

Weidmüller 

u-link Remote Access Service

Technical User Guide
Version 1.1

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Contact Information

Weidmüller Interface GmbH & Co. KG

PO box 3030

32760 Detmold

Klingenbergstrasse 16

32758 Detmold

Germany

Phone +49 (0) 5231 14-0

Fax +49 (0) 5231 14-2083

E-Mail info@weidmueller.com

Internet www.weidmueller.com

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Chapter 1: Overview u-link Remote Access Service

- 1.1 General information
- 1.2 How u-link is working / Involved components
- 1.3 Features of Entry Version (free of charge)
- 1.4 Features of chargeable Standard Versions
- 1.5 Link to buyable u-link licenses

1.1 General information

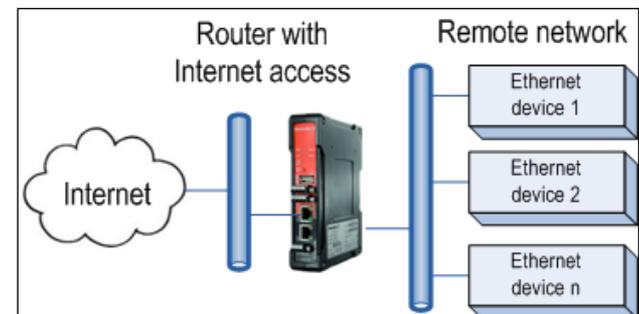
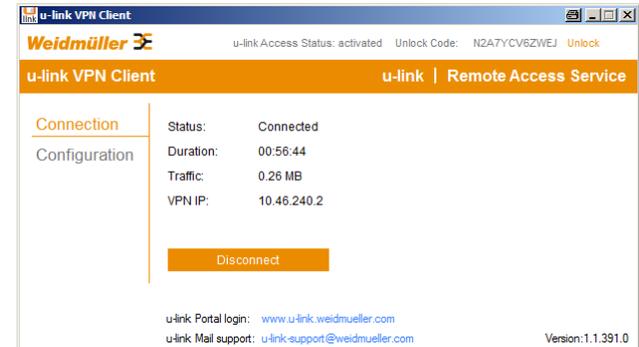
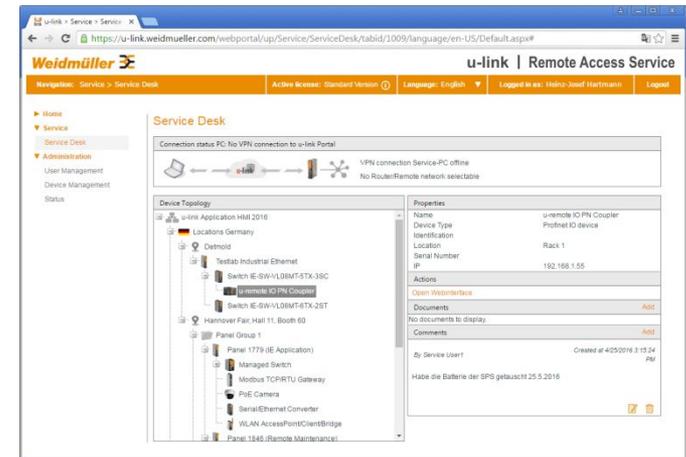
- The Weidmüller u-link Remote Access Service allows an easy and secure access of Service PCs to remote Ethernet devices via the Internet.
- The VPN-based access of a Service PC to remote devices will be provided by the web-based u-link Portal service (VPN server) and a Weidmüller Router (VPN client) located in a remote target network.
- The u-link VPN server is used as a meeting point and connects a Service PC to a Router (both running as VPN clients) to allow an encrypted data communication between the PC and remote Ethernet devices connected to the LAN port of the Router.
- Using the u-link VPN server as public accessible meeting point both a Service PC and a Router only need to establish an outgoing VPN connection to the Internet which usually is allowed and compliant to IT security requirements.
- For secure data integrity the u-link Remote Access Service uses for each u-link system account its own server and database instances (secure separation of u-link accounts).
- The data communication between an account specific u-link VPN server and remote clients (Service PCs and Router) is based on a certificate-secured OpenVPN communication (Encryption RSA 2048, x509 certificates).
- Based on customer requirements the u-link Remote Access Service is offered with following variants:
 - **Entry Version** (free of charge, no time limitation of use)
 - **Versions Standard 150/300/500/Unlimited** (Extended features, buyable use license, 1 year license validity)
 - When using a “**Standard Version**” additional **VPN licenses** can be purchased to use more than 3 simultaneous VPN pass-through connections of a Service PC to a remote router/network.



1.2 How the u-link Remote Access Service is working / Involved hard and software components

The u-link Remote Access Service consists of the 3 components...

- **Web accessible u-link Portal servers** to manage the customer specific account.
 - Device configuration representing the real devices located in the field.
 - User configuration representing the Service PCs which do a remote access.
 - Providing the VPN based pass-through connection between a Service PC and a Router / Remote network.
 - Main u-link components: Web server (Portal access), VPN server, Database server and the WWW server (world wide heartbeat).
 - By creating/registering an u-link system account for each account the Portal server instances will be created exclusively.
- **Windows-based PC**
 - Uses Software 'u-link VPN client' for secure communication with remote devices via the u-link VPN server.
 - Browser based access to u-link Portal to select the target devices for remote access.
 - Currently MS Windows versions 7, 8, and 10 are supported.
- **Weidmüller Router** located in the remote network providing the access to connected devices at LAN port.
 - Useable models: IE-SR-2GT-LAN or IE-SR-2GT-UMTS/3G
 - u-link is supported from firmware version 3.0.2 (Update downloadable).
 - Routers already installed in Security/Firewall applications can be extended to use u-link additionally.



1.3 Features of Entry Version (free of charge)

General features

- Can be used free of charge, no time limitation of use
- Maximum 50 Router objects configurable (Access points to a remote network)
- No limit on the number of configurable service users
- 2 VPN connections simultaneously usable for access of a Service PC via u-link to a remote router/network
- Bandwidth VPN connection (calculated on total data volume of a system account)
 - max. 500 kBit/sec for data volume <= 1 GB/Month (not guaranteed)
 - max. 64 kBit/sec for data volume > 1 GB/Month
- No guaranteed system availability

Service Desk

Connection status PC: No VPN connection to u-link Portal

VPN connection Service-PC offline
No Router/Remote network selectable

Device Topology

- MyCompany Ltd.
 - Router Machine 1
 - PLC 1 (S7-300)
 - u-remote IO Device 1
 - u-remote IO Device 2
 - Router Machine 2
 - Managed Switch
 - PLC 2 (S7-300)
 - u-remote IO Device 1
 - u-remote IO Device 2
 - u-remote IO Device 3
 - Router Machine 3
 - PLC (Beckhoff)
 - Ethercat u-remote D1
 - Ethercat u-remote D2
 - Router Machine 4
 - IP Camera
 - Router Machine 5

Properties	
Name	Router Machine 1
Device Type	Router/Firewall
Identification	
Location	
Serial Number	
IP	192.168.1.110 (LAN)
Activation Code	UYZMZSPBVC1Z
Status-Worldwide	Inactive
Status-VPN Router ↔ u-link	Disconnected
Status-VPN PC ↔ u-link ↔ Router	Disconnected
Action	
Discover	
Connect	
Documentation	
Connect	
No connection	

Sample screenshot of a flat Device topology.
All Router objects always are arranged directly below the root container.
All configured objects (Routers and user-defined Ethernet devices) are visible and accessible for each Service user.

Functional features

- Device Management (Router/Device configuration representing the remote accessible devices)
 - Device topology can only be designed as a flat structure (All Router objects directly are arranged among the root container)
- User Management (Administration of Service users)
 - Each defined service user has access to any configured object (Router/Remote network devices)
 - Each created user is member of default “Service group” with pre-defined user permissions (not changeable)
- Administrator has full featured access, service users may maintain the Device management (no User Management)

1.4 Features of chargeable Standard Versions

Variants

- Standard Versions having following extended features related to the Entry Version:
 - **Standard 150:** Maximum 10 Router objects configurable (Access points to a remote network)
 - **Standard 300:** Maximum 300 Router objects configurable
 - **Standard 500:** Maximum 500 Router objects configurable
 - **Standard Unlimited:** Unlimited Router objects configurable
- To use a standard version a use license has to be purchased having 1 year license validity.
- Upgrading from a lower version or extension of validity of a running version easily can be done by entering the purchased license key (u-link Portal account).

General features of all Standard versions

- 3 VPN connections simultaneously usable for access of a Service PC via u-link to a remote router/network
- Optional use of additional VPN connections (buyable license key)
- Remote device topology can be organized by a tree-like structure (Locations, Groups, definable container objects)
- Group-based organization of service users with different permissions allows a selected access to device topology objects
- Advanced reporting and statistical information
- Bandwidth VPN connections (calculated on total data volume of a system account)
 - 1 Mbit/sec for each VPN tunnel up to a monthly data volume of 5 GB (guaranteed)
 - 500 kBit/sec for each VPN tunnel if the monthly data volume exceeds 5 GB
 - Additional 1 GB/Month at 1 Mbit/sec per additional purchased VPN connection
 - General bandwidth limitation of all VPN connections to 500 kBit/s if the monthly data volume exceeds 12 GB
- System availability: $\geq 99,6\%$

Service Desk

Connection status PC: No VPN connection to u-link Portal

VPN connection Service-PC offline
No Router/Remote network selectable

Device Topology

- u-link Application HMI 2016
 - Locations Germany
 - Detmold
 - Testlab Industrial Ethernet
 - Switch IE-SW-VL08MT-5TX-3SC
 - Switch IE-SW-VL08MT-6TX-2ST
 - Hannover Fair, Hall 11, Booth 60
 - Panel Group 1
 - Panel 1779 (IE Application)
 - Managed Switch
 - Modbus TCP/RTU Gateway
 - PoE Camera
 - Serial/Ethernet Converter
 - WLAN AccessPoint/Client/Bridge
 - Panel 1846 (Remote Maintenance)
 - Panel Group 2
 - Panel 1847 (Signal Wiring)
 - Tripod

Properties

Name	Testlab Industrial Ethernet
Device Type	Router/Firewall
Identification	
Location	
Serial Number	
IP	
Activation	
Status-VPN	
Status-VPN	
Status-VPN	
Actions	
Disconnect	
Connect	
Document	
No document	
Comment	
No comment	

Sample screenshot of a complex Device topology. It is organized in hierarchical sub-structures (Locations /Groups) representing the real field applications. The visibility and accessibility of configured objects (Locations, Groups, Routers and user-defined Ethernet devices) can be individually configured for Service users by user groups.

1.5 Link to buyable u-link licenses

- For detailed information about available license types please check the Weidmüller product catalogue.
- Open www.weidmueller.com
- Select 'Product Catalogue'
- Select 'Active Industrial Ethernet'
- Then select section 'u-link Licenses' in product group overview

[Hyperlink to u-link licenses \(Weidmüller product catalogue\)](#)

The screenshot shows the Weidmüller product catalogue website. The main content area is titled "U-LINK licenes" and provides information about the u-link Remote Access Service. A dashed box highlights a product entry in the "Products:" section, which is then expanded into a larger view on the right. The expanded view shows a table of products with details like Type, Order No., and Version.

Type	Order No.	Version:
U-LINK-LIC-STD-150-1Y	2447050000	"Standard 150" version software licence for u-link Remote Access Service. Can be used to upgrade an entry version or to extend period of a "Standard 150" version
U-LINK-LIC-STD-300-1Y	2457840000	"Standard 300" version software licence for u-link Remote Access Service. Can be used to upgrade an entry version or to extend period of a "Standard 300" version
U-LINK-LIC-STD-500-1Y	2457850000	"Standard 500" version software licence for u-link Remote Access Service. Can be used to upgrade an entry version or to extend period of a "Standard 500" version
U-LINK-LIC-VPN-1Y	2447060000	"VPN connection" licence code for u-link Remote Access Service. Can be used as an additional VPN connection or to extend the period of a VPN connection that has already been activated

Chapter 2: Starting with u-link

2.1 Registration of a new u-link account

2.1 Registration of a new u-link account

Open u-link Web page (Step 1)

- Open a browser and enter u-link.weidmueller.com.
- Click button 'Register'.

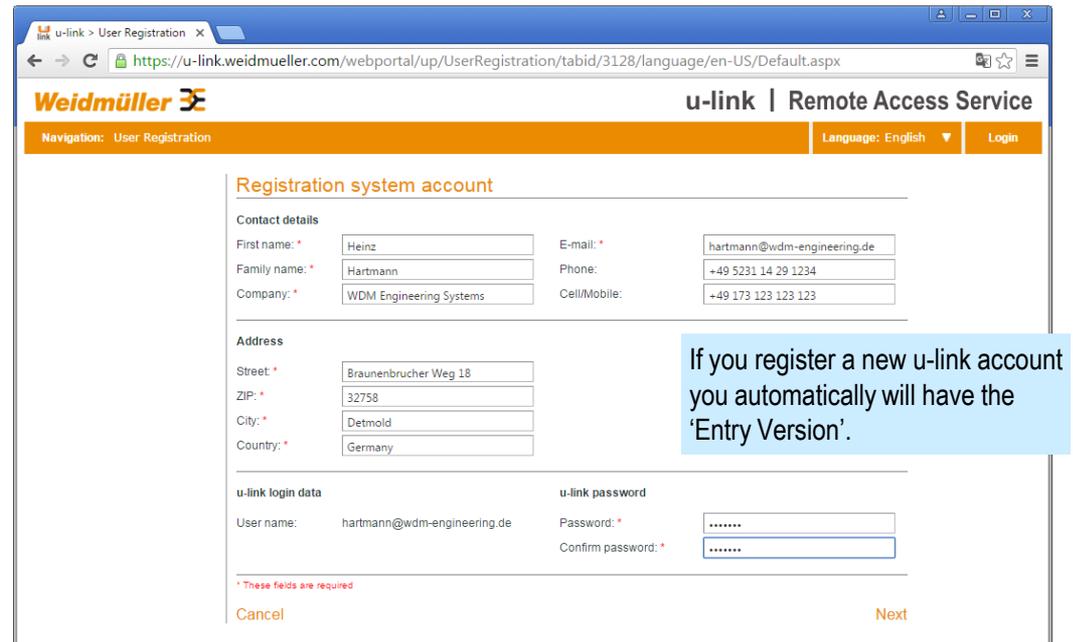


Starting the registration process (Step 2)

- Enter your registration data.
- Click button "Next".

Notes:

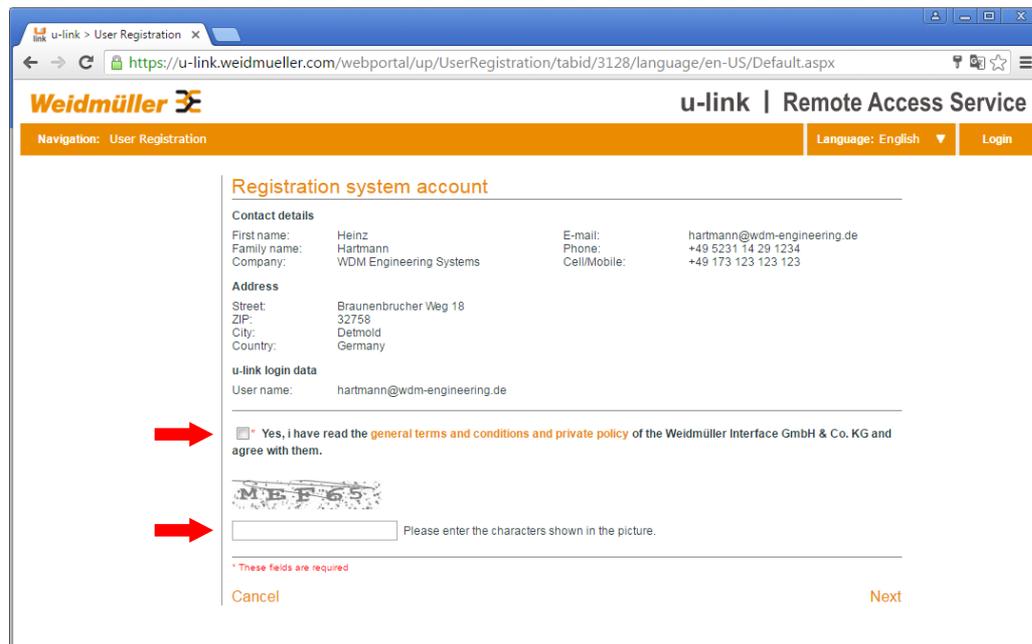
- This user will be the administrator of the u-link system account. Also this user can be used for remote access service.
- The mail address will be used for logon to the u-link account and must be unique in the global u-link system.
- The mail address must be existent because after registration a verification mail will be sent to the entered address.
- The entered password has to be used for logon to the u-link Portal after successful registration.



2.1 Registration of a new u-link account

Registration process (Step 3)

- Set checkbox that you agree to the “General u-link terms and conditions”.
- Enter for security reasons the captcha characters displayed as graphical image.
- Click button “Next”.



u-link | Remote Access Service

Navigation: User Registration Language: English Login

Registration system account

Contact details

First name: Heinz E-mail: hartmann@wdm-engineering.de
 Family name: Hartmann Phone: +49 5231 14 29 1234
 Company: WDM Engineering Systems CellMobile: +49 173 123 123 123

Address

Street: Braunenbrucher Weg 18
 ZIP: 32758
 City: Detmold
 Country: Germany

u-link login data

User name: hartmann@wdm-engineering.de

* Yes, I have read the general terms and conditions and private policy of the Weidmüller Interface GmbH & Co. KG and agree with them.



