SAP Business One
How-To Guide

PUBLIC

How to Work with Logging and Tracing in SAP Business One

Applicable Release:

SAP Business One 8.8

All Countries

English

November 2009

THE BEST-RUN BUSINESSES RUN SAP™

Table of Contents

Introduction **3**

Events Types and Severity Levels of Log Messages 3

Configuring the Logging Settings **5**

Working with Log Files **9**

Using the Log Repository 9

Viewing the Log Files 10

Log Configuration Files **13**

The Log Configuration File Structure 13

Setting the Configurations for Specific Components 18

Customizing the Log Configuration Files Recommendations 19

Authorizations **20**

Database Tables Reference **21**

Copyrights, Trademarks, and Disclaimers **22**

Introduction

SAP Business One lets you log and trace events at the business level and the system information level during application execution. The information is saved as log messages in log files. The files provide a source of information for understanding the root of any issues when you are working with the application and with add-ons. This information is useful when dealing with incident reports and searching for solutions.

A log file contains text information about important events that happened within the SAP Business One code. The events are written into the text file, together with a message and information about time (when it happened) and place (exact source code line).

The logging framework provides the following features:

- It records application flow – which function was entered and when it happened.
- It records performance – the duration of execution of each specific part of the code.
- Messages are logged with a specified severity.

You can configure the logging settings and decide what severity level of message is to be recorded in the log files. You can also export the log files to Microsoft Excel, filter the log messages, and see the relevant ones.

Note

- The following components do not use the SAP Business One logging settings:
  - SAP Business One upgrade wizard
  - DI API
- This document is valuable mostly for SAP channel partners. Therefore, unless noted differently, the information in this document refers only to SAP channel partners and not to SAP Business One users.

Events Types and Severity Levels of Log Messages

The log messages in the log files consist of 2 event types at 2 different levels:

- *Business Information Level*

  SAP Business One logs information about business flow and business objects. The logs contain all events that are triggered by the actions of users in SAP Business One:

  - Identification of business objects
  - All error, warning, and information messages that are displayed to users

- *System Information Level*

  SAP Business One logs all internal technical messages. These messages contain technical information about the following:

  - Internal errors (for example, ODBC error codes, memory errors), warnings, and information messages
  - Comments from developers
  - Performance logging

For each event type, in the *Logger Settings* window, you can choose one of the following severity levels of message logging:

- *Errors, Warnings, and Information*

  This is a low severity level. The log files contain events that development marked as low importance, in addition to the ones marked as medium and high importance. Function calls logging (tracing) and performance logging are also recorded.

- *Errors and Warnings*

  This is a medium severity level. The log files contain events that development marked as medium importance, in addition to the ones marked as high importance.

- *Errors Only*

  This is a high severity level. The log files contain events that development marked as high importance.

- *Custom*

  This level is displayed automatically if the configuration file was edited manually and does not reflect any of above-mentioned values. SAP Business One users cannot choose this level when configuring the logger settings. For more information, see Log Configuration Files.

  Note

  There is a special type of event level called Logged Always. This level contains information that developers decide to write into log files regardless of the logging settings, the type of event level, or the severity level.

  This level records special types of important messages in the log files. You cannot configure this type of event and the severities inside it.

For more information, see Configuring the Logging Settings.

Configuring the Logging Settings

SAP Business One lets you configure the logger settings. You can configure the severity levels of the recorded events in the Business Information level and in the System Information level. The configuration determines which log messages are recorded in the log files. In addition, you can decide whether to modify the logger settings for your computer or for all SAP Business One clients.

