# ESCG-Config

Program Version: 3.28

# Manual

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## Functional description

With the ESCG-Config-program you can realize the following functions in the context of one (connection via LAN) or several (connection via WLAN) ESCG Ethernet-Serial-Clients:

- Discovering of ESCG's in the network (via LAN or WLAN)
- Configuration of the ESCG parameter including saving and restoring of configuration data to or from files.
- Performing firmware updates
- Rebooting the ESCG
- Resetting the ESCG parameter to the factory default state
- Displaying the connection parameter of the ESCG's

## First time setup

At the first setup, the ESCG can communicate only via the LAN interface, because usually there is no WLAN with a matching SSID.
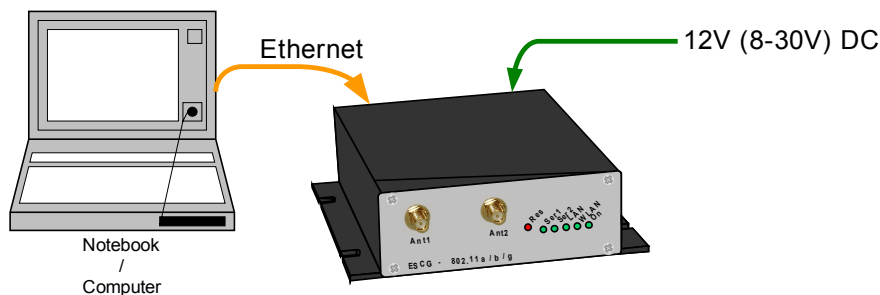


**Illustration 1: Connections to the ESCG**

The ESCG has to be connected to a PC with an ethernet interface. The PC has to run the ESCG-Config program.

You have to care for:
- The connected PC (Notebook) should have a fixed IP-Adresse on the LAN interface (no DHCP).
- The LAN interface at the PC must be recognized by the operating system as "connected."
- When the PC LAN interface has the right IP press the „refresh" button at the ESCG config program. Then the connected ESCG will be discovered.
- An active firewall program on the PC could prevent the communication to the ESCG.

After the start the ESCG config program first determines all network-interfaces that are active on the PC. Then Broadcast-UDP requests are sent to these interfaces. The answering ESCG's are registered and are shown in a list.

**Illustration 2: List view**

In the first columns of the list the device data like name, serial number, program version, IP-Address and MAC-Address will be shown. The other columns show the data of the WLAN connection. The signal strength value can be interpreted as follows:

Signal >= 40 → very good connection
Signal >= 30 → good connection
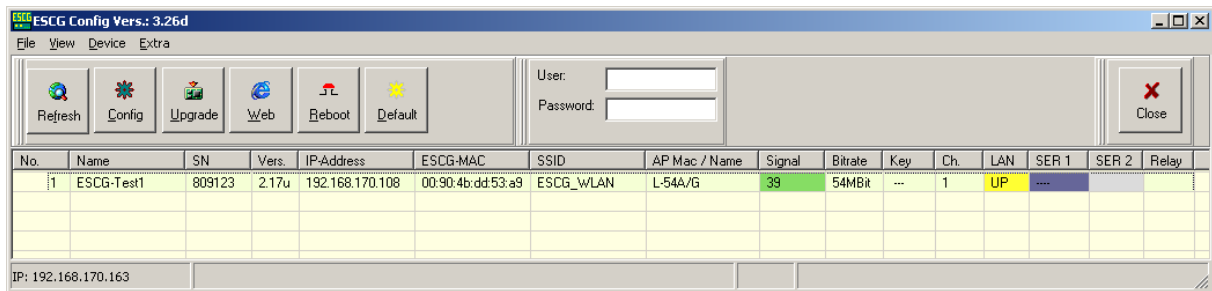Signal >= 20 → connection still sufficient
Signal < 20 →   connection restricted, the bit rate will be reduced to transfer data

The currently used bit rate to transmit data is shown at the column „Bitrate". The column „Key" shows the used encryption mode. The column „Ch" shows the channel number the AP is working.

ESCG-Config version >=  2.26 shows additional status information:
  – LAN shows the status of the LAN – connection of the device.
    UP + yellow → active 100MBit Connection
    UP + grün → active 10MBit Connection
    DOWN → no Connection
  – SER1 shows the status of the serial Port 1
    --- → no Connection
    CONN  TCP-connection active
  – SER2 (like SER1)
  – Relay shows the status of the relay.

The connection status of any captured ESCG is been updated continuously.

## *Application button functions*

The main buttons of the ESCG-Config application have the following functions:



means that the specification of user and password has to be given, if this is set in the ESCG configuration.

| Key | Function |
|-----|----------|
|  | Refresh clears the list of captured ESCG. The IP-network interfaces of the PC are detected. |

| | |
|---|---|
| **Config** | The config data of the ESCG is received and shown in the dialog for editing. |
| **Upgrade** | A firmware file can be transmitted to the ESCG. |
| **Web** | The configured Web-Browser starts and the info-web-page of the ESCG is opened. |
| **Reboot** | The ESCG is rebooted. |
| **Default** | The ESCG – Parameter will be reset to „default" and the ESCG will reboot. |

## Main window functions

In the following illustration all functions of the program are shown:



Autosize all columns to the optimal size

Copy the content of the list to the clipboard

Selection of the visible colums

> select visible columns
> copy list
> Autosize Columns

Set all entrys of the list to the „static" or „non static" status

Open dialog for the local scanning parameter

Open the window for the externded status view

Open the dialog for the scanning parameter for other networks

Clear the ARP-List

Change automatically parameter on many devices

Save automatically parameter on many devices

Upgrade automatically Firmware on many devices.

