TekENUM

Installation & Configuration Guide
Version 1.4

Document Revision 2.0

https://www.kaplansoft.com/

TekENUM is built by Yasin KAPLAN

Read "Readme.txt" for last minute changes and updates which can be found under application directory.

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Introduction

TekENUM is an ENUM Server *(Based on RFC 3761)* runs under Windows *(Vista/7/8/10, 2008-2019 Server).*

TekENUM can act as a DNS Proxy for undefined ENUM endpoints as well as unsupported DNS query types.

System Requirements

1. A Windows system with at least 4 GB of RAM.
2. Microsoft.NET Framework v4.0 *(Min.)*
3. 2 MB of disk space for installation.
4. Administrative privileges.

Installation

Unzip "TekENUM.zip" and click "Setup.exe" comes with the distribution. Follow the instructions of setup wizard. Setup will install TekENUM Manager and TekENUM Service, add a shortcut for TekENUM Manager to desktop and the start menu.

Configuration

Run TekENUM Manager from Start Menu / Program Files / TekENUM. TekENUM automatically configures itself at first run.

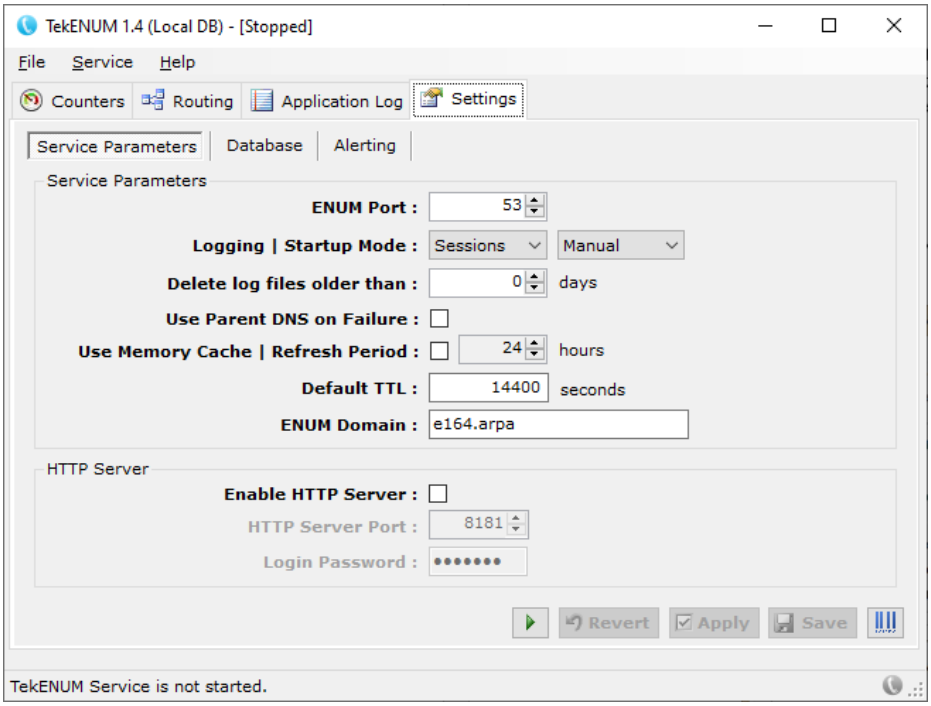

Figure - 1. TekENUM Settings tab

Settings Tab

Click the Settings Tab to start configuration. The Settings tab has four sub sections. Enter following information:

- **Listen IP Address | Port:** You can select a detected IPv4 address configured on your system. When you change the IP configuration of your system, the IP address list will automatically be updated. You can define a port number to be listened *(Default 5060)*.
- **Logging:** Select logging level of TekENUM. Select "None" if you do not want logging, select "Errors" to log errors and select "Sessions" to log session information and errors. Log files are located under <Application Directory>\Logs directory.
- **Startup Mode:** Set TekENUM service startup mode, Manual or Automatic. You can also disable service startup.
- **ENUM Domain:** Set default ENUM domain to be received in ENUM queries. The default is e164.arpa.
- **Use Parent DNS on Failure:** TekENUM can act as a DNS Proxy for undefined ENUM endpoints as well as unsupported DNS query types. Check if you wish to enable this feature. When this option is enabled TekENUM will forward DNS requests for the undefined endpoints and unsupported DNS queries to DNS servers defined in local machines network configuration.
- **Use Memory Cache:** This feature is available in commercial edition. You can keep query result in memory to provide faster responses to subsequent queries.
- **Memory Cache Refresh Period:** TekENUM will clear memory cache in periods specified in this parameter.

Routing

You can define resource records or routes for a particular E.164 number or a prefix in "Routing" tab. Enter a phone number prefix to bottom leftmost textbox and click "Add Route" button.

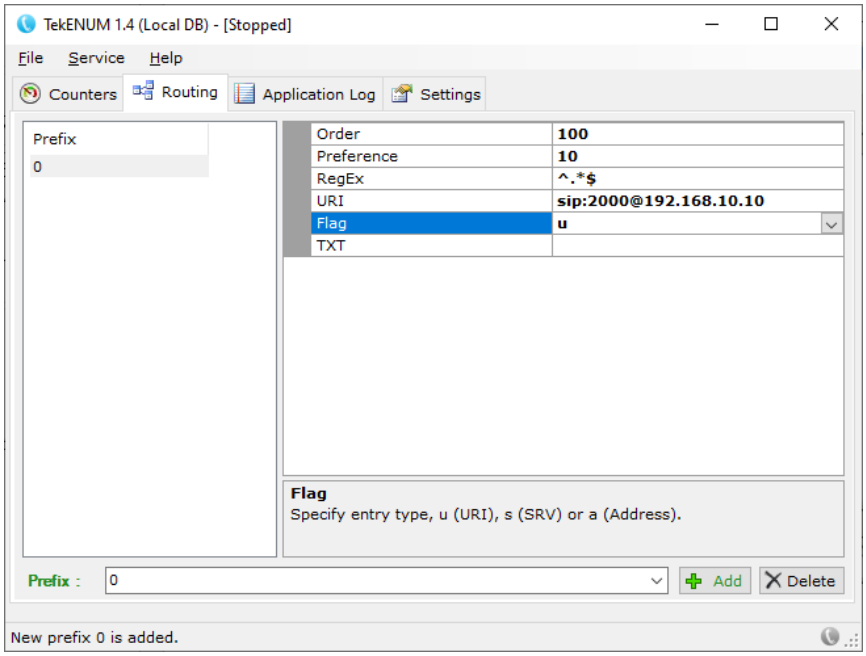

Figure - 2. Routing Tab

You can also have a default route entry. TekENUM chooses the longest match prefix route. If any match cannot be found the default route is chosen if exists. You can have just one resource record per prefix or per E.164 entry.

Enter a prefix and click “Add Route” button to add a new routing entry. You must edit at least URI entry to commit changes.

Application Log

You can monitor system events in the Application Log tab. You can manually refresh log entries and clear log entries. Click Enable Auto Refresh option to refresh log list every second.

