SSC Access Control and Alarm System Interface Specification

Based on the Universal Interface Specification

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Introduction

This document details an interface specification which allows self storage management software systems to interface with two of the self storage access control and alarm systems produced by Sentinel Systems Corporation (SSC): **Winsen Platinum Property Sentinel**, and **Winsen Property Sentinel**.

We will use the following terminology in our discussion:

- **Management software** - This is the property management software that maintains information about tenants including tenant name & address, balance due, etc.

- **Access control/alarm system** - this is the software and/or hardware that controls access to the facility and may also monitor individual door alarms. Special considerations for **Winsen Platinum Property Sentinel** or **Winsen Property Sentinel** are noted in the following discussion.

Please review the general procedure and requirements that follow.

General Procedure

1. **Create a text file**:
    The management software will create an update text file (update.txt) containing one line for each change that should be made by the access control/alarm system. The text file may contain one line (e.g. a move-in change) or it may contain multiple lines (e.g. a dump of all units). The management software should have the ability to send all information in its database in order to initialize a new or replaced gate system.

2. **Invoke an update program**:
    The management software will execute an update program (update.exe or update.bat) which is supplied by Sentinel Systems with the access control/alarm system.

3. **Process the text file**:
    The update program will process each line of the update text file (update.txt) and update its internal database and/or send these updates to the hardware controller. During the update process, the program will generate a result text file (result.txt) that reports the status of each change that was requested. If any warnings/errors are encountered, the program will generate an error text file (errors.txt) which provides a summary of the messages. The program may also generate an error log file (errors.log) which contains more details about the errors that were encountered.

4. **Report results**:
    The management software will provide a means of reporting any errors that were encountered by the update program so that the end user can correct any discrepancies.

The file names selected above are meant to be informative as well as adhere to the common extensions that are used by DOS and Windows based programs.

Management Software Requirements

This document divides the items for the management software into two areas: requirements and options. It is recognized that not all packages have the same capabilities but a minimum standard must be met by all packages for the end-user to gain a benefit from this specification.

Standard configuration

The standard configuration is the minimum level for management software. It includes the following requirements:

1. Create a text file (update.txt) which will contain the information needed to update the access control/alarm system. Please see Update.txt on page 7 for more information on the format of this file.

2. Delete the error file (errors.txt) so that the existence of this file may be used as an indicator that the update program executed. Invoke the update program via the update.bat batch file or update.exe.

3. After the update program is executed, read the error file (errors.txt) and determine the status of the update requests. If errors occurred, then process the results file (result.txt) and display a summary of the errors.

4. Provide a mechanism for transferring the entire management software database to the access control/alarm system.

Note: the files referred to above should be placed in the \Gate folder. Normally, this folder will be located on drive C:. However, the \Gate folder could be located on any drive. To prevent file name conflicts, vendors are encouraged not to put any other files in the \Gate folder. Only four required files (update.txt, result.txt, errors.txt, and update.bat) and two optional files (errors.log and update.exe) should be placed in the \Gate folder.

Management Software Options

There are two optional components on the management side: network configurations and multiple site configurations. The operating procedure might change slightly if the management software package supports either of these options.

Network configuration

The network configuration includes the following requirements:

1. Meet all of the requirements of the standard configuration.

2. Be able to handle update requests from multiple workstations. It is certainly possible for two move-ins to be processed at the same time in a network configuration. The management software should be able to transfer information to the access control/alarm system in this scenario. Normally, the management software would write information to the \Gate folder on the same drive where the management software is installed. But if two workstations were writing to this folder at the same time, some information might be lost. The management software may need a configurable destination folder on a workstation-by-workstation basis.

Multiple site configuration

The multiple site configuration includes the following requirements:

1. Meet all of the requirements of the standard configuration with some file name changes. The input & output file names would have a site suffix appended to them. For example, the management software would create update1.txt for site #1 and update2.txt for site #2. In the same manner, the other file names would also change: result.txt $\Rightarrow$ result1.txt, error.txt $\Rightarrow$ error1.txt, error.log, $\Rightarrow$ error1.log.

It is fairly natural for the network configuration to be combined with the multiple site configuration. In this case, all of the requirements would need to be met.