Scan
Config
Upgrade
Web
Reboot
Default Setting
Exit

Scan other Network
Scan Local Network
Show ext. Status
Set all Stations to static
Set all Stations to non static

Clear ARP Table
Multi Device Config
Multi Device Config Save
Multi Device Upgrade

If the paramters User/Password are set in the ESCG, these settings are needed to do configuration or upgrade.

| File | View | Device | Extra |

**ESCG Config Vers.: 3.26k**

File View Device Extra

Refresh | Config | Upgrade | Web | Reboot | Default

User:
Password:

Close

| No. | Name | SN | Vers. | IP-Address | ESCG-MAC | SSID | AP Mac / Name | Signal | Bitrate | Key | Ch. | LAN | SER 1 | SER 2 | Relay |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WL... | 809123 | 2.18a | 192.168.170.106 | 00:0b:6b:86:9e:ff | WLC2106 | AP_250 | 33 | 36MBit | EAP-TTLS | 64 | UP | ---- | ---- | |
| 2 | ESCG | 800295 | 2.18a | 192.168.170.109 | 00:0b:6b:37:4f:0a | WLC2106 | AP_250 | 51 | 54MBit | EAP-PEAP | 64 | DOWN | ---- | | |

IP: 192.168.170.163

IP – Interfaces:
In this field the IP addresses of the detected IP-Interface is shown. If there is more than one, a „+++" is appended.
Move the cursor to this field to show all the interfaces.

If this sign is shown , user/ password are set in this ESCG (shown if firmware version is >= 2.17u)

With a „doubleclick" to this field , the website of the ESCG will be opened with the standard webbrowser.

Info field:
Additional information to the ESCG are shown here if the cursor moves across the various columns of the ESCG list entrys.

Following information are shown:

| Column | Information |
|---|---|
| Name | runtime |
| SN | building date of the device |
| Vers | detailed info of the firmware |
| IP-Address | Gateway-IP + subnetmask |
| ESCG-MAC | IP+MAC of the conneced LAN client. If there is more then one LAN client a list is shown as a hint. (Firmware>= 2.18a) |
| SSID | Hint with a list of AP's with the same SSID |
| AP Mac/Name | if the name of the AP is available the MAC is shown here. |
| Signal | hint for the doubleclick function |
| Key | if EAP-XXX is active the stored certifikates are shown here. |
| Bitrate | --- |
| Ch | --- |
| LAN | LAN Status + Statistic |
| SER1 | SER1 Mode + Statistic |
| SER2 | SER2 Mode + Statistic |
| Relay | Relay Mode |

Display of systemmessages

With a doubleclick to the „signal"-flield a hostory of signalvalues are show a an additial window.

**Illustration 3: ESCG Config main window**

## Configuring the visible columns of the list

Since version 2.26 and later it is possible to configure the visible columns of the list.
This config is reachable with: Menue "View" → "select visible columns".

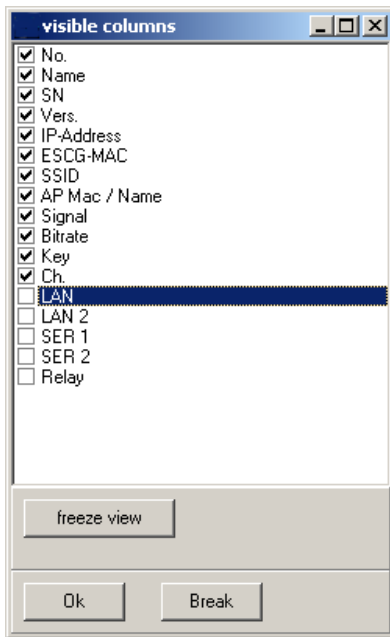**Illustration 4: Dialog to select the visible columns**

The button "freeze view" enables the user to protect this settings against changing with a password.

These settings will be saved after closing of the program and recovered at a next start.

## *Setup the ESCG parameter*

If several ESCG's are listed, you have to select the ESCG you want to setup by clicking the list entry. The list can be sorted by clicking a column head.  When clicking the "config"- button a download is started that transfers all configuration data from the ESCG to a text file. The content of this text file is shown as follows:
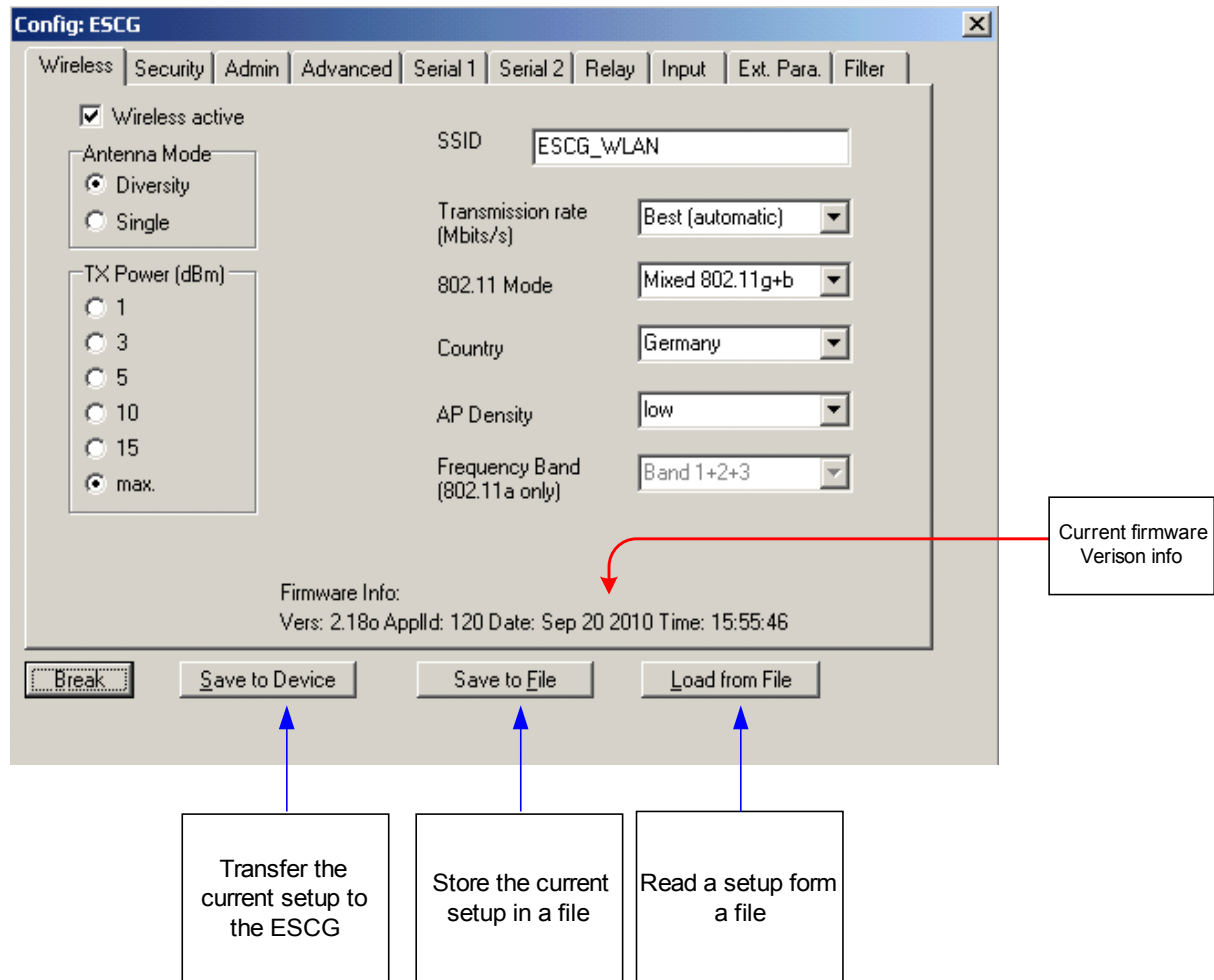