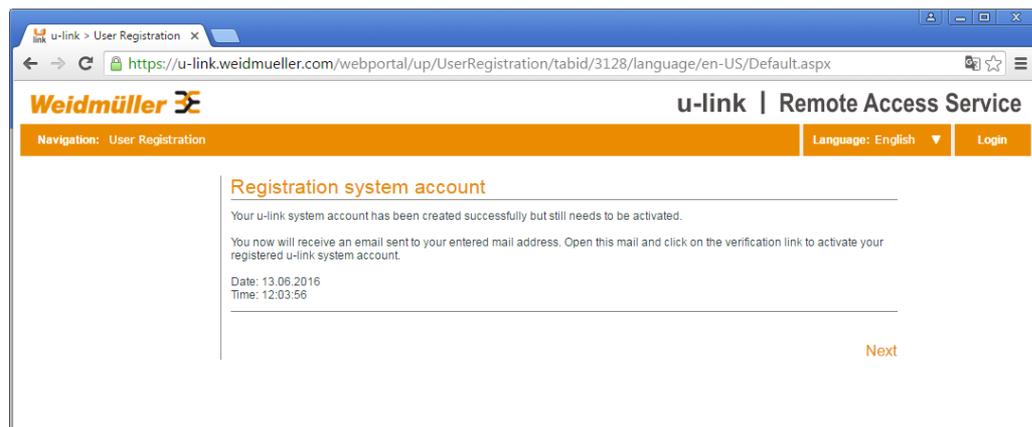
Please enter the characters shown in the picture.

* These fields are required

Cancel Next

Registration process (Step 4)

- An information will be displayed that your u-link account successfully has been created but it is not yet activated
- You now will now receive a mail containing a hyperlink to verify and activate your u-link account.
- When clicking button “Next” the u-link Login page will be displayed. **Before your first login you need to activate your account via verification mail.**



u-link | Remote Access Service

Navigation: User Registration Language: English Login

Registration system account

Your u-link system account has been created successfully but still needs to be activated.

You now will receive an email sent to your entered mail address. Open this mail and click on the verification link to activate your registered u-link system account.

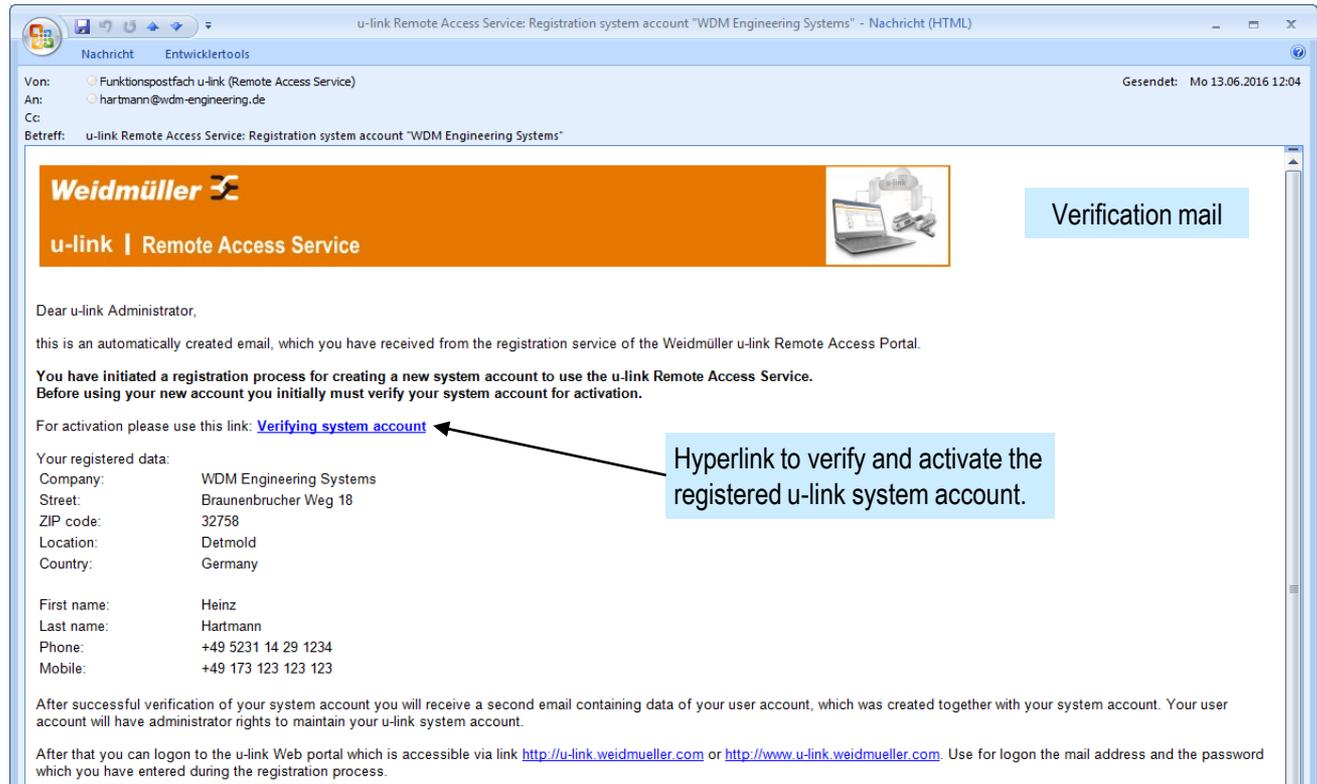
Date: 13.06.2016
 Time: 12:03:56

Next

2.1 Registration of a new u-link account

Registration process (Step 5)

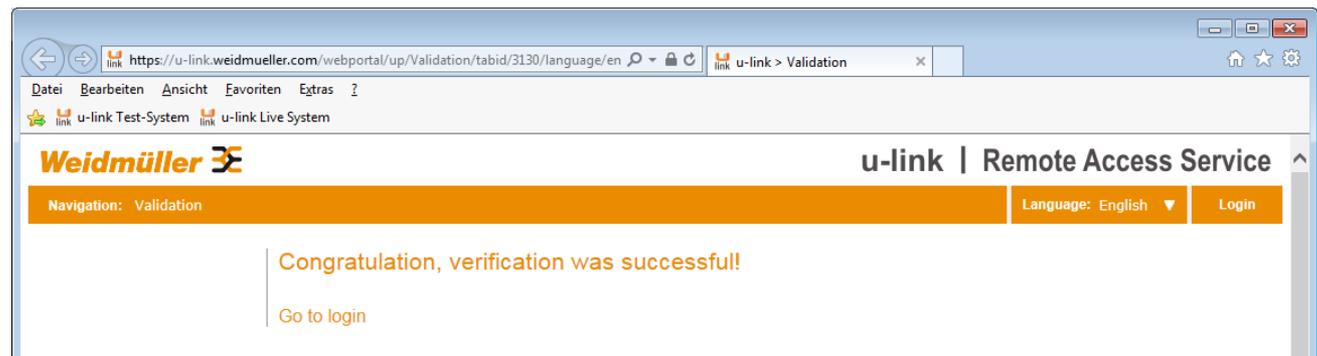
- Open your received mail “Registration system account”.
- Click on hyperlink “Verifying system account”.



Hyperlink to verify and activate the registered u-link system account.

Registration process (Step 6)

- Now your standard browser will be opened displaying the information that your u-link successfully was activated.
- Additionally you will receive a second mail named “Registration Administrator” containing information about your user data (being the u-link administrator of the registered account).



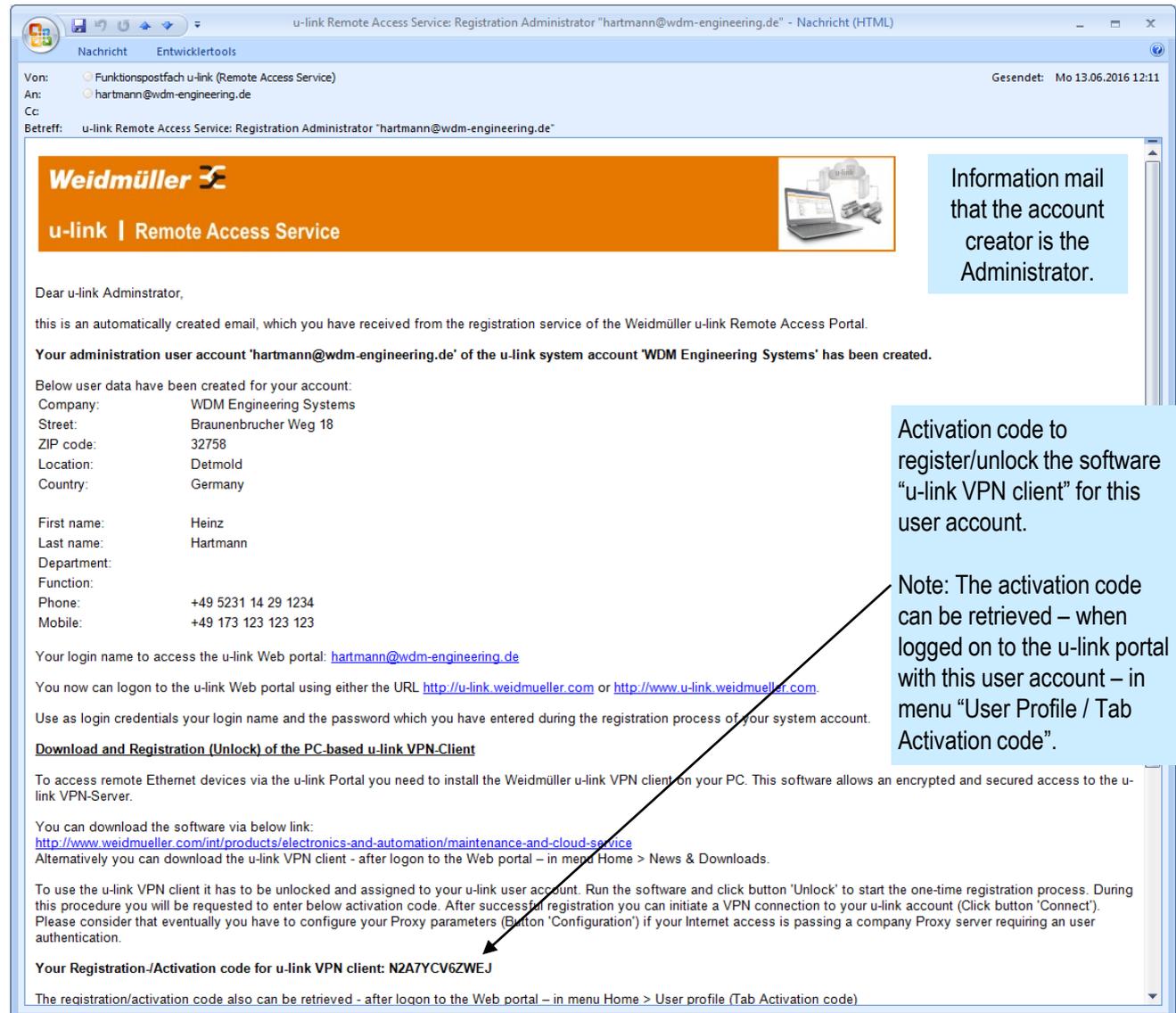
2.1 Registration of a new u-link account

Registration process (Step 7)

- Check your mailbox regarding the mail “Registration Administrator”.
- This mail contains some information about your entered registration data and how to logon to the u-link Web portal.
- Additionally it contains the “Activation code” to register / unlock the software “u-link VPN client” using this account for remote access.

Registration process finished!

- Now you can logon to your u-link account via web page u-link.weidmueller.com using your registered mail address and entered password.



u-link Remote Access Service: Registration Administrator "hartmann@wdm-engineering.de" - Nachricht (HTML)

Von: Funktionspostfach u-link (Remote Access Service)
An: hartmann@wdm-engineering.de
Cc:
Betreff: u-link Remote Access Service: Registration Administrator "hartmann@wdm-engineering.de"

Weidmüller
u-link | Remote Access Service

Dear u-link Administrator,

this is an automatically created email, which you have received from the registration service of the Weidmüller u-link Remote Access Portal.

Your administration user account 'hartmann@wdm-engineering.de' of the u-link system account 'WDM Engineering Systems' has been created.

Below user data have been created for your account:

Company:	WDM Engineering Systems
Street:	Braunenbrucher Weg 18
ZIP code:	32758
Location:	Detmold
Country:	Germany
First name:	Heinz
Last name:	Hartmann
Department:	
Function:	
Phone:	+49 5231 14 29 1234
Mobile:	+49 173 123 123 123

Your login name to access the u-link Web portal: hartmann@wdm-engineering.de

You now can logon to the u-link Web portal using either the URL <http://u-link.weidmueller.com> or <http://www.u-link.weidmueller.com>.

Use as login credentials your login name and the password which you have entered during the registration process of your system account.

Download and Registration (Unlock) of the PC-based u-link VPN-Client

To access remote Ethernet devices via the u-link Portal you need to install the Weidmüller u-link VPN client on your PC. This software allows an encrypted and secured access to the u-link VPN-Server.

You can download the software via below link:
<http://www.weidmueller.com/int/products/electronics-and-automation/maintenance-and-cloud-service>
Alternatively you can download the u-link VPN client - after logon to the Web portal - in menu Home > News & Downloads.

To use the u-link VPN client it has to be unlocked and assigned to your u-link user account. Run the software and click button 'Unlock' to start the one-time registration process. During this procedure you will be requested to enter below activation code. After successful registration you can initiate a VPN connection to your u-link account (Click button 'Connect'). Please consider that eventually you have to configure your Proxy parameters (Button 'Configuration') if your Internet access is passing a company Proxy server requiring an user authentication.

Your Registration-/Activation code for u-link VPN client: N2A7YCV6ZWEJ

The registration/activation code also can be retrieved - after logon to the Web portal - in menu Home > User profile (Tab Activation code)

Information mail that the account creator is the Administrator.

Activation code to register/unlock the software “u-link VPN client” for this user account.

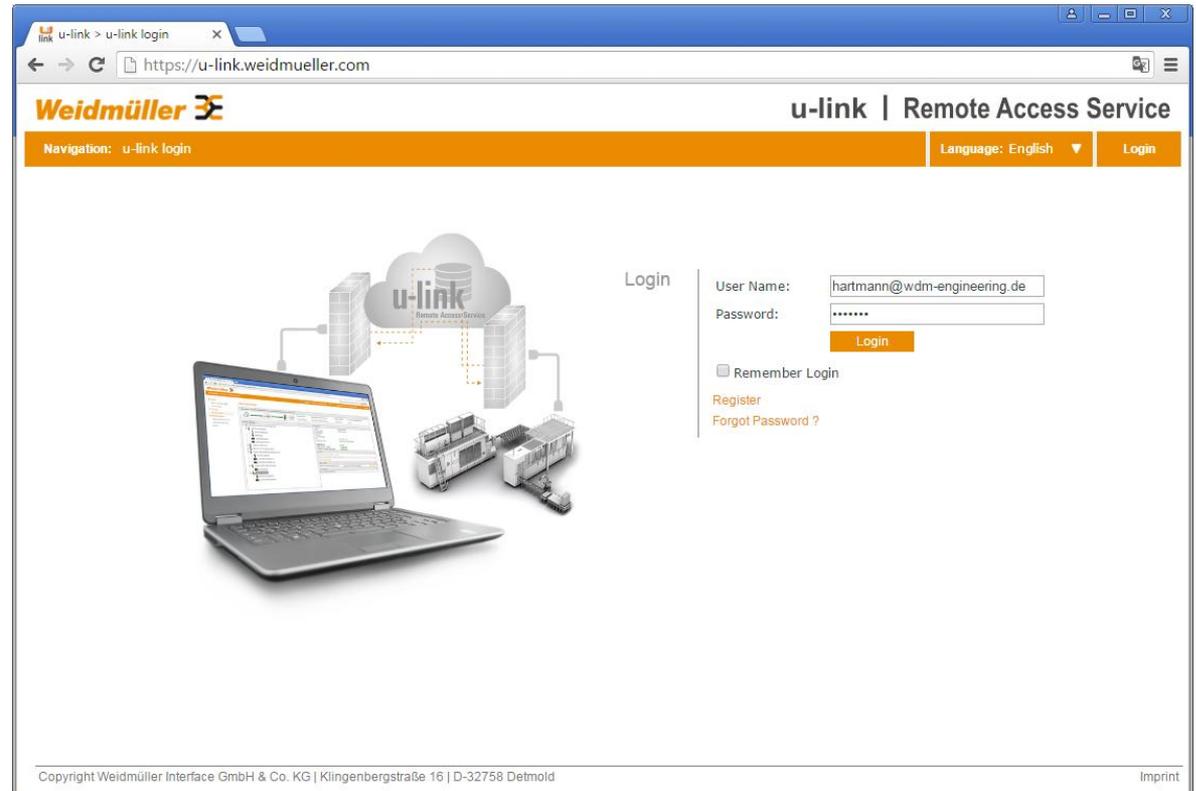
Note: The activation code can be retrieved – when logged on to the u-link portal with this user account – in menu “User Profile / Tab Activation code”.

Chapter 3: Overview features and functions of u-link Web portal

- 3.1 u-link Login page
- 3.2 Menu News & Downloads
- 3.3 Menu User Profile
- 3.4 Menu Service Desk
- 3.5 Menu User Management
- 3.6 Menu Device Management
- 3.7 Menu Status

3.1 u-link Login page

- For logon to the u-link Web portal any standard browser is supported.
- Open a browser and enter **u-link.weidmueller.com**
- Login with user name (Mail address) and password of the account creator (is automatically the Administrator).



3.2 Menu ‘News & Downloads’ (Initial state after registration)

- After successful login the menu “News & Downloads” automatically is opened (Home page).
- This page is separated into the 3 sections:
 - “Profile data” → Contains information about the data of the logged-on user.
 - “News from administrator” → Here any text information can be provided by the local administrator of this account to all other users of this account (Button “Add news”).
 - “News and Downloads from global u-link administrator” → Here the Weidmüller u-link administration team is providing data (any information, downloads, documents) to all u-link users of all u-link accounts.