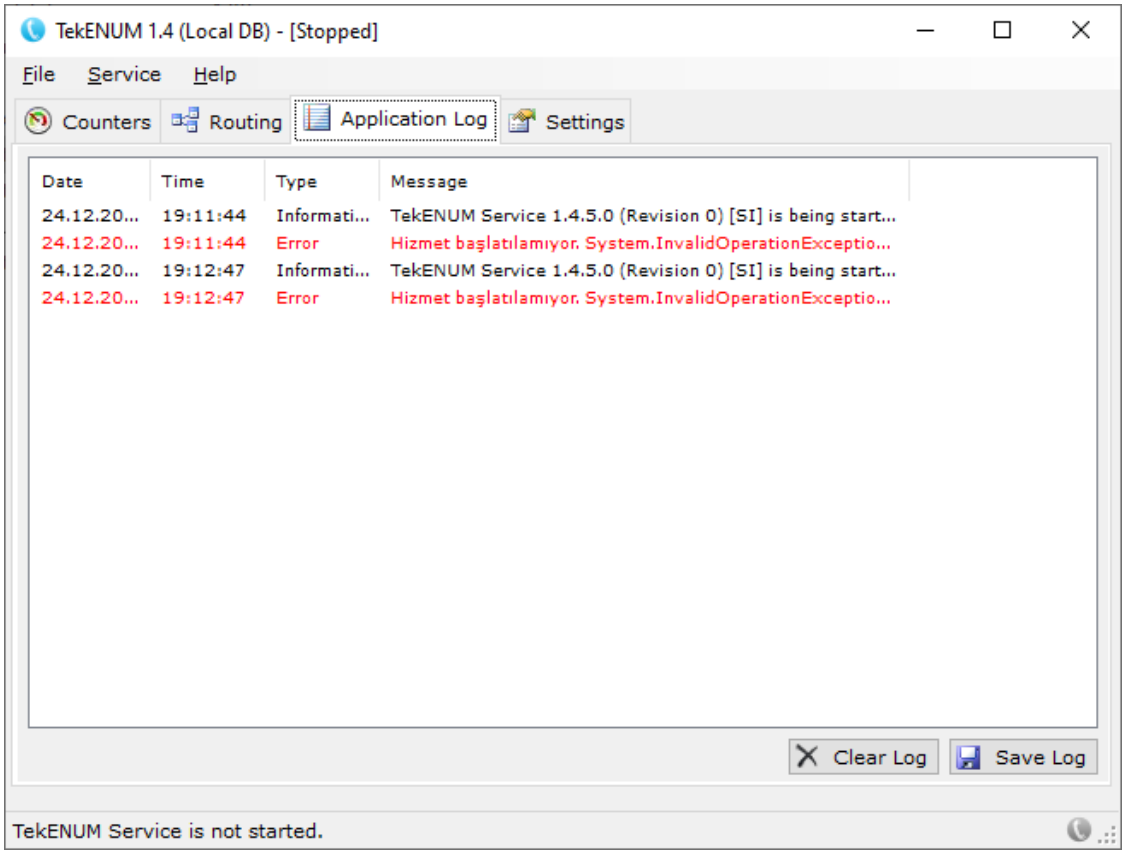

Figure - 3. Application Log Tab

Starting TekENUM

Click “Service” menu and select “Start” to run TekENUM after making necessary configuration and saving configuration. If service starts successfully you will see “TekENUM Service is started” message at bottom left message section of TekENUM Manager. Optionally you can start/stop TekENUM using the button on the Settings tab. When you make any change(s) in configuration, TekENUM will ask you if you wish to restart TekENUM to make settings changes active if TekENUM service is running.

If TekENUM service cannot start, please examine Application Log tab as well as TekENUM log file under <Application Directory>\Logs if you were enabled logging in Settings tab.

SQL Mode

TekENUM uses built-in Microsoft Access database by default. If you plan to use a Microsoft SQL Server database, create database and "Routes" table using TekENUM.sql and Routes.sql scripts respectively. These scripts can be found in the TekENUM application directory. You need to add flowing section and parameters for SQL mode operation to TekENUM.ini which can be found under TekENUM application directory;

```
[Database]
SQL_Server=<IP Address of the SQL Server>
Catalog=TekENUM
Table=<Table which holds routing entries>
UserName=<Database username, sa e.g.>
Password=<Database user password>
Timeout=30
```

You can optionally add `SelectClause` parameter to define an alternative SQL query under `[Database]` section of TekENUM.ini. For example;

```
SelectClause=EXECUTE getroute 'N%prefix%'
```