**Illustration 5: Config dialog**

The Parameters are shown on file-cards (Tabs). Each file-card contains the parameters, that belongs to a http-web-page of the Web-interface of the ESCG.
You can look up the meaning of the parameters in the manual for the ESCG in the description of the Web-interface.

The ESCG config program offers the advantage that you can also perform the configuration of all parameters if the current IP-Adresse of the ESCG doesn't go with the IP-Adresse of the connected PC.

### Administration of certificates

With the ESCG config program certificates can be transfer to the ESCG that are required for the 802.1x authentication methods with a radius-server.

On the "security" – file card you can manage the attitudes to the different possible security options.

If you want to use an 802.1x authentication-method, activate the corresponding checkbox and select the procedure you want to use.

Different methods require different parameters as well as certificates. The following table shows the prerequisites of the different methods.

| Method | User | Password | Server Cert. | Client Cert. |
|--------|------|----------|--------------|--------------|
| EAP-PEAP | X | X | O | |
| LEAP | X | X | | |
| EAP-TLS | X | | O | X |
| EAP-TTLS | X | X | O | X |

X = must be defined
O = could be defined

If certificates are required, these must be stored in the ESCG. With the button „certificate management" you get to a dialog where the certificates can be selected.
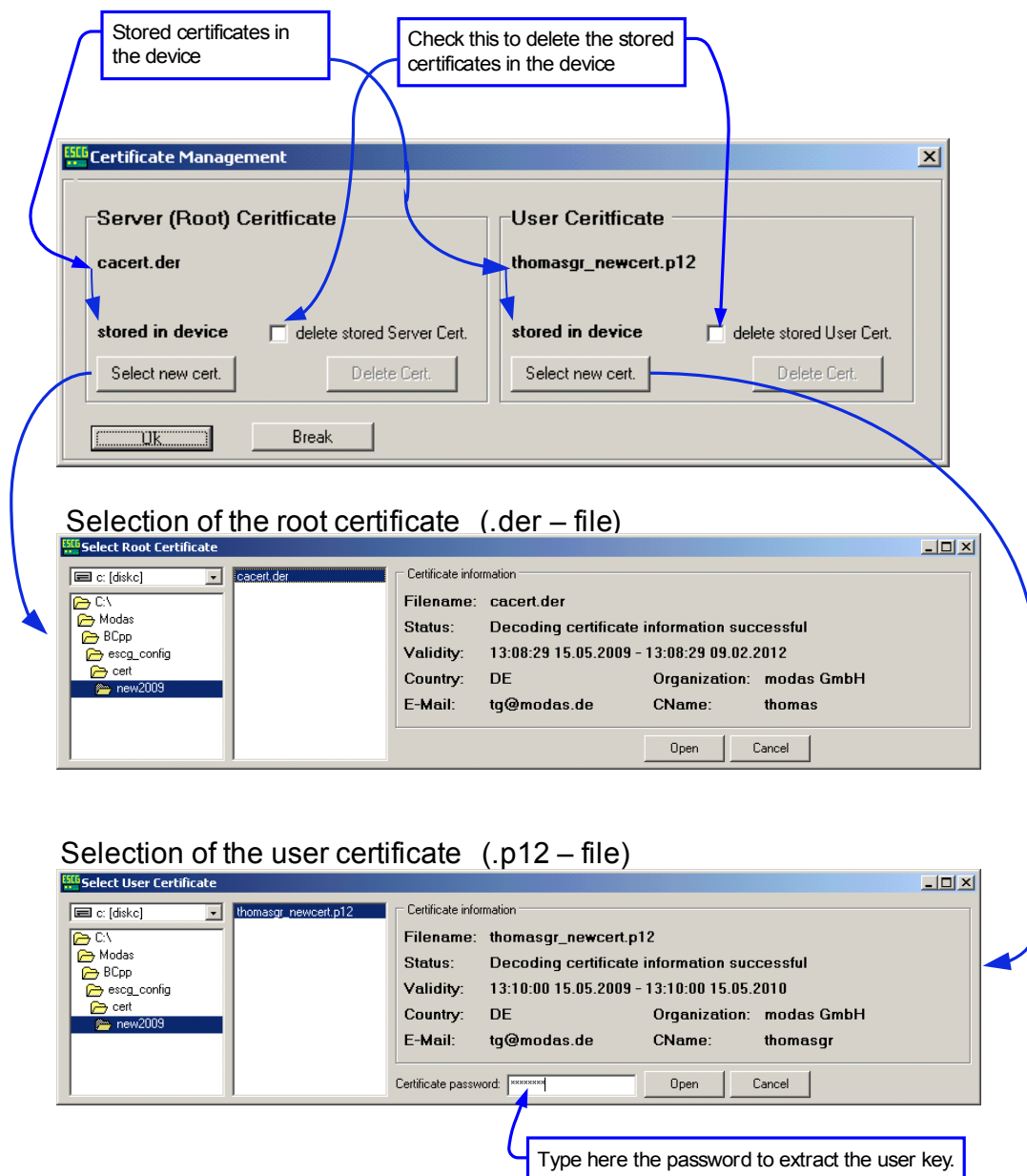


**Illustration 6: Certification management**

The root certificate file has the type „.der" and must be a DER coded binary X.509 format file.