Please check this section periodically regarding new information, software updates and documentation.

The screenshot shows the 'News & Downloads' page of the u-link Remote Access Service. The page is divided into three main sections: 'Your profile', 'News from your administrator', and 'News and Downloads from the u-link global administration team (Weidmüller)'. The 'Your profile' section displays user information such as Company (WDM Engineering Systems), Family Name (Hartmann), Name (Heinz), and Logged in as (hartmann@wdm-engineering.de). The 'News from your administrator' section includes a button for 'Add news'. The 'News and Downloads from the u-link global administration team' section contains an attention message about a firmware update and a list of downloads with links to download guides and previous versions. Annotations highlight the 'Current license, is always the 'Entry Version' after registration' in the top navigation bar, the 'Logged-on user' name, and the 'News from your administrator' section.

Each created u-link user can see this Web page after login. The displayed profile data will be shown individually based on the logged-on account. The section ‘News from your administrator’ only can be maintained by the administrator.

3.3 Menu ‘User Profile’ (Initial state after registration)

■ **Tab ‘User data’**

- Show / Edit the data of logged-on user
- Change Password
- Select default language when logged on
- Select default Home page when logged on

Note: Group membership and User permissions cannot be changed in the Entry-Version. The account creator automatically is member of group ‘Administrators’, additionally created users automatically becomes member of group ‘Service’.

■ **Tab ‘Status Information’**

- Shows several date and time values for information

■ **Tab ‘Activation Code’**

- **Activation code:** Shows the key which this user has to use to register/unlock the software “u-link VPN Client”.
- **States: “Not used”** as long as the u-link VPN Client never has initiated a VPN connection to u-link.

“In Use” after first establishing a VPN connection to u-link.

- **Release for additional activation:** If state is ‘In Use’ and if you want to release a second PC as u-link VPN Client using this activation code you first must enable the checkbox.

Note 1: Checkbox first can be set if state is ‘In Use’!

Note 2: If you release several Service PCs with the same activation code (all are clones from the perspective of the VPN server) be aware that you do not start the VPN connection on these PCs at the same time (A new connection is interrupting the previous one).

The screenshot shows the 'User Profile' web portal interface. On the left, a navigation menu includes 'Home', 'News & Downloads', 'User Profile' (highlighted with a red box), 'Service', and 'Administration'. The main content area is divided into three tabs: 'User Data', 'Status Information', and 'Activation Code'. The 'User Data' tab is active, showing fields for 'User data' (First Name: Heinz, Last Name: Hartmann, Department, Position, Telephone: +49 5231 14 29 1234, Cell/Mobile: +49 173 123 123 123) and 'Profile' (Group member from: Administratoren, User permission checkboxes for User management, Device management, Status, Comment management, Document management, and News&Downloads, Language: English, Home page: News & Downloads). The 'Email Address (Login Name)' field contains 'hartmann@wdm-engineering.de'. Below the 'User data' section is a 'Password' section with 'New Password' and 'Confirm Password' fields. An 'Update' button is located below the 'User data' section. The 'Status Information' tab is also visible, showing 'Created Date', 'Last Login Date', 'Last Activity Date', 'Last Lock-out Date', 'Last Password Change', and 'Password Expires'. The 'Activation Code' tab is visible at the bottom, showing 'Activation ID' with 'Activation Code' (N2A7YCV6ZWEJ) and 'State' (Not used). A checkbox for 'Release for additional activation' is present. Annotations include a blue box stating 'Note: The login name is the unique identifier of this account and cannot be changed as long as this account exists.' with an arrow pointing to the 'Email Address (Login Name)' field, and another blue box stating 'If you change anything do not forget to click button “Update”.' with an arrow pointing to the 'Update' button.

Each logged-on u-link user can change his own - editable - profile data and set a new password via menu ‘User Profile’.

Note: The login name is the unique identifier of this account and cannot be changed as long as this account exists.

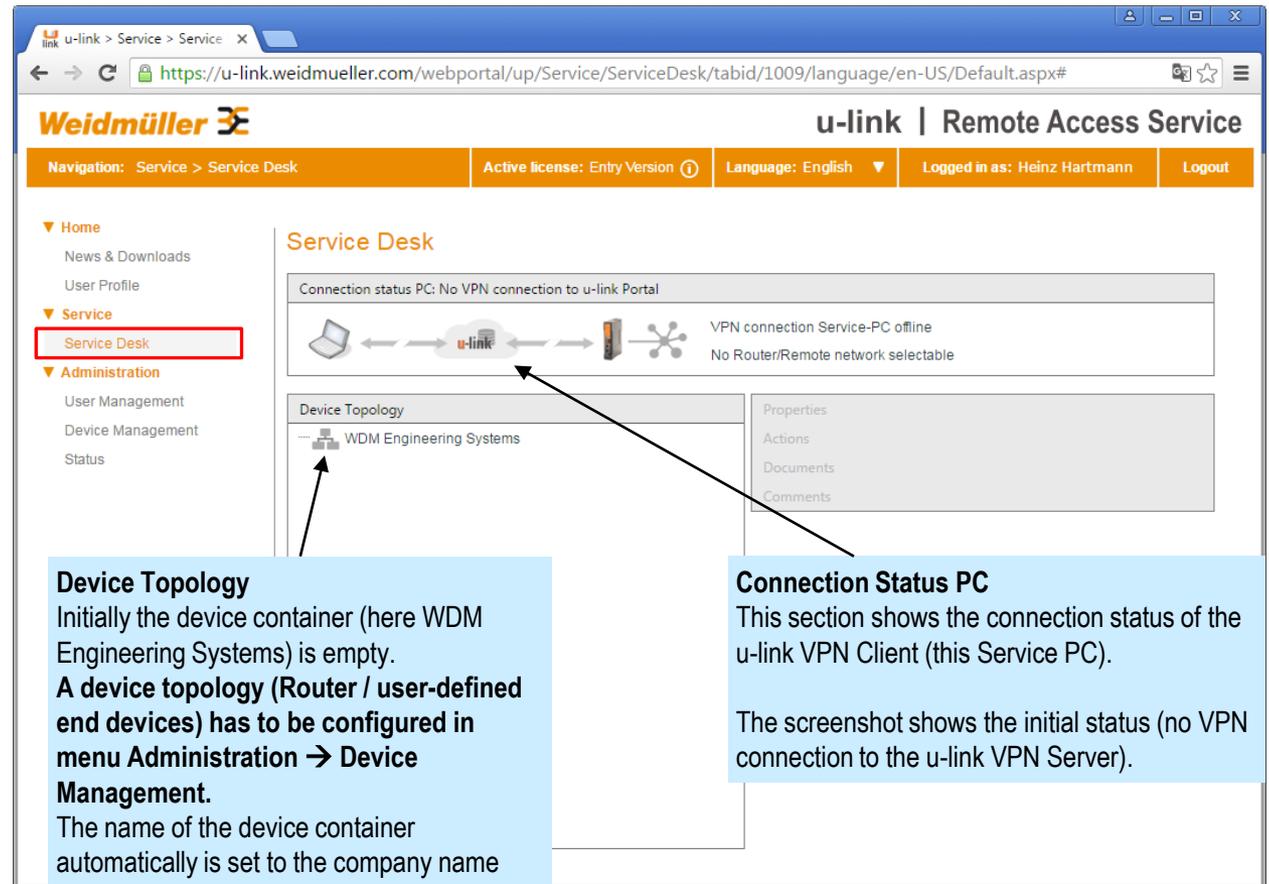
If you change anything do not forget to click button “Update”.

3.4 Menu 'Service Desk' (Initial state after registration)

- This menu will be used for access of remote devices (connecting to remote Router / Network devices)
- The screenshot is displaying the initial status after registering a new u-link system account:

Status:

- No devices configured.
- No active VPN connection of this Service PC to the u-link Portal (The software 'u-link VPN client' still has to be installed and assigned/registered to this administrator account if it will be used for remote access).



Device Topology
Initially the device container (here WDM Engineering Systems) is empty.
A device topology (Router / user-defined end devices) has to be configured in menu Administration → Device Management.
The name of the device container automatically is set to the company name which you have entered during the registration process of this u-link system account.

Connection Status PC
This section shows the connection status of the u-link VPN Client (this Service PC).
The screenshot shows the initial status (no VPN connection to the u-link VPN Server).

3.5 Menu ‘User Management’ (Initial state after registration)

- This menu will be used for creating and configuring the accounts of Service users.
- The screenshot is displaying the initial status after registering a new u-link system account. At this time only the account creator (Administrator) of this u-link account is existent.
- All users are organized into the 2 groups ‘Administrators’ and ‘Service’. In the Entry-Version the account creator automatically is the Administrator belonging to group ‘Administrators’.
- Each new created user will become a member of group ‘Service’.
- The Administrator is allowed to fully maintain the account.
- A Service user may maintain the device topology (creating Routers and user-defined Ethernet devices) via Menu ‘Device Management’ but may not maintain users (Menu ‘User Management’ is hidden).

Creation of a new user (points to the 'Add' button in the Users table)

The user who has registered the u-link system account automatically is the account administrator. This administrator account also can be used for remote access. A new user can be created via button ‘Add’. Each created user automatically is member of group ‘Service’.

Permissions of users are based on membership of groups ‘Administrators’ and ‘Service’. In the ‘Entry Version’ only this both groups exist and have pre-defined, not changeable permissions.

User Management: Maintain users (create, delete, edit)

Device Management: Maintain devices (create, delete, edit remote Routers)

Status: Menu “Status” is visible or hidden

Comments: Add/Delete comments to defined objects (Menu Device Management)

Documents: Add/Delete documents (any file type) to defined objects (Menu Device Management)

New&Downloads: Add/Edit news in menu News&Downloads (Visible for all created users)

Group permissions (vertical label on the left side of the annotations)

Type	User Name/Email Address	First Name	Last Name	Department	Position	Actions
	hartmann@wdm-engineering.de	Heinz	Hartmann			Info, Edit, Delete

Type	Name	Description	Permission Management					Actions	
			Users	Devices	Status	Comments	Documents		News & Downloads
	Administrators	Group for administrators	<input checked="" type="checkbox"/>	Info					
	Service	Group for service technicians	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Info

3.6 Menu ‘Device Management’ (Initial state after registration)

- This menu will be used to configure device objects (Router, Ethernet-based devices connected to the Router) representing the physical remote devices.
- The screenshot is displaying the initial status after registering a new u-link system account.
 - No devices configured (Container ‘Device Topology’ is empty).
- After setup the configured device topology will be displayed in menu ‘Service Desk’ to initiate a remote access to Ethernet devices via defined Router objects.

Device Topology
Initially the device container (here WDM Engineering Systems) is empty. The name of the device container automatically is set to the company name which you have entered during the registration process of this u-link system account.

Creating new devices
Router objects and Ethernet-based devices for remote access have to be configured by clicking button “New”.

3.7 Menu 'Status' (Initial state after registration)

- This menu is displaying status and license information of this system account.
- When registering a new u-link system account the version always will be the 'Entry Version'. An upgrade to a chargeable 'Standard Version' can be done via button 'Upgrade to Standard-Level'.
- For logging and reporting purposes following information will be provided:
 - Current connections (Service user to Remote Router)
 - Monthly data volume (VPN traffic) of a Service user
 - Connection history (Service user to Remote Router)
 - The VPN traffic and the connection history additionally can be exported to a csv-based text file.

u-link | Remote Access Service

Navigation: Administration > Status Active license: Entry Version ⓘ Language: English ▼ Logged in as: Heinz Hartmann Logout

Status / Statistics

Version: [Upgrade to Standard-Level...](#)

Validity period:

Max. number of simultaneous VPN connections (PC ↔ u-link ↔ Router/Remote network):

Currently connected u-link VPN clients:

Name	Type	Connected since	Connected to Router
No clients connected.			

VPN Traffic: [Export Summary](#) | [Export Details](#)

Name	Sent	Received	Total
No data recorded.			
	MB	MB	MB

Connction Log: [Export](#)

Router	User	Start	End
No data recorded.			

Chapter 4: Setup of a remote access scenario (Example)

- 4.1 Illustration of sample application
- 4.2 Creating a new user account (u-link Web portal)
- 4.3 Administration of a user account (u-link Web portal)
- 4.4 Setup of the Device configuration (u-link Web portal)
- 4.5 Preparing of the Service PC
- 4.6 Configuration of the Router

4. 1 Illustration of sample application (Setup described on next slides)

Windows Service PC

Having any kind of Internet access, eg. via company network or via DSL Router or via mobile connection.

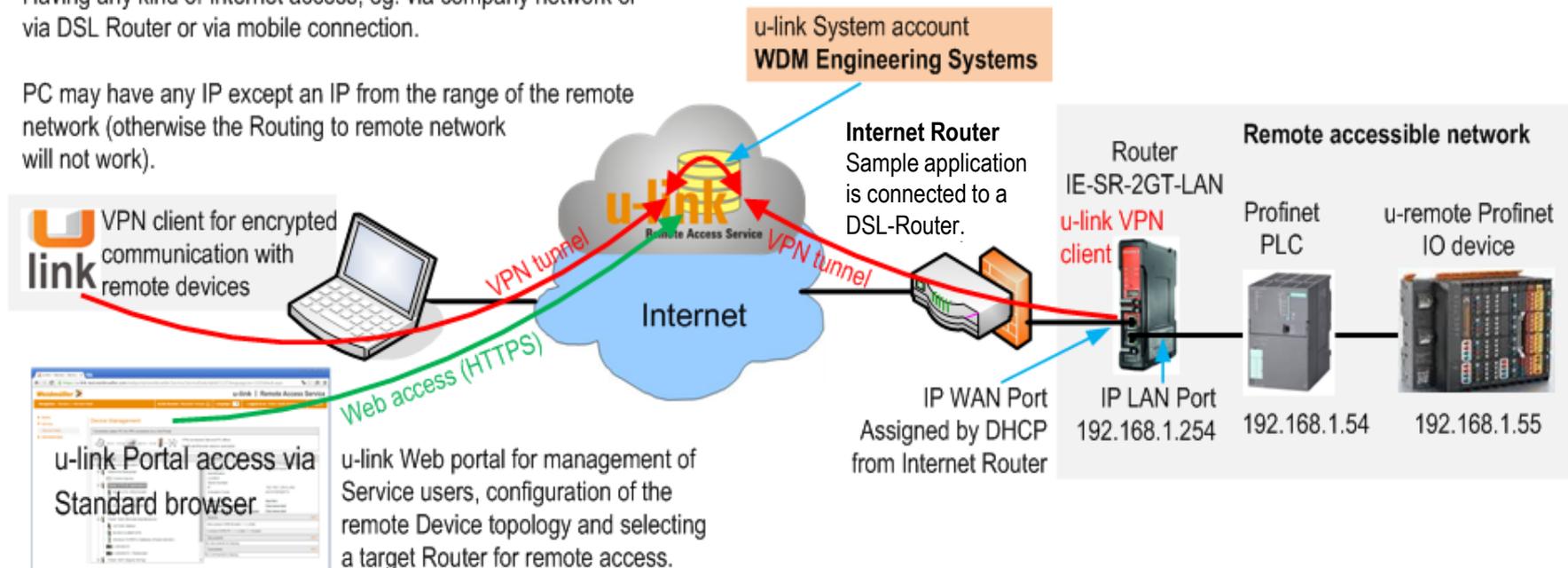
PC may have any IP except an IP from the range of the remote network (otherwise the Routing to remote network will not work).

 VPN client for encrypted communication with remote devices



u-link Portal access via Standard browser

u-link Web portal for management of Service users, configuration of the remote Device topology and selecting a target Router for remote access.



4.2 Creating a new user account

4.2 Creating a new user account (u-link Web portal)

Creating a new Service user (Step 1)

Note:

After registration of a new u-link system account only the administrator account exists. For doing a remote access the administration account also can be used, there is no need to create an additional service user. Next slides describe how to create and maintain a service user. For the later described example of a remote access session the administrator account is used, not the service user which we will create on the next slides.

- Goto menu 'User Management'.
- Click button 'Add' in section 'Users'.
 - A new window will be displayed to enter the user data.
- Enter the describing user data.
- Enter the users mail address.
 - It will be used for Login to the u-link Web portal.
- Click button 'Insert'.
 - Now the user will be created.
 - The activation code for registering the u-link VPN client of this user automatically will be generated.

Attention:

- The Login name (mail address) is used as unique identifier of this user account inside of the global u-link system.
- It may be used only one time.
- The Login name cannot be changed and cannot be used a second time as long as this user accounts exists.

Window displayed after clicking button 'Add'

4.2 Creating a new user account (u-link Web portal)

Creating a new Service user (Step 2)

- As next step the new user will be informed by mail that the administrator has created a u-link user account.
- After clicking button 'Insert' this window will be displayed to send the 'User registration mail' to the mail address of field 'Destination address'.
- Click button 'Send email'.
 - The recipient will receive a mail of type 'Registration User' from sender address **u-link-noreply@weidmueller.com**.

Window displayed after clicking button 'Insert'

Now the unique activation code to be used for registering the 'u-link VPN client' of this service user is created.

Window displayed after clicking button 'Information'

Information about u-link accessibility of this new user

The user account has been created. Now you have to send an email to the user containing the entered data and a Hyperlink for setting an initial password to log into the u-link Web portal.

The initial password setting via the Hyperlink is mandatory otherwise a login into the u-link Web portal is not possible.

Note:
If you - as administrator - would like to activate the users u-link access and to set a password by yourself then please change the content of parameter „Destination address“ to your mail address. Then you will receive the mail instead of the created user.

Note:

By default the user registration mail is sent to the mail address which is used for user login. For this reason both Mail address (Login name) and Destination address are the same.