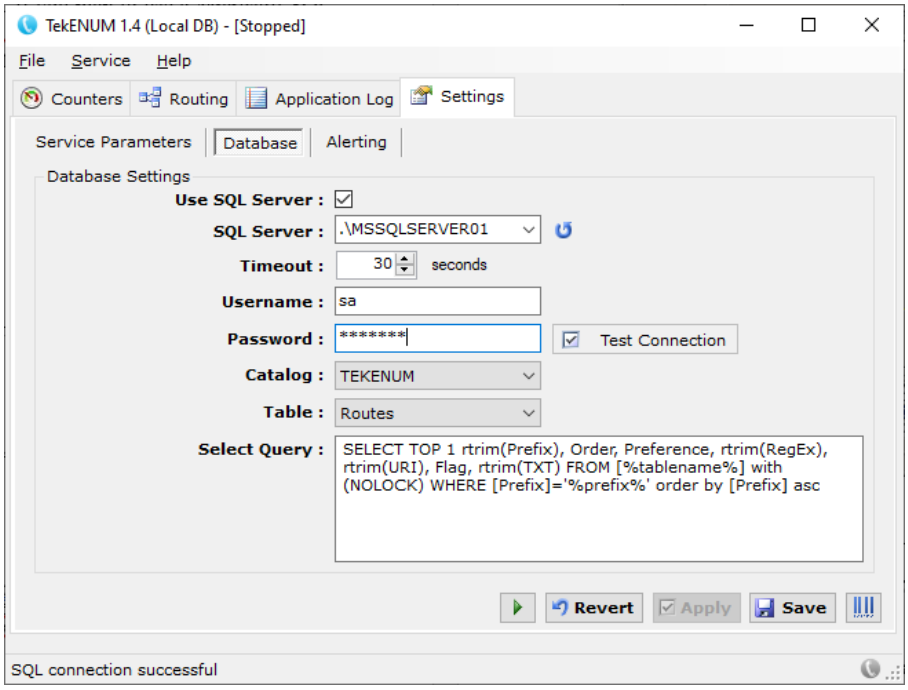

Figure - 4. Database Settings Tab

TekENUM will replace `%prefix%` variable with queried E.164 address. TekENUM invokes stored procedure `getroute` in this sample. If you use a view or a stored procedure, returned record structure must be in following format;

```
CREATE TABLE [dbo].[Routes](
      [Prefix] [nvarchar](255) NOT NULL,
      [Order] [int] NULL CONSTRAINT [DF_Routes_Order]  DEFAULT ((100)),
      [Preference] [int] NULL CONSTRAINT [DF_Routes_Preference]  DEFAULT ((10)),
      [RegEx] [nvarchar](255) NULL CONSTRAINT [DF_Routes_RegEx]  DEFAULT ('^.*$'),
      [URI] [nvarchar](255) NULL,
      [Flag] [char](1) NULL,
      [TXT] [nvarchar](255) NULL
) ON [PRIMARY]
```

Default select clause is;

```
SELECT TOP 1 * FROM [Routes] (NOLOCK) WHERE [Prefix]='%prefix%' order by
[Prefix] asc
```

You must have SQL Management Studio installed to execute SQL statements above.

Re-start TekENUM service after adding these parameters.

You can also use TekSIP Route Server GUI for SQL connection settings;

Mail Alerting

TekENUM can be configured to send e-mail alerts if an error condition occurs for a specified duration.[1]