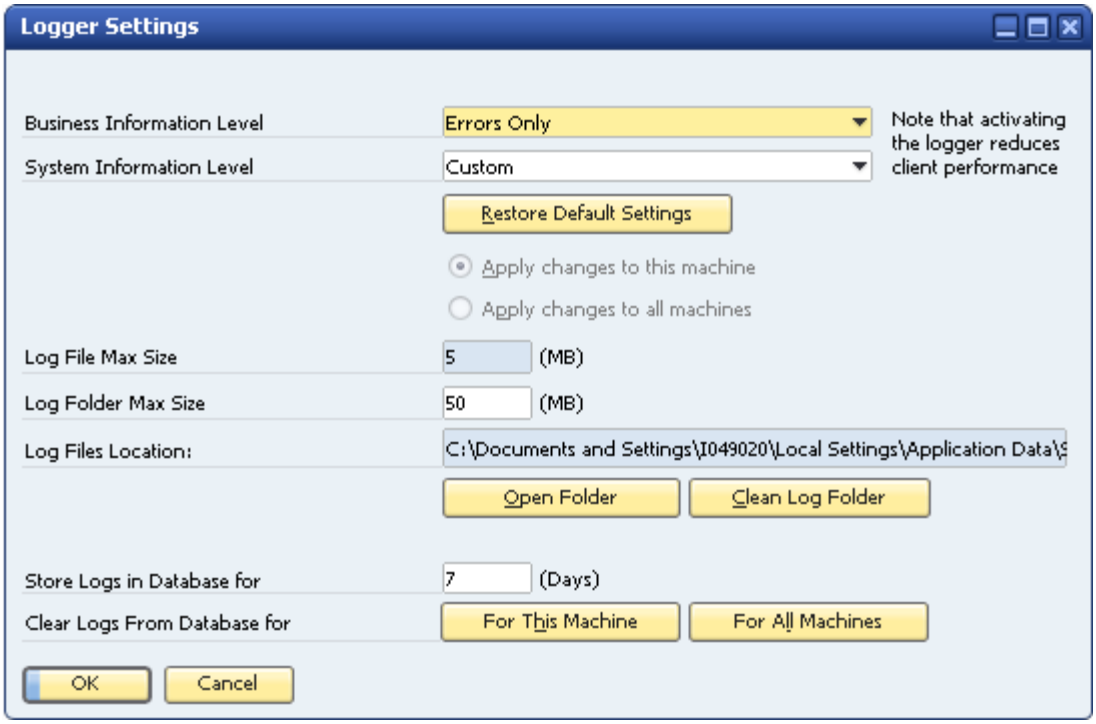
The logging settings are stored in a configuration file on your computer and in the SBO-Common database. On every startup, SAP Business One loads the logging settings. For more information, see Working with Log Files.

Note

Only SAP channel partners, SAP Business One superusers, and SAP Business One authorized regular users can access the *Logger Settings* window.

Procedure

1. From the SAP Business One *Help* menu, choose *Support Desk* → *Logger Settings*.



2. In the *Logger Settings* window, specify the following data:

Field / Button	Activity / Description
Business Information Level	From the dropdown list, choose a severity level that reflects the user messages to be recorded in the log files: • *Off* No messages in the Business Information level are recorded. • *Errors, Warnings, and Information* This is a low severity level. The following events are recorded in the log files: ○ Error, warning, and information messages ○ Identification of business objects • *Errors and Warnings* This is a medium severity level. Error and warning messages are recorded. • *Errors Only* This is a high severity level. Only error messages are recorded. This is the default setting. • *Custom* This level is displayed automatically if the configuration file was edited manually and does not reflect any of the above-mentioned values. SAP Business One users cannot choose this level when configuring the logger settings. For more information, see Log Configuration Files.

Field / Button	Activity / Description
System Information Level	From the dropdown list, choose a severity level that reflects the information to be recorded in the log files: • *Off* No messages in the System Information level are recorded. • *Errors, Warnings, and Information* This is a low severity level. The following events are recorded in the log files: ○ Performance logs ○ Database messages • *Errors and Warnings* This is a medium severity level. Error and warning messages are recorded. • *Errors Only* This is a high severity level. It pertains to all cases in which a required action cannot be completed, such as: ○ Database errors, ODBC error codes ○ Connectivity errors ○ Memory management errors • *Custom* This level is displayed automatically if the configuration file was edited manually and does not reflect any of the above-mentioned values. SAP Business One users cannot choose this level when configuring the logger settings. For more information, see Log Configuration Files. This is the default setting.
Restore Default Settings	Restores the default severity level settings for both business and system information levels.
Apply changes to this machine	Select this option to apply the changes to your computer only.
Apply changes to all machines	Select this option to apply the changes to all the computers that are connected to the same server.
Log File Max Size	Displays the log file maximum size. This size is set to 5 MB and cannot be changed. When the file exceeds maximum size, SAP Business One saves the file in the repository and creates a new file. For more information, see Using the Log Repository.

