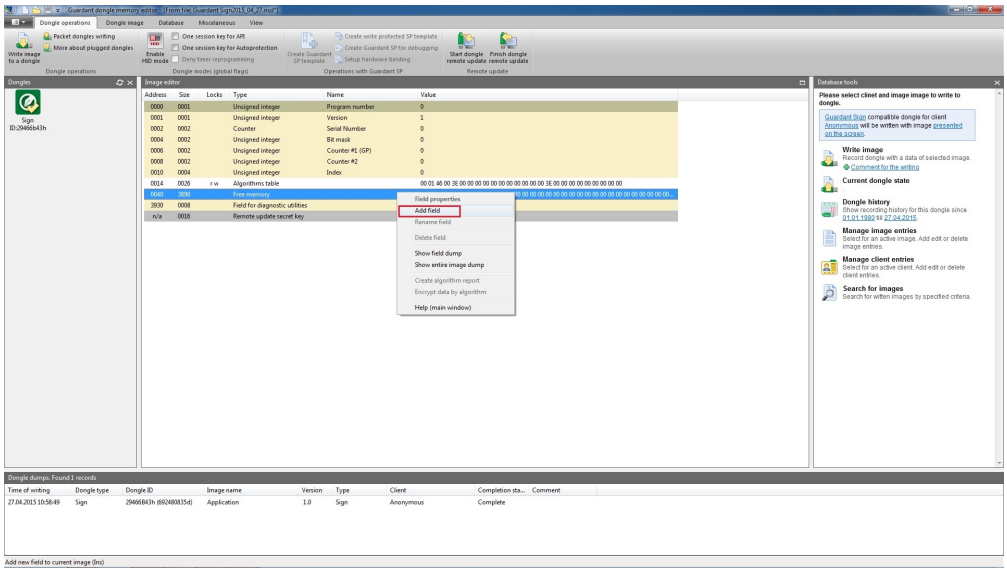
Properties dialog box control elements for each type of fields:

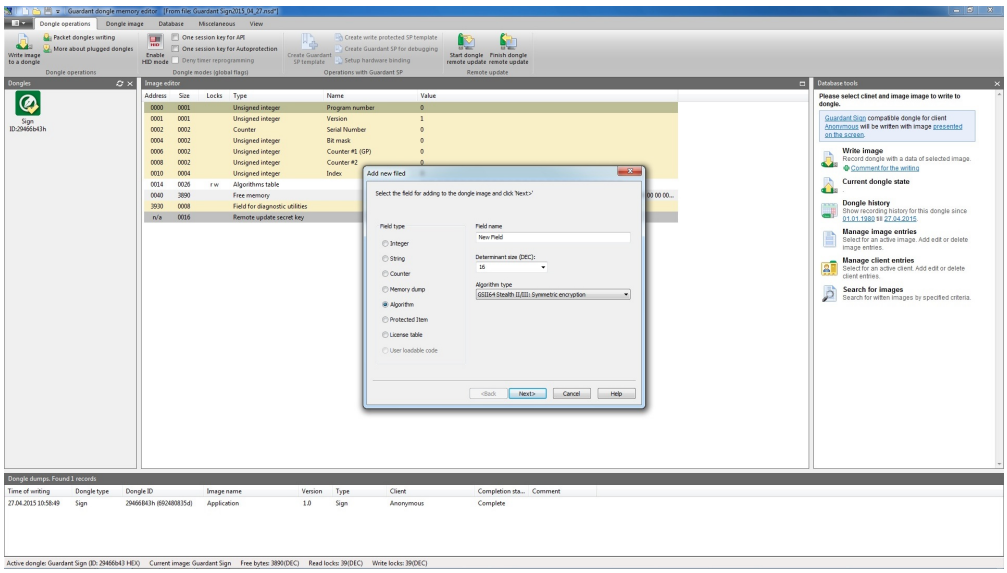
Field type	Interface element	Description of purpose
Dump	Hexadecimal editor window	Enter the dump contents
	OEM flag	Select Windows/DOS encoding. Windows (ANSI) encoding is used by default – OEM option is off
	[Load] button	Load dump from *.dmp file
	[Save] button	Save dump into *.dmp file
String	Entry window	Enter the string value
	ANSI/Unicode switch	Select ANSI/Unicode encoding. ANSI encoding is used by default
Integer	**Unsigned integer** flag	Select field subtype: integer/unsigned integer
	Number representation list	Select numerical system
	Value field	Enter the value
Counter	**Number representation** list	Select numerical system
	Value field	Enter the value