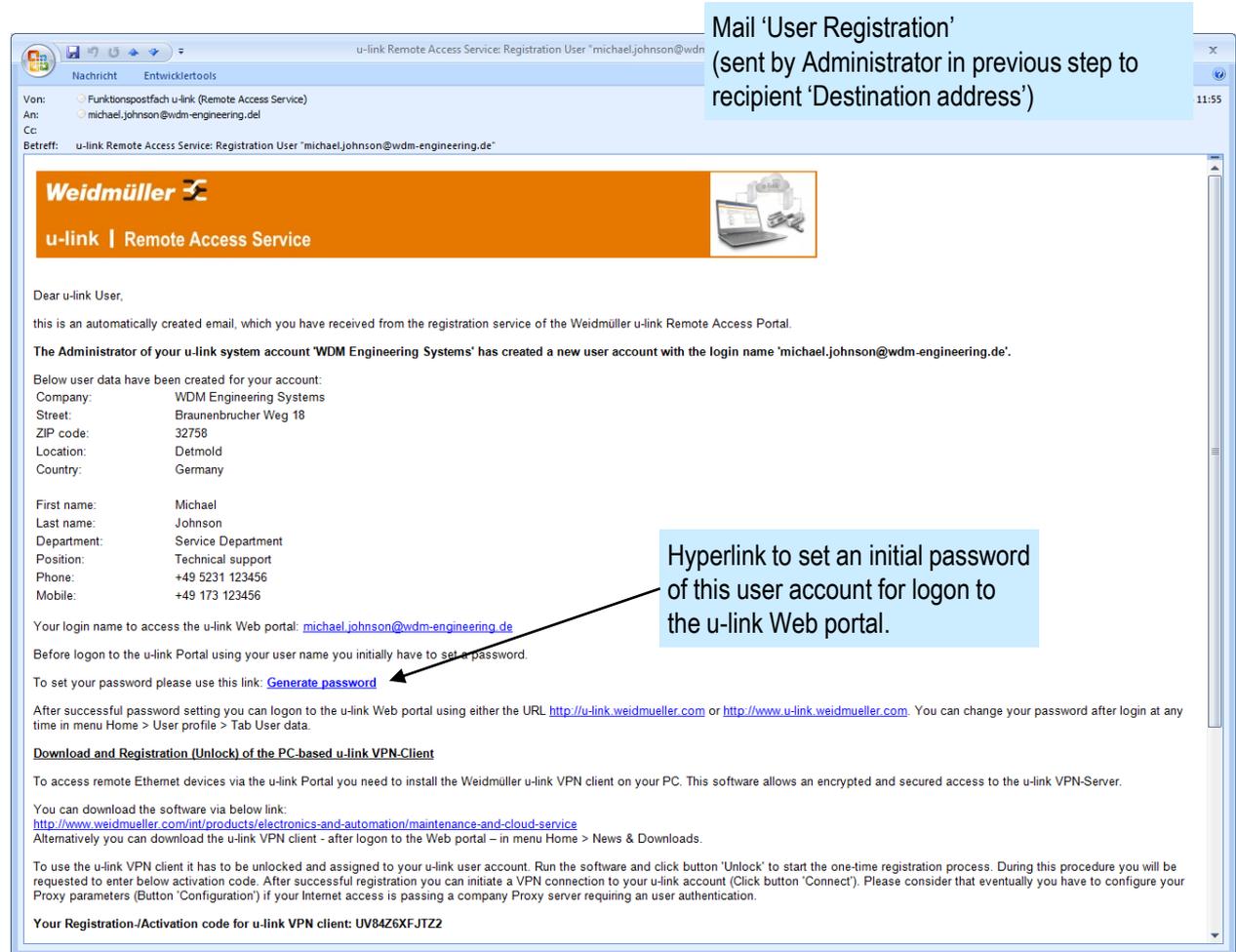
If the user registration mail shall be sent to a different mail address then it is possible to change the destination address.

4.2 Creating a new user account (u-link Web portal)

Creating a new Service user

(Step 3 – To-Do by new user)

- Screenshot shows the mail (Type 'User Registration') which the new user has received from the u-link administrator.
 - At his time the user account already is active but before login to the u-link Web portal the new user has to set an initial password.
- Open the mail.
- Click hyperlink 'Generate password'.
- Now an u-link Web page will be opened to enter the initial password of this user.



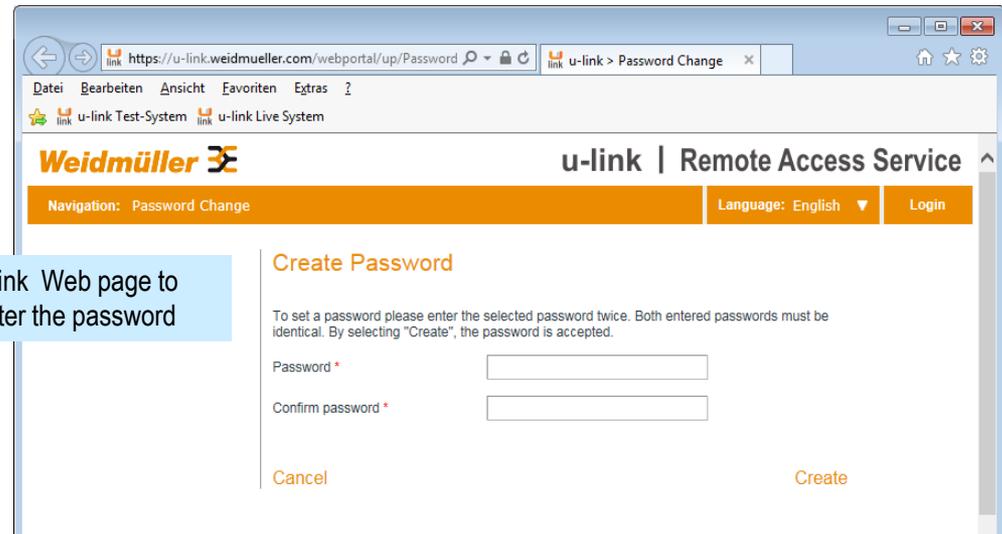
4.2 Creating a new user account (u-link Web portal)

Creating a new Service user

(Step 4 – To-Do by new user)

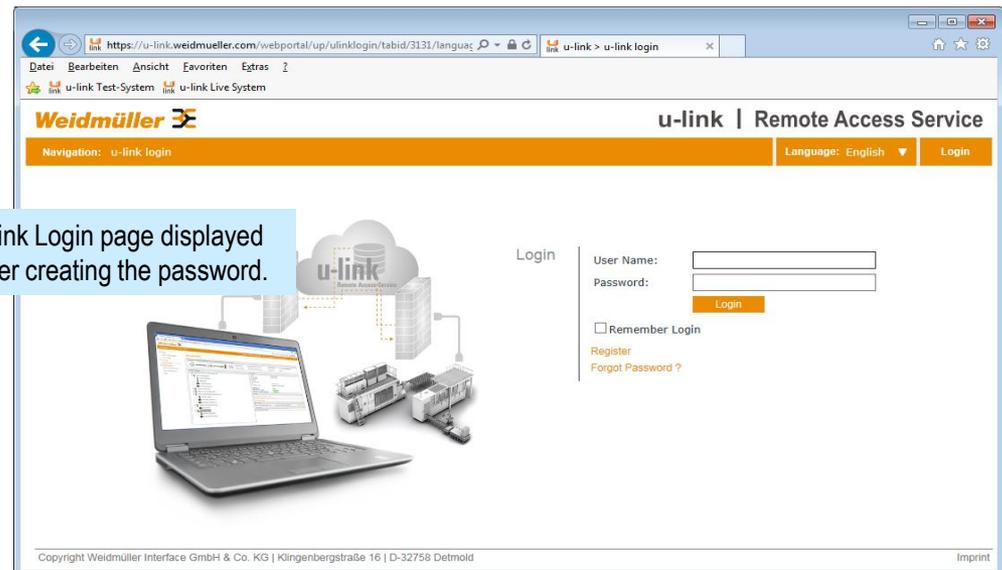
- Enter the password twice.
- Click button 'Create'.
 - After successful creation the u-link Login page is displayed.
- Now the user can login to the u-link Web portal using his login name (mail address) and the entered password.

u-link Web page to enter the password



The screenshot shows a web browser window with the URL <https://u-link.weidmueller.com/webportal/up/Password>. The page title is "u-link | Remote Access Service". The navigation bar shows "Navigation: Password Change" and "Language: English". The main content area is titled "Create Password" and contains the following text: "To set a password please enter the selected password twice. Both entered passwords must be identical. By selecting 'Create', the password is accepted." Below this text are two input fields: "Password *" and "Confirm password *". At the bottom of the form are two buttons: "Cancel" and "Create".

u-link Login page displayed after creating the password.



The screenshot shows a web browser window with the URL <https://u-link.weidmueller.com/webportal/up/ulinklogin/tabid/3131/lanuage>. The page title is "u-link | Remote Access Service". The navigation bar shows "Navigation: u-link login" and "Language: English". The main content area is titled "Login" and contains the following text: "User Name:" and "Password:" followed by two input fields. Below the input fields is a "Login" button. There is also a checkbox for "Remember Login" and links for "Register" and "Forgot Password?". The page features a large graphic of a laptop and server racks connected to a cloud labeled "u-link". At the bottom, there is a copyright notice: "Copyright Weidmüller Interface GmbH & Co. KG | Klingenbergstraße 16 | D-32758 Detmold" and an "Imprint" link.

4.2 Creating a new user account (u-link Web portal)

Creating a new Service user (Step 5)

- The new user now is displayed in section 'Users' and automatically assigned to group 'Service'.
- The permissions of this user are based on the permissions of group 'Service' having following rights:
 - User Management is prohibited (only allowed for Administrator account).
 - Device Management is allowed (Maintain Router, user-defined end devices).
 - Access to Menu 'Status' is allowed.
 - Documents and Comments can be stored to defined device objects (Menu Device Management).
 - Creation of information messages in Menu 'News & Downloads' is prohibited.
- The permissions cannot be changed in the Entry-Version.

The screenshot shows the 'User Management' interface. On the left, a tree view shows the hierarchy: WDM Engineering Systems > Administrators > Heinz Hartmann and Service > Michael Johnson. The 'Service' group is highlighted with a red box. On the right, the 'Users' table shows a new user 'Michael Johnson' with email 'michael.johnson@wdm-engineering.de' and position 'Technical support', also highlighted with a red box. A blue callout box with an arrow points to this user, stating: 'New user being automatically member of group 'Service''. Below the users table is a 'Groups' table with columns for Name, Description, and Permission Management (Users, Devices, Status, Comments, Documents, News & Downloads). The 'Service' group is highlighted with a red box.

Type	Name	Description	Users	Devices	Status	Comments	Documents	News & Downloads	Actions
Group for administrators	Administrators	Group for administrators	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
Group for service technicians	Service	Group for service technicians	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The screenshot shows the 'User Management' interface with the 'Users' table. A red box highlights the header of the 'Users' table. A context menu is open over the header, showing options for 'Sort Ascending', 'Sort Descending', 'Clear Sorting', 'Best Fit', and 'Columns'. A blue callout box with an arrow points to the context menu, stating: 'Information about displayable user parameters Do a right mouse click on the grid header to open a sub menu for enabling/disabling the visibility of user parameters.' The 'Columns' menu is open, showing a list of user parameters with checkboxes: Type, User Name/Email Address, First Name, Last Name, Department, Position, Telephone, Cell/Mobile, Activation code, and Authorised.

Type	User Name/Email Address	First Name	Last Name	Department	Position	Actions
Administrator	hartmann@wdm-engineering.de	Heinz	Hartmann			<input type="checkbox"/>
Service Technician	michael.johnson@wdm-engineering.de	Michael	Johnson	Service Department	Technical support	<input type="checkbox"/>

4.3 Administration of a user account

4.3 Administration of a user account (u-link Web portal)

Provided actions to maintain a service user

- Following user-related actions are provided:
 - ▶ Service
 - View user data
 - Edit user data
 - Send an information mail to user containing the user data
 - Delete the user account

Note:

The administration of user accounts only can be done by the Administrator. The menu item 'User Management' is not visible for service users.

User Management

Assignment Users to Groups

- WDM Engineering Systems
 - Administrators (Group for administrators)
 - Heinz Hartmann (hartmann@wdm-engineering.de)
 - Service (Group for service technicians)
 - Michael Johnson (michael.johnson@wdm-engineering.de)

Type	User Name/Email Address	First Name	Last Name	Department	Position	Actions
	hartmann@wdm-engineering.de	Heinz	Hartmann			View Edit Mail
	michael.johnson@wdm-engineering.de	Michael	Johnson	Service Department	Technical support	View Edit Mail Delete

Type	Name	Description	Permission Management					Actions	
			Users	Devices	Status	Comments	Documents		News & Downloads
	Administrators	Group for administrators	<input checked="" type="checkbox"/>	View					
	Service	Group for service technicians	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	View

4.3 Administration of a user account (u-link Web portal)

Action 'View user data'

- Click button 'View' to open a new window showing the user data on tabs
 - User Data
 - Status Information
 - Activation Code
- In viewing mode no data can be changed.

Type	User Name/Email Address	First Name	Last Name	Department	Position	Actions
	hartmann@wdm-engineering.de	Heinz	Hartmann			
	michael.johnson@wdm-engineering.de	Michael	Johnson	Service Department	Technical support	

Button 'View User Data'

View user data (Michael Johnson)

User Data Status Information Activation Code

User data

First Name: Michael
 Last Name: Johnson
 Department: Service Department
 Position: Technical support
 Telephone: +49 5231 123456
 Cell/Mobile: +49 173 123456
 Email Address (Login Name): michael.johnson@wdm-engineer

Profile

Group member from: Service

User permission (Automatically assigned by group membership)

User management
 Device management
 Status
 Comment management
 Document management
 News&Downloads

Language: English
 Home page: News & Downloads
 Authorised: Yes
 Administrator: No

Close

View user data (Michael Johnson)

User Data Status Information Activation Code

Status Information

Created Date: 7/6/2016 11:43:52 AM
 Last Login Date: -
 Last Activity Date: -
 Last Lock-out Date: -
 Last Password Change: -
 Password Expires: Never

View user data (Michael Johnson)

User Data Status Information Activation Code

Activation ID

Activation Code: UV84Z6XFJTZ2
 State: Not used

Close

After first VPN connection of this service user to the u-link VPN server the status is changed to 'In Use'.

4.3 Administration of a user account (u-link Web portal)

Action 'Edit user data'

- Click button 'Edit' to open a new window showing the user data on tabs
 - User Data
 - Activation Code
- In this mode data can be changed.

Type	User Name/Email Address	First Name	Last Name	Department	Position	Actions
	hartmann@wdm-engineering.de	Heinz	Hartmann			
	michael.johnson@wdm-engineering.de	Michael	Johnson	Service Department	Technical support	

Button 'Edit User Data'

Edit user data (Michael Johnson)
Changeable parameters
Not changeable parameters (Permissions assigned by group membership)

User Data

First Name: Michael

Last Name: Johnson

Department: Service Department

Position: Technical support

Telephone: +49 5231 123456

Cell/Mobile: +49 173 123456

Email Address (Login Name): michael.johnson@wdm-engineer

Profile

Group member from: Service

User permission (Automatically assigned by group membership)

User management

Device management

Status

Comment management

Document management

News&Downloads

Language: English

Home page: News & Downloads

Authorised: Yes

Administrator: No

Password

New Password:

Confirm Password:

Password change by Administrator

Default language when logged in to u-link Portal

Default Home page when logged in to u-link Portal

Activate / Deactivate the users u-link access.

If set to 'Yes' then this user will be the new Administrator having full permissions.
Attention: The current administrator will be become a Service user (Member of group 'Service') having these limited group permissions.

Edit user data (Michael Johnson)
Activation Code

Activation ID

Activation Code: UV84Z6XFJTZ2

State: Not used

Release for additional activation:

If you want to use a second PC running as 'u-link VPN Client' using this activation code then - if state is 'In Use' - you first must enable the checkbox 'Release for additional activation' to allow an additional use.

Note 1: Checkbox first can be set if state is 'In Use' (is changed when service user first time connects to u-link).

Note 2: If you release several Service PCs with the same activation code be aware that you do not start a VPN connection on these PCs at the same time. All are VPN connections are identical clones from the perspective of the VPN server. If you would do this a new connection is interrupting the previous one).

4.3 Administration of a user account (u-link Web portal)

Action 'Send information mail to user'

- Click button '@' to open a new window for sending an information mail (containing the user data) to the users mail address.

Type	User Name/Email Address	First Name	Last Name	Department	Position	Actions
	hartmann@wdm-engineering.de	Heinz	Hartmann			
	michael.johnson@wdm-engineering.de	Michael	Johnson	Service Department	Technical support	

Button 'Send mail with user data'

Send info mail to user again

First Name:

Last Name:

Department:

Position:

Telephone:

Cell/Mobile:

Email Address (Login Name):

Activation ID:

Destination address:

Sender address:

Note: Mail can be sent to a different recipient by changing the content of field "Destination address"

[Send email](#) [Cancel](#)

This window will be displayed after clicking button '@'.

u-link Remote Access Service Information User "michael.johnson@wdm-engineering.de" - Nachricht (HTML)

Von: Funktionspostfach u-link (Remote Access Service)
An: michael.johnson@wdm-engineering.de
Cc:
Betreff: u-link Remote Access Service: Information User "michael.johnson@wdm-engineering.de"

Weidmüller
u-link | Remote Access Service

Dear u-link User,

this is an automatically created email, which you have received from the registration service of the Weidmüller u-link Remote Access Portal.

The Administrator of your u-link account 'WDM Engineering Systems' has sent this mail - containing your user account data - for your information.

Below user data have been created for your account:

Company: WDM Engineering Systems
Street: Braunenbrucher Weg 18
ZIP code: 32758
Location: Detmold
Country: Germany

First name: Michael
Last name: Johnson
Department: Service Department
Position: Technical support
Phone: +49 5231 123456
Mobile: +49 173 123456

Your login name to access the u-link Web portal: michael.johnson@wdm-engineering.de

For logon to the u-link Portal please enter your user name and your valid password. This you either have set initially during the activation process of your user account (refer to your received mail "u-link Registration User") or you have already changed it after first logon to the u-link Web portal.