The user certificate file has the type".p12" and must be a PFX (Personal Information Exchange) coded data file. After confirming with "Ok" the defined certificates will be transferred to the ESCG. The ESCG will restart afterward. If both certificates are needed, they must be uploaded together. Single upload is not possible.

## Saving and restoring the ESCG configuration

On the config dialog, there is the possibility to store all the parameters of the setting in a file. This file can be used in order to configure other ESCG with the same parameters. Because the IP-address is included in the parameter set, you have to note that this IP-address will also be transfer to other ESCG. If this is not your intention you easily can edit the parameter file to remove the IP-address parameter.
The values are defined in the form:
Parameter = Value
You see an excerpt from an example-file in the following one:

```
# [ADMIN] -------------------------------
username=82c913ceffc6   # encrypted
password=e6c622ecaa0448   # encrypted
# [ ] ----------------------------
devname="ESCG "
ip_mode=0
subnet_mask=255.255.255.0
ip_gateway=192.168.170.1
ip_address=192.168.170.100
# [ADMIN-FLAGS] -------------------------------
TelnetConfigActive=0
UdpConfigActive=0
NoBridgeFunction=0
AutoIpConfigActive=0
```

**Illustration 7: Configuration file**

If you want to preserve the IP address of the ESCG, you can delete the marked line or you can comment it out by inserting a ‚#' – sign first in that line.

The represented example file has been written with a defined „username" and „password". These parameters are stored encoded in the parameter file. These parameter can be transferred into other ESCG but you can not recognize the values in this file in clear-writing. Other encoded parameters are PSK, WEP-Keys and 802.1x user account data.

By clicking the „save to device" button the settings will be transfered to the ESCG. After that the parameter are stored in the FLASH memory. The ESCG reset itself after 3 seconds to restart with the new parameters.

## Automatic configuring of many ESCG

This function is implemented in the version 3.27f or later.

In some cases only a few parameter has to be changed at many ESCG devices at the same time. With the function "Extra → Multi Device Config" is is possible to select ESCG's from a list. Then the

user can define a set of parameters and transfer these parameters to all selected devices automatically.
The user can define the parameter in a text field which can be loaded with the content of a ESCG parameter file. If the user wants to define an encoded parameter, a * - sign at the beginning marks an unencrypted parameter value (see example)
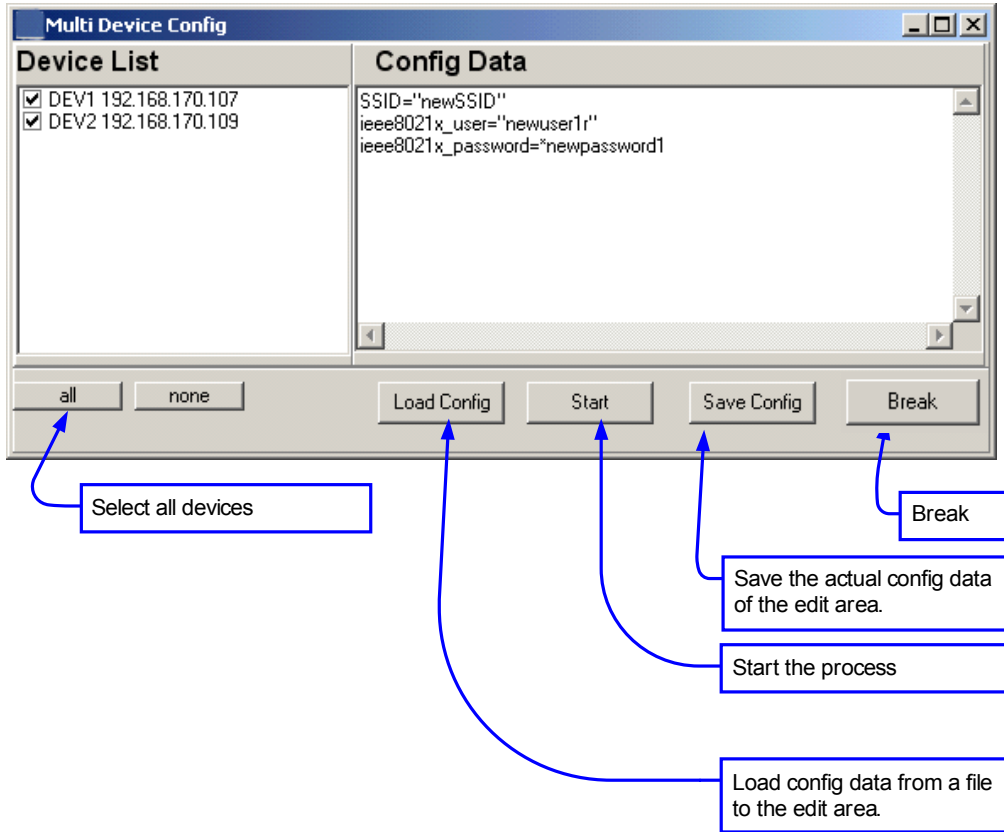