Field / Button	Activity / Description
Log Folder Max Size	Specify the size of the log directory. The directory size includes all log files that are placed inside. The minimal size allowed is 4 times the maximum log file size. Since the maximum log file size is 5 MB, then the minimal size allowed for the log directory is 20 MB. Note By default, the directory size is set to 50 MB. There is no limitation on its maximum size. If the size limit of the directory is exceeded, older files that cause the size limit to be exceeded are deleted. If you specify the directory size as smaller than its current size, the directory size is reduced immediately after you apply configuration changes. CAUTION Directory limitation applies to individual subdirectories (logging directory for a specific component). The limitation is not applied to the root log directory.
Log Files Location	Displays the current location of the log files. For more information, see Viewing the Log Files.
Open Folder	Opens the log directory to view the log files.
Clean Log Folder	Empties the log directory and removes all log files that are currently not in use.
Store Logs in Database for	The number of days to store log files in the database. The minimal configurable time is 7 days, which is also the default value.
Clear Logs From Database for	In addition to the text files, log files are stored in the SBO-Common database. To delete the database log for your computer only, choose the *For This Machine* button. To delete the database log for all computers, choose the *For All Machines* button.

3. To save your changes, choose the *Update* button.

Result

The changes in the logging settings are applied immediately with no need to restart the application.

Working with Log Files

SAP Business One creates a new log file on every startup. A log file contains text information about important events that happened within the SAP Business One code. The events are written into the text file together with information about the following:

- The time the event happened
- The exact source code line the event refers to
- The event's message content

The log files have a unique, predefined name that contains a date, a time stamp, and the Process ID (PID) of the SAP Business One application that created the file. Tracing and logging information, all types of event levels, and severity levels are stored together in one log file.

The log file size is restricted to 5 MB. After the file exceeds the maximum size, SAP Business One creates a new file. The number of log files that can be stored in a logging directory depends on the configuration of the folder size. For more information, see Configuring the Logging Settings.

SAP Business One lets you view the log files. You can also customize the log configuration files to decide which messages are to be recorded in the log files.

> **Note**
>
> The database upgrade log is created as a separate log file to prevent database upgrade messages from becoming mixed in with SAP Business One messages.

Using the Log Repository

In addition to the stored text log files, SAP Business One stores log files in a repository that contains log files from all SAP Business One clients.

The log file repository is maintained in the SBO-Common database. SAP Business One writes log files to the SBO-Common database if one of the following events occurs:

- You exit SAP Business One properly, which means you close the application window.
- The size of the log file exceeds the configured maximum size of the log file. SAP Business One writes it into the Common database and creates a new empty log file.
- SAP Business One crashes and the log file is not written into the repository. SAP Business One writes the log file into the Common database at the next startup.

The log files are compressed and stored in the repository for a specific number of days. When log files that are kept in the repository exceed the date limit, those log files are removed. You can specify the number of days the logs are kept and specify whether to empty the repository for your computer or all the computers in your company. For more information, see Configuring the Logging Settings.

Viewing the Log Files

All log files created by SAP Business One or by other components, such as add-ons, are stored in the same directory. By default, this directory is:

%USERPROFILE%`\Local Settings\Application Data\SAP\SAP Business One\Log\`

For each component, a subdirectory is created under this directory.

Note

An environment variable *%USERPROFILE%* belongs to each component. For example, if an add-on is a service, the *%USERPROFILE%* is `C:\Documents and Settings\LocalService`.

The following table describes the locations of the log files and the name of the log file for the different components:

Component	Log Subdirectory Location	Log File Name
SAP Business One Client	`.\BusinessOne\`	`BusinessOne<Channel Name>Pidxxx_<datetime>.txt`
DI API (Multiple Add-on)	`.\DIAPI\`	`BusinessOneDI<Channel Name>Pidxxx_<datetime>.txt`
DI API (Single Add-on)	`.\DIAPI\`	`<Add-on Name><Channel Name>Pidxxx_<datetime>.txt`
Upgrade Wizard	`.\UpgradeWizard\`	`BusinessOneUpgrade<Channel Name>Pidxxx_<datetime>.txt`

Use Microsoft Excel to view the relevant log files. This information can help you in understanding the root of any issues when working with the application and with add-ons. This information is useful when dealing with incident reports and searching for solutions.