Sizes of fields of various types:

Field type	Possible field size, bytes
Dump	Arbitrary size
String	
Integer	1, 2, 4, 8
Counter	

Add new field dialog box:


Guardant dongle memory editor
Dongle operations
Dongle image
Database
Miscellaneous
View
Write image to a dongle
Packet dongles writing
More about plugged dongles
Enable HID mode
One session key for API
One session key for Autoprotection
Deny timer reprogramming
Create Guardant SP template
Create write protected SP template
Create Guardant SP for debugging
Setup hardware binding
Start dongle remote update
Finish dongle remote update
Dongle operations
Dongle modes (global flags)
Operations with Guardant SP
Remote update
Dongles
Sign ID:29466b43h
Image editor
Address
Size
Locks
Type
Name
Value
0000 0001 Unsigned integer Program number 0
0001 0001 Unsigned integer Version 1
0002 0002 Counter Serial Number 0
0004 0002 Unsigned integer Bit mask 0
0006 0002 Unsigned integer Counter #1 (GP) 0
0008 0002 Unsigned integer Counter #2 0
0010 0004 Unsigned integer Index 0
0014 0026 r w Algorithms table 00 01 46 00 3E 00 00 00 00 00 00 00 00 00 00 00 3E 00 00 00 00 00 00 00 00 00
0040 3890 Free memory
3930 0008 Field for diagnostic utilities
n/a 0016 Remote update secret key
Field properties
Add field
Rename field
Delete field
Show field dump
Show entire image dump
Create algorithm report
Encrypt data by algorithm
Help (main window)
Database tools
Please select clinet and image image to write to dongle.
Guardant Sign compatible dongle for client Anonymous will be written with image presented on the screen.
Write image
Record dongle with a data of selected image.
Comment for the writing
Current dongle state
Dongle history
Show recording history for this dongle since 01.01.1980 till 27.04.2015.
Manage image entries
Select for an active image. Add edit or delete image entries.
Manage client entries
Select for an active client. Add edit or delete client entries.
Search for images
Search for written images by specified criteria.
Dongle dumps. Found 1 records
Time of writing
Dongle type
Dongle ID
Image name
Version
Type
Client
Completion sta...
Comment