Link to u-link login: <http://u-link.weidmueller.com> or <http://www.u-link.weidmueller.com>

Download and Registration (Unlock) of the PC-based u-link VPN Client

To access remote Ethernet devices via the u-link Portal you need to install the Weidmüller u-link VPN client on your PC. This software allows an encrypted and secured access to the u-link VPN-Server.

You can download the software via below link:
<http://www.weidmueller.com/int/products/electronics-and-automation/maintenance-and-cloud-service>
Alternatively you can download the u-link VPN client - after logon to the Web portal - in menu Home > News & Downloads.

To use the u-link VPN client it has to be unlocked and assigned to your u-link user account. Run the software and click button 'Unlock' to start the one-time registration process. During this procedure you will be requested to enter below activation code. After successful registration you can initiate a VPN connection to your u-link account (Click button 'Connect'). Please consider that eventually you have to configure your Proxy parameters (Button 'Configuration') if your Internet access is passing a company Proxy server requiring an user authentication.

Your Registration-/Activation code for u-link VPN client: UV84Z6XFJT22

The registration/activation code also can be retrieved - after logon to the Web portal - in menu Home > User profile (Tab Activation code)

Sample mail which the addressed service user will receive.

4.3 Administration of a user account (u-link Web portal)

Action 'Delete user'

- Click button 'Delete' to delete the user.
 - A window will appear asking you if you are sure to delete the user. After confirmation the user will be deleted.
 - The list user item in the section 'Users' will be removed.

Users Add						
Type	User Name/Email Address	First Name	Last Name	Department	Position	Actions
	hartmann@wdm-engineering.de	Heinz	Hartmann			  
	michael.johnson@wdm-engineering.de	Michael	Johnson	Service Department	Technical support	   

Button 'Delete user'

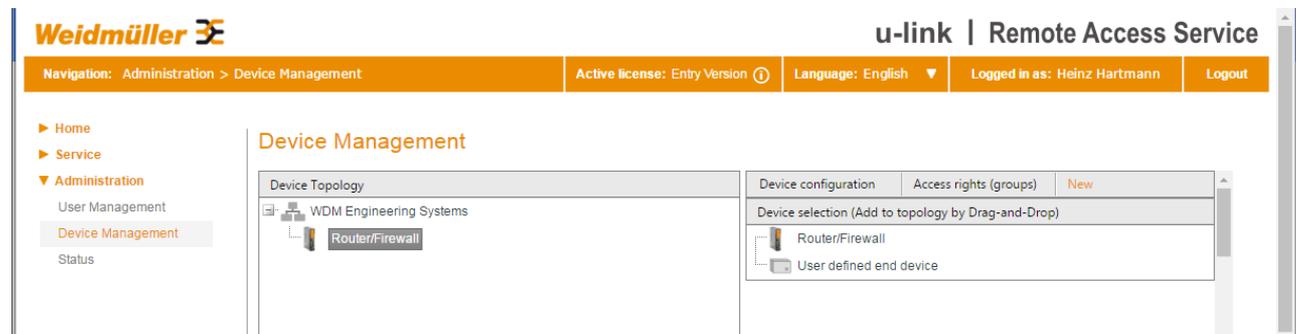
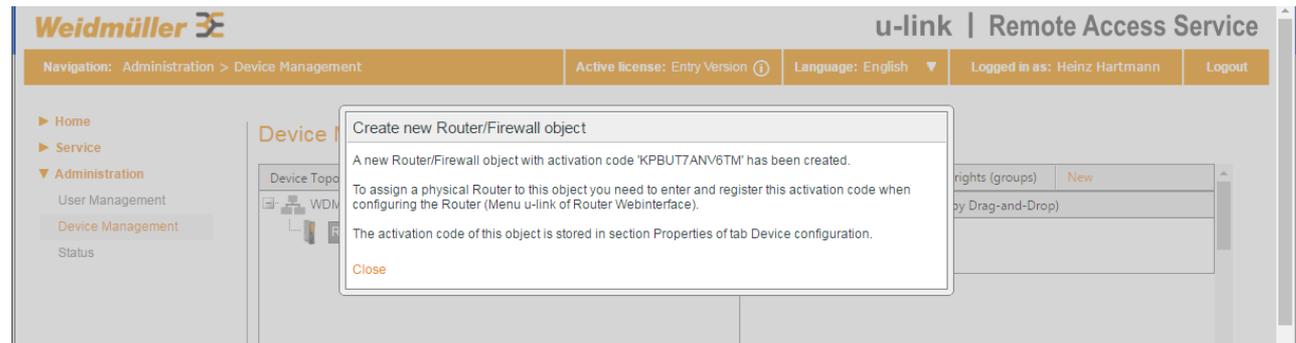


4.4 Setup of the Device configuration

4.4 Setup of the Device configuration (u-link Web portal)

Create a Router object (Step 1)

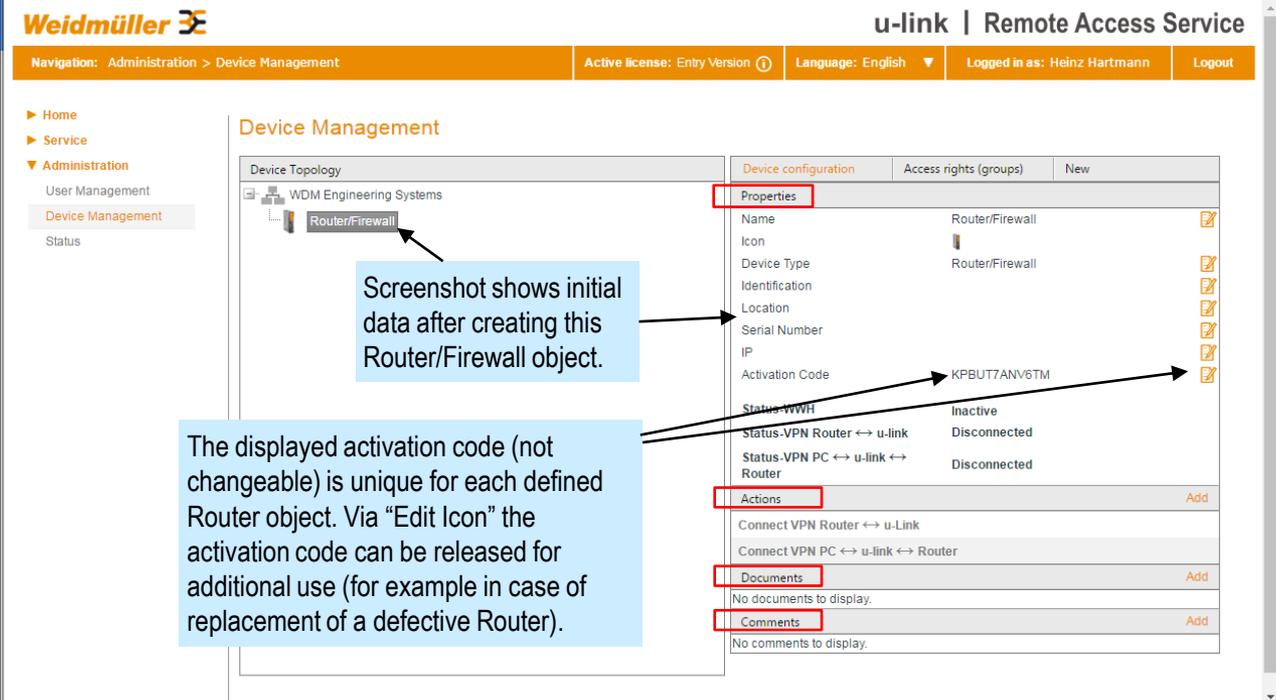
- Goto menu “Device Management”.
- Click Tab “New” to configure the first Router object (access point to devices at remote network).
- Drag from “Device selection” the Router/Firewall object and drop it on the container object in ‘Device Topology’.
- An information window will be displayed showing that this action was accepted. By creating a Router object an unique activation code will be created, which later has to be used to assign a physical Router to this defined object.
- Now the new Router object is defined as first device in the device topology container.
- Next the properties of this Router object have to be configured.



4.4 Setup of the Device configuration (u-link Web portal)

Configuration of properties of new Router object (Step 2)

- Highlight the Router/Firewall object and click Tab “Device configuration” to display object specific item parameters.
- Section **“Properties”**
All items with an “Edit Icon” (except parameter Activation code) can be edited to store individual data to this object. These parameters (text-based fields) are used only for information. They have no relevance regarding the remote access functionality.
- Section **„Actions“**
By default the 2 actions **Connect VPN Router ↔ u-link** and **Connect VPN PC ↔ u-link ↔ Router** are predefined.
First action can be used to start a VPN connection on the Router to the u-link VPN Server remotely from the u-link Portal (via WWH function).
Second action will be used to initiate a VPN pass-through connection from a Service PC via u-link VPN Server to the Router (to access remote devices).
Via button „Add“ customized actions (currently only http/https based calls) can be defined and started via mouse click).
Note: Actions are only active in menu „Service Desk“



u-link | Remote Access Service

Navigation: Administration > Device Management Active license: Entry Version Language: English Logged in as: Heinz Hartmann Logout

Home
Service
Administration
User Management
Device Management
Status

Device Management

Device Topology
WDM Engineering Systems
Router/Firewall

Device configuration Access rights (groups) New

Properties	
Name	Router/Firewall
Icon	
Device Type	Router/Firewall
Identification	
Location	
Serial Number	
IP	
Activation Code	KPBUT7ANV6TM
Status-WWH	Inactive
Status-VPN Router ↔ u-link	Disconnected
Status-VPN PC ↔ u-link ↔ Router	Disconnected

Actions Add

- Connect VPN Router ↔ u-Link
- Connect VPN PC ↔ u-link ↔ Router

Documents Add

No documents to display.

Comments Add

No comments to display.

Annotations:
 - Screenshot shows initial data after creating this Router/Firewall object.
 - The displayed activation code (not changeable) is unique for each defined Router object. Via “Edit Icon” the activation code can be released for additional use (for example in case of replacement of a defective Router).

- Section **“Documents”**
Storing/Retrieving documents (any file type) assigned to this object. Can be done by all u-link account users.
- Section **„Comments“**
Creating any comments (information) to this object. Useable by all u-link account users.

Note:

For preparing a remote access session via a Router (which will be assigned to this Router object) you only need the activation code. Copy and save this activation code which later is necessary when preparing the physical Router for u-link access.

For a remote access session it is not necessary to edit anything. But we recommend to edit the text-based fields in section “Properties” to better identify the defined object.

4.4 Setup of the Device configuration (u-link Web portal)

Screenshot of created Router object after changing the values of some parameters in section Properties.

Changed name also is displayed in section Device Topology

This screenshot shows the - on previously slide - created Router object after changing the properties of this Router object.

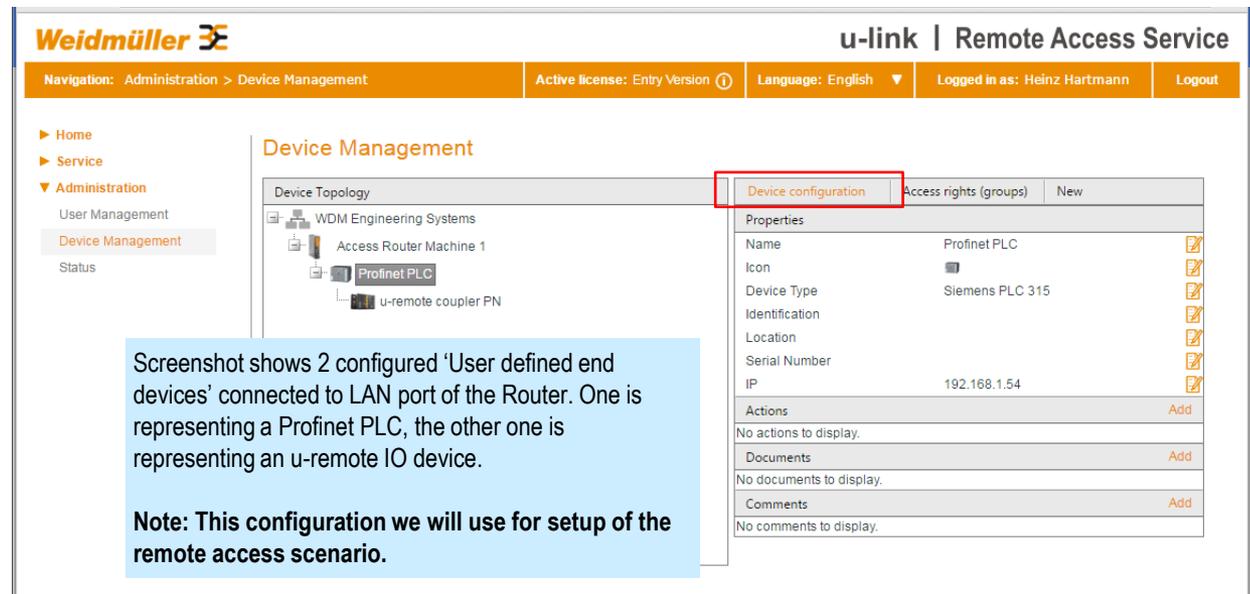
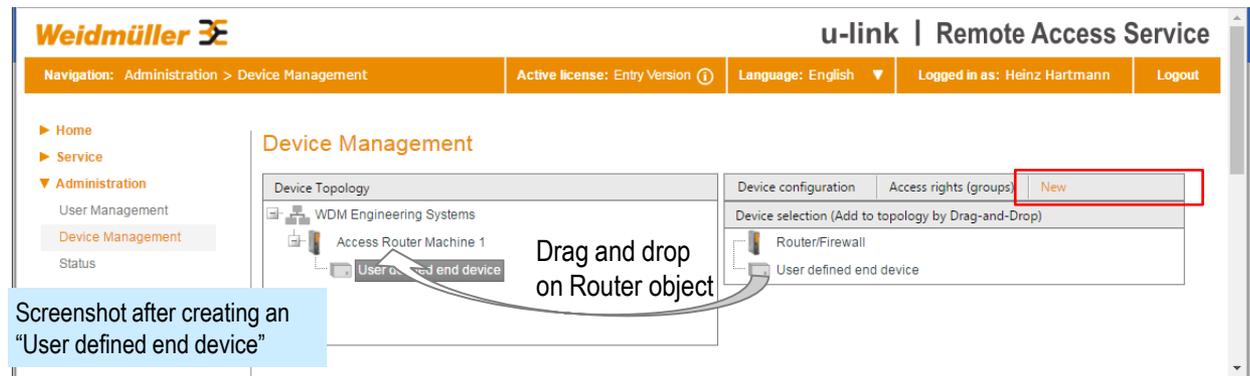
Device configuration		Access rights (groups)	New
Properties			
Name	Access Router Machine 1		
Icon			
Device Type	Router/Firewall		
Identification			
Location	Factory Detmold		
Serial Number			
IP	192.168.1.254 (LAN port)		
Activation Code	KP BUT7ANV6TM		
Status-WWH	Inactive		
Status-VPN Router ↔ u-link	Disconnected		
Status-VPN PC ↔ u-link ↔ Router	Disconnected		
Actions Add			
Connect VPN Router ↔ u-Link			
Connect VPN PC ↔ u-link ↔ Router			
Open Router Web page			
Documents Add			
Backup_Router_Configuration.cf2	Configuration Backup of this Router		
Comments Add			
Comment to Machine 1			
By Heinz Hartmann		Created at 6/15/2016 4:03:49 PM	
Any information which is visible for all users of this u-link system account.			

4.4 Setup of the Device configuration (u-link Web portal)

Configuration of a 'User defined end device' connected to Router LAN port (Step 3)

- The object type „User defined end device“ can be used to define any device type being accessible by an Ethernet communication (TCP/UDP).
- This object type will be used to provide a mapping of remote accessible devices behind the Router. It is not necessary to create 'User defined end devices' for remote access because all IP addresses at Router LAN port are accessible when having a pass-through VPN connection to the Router.

- Select Tab 'New'
- Drag from 'Device selection' the object 'User defined end device' and drop to the container object 'Access Router Machine 1'.
- Click Tab 'Device configuration' and configure the object specific properties as you want (Screenshot shows 2 already configured 'User-defined end devices'). These parameters (text-based fields) are used only for information. They have no relevance regarding the remote access functionality.
- Same as for a Router object the features 'Actions', 'Storing documents and comments' are provided for this object type.



Preparing of the device configuration now is finished !