The following table describes the structure and the information of the SAP Business One log file:

Column Name	Technical Name	Description	Example
Time	Time	The date and the time (including microseconds) of the message.	25/06/2009 10:57:31:513659
Component Name	Component name	The component that wrote the message.	SystemMessage General
Severity Name	Severity name	The severity level name of the message.	Error NoteLogAlways

Column Name	Technical Name	Description	Example
Source of Message	Source of msg	The source of the message: • I – For internal sources: SAP Business One client and upgrade wizard. • E – For external sources, including single and multiple add-ons.	I E
Message Type Flag	Msg type flag	The type of event to which the message belongs.	Business Technical
Message Content	Msg Content	The message content.	Due Date is missing SetLogConfiguration - Loading log configuration
Context	Context	The item in the user interface that is related to the message.	#Field: Due Date #Field: Delivery Date
Technical	Technical	Technical information from the database: the table name and the relevant field.	#Table Name: OINV, Table Field: DocDueDate
Message ID	MessageID	The message ID that was displayed.	MID=10000443
Business Object ID	boID	The business object ID that was created or modified. The column contains one of the following values: • BOID=-1 The log message has no business object. • BOID=0 The business object has not been inserted in the database. The DocEntry(BOID) was generated by the database, but it was not possible to extract the correct business object ID before the data was inserted. • BOID>=1 The DocEntry from business object.	BOID=0 BOID=2

Column Name	Technical Name	Description	Example
Business Object Name	boName	The business object name.	BO=Sales Orders BO=A/R Invoices
User ID	User ID	The ID of the user who is logged on to SAP Business One and who performed the action that triggered the message.	UserID=manager
Process Name	Process Name	The component path.	C:\Program Files\SAP\SAP Business One\SAP Business One.exe
Version	Version	The version description that logged the event. This information helps to identify the source of an issue.	Version=8.80.220
Application Area	APP Area	The SAP Business One module that is relevant to the message. In the case of a single add-on, the column contains the add-on name. In the case of a multiple add-on, *SAP Business One DI* is written in the message.	Area=Sales and Purchasing
Process ID	PID	The process ID.	PID=2868
Thread ID	TID	The thread ID in which this message is logged.	TID=336
File Name	FileName	The file in which the message is logged.	D:\depot\BUSMB_B1\8.8_REL\SBO\8.8_REL\Application\ObjMgr\POEULA.cpp
Line	Line	The line number in the file in which the message is logged.	157 481

Log Configuration Files

The log configuration files are .xml files that you can customize and edit manually. The recorded messages in the log files do not reflect any of the predefined severity level options that you can select when configuring the logging settings in the *Logger Settings* window. For more information, see Events Types and Severity Levels of Log Messages and Configuring the Logging Settings.

When the SAP Business One log configuration file is customized and its configuration does not reflect one of the default severity levels, the value in the *Business Information Level* field or in the *System Information Level* field in the *Logger Settings* window is displayed as *Custom.*

The Log Configuration File Structure

The following table provides the location of the log configuration file for each component:

Component	Log Configuration File Location
SAP Business One Client	*SAP_Business_One_Client _exe_path*`\Conf\b1LogConfig.xml`
DI API (Multiple Add-on)	*DIAPIInstallPath*`\Conf\b1LogConfig.xml`
DI API (Single Add-on)	*add-on_exe_path*`\Conf\b1LogConfig.xml` *DIAPIInstallPath*`\Conf\b1LogConfig.xml` (if the first path does not exist)
Upgrade Wizard	*UpgradeWizard_exe_path*`\Conf\b1LogConfig.xml`

Note

- By default, the log configuration file for both the single add-on and the multiple add-on is located under *DIAPIInstallPath*`\Conf\b1LogConfig.xml`.

  To configure a single add-on separately, create a `Conf` folder under the add-on executable file path. Then, from *DIAPIInstallPath*`\Conf\,` copy the following files to the folder you created:

  - `b1LogConfig.xml`
  - `b1-config-path.txt`
  - `b1-conf.dtd`
  - `b1-current-user-template.xml`
  - `b1-local-machine-template.xml`

- Customers cannot modify "LogPath" and "LogPathOverride" in `b1-current-user.xml` to configure log file locations.