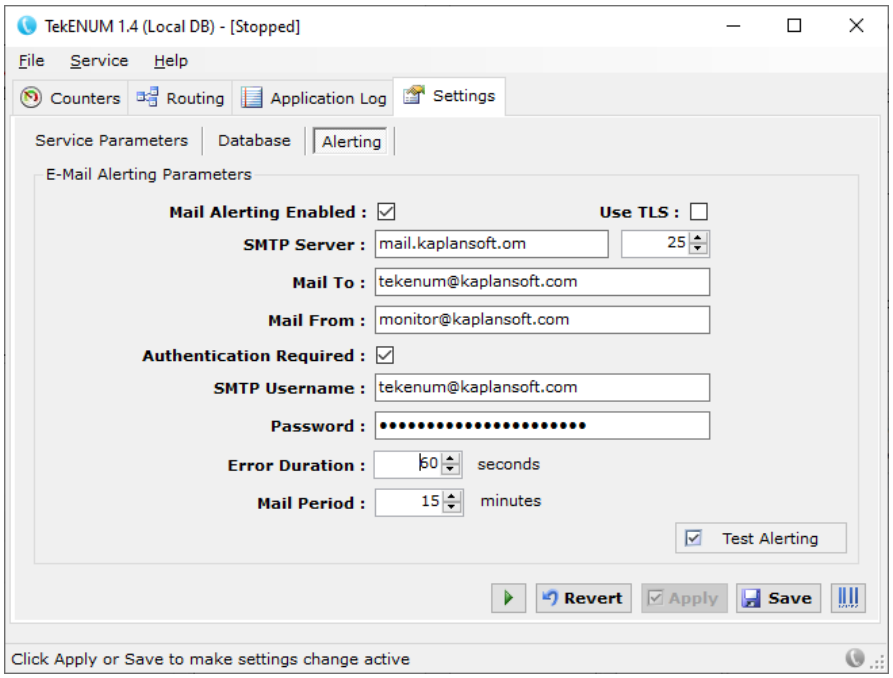

Figure 5 - Alerting Configuration

Enter the following information to configure alerting:

- **Mail Alerting Enabled.** Check this option to enable the Mail Alerting feature.
- **SMTP Server.** Enter the IP address or FQDN of the SMTP server.
- **Mail To.** Enter the e-mail address to which alerts are to be sent.
- **Mail From. E**nter the e-mail address that will be shown as the sender email address.
- **Authentication Required.** Check this option if the SMTP server requires user authentication.

[1] Please set SMTP port as 587, go to https://myaccount.google.com/lesssecureapps and set Allow less secure apps: ON if you prefer to use a Gmail account.

- **SMTP Username.** If 'Authentication Required' has been checked, enter the SMTP username.
- **Password.** If 'Authentication Required' has been checked, enter the password of the SMTP user.
- **Error Duration**. Enter the minimum error duration *(in seconds)* before sending an e-mail alert *(Default: 60 seconds)*.
- **Mail Period.** Enter the minimum duration *(in minutes)* before sending the next e-mail alert *(Default: 15 minutes)*.

Click **Test Alerting** to test the E-Mail Alerting configuration. If the configuration is valid, a test message will be sent by TekENUM to the 'Mail To' email address.

TekENUM will send notifications via e-mail when system errors *(Such as database connection failures)*, startup and shutdown events occur for a specified duration. TekENUM also sends a warning message when a user account is locked due to number of failed authentications attempts if **Settings / Service Parameters / Failure Count** value is set to a value greater than zero.

Troubleshooting

TekENUM provides many messages when problems occur. You can see error messages on TekENUM Status bar or in the log file of TekENUM service. You can enable logging in to the Settings Tab. There are three levels of logging: None, Errors, Sessions. If you select Errors TekENUM logs just error messages. If you select Sessions both Session and Error messages will be logged. You must save or apply settings changes if you change logging level setting. Log files are located under <Application Directory>\Logs directory.

TekENUM also utilizes Windows Performance Monitor providing numerous counters;

- Used Memory
- Number of Items in Memory Cache
- Number of DNS Requests Received
- Number of ENUM Requests Received
- DNS Requests Receive Rate
- ENUM Requests Receive Rate
- Number of DNS Requests Forwarded
- Number of ENUM Requests Forwarded
- Number of Successful Queries
- Number of Replies from Memory Cache
- Number of Failed Queries