27.04.2015 10:58:49 Sign 29466B43h (692480835d) Application 1.0 Sign Anonymous Complete
Add new field to current image (Ins)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Start dongle remote update
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Dongle operations
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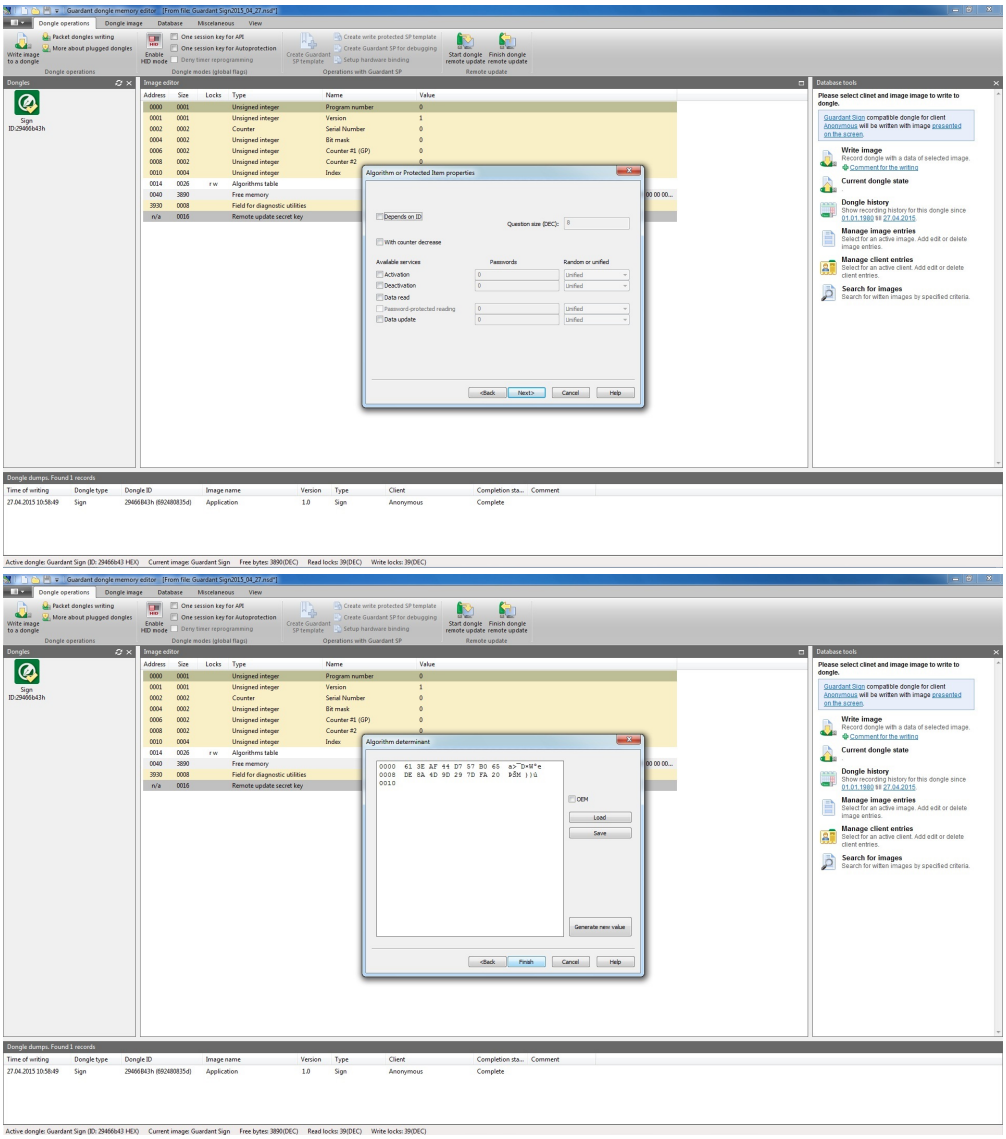
Remote update
Dongles
Sign ID:29466b43h
Image editor
Address
Size
Locks
Type
Name
Value
0000 0001 Unsigned integer Program number 0
0001 0001 Unsigned integer Version 1
0002 0002 Counter Serial Number 0
0004 0002 Unsigned integer Bit mask 0
0006 0002 Unsigned integer Counter #1 (GP) 0
0008 0002 Unsigned integer Counter #2 0
0010 0004 Unsigned integer Index 0
0014 0026 r w Algorithms table
0040 3890 Free memory
3930 0008 Field for diagnostic utilities
n/a 0016 Remote update secret key
Add new filed
Select the field for adding to the dongle image and click 'Next>'
Field type
Integer
String
Counter
Memory dump
Algorithm
Protected Item
License table
User loadable code
Field name
New Field
Determinant size (DEC):
16
Algorithm type
GSII64 Stealth (LEE): Symmetric encryption
<Back
Next>
Cancel
Help
Database tools
Please select clinet and image image to write to dongle.
Guardant Sign compatible dongle for client Anonymous will be written with image presented on the screen.
Write image
Record dongle with a data of selected image.
Comment for the writing
Current dongle state
Dongle history
Show recording history for this dongle since 01.01.1980 till 27.04.2015.
Manage image entries
Select for an active image. Add edit or delete image entries.
Manage client entries
Select for an active client. Add edit or delete client entries.
Search for images
Search for written images by specified criteria.
Dongle dumps. Found 1 records
Time of writing
Dongle type
Dongle ID
Image name
Version
Type
Client
Completion sta...
Comment
27.04.2015 10:58:49 Sign 29466B43h (692480835d) Application 1.0 Sign Anonymous Complete
Active dongle: Guardant Sign (ID: 29466b43 HEX) Current image: Guardant Sign Free bytes: 3890(DEC) Read locks: 39(DEC) Write locks: 39(DEC)