All configuration files have the same name: `b1LogConfig.xml;` and all have a similar structure:

```
<log>
    <Channel1>
        <Components>
        </Components>
        <Severities … />
    </Channel1>
    <Channel2>
                …
</log>
```

Log – The Root Node

The Log is the root node of the log configuration file and has the following attributes:

Attribute	Description
FolderSize	The maximum log subdirectory size in megabytes. It must be an integer greater than 20 and at least 4 times the defined maximum log file size. For more information, see Channels. If the size limit of the directory is exceeded, older files that cause the size limit to be exceeded are deleted. If you specify a size that is smaller than the current size, the directory size is reduced when you run SAP Business One. CAUTION The directory limitation applies to individual subdirectories (logging directory for a specific component). The limitation is not applied to the root log directory. We recommend not modifying this attribute.
SubFolder	The subdirectory where log files for this component are saved. By default, its value is BusinessOne. You cannot modify this attribute. Note The log configuration file for the SAP Business One client does not have this attribute.

Channels

The root node is composed of different channels. Each channel refers only to one log configuration file. Each log configuration file contains one or several of the following channels:

Channel	Description
b1logger	Refers to SAP Business One client business and technical information
B1Upgrade:	Refers to database upgrade information
EventView	Refers to SAP Business One logon information

Channel	Description
StockTool	Refers to SAP Business One StockTool information
DILogger	Refers to SAP Business One DI API information
UpgradeWizard	Refers to SAP Business One Upgrade Wizard information

Each channel may have several attributes. The following table describes the different channel attributes:

Attribute	Description
Activate	Indicates whether or not the channel is activated: • 1 – The channel is activated. • 0 – The channel is not activated and, therefore, no log file is created for this channel.
LogStack	Indicates whether or not the channel includes stack information: • 1 – (enabled) – Channel includes stack information, which is written to the log file. • 0 – (disabled) - No stack information is written to the log file. CAUTION If this flag is enabled, performance is significantly reduced; therefore, we recommend not modifying this attribute.
MaxFileSize	The log file maximum size in megabytes. It must be an integer greater than 5. You cannot modify this attribute.
Mode	The method with which the log messages are written in the log files. The Mode attribute must have one of the following values: • A Log messages are written asynchronously. • S Log messages are written synchronously. • DI Log messages are written asynchronously. You must use this value for the DILogger channel. You cannot modify this attribute.

Attribute	Description
MaxNumOfMsg	To enhance performance, log messages are not written to the log file one by one. A message queue is used to cache log messages, and once its size exceeds MaxNumOfMsg, all the messages in the queue are written to the log file at the same time. The value of MaxNumOfMsg must be an integer. For example, "500" means that only when the message queue has more than 500 log messages are they all written to the log file together. There are two exceptions to this behavior: • When you launch SAP Business One, the first log message is written to the log file immediately. • If a log message's severity is error or critical error, the message is added to the queue and all the messages of the queue are written to the log file immediately. This field is valid only when the Mode attribute is A or DI. We recommend not modifying this attribute.
NumOfFiles	An obsolete attribute that cannot be modified.
SaveToRepository	Indicates whether or not this channel is uploaded to the database: • 1 – The channel is uploaded to the database. • 0 – The channel is not uploaded to the database. You cannot modify this attribute.

In the log configuration files, channel attributes are located as Channel node attributes. For example, the default b1logger channel looks as follows:

```
<b1logger Activate="1" LogStack="0" MaxFileSize="5" MaxNumOfMsg="500"
Mode="A">
```

Components

Each log message belongs to one component. Components are used to segment the different types of messages. Each channel contains one or several components.

The following table describes the different components:

Component	Description
General	Component added by developer for debugging
Performance	Component includes performance information
SQLMessage	Component about the SQL module
Security	Component about the Security module
SystemMessage	Component about SAP Business One business logic
StockTool	Component about the stock tool module

Component	Description
Trace	Component about trace information CAUTION If this component is enabled, performance is significantly reduced. We recommend that you not enable this component.
Upgrade	Component about the database upgrade module
DI	Component about the DI API module
UpgradeWizard	Component about the upgrade wizard module

Each component can be either enabled or disabled:

- 1 – The component is enabled.
- 0 – The component is disabled and no log messages about this component are written to the log file.

In the log configuration files, the configurations of the components are located in the Components node. For example:

```
<Components General="1" Performance="0" SQLMessage="1" StockTool="0"
SystemMessage="1" Trace="0" Upgrade="0">
```

Severities

Each log message has one severity flag. Each component has several severity settings.