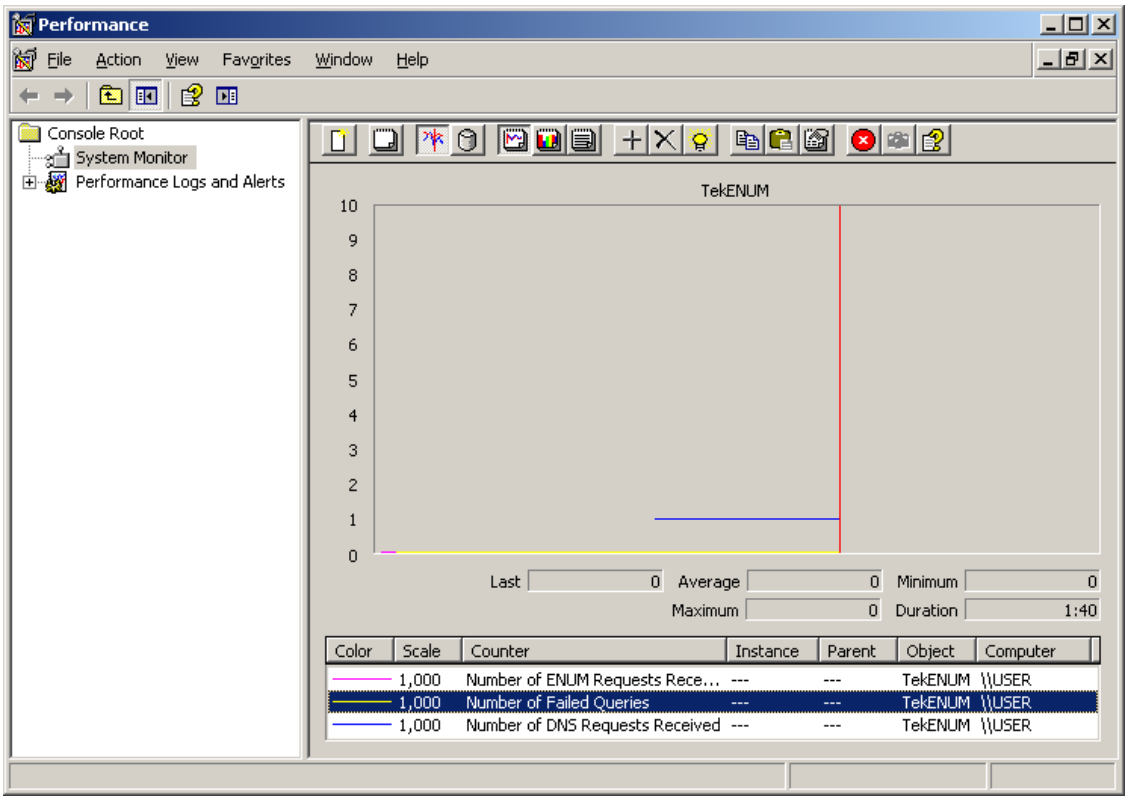

Figure - 5. TekENUM counters on Windows Performance Monitor

You can add and monitor them using Windows Performance Monitor *(Perfmon.exe)*. You can also monitor these counters through TekENUM Manager and web monitoring interface.

You can use ENUM Resolver utility which can be downloaded from http://www.kaplansoft.com/enumresolver to test your ENUM Server installation.

TekENUM Messages

`TekENUM started. Listening on x.x.x.x.`

This message notifies that TekENUM service is started.

`Listened IP Address is being changed from x.x.x.x to y.y.y.y.`

TekENUM has detected a change in the system's IP configuration and automatically changed listened IP address. You might change or remove the IP address configured for listening.

`Settings could not be loaded. Initializing with default values.`
`TekENUM Service is being started with default values on : x.x.x.x`

You get this message at first run of TekENUM. If TekENUM can not find or read TekENUM.ini initializes itself with default settings.

`Unable to initialize UDP/TCP thread [x.x.x.x:5060]`

If another application is configured to use same UDP port *(53)* with TekENUM, TekENUM can not initialize respective thread. Please also check if a DNS server is running on the same machine.

`Default route points to this host`

You cannot specify listened IP address as default route.

`Can not apply changes; enter minimum configuration`

There is missing configuration data.