Add new field dialog box control elements:

Interface element	Description of purpose
Name	Specifies any valid name for the field being created
Size in bytes	Selects possible / sets arbitrary field size. Size depends on the selected field type.
Field type	Selects field type out of list of possible types

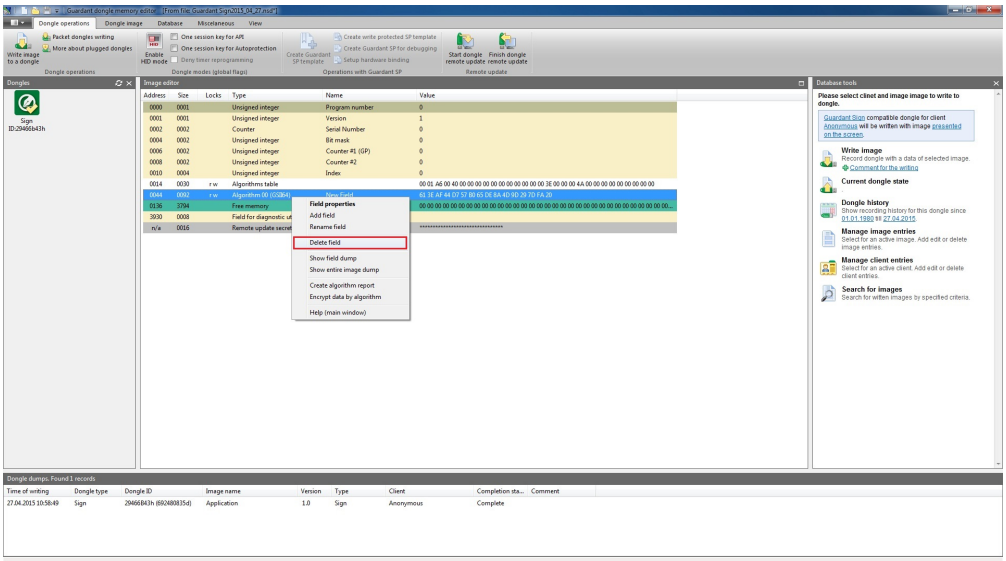
The dialog box interface may slightly differ depending on the mask type and field being created.

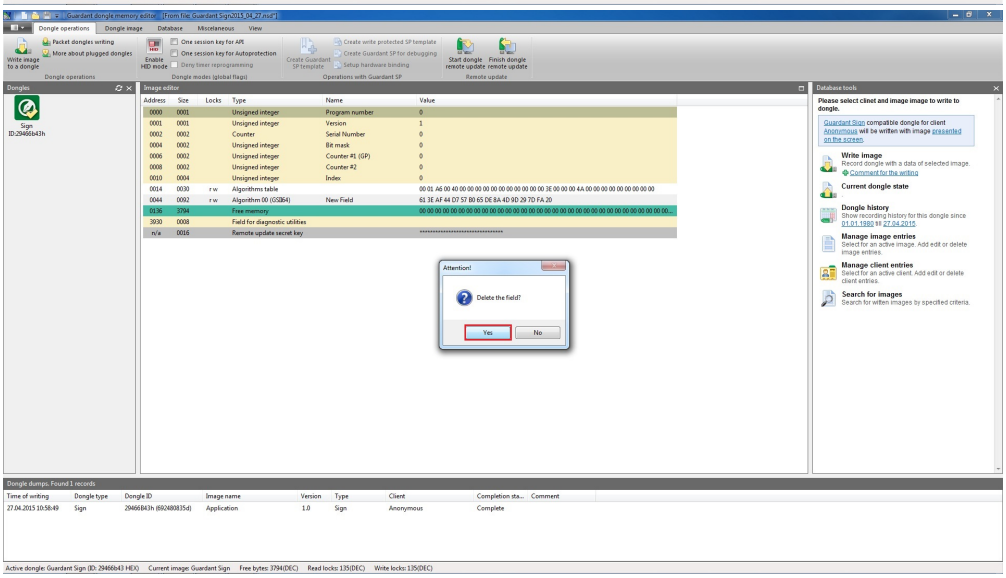
After filling in the current dialog box you need to click **[Next]** to move the field properties dialog box.