The following table describes the different severities:

Severity	Description
AuditFailure	Severity for login fail log message
AuditSuccess	Severity for login success log message
BeProtective	Severity for protective log message
CriticalError	Severity for critical error log message. When a critical error occurs, SAP Business One stops.
Error	Severity for error log message
Note	Severity for note log message
Warning	Severity for warning log message
FullInfo	Severity used only for DI component
Trace	Severity used only for DI component

Each severity can be either enabled or disabled:

- 1 – The severity is enabled.
- 0 – The severity is disabled and no log messages about this severity are written to the log file.

In addition, each severity may have a specific LogStack attribute. If this attribute is enabled, log messages of this severity include stack information. For more information, see Channels and Setting the Configurations for Specific Components.

In the log configuration files, the configurations of the severities are located in the Severities node. For example:

```
<Severities AuditFailure="1" BeProtective="1" CriticalError="1" Error="1"
Note="0" Warning="0" />
```

Setting the Configurations for Specific Components

You can override the default setting configurations for specific components by specifying the configuration settings for it. You need to add a sub node to the Components node that indicates the name of the relevant component and specifies the severities for it.

> **Note**
>
> Even if the component is not enabled in the Components node attributes, it is enabled if you define specific configurations for it.

Example

```
<b1logger Activate ="1" LogStack="0" MaxFileSize="5" MaxNumOfMsg="500"
  Mode="A">
   <Components General="1" Performance="0" SQLMessage="1" SystemMessage="1"
     StockTool="0" Trace="0" Upgrade="0" >
      <Component name="SystemMessage">
        <Severities AuditFailure="1" BeProtective="1" CriticalError="1"
         Error="1" Note="0" Warning="0">
         <Severity name="BeProtective" LogStack="1"/>
       </Severities>
      </Component>
   </Components>
   <Severities AuditFailure="0" BeProtective="1" CriticalError="1"
     Error="1" Note="0" Warning="0"/>
</b1logger>
```

The specific configuration for the SystemMessage component overrides the default configuration for this component. In contrast to the other components, the AuditFailure severity is enabled for the SystemMessage component. In addition, the BeProtective severity log messages include stack information for this component.

Customizing the Log Configuration Files Recommendations

For all the log configuration files, we suggest modifying only existing attribute values. We recommend that you do not add or remove components and severities. In addition, we recommend that you do not enable the Trace component because it significantly degrades performance.

- B1 client log configuration file
  - We recommend using the *Logger Settings* window in SAP Business One UI to change the logging settings for the SAP Business One client.
  - For the B1Upgrade channel, we recommend enabling only the Upgrade component.
  - For the StockTool channel, we recommend enabling only the StockTool, the Upgrade, and the Security components.
- DI API log configuration file

  We recommend not modifying the b1logger and the EventView channels.
- Upgrade Wizard log configuration file
  - For the B1Upgrade channel, we recommend enabling only the Upgrade component.
  - For the UpgradeWizard channel, we recommend enabling only the UpgradeWizard component.

    CAUTION

    The more components and severities you enable, the more significant the reduction in performance.

Authorizations

For information about the authorizations required for logging and tracing, see the online help for SAP Business One. In addition, see the document *How to Define Authorizations* in the documentation area of SAP Business One Customer Portal at http://service.sap.com/smb/sbocustomer/documentation.

Database Tables Reference

For information about the tables used in logging and tracing, see the *Database Tables Reference* .chm file. You can download it from the SAP Community Network.

To download the *Database Tables Reference* .chm file:

1. Go to https://www.sdn.sap.com/irj/sdn/businessone.
2. Under *BUSINESS ONE KNOWLEDGE CENTER*, click the link of the SAP Business One release version you need.
3. Click the SDK Help Center link.
4. In the *File Download* window, do one of the following:
   - To open the .zip file, choose the *Open* button; then extract the `REFDB.chm` file to your computer.
   - To save the .zip file to your computer, choose the *Save* button. You can open the .zip file and extract the `REFDB.chm` file later.

Copyrights, Trademarks, and Disclaimers

© Copyright 2009 SAP AG. All rights reserved.

The current version of the copyrights, trademarks, and disclaimers at http://service.sap.com/smb/sbocustomer/documentation is valid for this document.