**Illustration 8: Dialog for "Multi Device Config"**

After the user has started the process the selected devices will be marked in the main list view. The parameters will be transferred to the devices one after the other. The devices that have received the new parameters will reboot automatically. The results of the process are shown in an additional field in the main window. The user should not use any other functions of the program when this process is running.
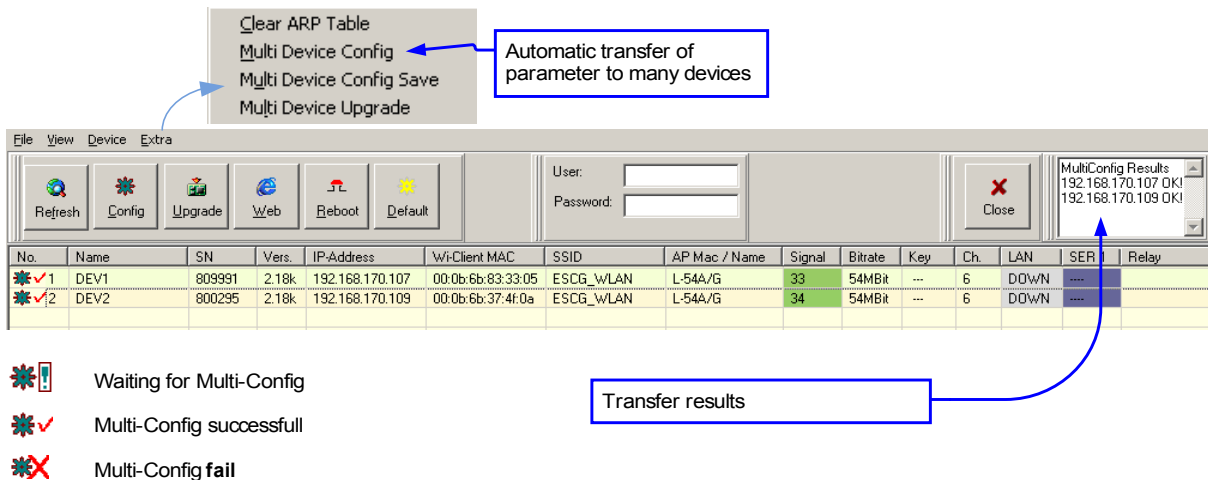


**Illustration 9: Running the „Multi Device Config" process**

**A possible set User/Password parameter on the devices has to be the same on all selected devices. The User/Password parameter must be defined in the main menu before the process is started.**

## Automatic saving of parameter from many ESCG's

In applications it is sometimes practical to save all parameters of the ESCG's in the system in one pass. To do that you can use the menu item „Extra → Multi Device Config Save". If selected the following dialog will open:
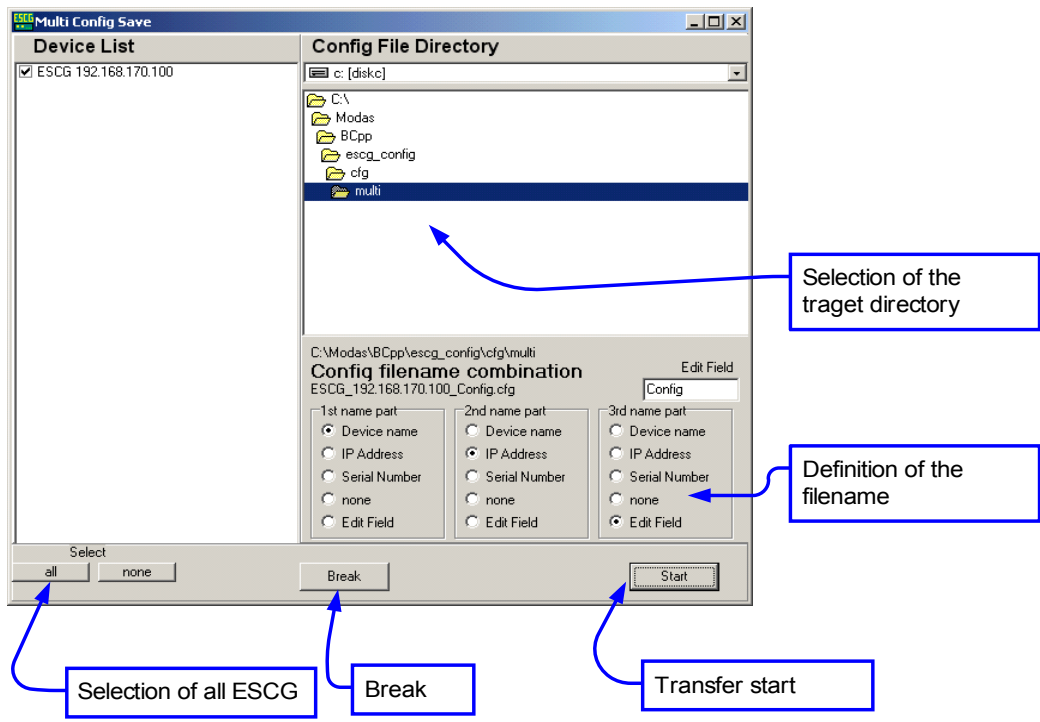


**Illustration 10: Dialog for "Multi Device Config Save"**

After the user has started the process the selected devices will be marked in the main list view. The config parameters will be saved in separate files for every device. The results of the process are shown in an additional field in the main window. The user should not use any other functions of the program when this process is running.
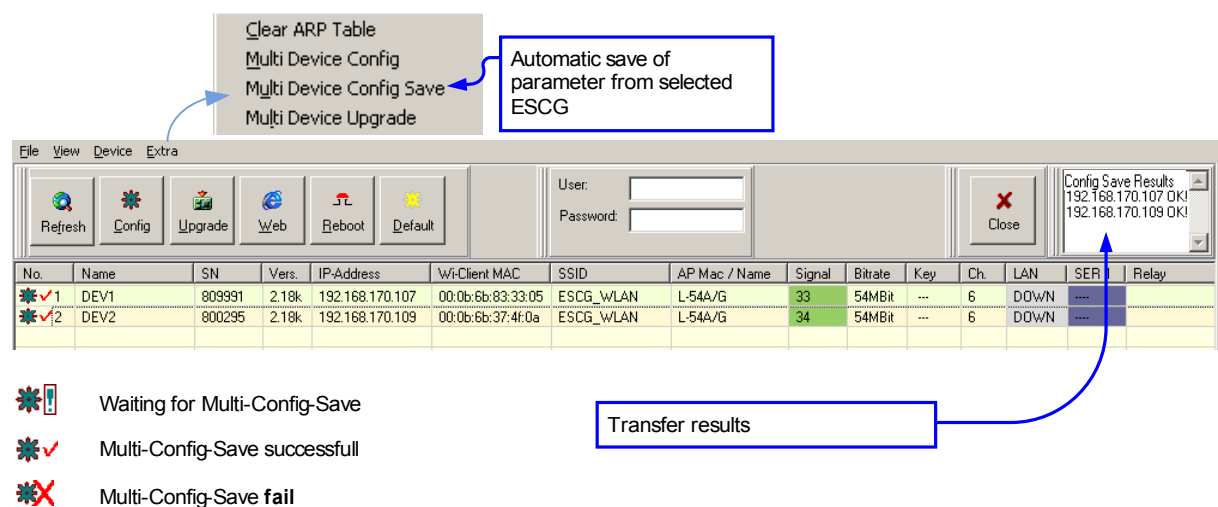