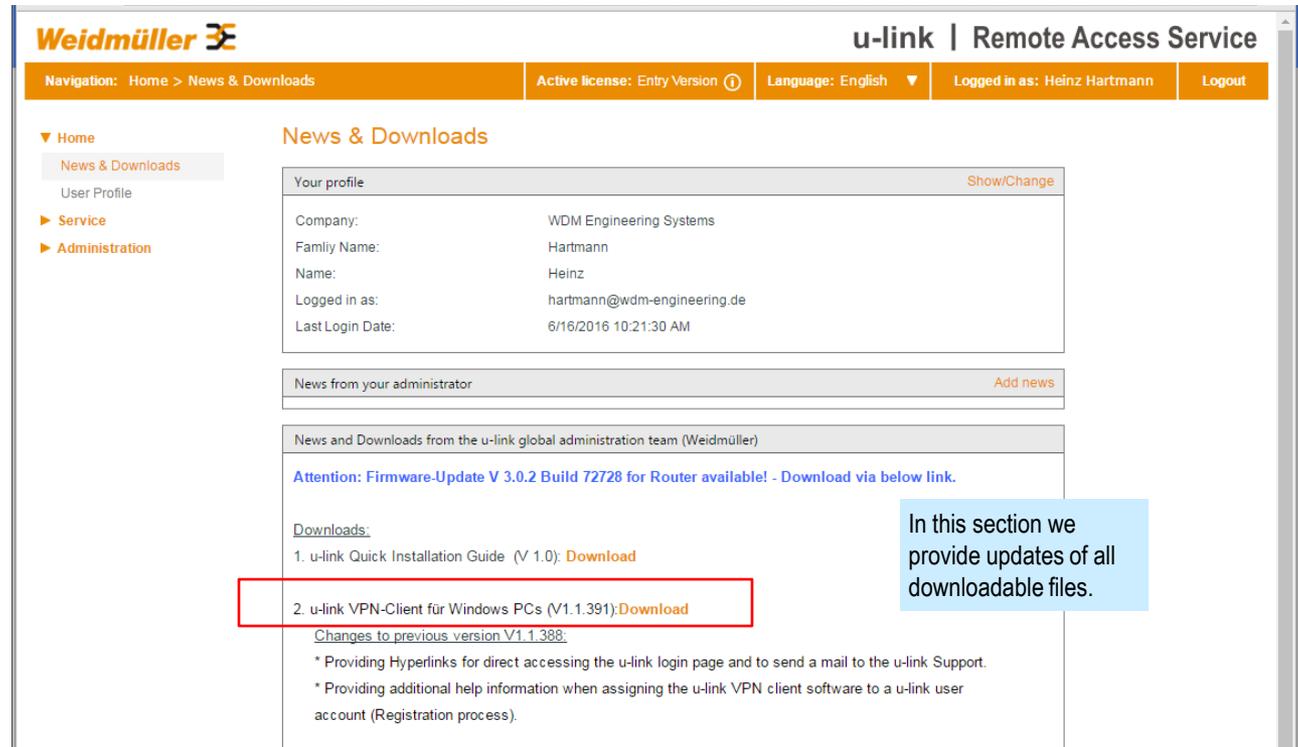
In the next steps both the Service PC (using this administrator account) and the physical Router (which later is located in the remote network) have to be configured.

4.5 Preparing of the Service PC

4.5 Preparing the Service PC

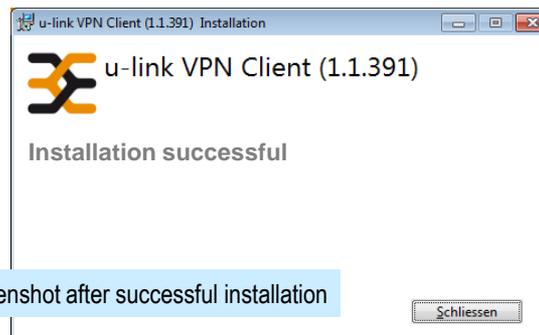
Download and installation of Windows software ‘u-link VPN Client’ (Step 1)

- Logon to the u-link Web portal using your user name and password
- Goto menu “News & Downloads”
- Download the provided software from section “News&Download from global u-link administration”



Unzip the download file and install the software (Step 2)

- For installation you need admin rights.



Screenshot after successful installation

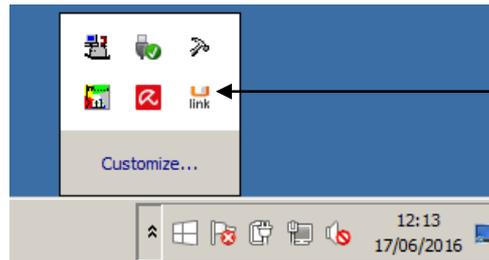
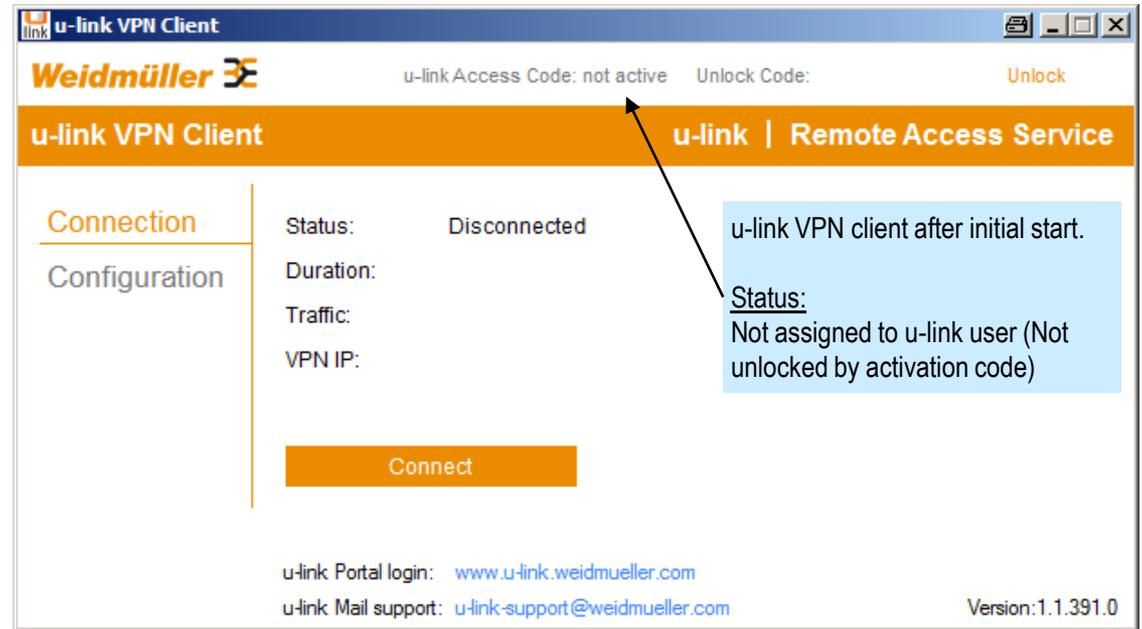


New u-link desktop icon

4.5 Preparing the Service PC

Start software “u-link VPN Client” on the Service PC (Step 3)

- The program window will be opened and the u-link icon will be displayed in the notification area of the taskbar.
- Initially the software is not assigned to a u-link user account.
- Before starting a VPN connection to the u-link VPN server the software has to be unlocked (registered) using the unique activation code of the u-link user account which shall be used for remote access.

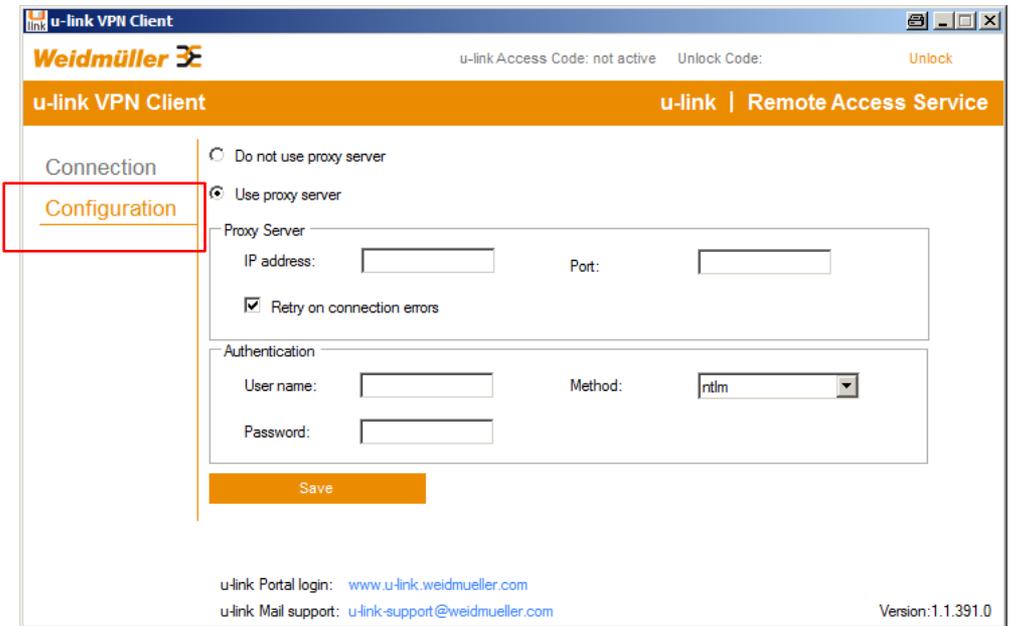


4.5 Preparing the Service PC

Configure Proxy server connection parameters if your Internet access is passing a Proxy server (Step 4)

- Click button “Configuration”
- Enable checkbox “Use proxy server”
- Enter the your Proxy server specific parameters (provided by IT department).
- Click button “Save”

Skip this step if the Service PC is not passing a Proxy server for Internet access.



The screenshot shows the 'u-link VPN Client' configuration window. The 'Configuration' tab is active. Under 'Connection', the 'Use proxy server' option is selected. The 'Proxy Server' section includes an 'IP address' field, a 'Port' field, and a checked 'Retry on connection errors' checkbox. The 'Authentication' section includes 'User name' and 'Password' fields, and a 'Method' dropdown menu set to 'ntlm'. A 'Save' button is located at the bottom of the configuration area. The status bar at the top indicates 'u-link Access Code: not active' and 'Unlock Code: Unlock'.

Note:

If this Service PC is member of a company-based Windows domain (controlled by IT department) then often the Internet access is secured by a Proxy Server. A Windows user (logged-in with his domain account) normally does not know anything about Proxy configuration because a Browser-based Internet access automatically is allowed when logged-on to the PC using the credentials of the users domain account.

To pass the Proxy Server the proxy parameters of then ‘u-link VPN client’ have to be set manually because it is not part of the programs controlled by domain policies.

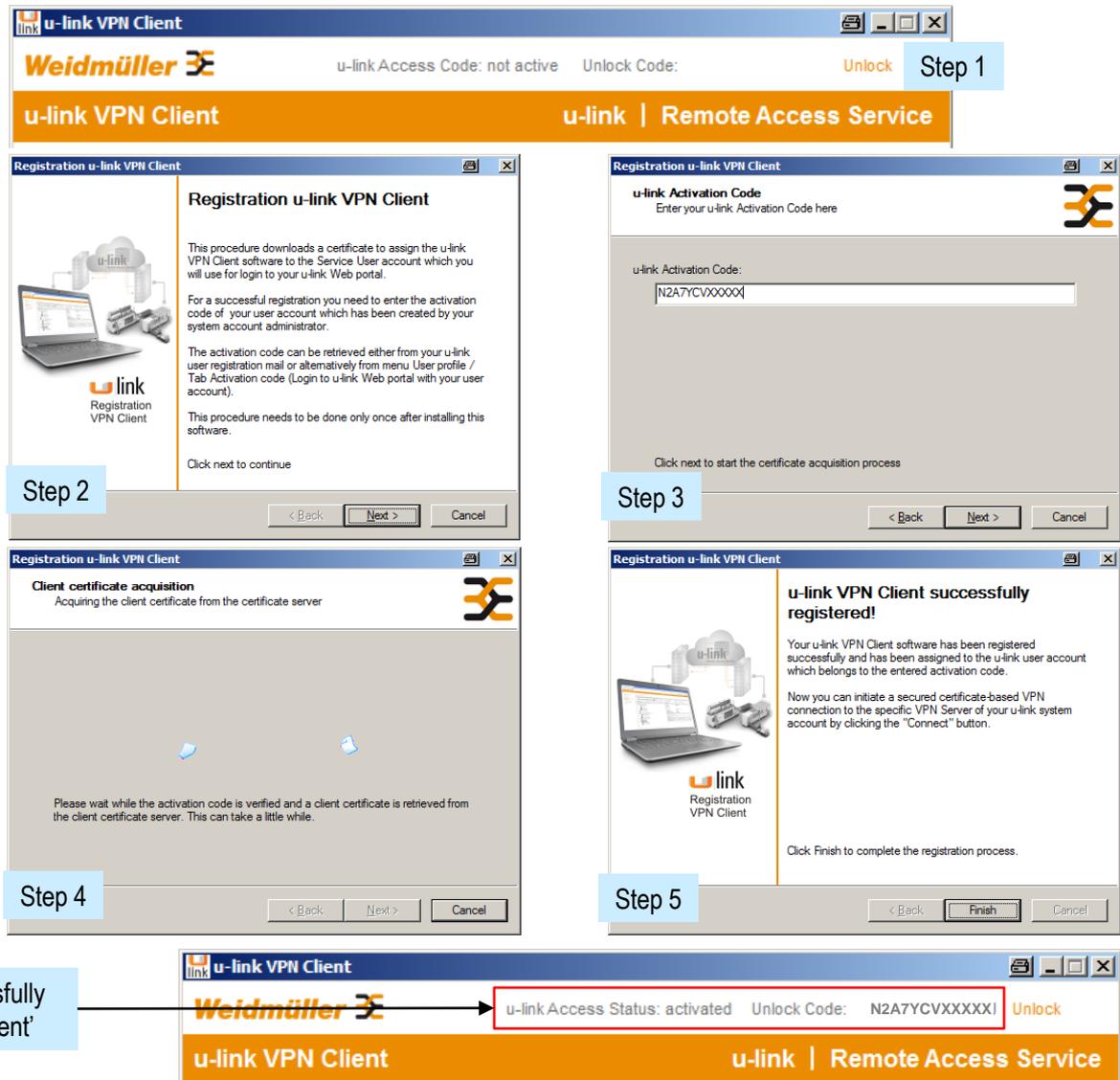
The authentication credentials ‘User name’ and ‘Password’ normally are the same as used for logon to the Windows PC.

Keep in mind - when using the domain-based login credentials – that if the password has changed you also have to update the password in section ‘Authentication’. Otherwise the Proxy server will block the u-link VPN connection.

4.5 Preparing the Service PC

Unlock (Register) software 'u-link VPN Client' (Step 5)

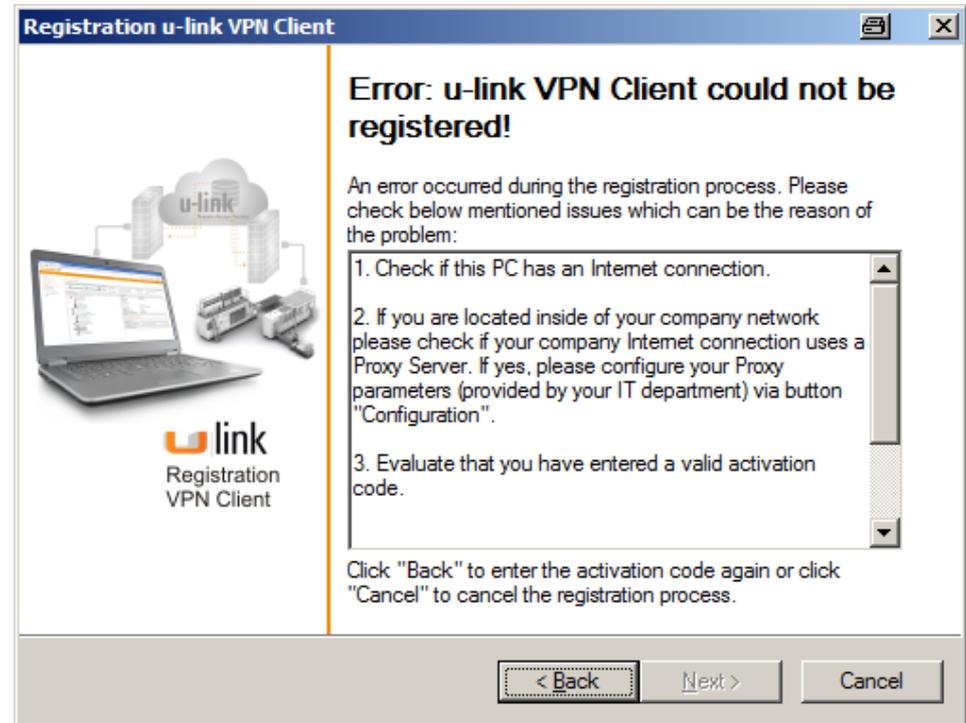
- This step has to be done to assign the installed 'u-link VPN Client software' to the defined service user in the u-link system account (here we use the Administrator account).
- For the registration process we need the user specific activation code. The activation code can be found either in the received mail 'User Registration' or in menu 'User Profile' on tab 'Activation Code' when logged-on to the u-link Web portal.
- Click button 'Unlock' and follow the instructions of the registration process.
- After clicking button 'Finish' the software is unlocked and assigned to the u-link user account.



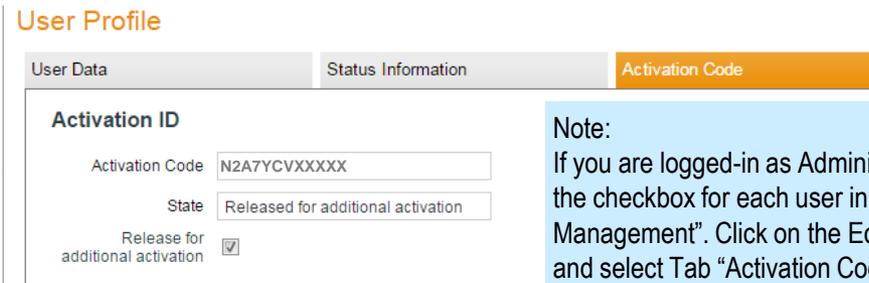
4.5 Preparing the Service PC

Possible errors if the unlock (Register) process of “u-link VPN Client” has failed

- **No Internet access**
Ensure that your PC is accessible to the Internet.
- **Registration process blocked by Proxy Server**
If you are located inside of your company network please check if your company Internet connection uses a Proxy server. If yes, please configure your Proxy parameters (provided by your IT department) via button "Configuration".
- **Wrong activation code**
Evaluate that you have entered a valid activation code.
- **Activation code already registered and not released for additional use (Status “In use”)**
If you have entered an already registered activation code (for using on a second PC) you first must release the additional use of this activation code.
 - Login to u-link Web portal using your user account.
 - Goto menu User profile / Tab Activation Code.
 - Activate checkbox “Release for additional activation”.
 - Click button “Update” (not displayed in screenshot below).