Access Control/Alarm System Requirements

Sentinel Systems will provide / support the following with our access control / alarm systems.

1. An update.exe program which is used to invoke the update program. An MS-DOS update.bat batch file is also provided for the same purpose. The management program will normally invoke update.exe.

2. An update program which processes the update text file according to the rules in the File Contents section on page 6. During the processing, the update program creates a results.txt file and an errors.txt file. The program could also create an errors.log file if conditions warrant. For trouble-shooting purposes, the update.txt is renamed to update.old after the update process is finished.

3. A way to configure the defaults that are used by the update program when no information is passed in a particular field. For example, if the management software does not have access levels, the update program will assign a default access level at the time a unit is created or tenant moved in.

4. The files referred to above are normally placed in the C:\Gate folder. However, the gate folder could be on any drive; drive C: is not a requirement.

5. The update program can update the access control / alarm system running on another machine on the network.

6. The update program handles multiple site updates as explained above in the Multiple site configuration section.

File Contents

Update.txt

This file contains the update records and is located in the \Gate folder. The file has a number of required fields and a number of optional fields. The table below provides a field name, a field type and a brief description for the field. More details for each field are provided below.

Table 1 – Update.txt File Format (* = Required Field)				
Field Name	*Field Type*	*Field Size*	*Pos.*	*Description*
Version*	Numeric	4	1	Version of the Interface (e.g. 1.10)
Operation Code*	String	1 byte	5	Add, Edit, Delete, or Query
Unit Number*	String	10 bytes	6	Right Justified
Unit Status	String	1 byte	16	Rented, Delinquent, Vacant, or blank
Passcode	Numeric	10 bytes	17	Right Justified or blank
Card Number	Numeric	10 bytes	27	Right Justified or blank
Time Zone/Period Code	Numeric	2 bytes	37	Right Justified or blank
Keypad/Access Level	Numeric	2 bytes	39	Right Justified or blank
Start Time	Numeric	4 bytes	41	24 hour format or blank
End Time	Numeric	4 bytes	45	24 hour format or blank
Alert Code	String	1 byte	49	Alert, Not on Alert, or blank
On-site Status	String	1 byte	50	On-site, Not on-site, or blank
Alarm Status	String	1 byte	51	Permanently disabled, Time disabled, Both disabled, Enabled, or blank
Link Number	Numeric	10 bytes	52	Right Justified, or blank
Tenant Name	String	30 bytes	62	Left Justified or blank
Result Value	Numeric	2 bytes	92	From 0-99, see Result Values
Secondary Tenant	String	1 byte	94	Secondary tenant flag, 1 / 0 or Y / N or blank
Reserved	String			Reserved for later enhancements
CR/LF	String	2 bytes		Carriage return/linefeed

Fields left blank indicate that either no change is desired or the field is not supported. The update program will determine whether to set default values for blank fields, which is normally only necessary when the status of a unit changes from vacant to rented.

Version: This field contains the version number of the interface that is supported by the management software. Inclusion of this field allows the interface protocol to be updated while maintaining backward compatibility. Current version is 1.10.

Operation Code: There are four options for this field. **A** (Add a unit, not to be confused with moving a tenant in), **E** (Edit a unit's information), **D** (Delete a unit, not to be confused with moving a tenant out), and **Q** (Query a unit). This field is required. An error message may be generated if an add request is received for a unit that already exists or if a delete request is received for a unit that does not exist. A unit to be added may be rented, in which case all relevant information should be supplied, or it may be vacant, followed by an edit operation to rent the unit if necessary. In other words, an add operation can be combined with an edit operation by setting the **Unit Status** field to **R** as an alternative to doing the two separately.

Multiple changes may exist in one record when the Edit option is used. The update program will process all changes. The Query option allows the management software to query the status of a unit. All information about the unit will be returned in the result.txt file. Fields that are not supported by the access control/alarm system are left blank.

> **Note**: Do not use a Delete operation to move the customer out from a unit, instead use an Edit operation with the unit status set to Vacant. Also, do not use an Add operation for a movein, instead use an Edit operation with the unit status set to Rented.

