

Grandstream Networks, Inc.

Third-Party SQL Database Integration Guide



This guide explains how to configure Grandstream IP PBXs to connect to an external SQL database and use it for contacts synchronization and real-time inbound caller name lookup.

Instead of manually maintaining phone book records on the PBX, the system queries the external database or syncs from it automatically, improving consistency and reducing administrative effort.

The configuration workflow includes:

1. Configure the global SQL database connection
2. (Optional) Sync contacts from the external database
3. Configure inbound routes to perform database caller name lookup

PREREQUISITES

Before configuring the PBX, ensure the following:

- PBX running a compatible firmware (See [Supported Models](#) section).
- A SQL database server is available (MySQL or SQL Server).
- Network connectivity exists between the PBX and the database server.
- A database and user account are created.
- The database user has, at a minimum, *SELECT* privileges on required tables.

PBX CONFIGURATION

Configure Global SQL Integration

The PBX first needs a global database connection that other features can reference. This connection is configured once and reused by modules such as Contacts Sync and Inbound Routes' third-party database lookup.

To configure the SQL integration, please refer to the steps below:

1. Navigate to **System Settings→3rd Party Database Integration**.

3rd Party Database Integration

Basic Settings | Contacts Sync

3rd Party Database Integration ☒

Database Type: MySQL

* Server Address: 192.168.6.36 (IPv4 Address)

* Port: 3306 (Range 1 - 65535)

* Database Name: phonebook

* Connection Timeout (s): 5

* Username: phonebook_user (1 - 64 characters)

* Password: Phonebook123! (At least 4 characters)

* Character Set ①: UTF8MB4

Test Connection: Start

Cancel Save

Connection success

3rd Party Database Integration Basic Settings

2. Configure the fields as described below.

3rd Party Database Integration	Enable or disable 3rd party database integration. When enabled, the PBX queries the configured database for contact information.
Database Type	Select the database engine: • SQL Server • MySQL
Server Address	Enter the IPv4 address of the database server.
Port	Enter the port used by the database service. Valid range: 1–65535
Database Name	Enter the name of the database used for establishing the connection.
Connection Timeout (s)	Set the time (in seconds) to wait before a connection attempt times out. Please enter a value between 1 and 300. The default value is 5.
Username	Enter the username used to connect to the database.
Password	Enter the password for the specified username.
Character Set	Specifies the character set for MySQL connections. • ASCII • UTF-8 • GBK • GB2312 • UTF8MB4
Test Connection	Click to test connectivity and authentication to the configured database.

3. Click *Start* under “Test Connection” to verify connectivity.

4. If the test succeeds, click “Save”.

Configure Contacts Sync (Optional)

After the database connection is successfully established, an additional Contact Synchronization tab becomes available.

The PBX can synchronize phone book records from the external database into its internal LDAP directory. The synchronized contacts are then exposed to endpoints through the PBX LDAP server.

Note:

LDAP phonebooks synced from third-party databases support up to 500,000 contacts.

To configure contact synchronization:

1. Navigate to **Call Features** → **Contacts** → **3rd Party Database Sync**.
2. Enable **Contacts Sync**.
3. Specify the table and column mappings.
4. Configure the synchronization schedule, or run a manual sync.

3rd Party Database Integration Contacts Sync

The configurable parameters are described below:

Contacts Sync	Enables synchronization of database contacts into the PBX LDAP phone book. When disabled, real-time caller lookup remains available, but contacts are not synchronized.
Table	Enter the database table containing contact records.
Phonebook Name	Choose the display name of the LDAP phone book created on PBX.
Attribute Mapping	Maps the 3rd party database fields to PBX LDAP attributes (max 10).
Scheduled Sync	Defines automatic synchronization schedule.

When synchronization runs, the PBX imports records from the defined table and updates its internal contact storage. To verify the synced LDAP Phonebook:

1. Navigate to **System Settings**→**LDAP Server**→**LDAP Phonebook**.
2. Confirm a new phonebook with the configured name is present.

3rd Party Database Synced Phonebook

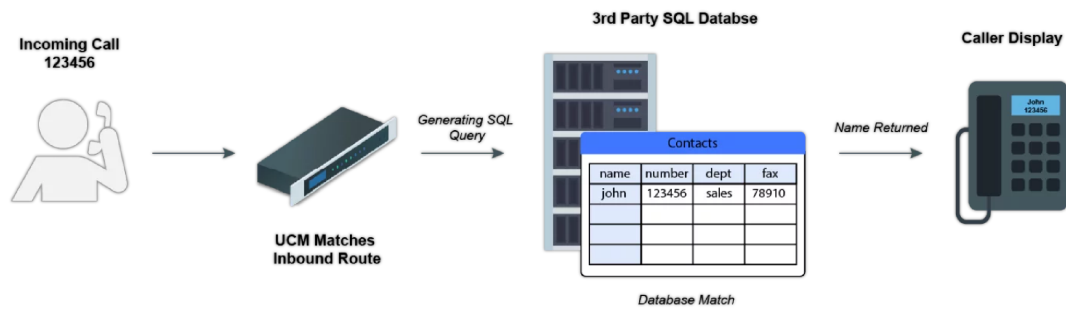
3. Verify that the 3rd party database synced contacts are listed and searchable.

Synced Phonebook Contacts

Configure Inbound Routes Search

This feature allows the PBX to perform a real-time lookup in an external SQL database when an inbound call is received. If the inbound caller number matches a record in the database, the associated name is returned and displayed as the caller ID.

This lookup operates independently of the contact synchronization feature. Instead of importing data, the PBX queries the external database dynamically during call processing.



PBX with SQL Caller ID Lookup

To configure third-party database lookup on inbound routes, please refer to these instructions:

1. Navigate to **Extension/Trunk → Inbound Routes**
2. Enable *3rd Party Database Search*.

The screenshot shows the configuration page for the 3rd Party Database Search feature. The '3rd Party Database Search' checkbox is checked. The 'Query Key' section shows 'Table' set to 'phonebook', 'Caller Name' set to 'name', and 'Number' set to 'number'. A note explains that the 3 keys of the target phonebook must be entered to generate a valid query. An example SQL statement is provided: `SELECT name FROM phonebook WHERE number LIKE '%[INBOUND_NUMBER]%'`.

3rd Party Database Search Feature for Inbound Routes

3. Configure the Query Key fields described below.

Field	Description
Table	Specifies the name of the database table that contains caller information. This table is queried when an inbound call is received. Note: The table name must exist in the configured database and be accessible by the database user defined under the Global SQL Integration.
Caller Name	Specifies the column in the selected table that stores the caller's display name. When a matching record is found, the value from this column is used as the inbound caller ID name.
Number	Specifies the column in the selected table that stores the phone number. The PBX compares the inbound caller number against this column to determine whether a matching record exists.

Based on the configured query keys, the PBX automatically generates and executes a SQL query in the following format:

```
SELECT <Caller Name Column>
FROM <Table>
WHERE <Number Column> LIKE '%[INBOUND_NUMBER]%';
```

The inbound caller number is dynamically substituted at call time.

SUPPORTED MODELS

The following table shows the list of models that support the 3rd Party SQL Database Integration.

Model	Minimum Firmware Version
UCM63xx	1.0.31.7+
UCM63xx/A	1.0.31.7+
CloudUCM	1.0.27.15+
SoftwareUCM	1.0.33.7+
GCC6000 IPPBX	1.0.27.14+
GCC6020 IPPBX	1.0.27.70+