This window will appear if the unlock (Register) process has failed!



Note:
If you are logged-in as Administrator you can set the checkbox for each user in menu “User Management”. Click on the Edit icon of a user item and select Tab “Activation Code”.

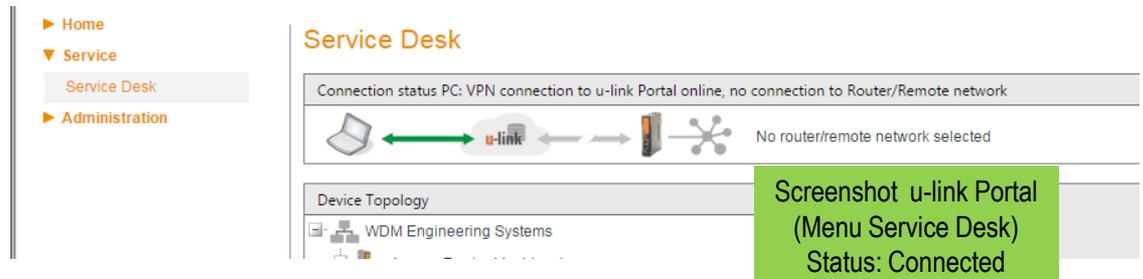
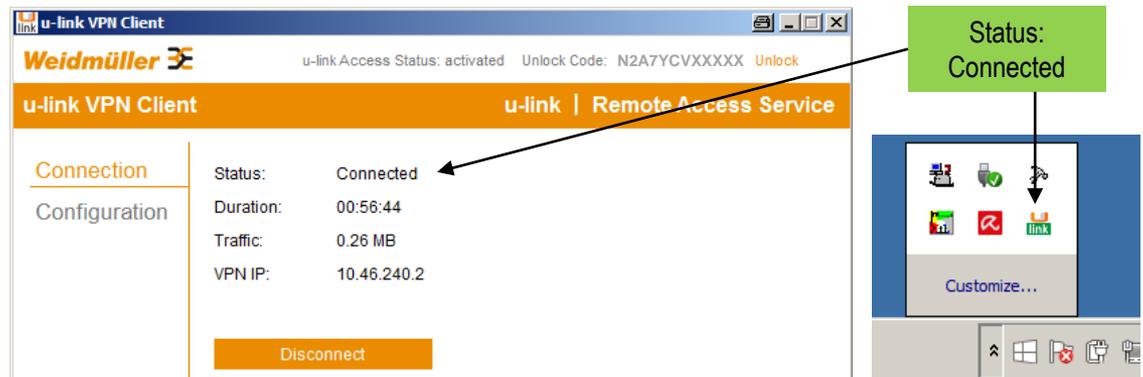
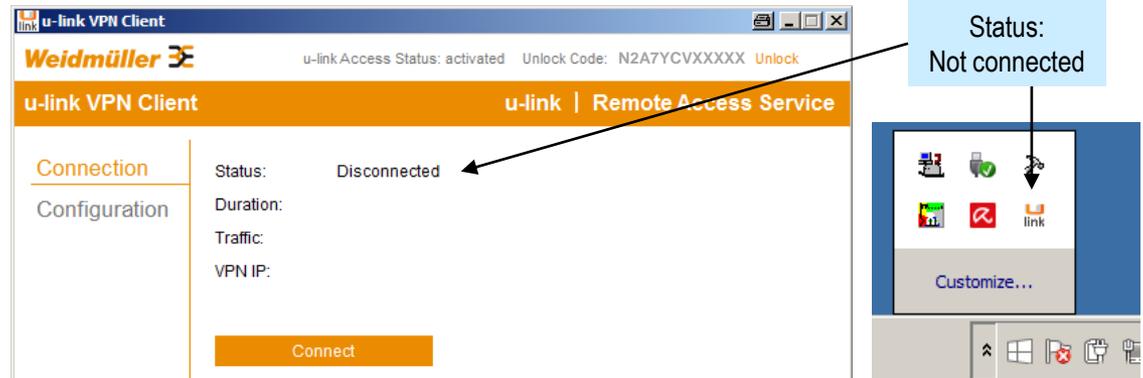
Note:
If the problem cannot be solved please read later described topic ‘**Failure management in case of problems to establish a VPN connection or any failure issues**’.

4.5 Preparing the Service PC

Initiate a VPN connection to the u-link VPN server for testing (Step 6)

- Condition: The u-link VPN client is unlocked (Status 'activated' and displaying an activation code)
- Click button 'Connect'.
 - The VPN client is starting the connection to the u-link VPN server.
 - When successfully connected the status and some additional information will be displayed in the program window.
 - The u-link icon in the task bar is displaying a connected status.

- Open a browser and logon to the u-link Web portal with user name and password of the user having this activation code.
 - In menu 'Service Desk' the PC's connection to the u-link VPN server will be signaled by a green colored double arrow.
 - Now you are connected to the u-link VPN server but at this time you still do not have any pass-through connection to a Router/Remote network. This has to be configured in the next steps.
- Click button 'Disconnect'
 - The green colored connection status in menu 'Service Desk' will disappear.



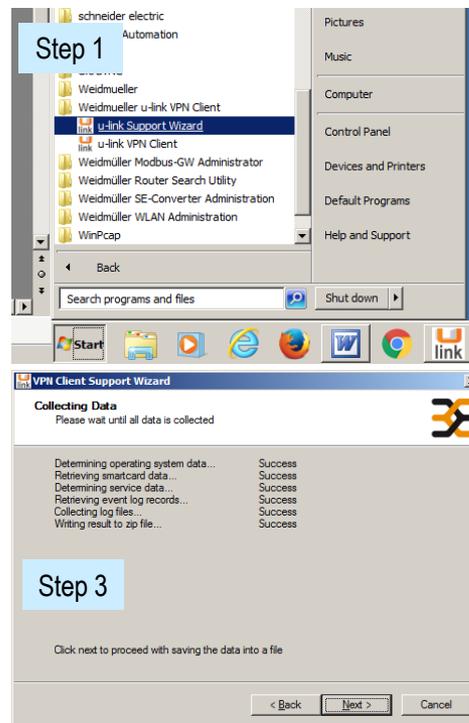
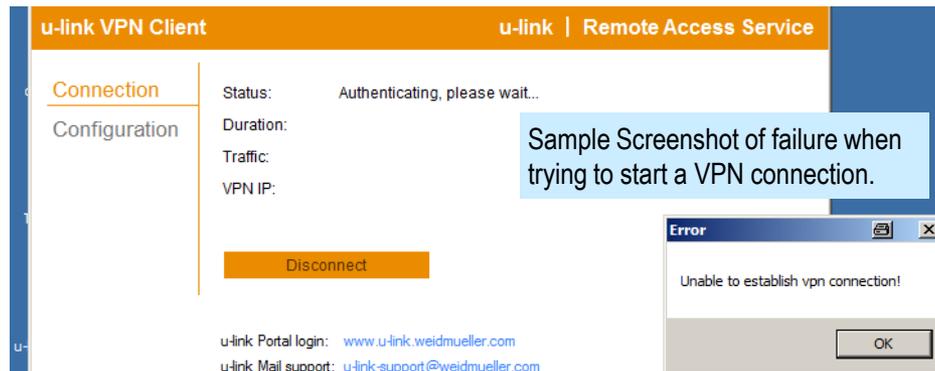
Preparing of the Service PC now is finished !
 Next the physical Router (which later is located in the remote network) has to be configured.

4.5 Preparing the Service PC

Failure management in case of problems to establish a VPN connection or any failure issues

- ▶ To evaluate the reason of a problem regarding the 'u-link VPN client' the tool 'u-link Support Wizard' can be used to gather detailed logging information about the failed process which is saved in a zip-file. Please send this file to the u-link Support department to analyze the problem.

- ▶ Start the "u-link Support Wizard"
 - ▶ Run the steps based on the displayed instructions.
 - ▶ Save the zip-file containing the gathered logging data to a directory.
- ▶ Send the zip-file to mail address u-link-support@weidmueller.com.
 - ▶ The u-link support department then will analyze the issue and contact you to solve the problem.



4.6 Configuration of the Router

4.6 Configuration of the Router

Download of latest Router firmware (Step 1)

- Only the Router models IE-SR-2GT-LAN and IE-SR-2GT-UMTS/3G (which support VPN functions) can be used for u-link.
 - If you would like to use an already running Router with u-link then you need a firmware version 3.0.2 or higher.
- Logon to the u-link Web portal using your user name and password.
 - Goto menu 'News & Downloads'.
 - Download the provided firmware from third section 'News and Downloads from global u-link administration'.

Unzip the downloaded firmware (Step 2)

- The ZIP file is containing the binary file (firmware) and a pdf-file (Change log).

Weidmüller  u-link | Remote Access Service

Navigation: Home > News & Downloads Active license: Entry Version ⓘ Language: English ▼ Logged in as: Heinz Hartmann Logout

▼ Home

- News & Downloads
- User Profile
- ▶ Service
- ▶ Administration

News & Downloads

Your profile Show/Change

Company:	WDM Engineering Systems
Family Name:	Hartmann
Name:	Heinz
Logged in as:	hartmann@wdm-engineering.de
Last Login Date:	6/16/2016 10:21:30 AM

News from your administrator Add news

News and Downloads from the u-link global administration team (Weidmüller)

Attention: Firmware-Update V 3.0.2 Build 72728 for Router available! - Download via below link.

Downloads:

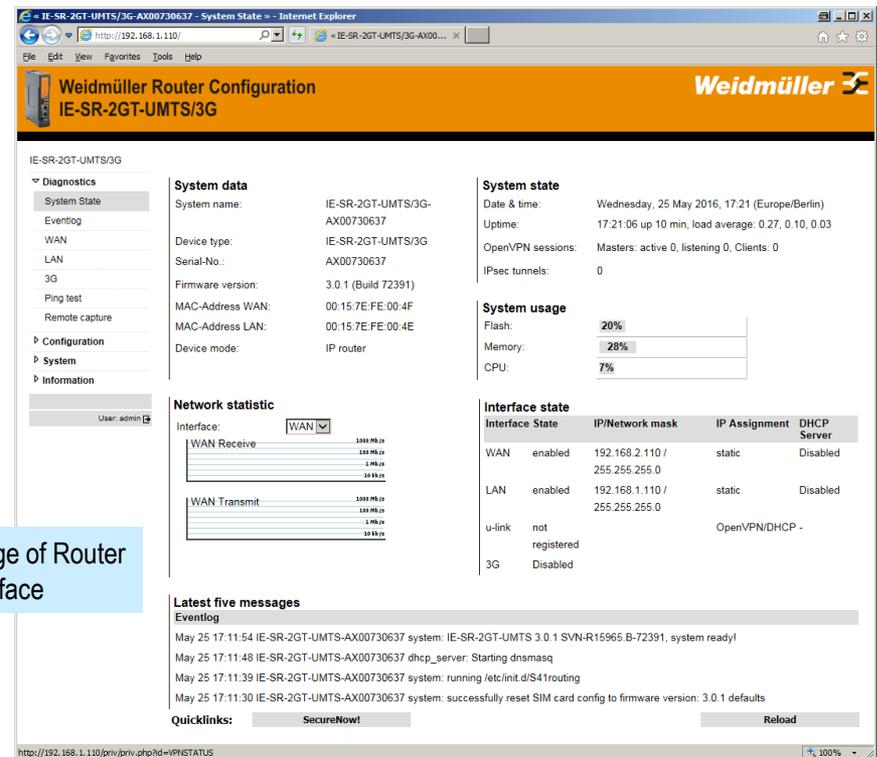
- u-link Quick Installation Guide (V 1.0): [Download](#)
- u-link VPN-Client für Windows PCs (V1.1.391): [Download](#)
[Changes to previous version V1.1.388:](#)
 * Providing Hyperlinks for direct accessing the u-link login page and to send a mail to the u-link Support.
 * Providing additional help information when assigning the u-link VPN client software to a u-link user account (Registration process).
- Firmware Router V3.0.2 Build 72728 (released for u-link): [Download](#)** (Version updated May 23, 2016)
[Changes to previous version 3.0.1 Build 72391:](#)
 * Added support for u-link Internet connection via Proxy Server.
 * Improved diagnostic management (Status messages) for u-link registration process.
 Update recommended! An existing configuration can be still used (Reset to factory default settings not required).

Support:

4.6 Configuration of the Router

Connecting to the Router and open the Web interface (Step 3)

- We assume that the Routers configuration is set to factory default values (LAN IP: 192.168.1.110, WAN IP: 192.168.2.110).
- Connect the PC to the Router LAN or WAN port (Here we use the LAN port).
- Configure the PCs Ethernet interface to the same IP network range as the Router (eg. 192.168.1.99).
- Open a browser and enter IP address 192.168.1.110 to open the Router Web interface.
- Enter user name **admin** and password **Detmold**.
 - The home page (System state) will be displayed.



Home page of Router Web interface

4.6 Configuration of the Router

Updating the Router firmware to a u-link enabled version (Step 4)

- Note: If you update an individually configured Router with an older firmware version the stored configuration will not be changed as long as if you not enable checkbox “Reset to factory defaults”.
- Goto menu System → Software Update.
- Click button browse and select the firmware file (eg. IE-SR-2GT-LAN_FN_3G_V3.0.2_Build_72728.bin).
- Click button ‘Start Update’.
- Wait around 2 minutes (until the PWR LED is no longer blinking).
- Open the browser window again using the same IP address.
- In section ‘System data’ of menu ‘System state’ the new current firmware version is displayed.

Weidmüller Router Configuration
IE-SR-2GT-UMTS/3G

System

Software update

Installed firmware versions: ⓘ

Running image: 3.0.1 B-72391
Fallback image: 3.0.1 B-72386

Online available firmware:
Update by upload or from server:

- Specify update from firmware server ⓘ
- ▾ Select file for browser upload ⓘ

F:\Firmware_Router\IE-S

Set the factory defaults of the new firmware. ⓘ

Firmware version

Weidmüller Router Configuration
IE-SR-2GT-UMTS/3G

System state

System data

System name:	IE-SR-2GT-UMTS/3G-AX00730637
Device type:	IE-SR-2GT-UMTS/3G
Serial-No.:	AX00730637
Firmware version:	3.0.2 (Build 72728)
MAC-Address WAN:	00:15:7E:FE:00:4F
MAC-Address LAN:	00:15:7E:FE:00:4E
Device mode:	IP router

System state

Date & time: Wednesday, 25 May 2016, 17:25 (Europe/Berlin)
Uptime: 17:25:58 up 1 min, load average: 0.23, 0.12, 0.04
OpenVPN sessions: Masters: active 0, listening 0, Clients: 0
IPsec tunnels: 0

System usage

Flash:	20%
Memory:	27%
CPU:	5%

Interface state

Interface State	IP/Network mask	IP Assignment	DHCP Server
WAN			

4.6 Configuration of the Router

Configuration of basic IP parameters (Step 5a)

Internet access via WAN port and using DHCP

- Now the IP parameters of the Router's Ethernet interfaces have to be configured. The LAN port has to be set according to the IP range of the remote network. The WAN port will be used for Internet access.
- Based on our example we will configure the IP parameters as shown in the screenshot. If you have a 3G Router (IE-SR-2GT-UMTS/3G) and inserted a SIM card (any provider with Internet flat) you alternatively can configure the Internet access via the 3G connection.

- Goto menu Configuration → IP Configuration.
- Set WAN port to DHCP (getting IP parameters from a DHCP server).
- Set LAN IP to 192.168.1.254.
- Enable checkbox 'NAT Masquerading' at LAN port.
- Click button 'Apply Settings'.
- Note: Now the Router will apply the settings. As a result you will lose the browser connection to the Router due to changed LAN IP. Wait some seconds and re-open the Web interface using the new IP address 192.168.1.254.

Currently connected to PC via Router LAN port (IP: 192.168.1.110)

Screenshot after parameter configuration (but still not applied).

Important note
 "NAT Masquerading" has to be activated if devices – connected to Router LAN port - does **not** have configured the Router LAN IP as gateway.

Effect of NAT masquerading
 If the checkbox is enabled then the Router is replacing the source IP of an incoming IP packet (via u-link VPN tunnel) with its own LAN IP when the packet is outgoing out of the LAN port to a target device. Internally the Router stores the requesting source IP to be able to forward a reply packet back to the original sender. When the LAN device receives the request packet it believes that the request comes from a member of its own network (Router's LAN IP) and is able to reply without having configured a gateway.

Recommendation: Activate generally "NAT masquerading" at LAN port when using the Router with u-link.

Internet access via WAN port (IP parameters via DHCP)

Router receives Default gateway from DHCP server

4.6 Configuration of the Router

Configuration of basic IP parameters (Step 5b)

Internet access via WAN port and using a static IP address

- Goto menu Configuration → IP Configuration.
- Configure the WAN IP settings according to the network to which the WAN port will be connected.
 - Enter IP address and subnet mask.
 - Enable WAN checkbox 'NAT Masquerading'.
 - Enter the Default gateway (IP address of a Router located in the WAN side network which is providing the Internet access).
- In this example the LAN IP settings are configured with same value as used in previous slide.
 - Set LAN IP to 192.168.1.254 and subnet mask to 255.255.255.0.
 - Enable LAN checkbox 'NAT Masquerading'.
- Click button 'Apply Settings'.
 - Now the Router will apply the settings. As result you will lose the browser connection to the Router due to changed LAN IP. Wait some seconds and re-open the Web interface using the new IP address 192.168.1.254.

Currently connected to PC via Router LAN port (IP: 192.168.1.110)

Screenshot after parameter configuration (but still not applied).

Internet access via WAN port configured with static IP parameters.

IP parameters of LAN port same as configured on previous slide.

The Default gateway to get Internet access explicitly has to be configured.