Unit Number: This is a right justified alphanumeric field containing the unit designation. A unit number can not be changed using the Edit operation code. To change a unit number, use the Delete operation code

to delete the old unit, then use the Add operation code to add the new unit. Leading zeros are not significant and should be removed from the unit number if they exist.

Unit status: There are four options for this field. **V**acant will vacate the unit and set all of the fields to their default values. The rest of the fields may be left blank. If the unit status is changing from **V**acant to **R**ented, and a supported field is blank, the update program will set that field to the default value. **D**elinquent will lock out the customer. If the status field is blank, it means that this field is not supported (no change is made to the unit status in this case).

Passcode: This field should contain the unit's access code/passcode or will be blank. If the field is blank, then the management software does not support a passcode. Duplicate passcodes may or may not be allowed depending on settings in the access control/alarm system.

Card Number: This field should contain the unit's access card number or will be blank. Some access systems have keypads and/or cardreaders; this field allows a separate card number to be entered. If the field is blank, then the management software does not support an access card number and the access system may have to use the passcode field for the card number depending on the facility's configuration.

> **Note**: Some systems allow a customer who rents more than one unit to use one access code to enter the facility and open any of their units. To link units in the gate system via the interface, the management software should use the **link number** as explained below.

Time zone/period code: This field will contain a two-digit number from 0 to 99 or will be blank. SSC's access control/alarm systems allow the user to define specific time zones. These time zones are associated with a number. If this field is blank on a new move-in, the update program will assign the default time zone.

Keypad/access level: This field will contain a two-digit number from 0 to 99 or will be blank. SSC's access control/alarm systems allow the user to limit access to specific keypads. These access levels are associated with a number. If this field is blank on a new move-in, the update program will assign the default access level as necessary.

Start time: Not used by SSC, see Time zone/period code above.

End time: Not used by SSC, see Time zone/period code above.

Alert code: This field will contain either an A, N, or will be blank representing Alert, Not on Alert, and not supported. Currently, the alert code option is only supported by **Winsen Platinum Property Sentinel version 4.2.1** and higher.

Tenant name: This is a left-justified alphanumeric field containing the renter's name. This field must contain printable characters only.

On-site status: This field will contain either an O, N, or will be blank. SSC's access control/alarm systems track whether a tenant is currently on-site. This option allows the management software to change this indicator without forcing the user to start the access control/alarm software. If the field is blank, the on-site status is not changed.

Alarm Status: This field will contain a P, T, B, E, or will be blank. SSC's access control/alarm packages track whether the alarm for a unit has been disabled because of problems or because no alarms should be registered during certain hours. This option allows the management software to change this indicator without forcing the user to start the access control/alarm software. If the field is blank, the alarm status is not changed.

Link Number: If there is a number in this field, the access control/alarm system will link this unit with all other units with the same link number (assuming the transaction is not a moveout). The link number used by the gate system does not necessarily have any correspondence to any similar number in the management software, nor does it need to.

For **Winsen Property Sentinel**, the recommended way to link two units via the interface is for the management software to perform a query operation of the unit to link with. This returns the gate system link number for that unit. The subsequent edit or add operation then uses that link number. To break a unit from a link, vacate the unit, then reassign it with the link number set to 0.

For **Winsen Platinum Property Sentinel**, it is supported, but not required to perform a query operation to get the link number. All units that have the same link number will be linked together by Platinum. The link number passed in the update file will be used as the **customer number** in Platinum.

If a primary customer exists whose customer number matches the passed-in link number, the transaction will cause this unit to be linked with the other unit(s) for the customer. If there is a customer currently renting the unit in this transaction, and the customer number doesn't match the link number, the customer number will be updated so it does match.

Result Value: This field is initially left blank. After the update program processes the record, an entry will be made in this field when it is written to the result.txt file. See the Result Values on page 11 for more information.

Secondary Tenant Flag: When set to **1** or **Y**, indicates this is a secondary tenant operation. Secondary tenant operations allow more than one passcode and/or access card to be associated with one or with a group of units in Platinum. For this mode, an operation code of **A** adds a secondary tenant, and an operation code of **D** removes a secondary tenant. A unit status of **V** will also remove the secondary tenant.