**Illustration 11: Running the „Multi Device Config Save" process**

## *Firmware-Updates*

The ESCG config program offers the possibility like the Web-interface as well to transfer firmware-files on the ESCG. By clicking the button "Upgrade" a dialog to select the firmware-file is shown. The firmware-file has always the type ".bin". After selection the file is transferred to the ESCG.

The firmware-file is stored in a special flash memory area. It is possible to break the upload without any loss of functionality. After the transfer is finished, the ESCG checks if the uploaded file is a proper firmware file. If yes, an acknowledge is send to the ESCG-config-program. After that, the uploaded file is processed and is stored in the flash memory area where the main program is running.

It is very important, that the ESCG is not interrupted by reset or power failure in this situation. If this happens, the ESCG must be send back to the producer for repairing.

### Automatic firmware upgrade on many ESCG

This function is implemented in the version 3.27f or later.
With the function "Extra → Multi Device Upgrade" is is possible to select ESCG's from a list to transfer a firmware file to these devices automatically.
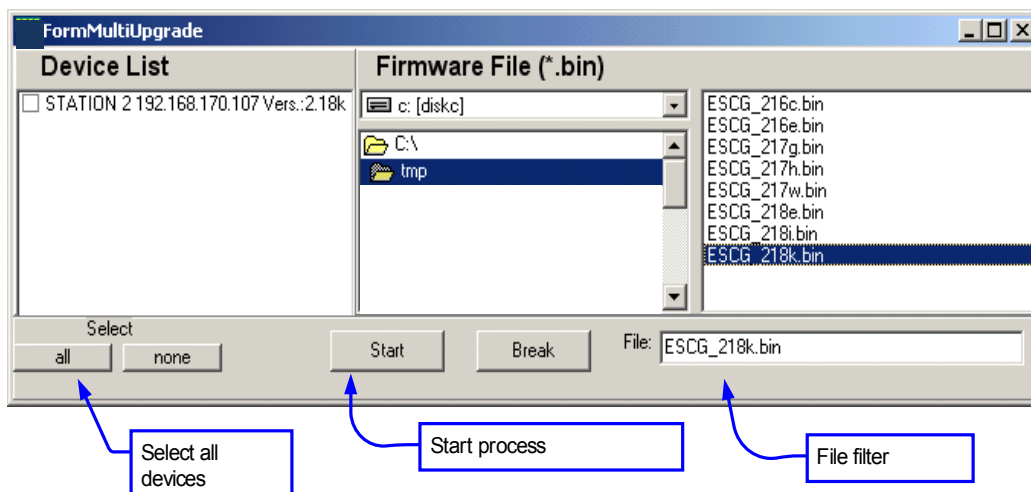


**Illustration 12: Dialog for "Multi Device Upgrade"**

After the user has started the process the selected devices will be marked in the main list view. The firmware file is transferred to the devices one after the other. The devices that have received the new firmware will reboot automatically and will process the uploaded firmware file.

It is very important, that the ESCG is not interrupted by reset or power failure in this situation. If this happens, the ESCG must be send back to the producer for repairing.

The results of the process are shown in an additional field in the main window. The user should not use any other functions of the program when this process is running.
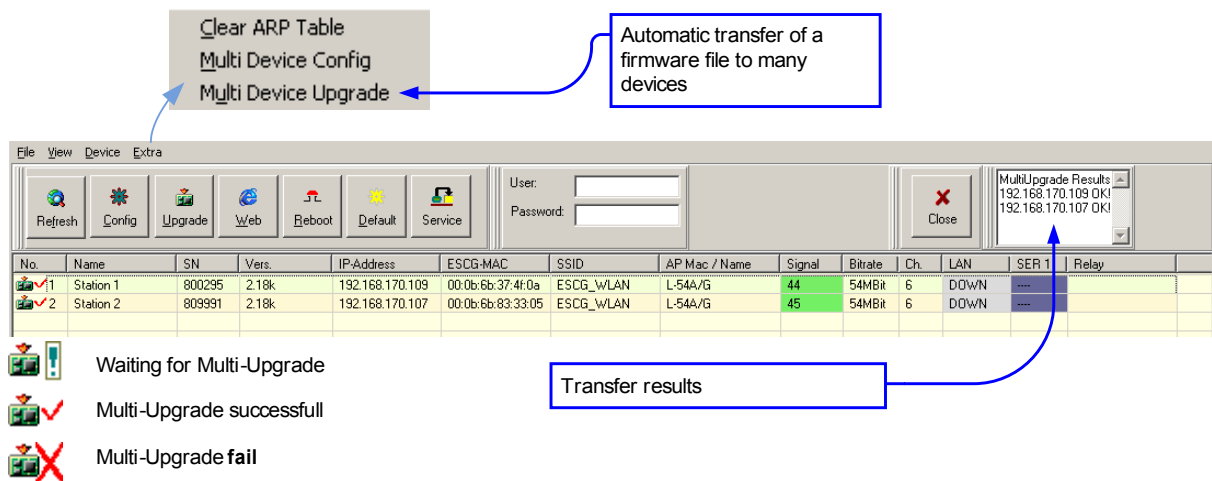
**Illustration 13: Running the „Multi Device Upgrade" process**

**A possible set User/Password parameter on the devices has to be the same on all selected devices. The User/Password parameter must be defined in the main menu before the process is started.**

## Security

The access to the ESCG can be protected by setting a username and password. (See WEB interface on the admin page). To read or write the setting or to do an firmware upgrade you have to input the proper values in the input fields.