More detailed information on creating and working with fields of various types is given in respective chapters.
To change field contents or to edit its properties, select a field of the current mask and execute command **Edit | Field properties**.

Make the required changes in the **Field properties** dialog box that will appear.

More detailed information on editing fields of various types is given in respective chapters.
To delete a field and its contents, select a field from the mask and execute command **Edit | Delete field**. A dialog box will appear to confirm the deletion:

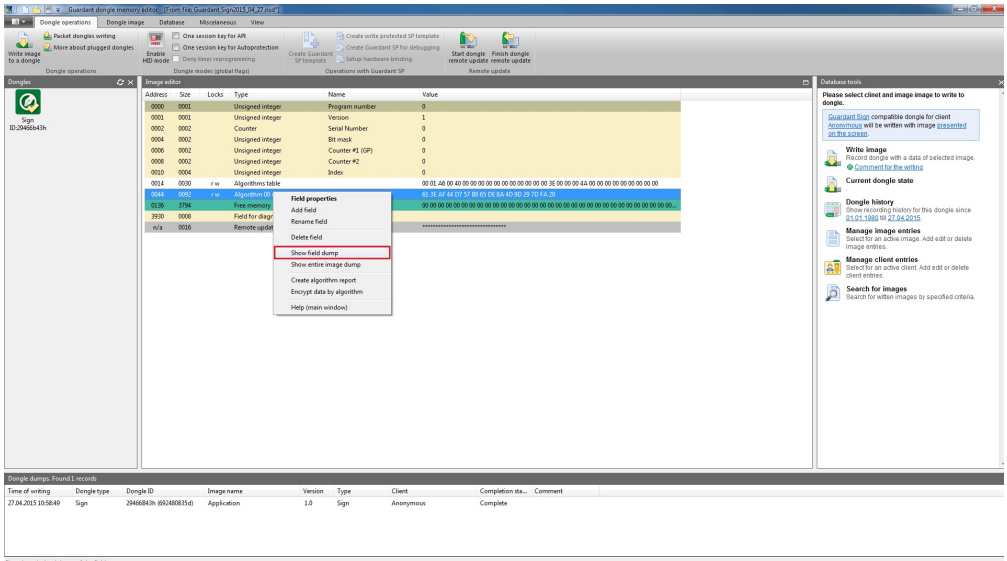




Important information

Any changes in the mask – creation, deletion or editing of field contents – will be written to the dongle memory only after executing command **Dongle | Write into the Dongle**.

In order to view and edit a field's dump and also to save it as a file, choose the required field in a mask, pull up the context menu by right-mouse clicking it and select **Show full field dump** item:


Guardant dongle memory editor [From File: Guardant Sign2015_04_27.nsd]
Dongle operations
Dongle image
Database
Miscelaneous
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Write image to a dongle
Packet dongles writing
More about plugged dongles
Dongle operations
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One session key for API
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Sign ID:29466b43h
Image editor
Address
Size
Locks
Type
Name
Value
0000 0001 Unsigned integer Program number 0
0001 0001 Unsigned integer Version 1
0002 0002 Counter Serial Number 0
0004 0002 Unsigned integer Bit mask 0
0006 0002 Unsigned integer Counter #1 (GP) 0
0008 0002 Unsigned integer Counter #2 0
0010 0004 Unsigned integer Index 0
0014 0030 r w Algorithms table 00 01 A6 00 40 00 00 00 00 00 00 00 00 00 00 00 3E 00 00 00 4A 00 00 00 00 00 00 00 00
0044 0092 r w Algorithm 00 (GSB64) 41 3E AF 64 D7 57 B0 65 DE 8A 4D 9D 29 7D FA 20
0136 3794 Free memory 00 00 00 00 00 00 00 00 00 00 00