Currently, the secondary tenant options are only supported by **Winsen Platinum Property Sentinel version 4.2.1** and higher. Please note that Winsen Property Sentinel does not support secondary tenant operations via the Universal Interface at this time.

If the **Link Number** is populated Platinum Property Sentinel will attempt to find a secondary tenant whose customer number matches the link number, and who is associated with the primary tenant for the unit. If a match isn't found, the passcode or access card number is used to attempt to locate the secondary tenant. If there is still no match, and the operation is **A** or **E** the secondary tenant is created.

Secondary tenant operations will fail if the unit is vacant or does not exist.

Reserved: The rest of the line is reserved for future changes. The record length is not fixed; the end of the line will be marked by a carriage return/linefeed. The carriage return/linefeed may follow the secondary tenant flag field. The maximum length of a record is 255 characters.

Result.txt

This file contains the results of the update process and is located in the \Gate folder. It is formatted exactly the same as the update.txt file. Normally, all information is transferred from the record in update.txt and the only field that the access control/alarm software fills in is the result value. However, if the management software has issued a query for a valid unit's status, the other fields are filled in with the information from the access control/alarm system database.

Errors.txt

This file will contain one line with three numbers separated by commas and ending with a carriage return/linefeed. It is located in the \Gate folder. The file should be generated at the end of each update process. The management software should read this file to determine whether the results.txt file should be processed. If no errors are reported, then no message needs to be displayed for the user. However, the management software could display a summary of the updates. If errors are reported, then the user should be given notification of these errors by the management software. The result.txt file will need to be

processed by the management software to determine the specific errors. The format of the notification message is left to the management software vendor.

Table 2 – Errors.txt		
Field Name	*Field Type*	*Description*
Successes	Numeric	Number of successful updates
Warnings	Numeric	Number of updates with warnings
Errors	Numeric	Number of updates with errors
CR/LF	2 characters	Carriage return/linefeed

Errors.log

This optional file will contain additional error or troubleshooting information. It is located in the \Gate folder. This file should be a text file but no particular format is specified.

Update.bat/Update.exe

This batch file and/or executable program is included with the access control/alarm software. It has the necessary commands to invoke the update program and is located in the \Gate folder. Although drive-related specifications are discouraged, it may be necessary for the user to modify any drive-related specifications in the batch file, if used, or the update program configuration. For example, if the access control/alarm software is normally installed on drive C:, the batch file may contain references to drive C:. However, if the user chooses to install the software to drive D:, the drive references would need to be changed to D:.

Result Values

There are three types of result values defined by this specification: success, warnings and errors. A success indicates that the update request was processed with no problems. Warnings are considered non-critical and indicate that the update request was processed. However, information may have been missing from the record or the access control/alarm software may have detected some other minor discrepancy. Errors are considered serious and indicate that the update request could not be processed.   A result value of 0 indicates success. Result values from 1 to 49 indicate warnings. Result values from 50 to 99 indicate errors. The following table details the currently defined result values.

Table 5 – Result Values

Result Value	Description
0	Record processed without error
1	Record processed, default values were used for blank fields.
2	Record processed, no changes were made because the existing database matches the update.txt record.
50	Update.txt not found.
51	Insufficient memory.
52	Record length error or CR/LF not found.
53	Version not supported.
54	Operations code field is invalid.
55	Operation not supported.
56	Unit number field is invalid.
57	Unit number not found.
58	Duplicate unit number not allowed during add.
59	Unit status field is invalid.
60	Passcode field is invalid.
61	Duplicate passcode not allowed.
62	Card number field is invalid.
63	Duplicate card number not allowed.
64	Time zone/period code field is invalid.
65	Keypad/access zone field is invalid.
66	Start time field is invalid.
67	End time field is invalid.
68	Alert code field is invalid.
69	On-site field is invalid.
70	Alarm status field is invalid.
71	Link number is invalid.
72	Name field is invalid.
73	Network problems.
74	See error.log for more details.
75	Controller malfunction.
76	Unit limit exceeded during add operation.
77	Option not installed.
78	Process was aborted.
79	Secondary tenant operation not supported.
80	Secondary tenant operation attempted, lease or customer not found.