## Reboot

When clicking the „Reboot" button the selected ESCG processes an reboot.

## Setting the default parameter

When clicking the „Default" button the selected ESCG is set to its factory default parameters. A restart is done automatically after 3 seconds. This operation needs the "user" and "password" values when these are set.

## Web

When clicking the „WEB" button the default WEB browser of the PC is started with the IP address of the selected ESCG.

## Configuration and monitoring of ESCG's in different networks

Because the ESCG-Config-Program sends broadcast requests to the network the ESCG's i different networks are are not reachable. Usually the gateways will block these requests. Therefore an option has been implemented to reach this ESCG's via unicast requests. If such an ESCG answers a so called "static" list entry is created. This means that status requests to that ESCG are always send via unicast addressing and is never timed out from the list. These entries are marked with a yellow background in the first column field. The property "static" cab the reseted by clicking the entry with the right button an selecting "Remove static entry". When the ESCG-Config-Program is closed, the active static entries are stored and recovered at next program start.
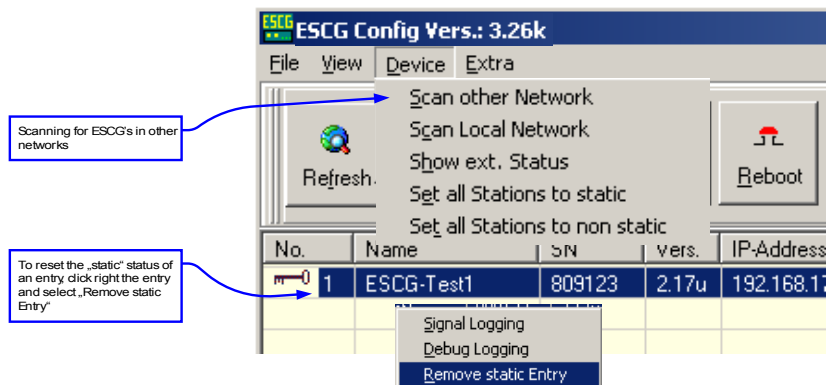
**Illustration 14: Scanning for ESCG's in different networks**

## Scanning ESCG's in different networks

To create an entry in the list the config-program needs the MAC-Address of the device. To detect this MAC-Address the config-program opens an dialog were the scan parameter are defined. This dialog is reached via: „device → scan other network".
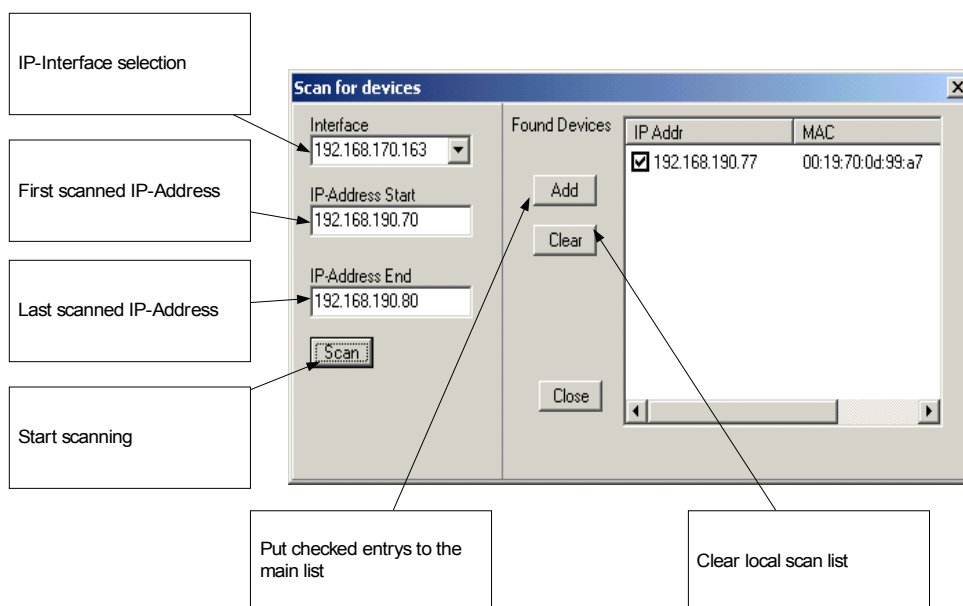The dialog is show in the next illustration.



**Illustration 15: Scan dialog**

Remark: Die scanning is only working when a proper entry for the gateway-IP is set on the PC an the ESCG.

## Searching for ESCG's in the local network

In present times more and more WLAN solutions are operating that uses central controllers to drive all the access points in the area. The most usual setting for this wireless controllers is to not send broadcast data via wireless media. This means that the ESCG-Config-Program will not get any answers from the wireless connected ESCG's. Because of that a function has been implemented that continuously scans a defined IP range to find ESCG's.

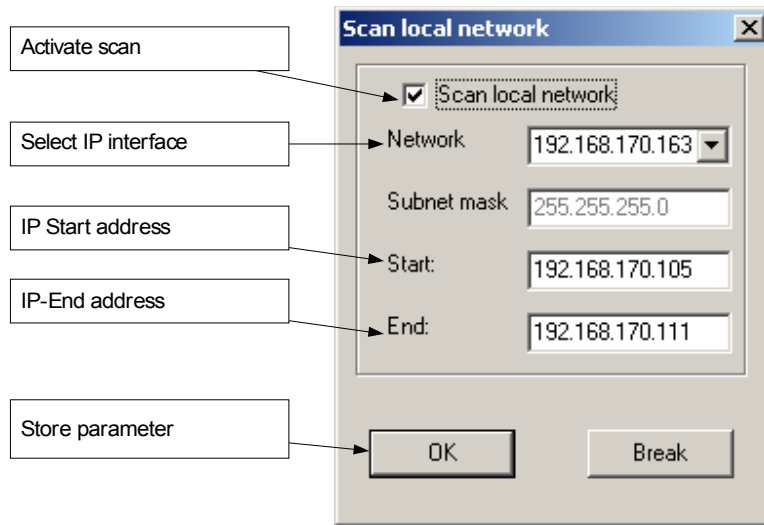The dialog to adjust the scan parameter opens by selecting: "Device → Scan local Network".

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**Illustration 16: Scan local Network Dialog**

If this scan is active an additional panel with scan information is shown at the main window.
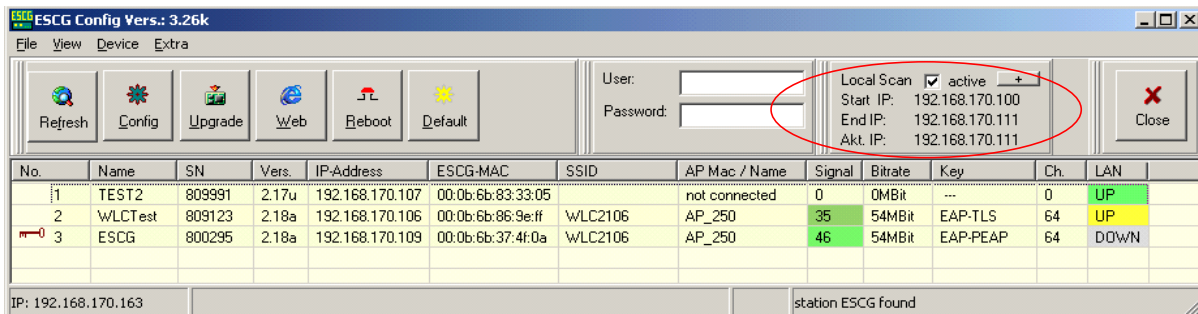


**Illustration 17: ESCG-Config with additional info panel**

The scan can be switch on or off with the checkbox switch.
These parameters will be store and recovered at program stop and start.

## *Extended Status information*

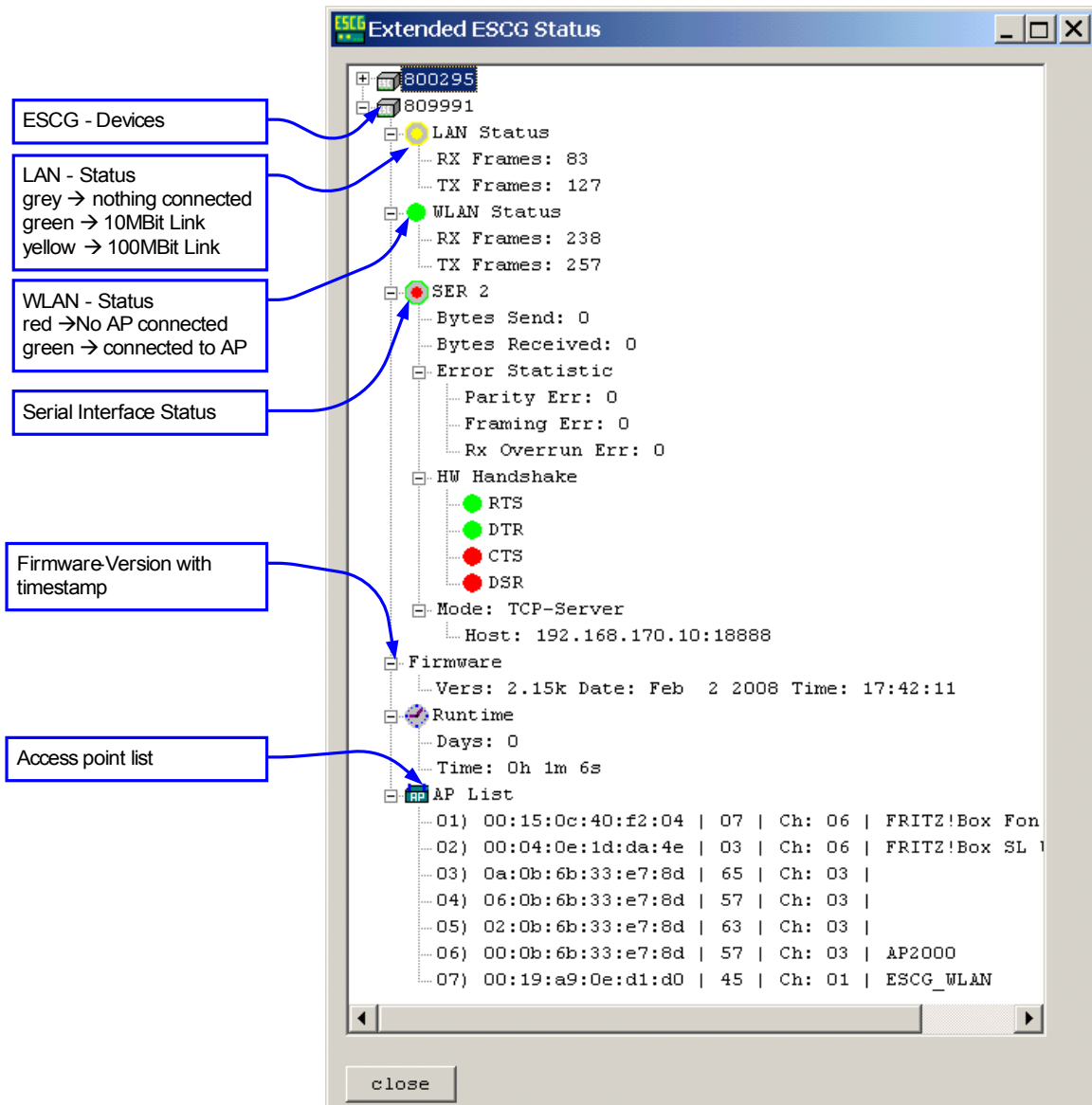By selecting "Device → Show ext. Status. a additional window opens where extended status infos are shown.

**Illustration 18: Extended status view**