The screenshot shows the 'IP configuration' page in a web browser. The 'Operational mode' is set to 'IP router'. Under 'WAN', the 'IP assignment' is set to 'static', with an IP address of 192.168.99.205 and a subnet mask of 255.255.255.0. The 'NAT (Masquerading)' checkbox is checked. Under 'LAN', the 'IP assignment' is also set to 'static', with an IP address of 192.168.1.254 and a subnet mask of 255.255.255.0. The 'NAT (Masquerading)' checkbox is checked. Under '3G', the 'Dialmode' is set to 'disabled'. The 'Default gateway' section has an IP address of 192.168.99.1. At the bottom, there are buttons for 'Apply settings' and 'Reset changes'.

4.6 Configuration of the Router

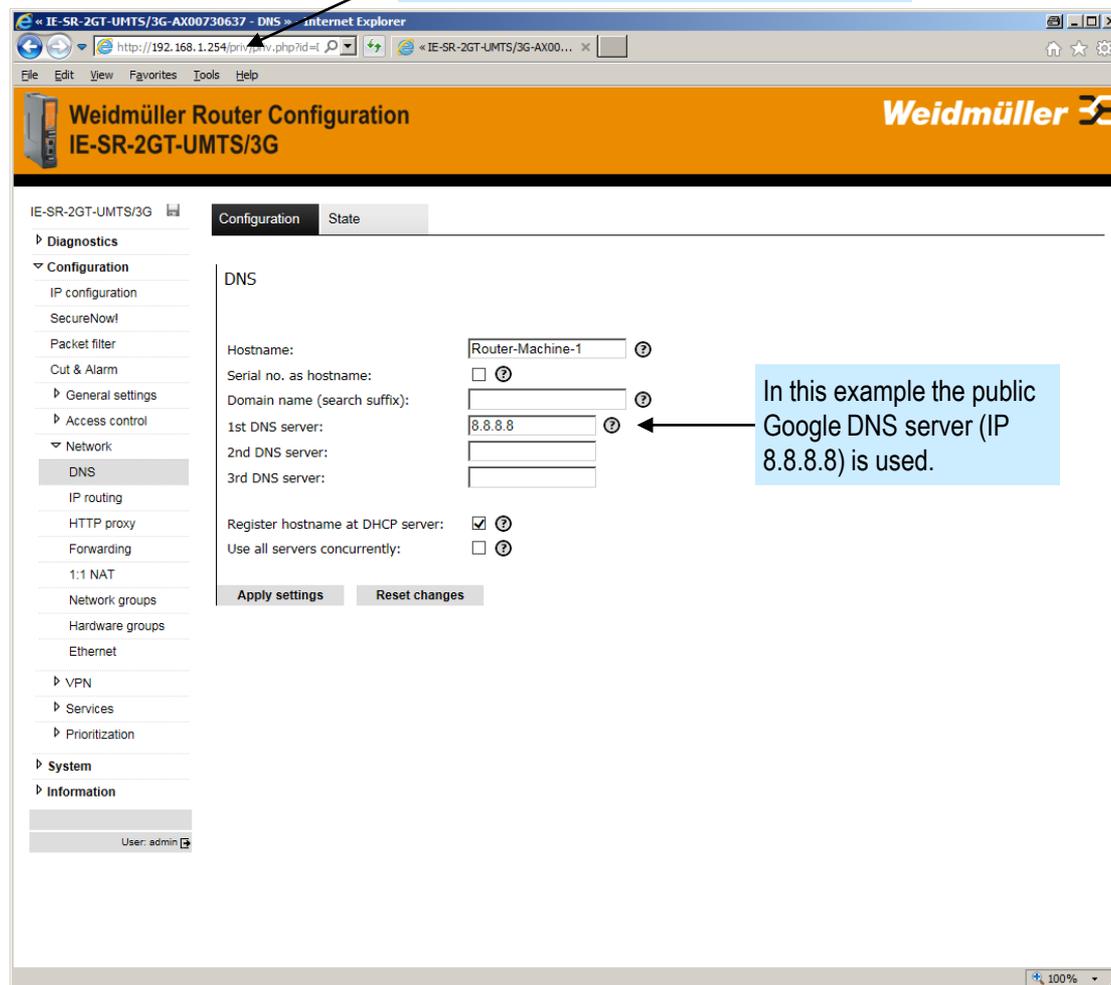
Configuration DNS server (Step 5c)

Only necessary if WAN port is using a static IP address for Internet access.

- Note: To resolve DNS names (like www.google.com) the Router must have access to a DNS Server. If the WAN port is configured using DHCP then the IP address of the DNS server automatically will be provided by the DHCP server.
- If the IP address of the WAN port is configured with a static IP then additionally a DNS server has to be set manually.
- Goto menu Configuration → Network → DNS.
- Enter your own Hostname (is optional).
- Enter at least 1 IP address of a DNS server (starting with parameter '1st DNS server').
- Click button 'Apply Settings'.

Skip this step if the WAN port of the Router is configured to DHCP.

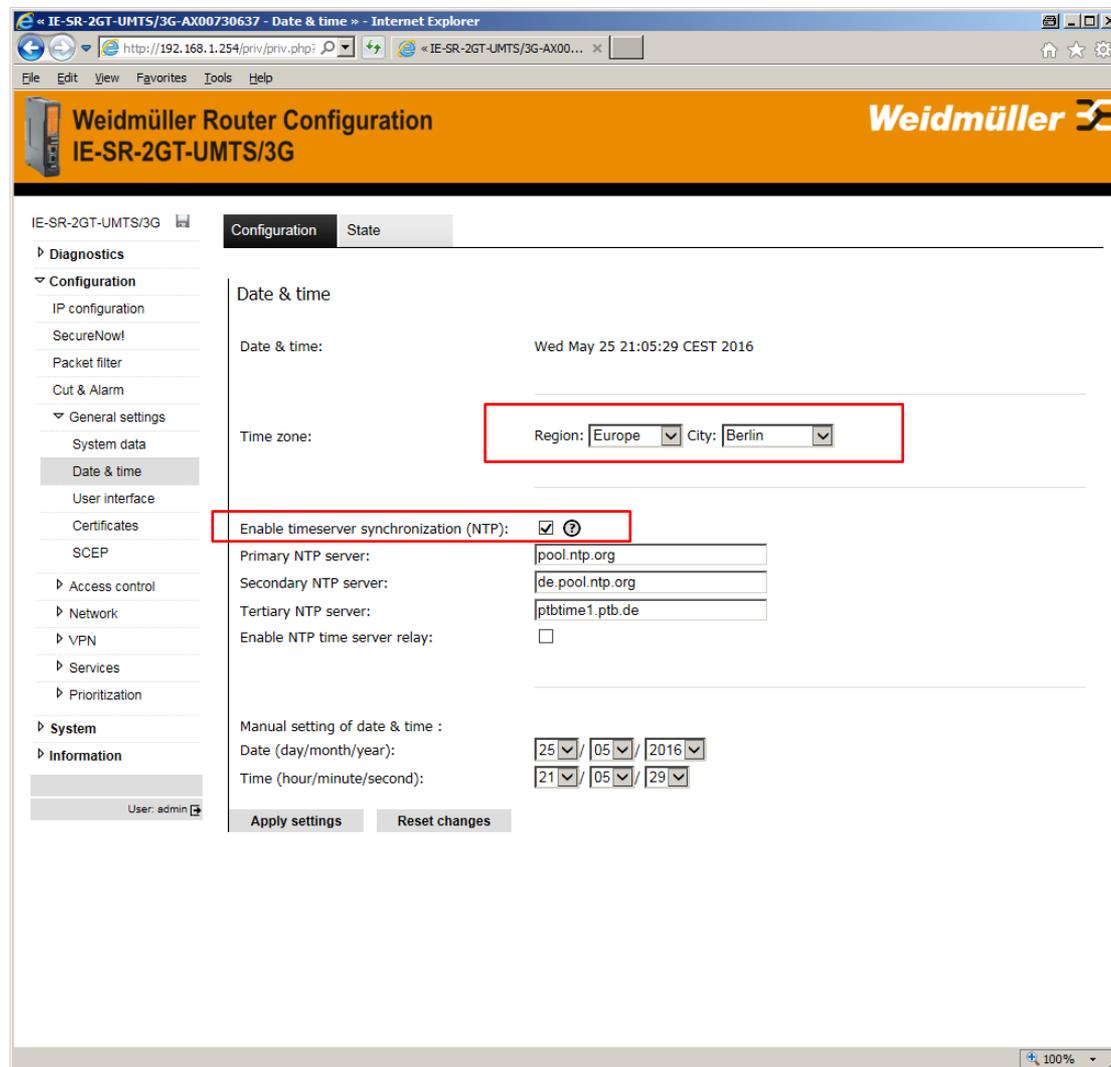
Router now is connected via IP 192.168.1.254



4.6 Configuration of the Router

Configuration of date / time parameters (Step 6)

- Note: The VPN connection to the u-link VPN server will use a certificate for encryption. Generally the validity of a certificate depends on date/time stamps (valid from/valid until). For this reason the Routers date and time settings should be set to a current value. Due to the fact that for an u-link access the Router always must have an Internet connection it is recommended to enable the time server synchronization (NTP) that the Router automatically will update date and time. If no time synchronization is possible then date and time values have to be set manually.
- Goto menu Configuration → General settings → Date & Time.
- Select your time zone.
- Enable checkbox 'Time Server Synchronization'.
- Enter your preferred NTP servers or use the defaults ones.
- Click button 'Apply Settings'.



The screenshot displays the 'Date & time' configuration page for a Weidmüller router. The interface includes a navigation menu on the left with options like 'Diagnostics', 'Configuration', 'General settings', 'System data', 'User interface', 'Certificates', 'SCEP', 'Access control', 'Network', 'VPN', 'Services', 'Prioritization', 'System', and 'Information'. The 'Date & time' section is active, showing the current date and time as 'Wed May 25 21:05:29 CEST 2016'. The 'Time zone' is set to 'Europe' and 'Berlin'. The 'Enable timeserver synchronization (NTP)' checkbox is checked. The NTP servers are set to 'pool.ntp.org', 'de.pool.ntp.org', and 'ptbtime1.ptb.de'. The 'Manual setting of date & time' section shows the date as '25/05/2016' and the time as '21:05:29'. The 'Apply settings' and 'Reset changes' buttons are visible at the bottom.

4.6 Configuration of the Router

Configuration of HTTP proxy parameters if the Internet connection is passing a Proxy server, requiring authentication by user name and password (Step 7)

- See section 'Preparing the Service PC (u-link VPN client)' for additional information in terms of proxy settings. Be aware that the Router proxy parameters depend on the network security settings of the Routers location.
- Goto menu Configuration → Network → HTTP Proxy.
- Enter the Proxy Server specific parameters (provided by IT department of remote network which the Router is using for Internet access).
- Click button 'Apply Settings'.

Skip this step if the Routers Internet access is not passing a Proxy server.

Weidmüller Router Configuration
IE-SR-2GT-UMTS/3G

Configuration

IE-SR-2GT-UMTS/3G

- Diagnostics
- ▼ Configuration
 - IP configuration
 - SecureNow!
 - Packet filter
 - Cut & Alarm
 - General settings
 - Access control
 - ▼ Network
 - DNS
 - IP routing
 - HTTP proxy
 - Forwarding

HTTP proxy

Use a system wide HTTP proxy:

HTTP proxy IP address or hostname:

HTTP proxy TCP port:

HTTP proxy authentication method: **none**

HTTP proxy username:

HTTP proxy password:

Apply settings Reset changes

Factory default settings (No proxy parameters configured)

Weidmüller Router Configuration
IE-SR-2GT-UMTS/3G

Configuration

IE-SR-2GT-UMTS/3G

- Diagnostics
- ▼ Configuration
 - IP configuration
 - SecureNow!
 - Packet filter
 - Cut & Alarm
 - General settings
 - Access control
 - ▼ Network
 - DNS
 - IP routing
 - HTTP proxy
 - Forwarding

HTTP proxy

Use a system wide HTTP proxy:

HTTP proxy IP address or hostname: **10.1.33.44**

HTTP proxy TCP port: **8080**

HTTP proxy authentication method: **NTLM**

HTTP proxy username: **user_name**

HTTP proxy password: **••••••**

Apply settings Reset changes

Example of configured proxy parameters.

Note:
For an u-link connection the configured proxy parameters only are used if in the u-link configuration menu the checkbox "Use a system wide HTTP proxy" is activated.

4.6 Configuration of the Router

Establishing a network connection via WAN port (Step 8) / In this example we use DHCP for IP settings of WAN port.

- Connect the WAN port to a network which is providing DHCP and allowing Internet access.
 - Wait around 30 seconds that the Router is getting IP data from DHCP server.
- Goto menu Diagnostic → System state (Home page).
- Check section 'Interface state' if WAN port has received an IP address.
- Check menu 'System state' if date and time values have current values.

Check Internet access (Step 9)

- Goto menu Diagnostic → Ping test.
- Enter a DNS name (eg. www.google.com) or an IP address (eg. 8.8.8.8) and click button 'Apply Settings'.
 - When having an Internet connection the Router will displaying the result.

Router now connected via IP 192.168.1.254

System data

System name: IE-SR-2GT-UMTS/3G-AX00730637
 Device type: IE-SR-2GT-UMTS/3G
 Serial-No.: AX00730637
 Firmware version: 3.0.2 (Build 72728)
 MAC-Address WAN: 00:15:7E:FE:00:4F
 MAC-Address LAN: 00:15:7E:FE:00:4E
 Device mode: IP router

System state

Date & time: Monday, 20 Jun 2016, 17:25 (Europe/Berlin)
 Uptime: 17:25:17 up 3:52, load average: 0.22, 0.11, 0.04
 OpenVPN sessions: Masters: active 0, listening 0, Clients: 0
 IPsec tunnels: 0

System usage

Flash: 20%
 Memory: 36%
 CPU: 14%

Interface state

Interface	State	IP/Network mask	IP Assignment	DHCP Server
WAN	enabled	192.168.99.20 / 255.255.255.0	DHCP	Disabled
LAN	enabled	192.168.1.254 / 255.255.255.0	static	Disabled
u-link	not registered		OpenVPN/DHCP	-
3G	Disabled			

Network statistic

Interface: WAN

WAN Receive: 1000 Mb/s, 100 Mb/s, 1 Mb/s, 10 kb/s
 WAN Transmit: 1000 Mb/s, 100 Mb/s, 1 Mb/s, 10 kb/s

State

Diagnosics

- System State
- Eventlog
- WAN
- LAN
- 3G
- Ping test**
- Remote capture

Ping test

IP address or hostname:

Number of ping messages:

Apply settings Reset changes

Screenshot of menu "Ping test"

Result

PING www.google.com (216.58.213.36): 56 data bytes
 64 bytes from 216.58.213.36: seq=0 ttl=56 time=54.673 ms

--- www.google.com ping statistics ---
 1 packets transmitted, 1 packets received, 0% packet loss
 round-trip min/avg/max = 54.673/54.673/54.673 ms

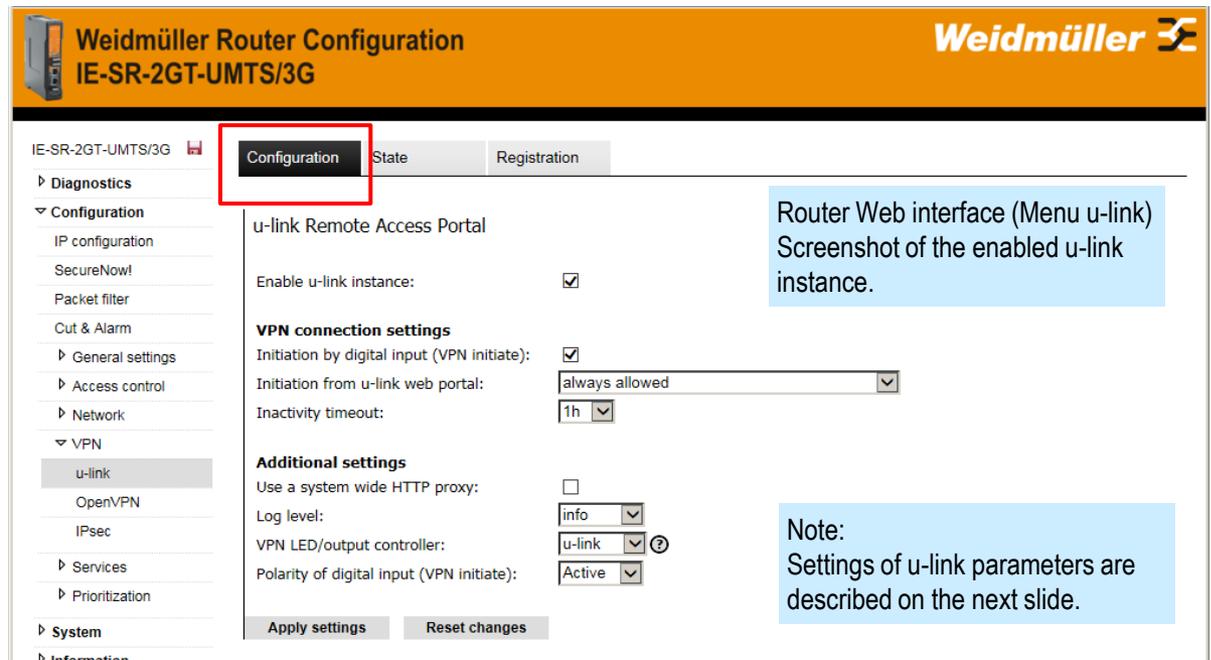
Continue...

Screenshot of a successful "Ping" test

4.6 Configuration of the Router

Activate the Router for u-link (Step 10)

- Goto menu Configuration → VPN → u-link (Tab 'Configuration').
- Enable checkbox 'Enable u-link instance'.
- Use default values of section 'VPN connection settings'.
- Enable checkbox 'Use a system wide HTTP Proxy Server'.
 - Note: If the checkbox will be enabled the Proxy server settings must be configured as described previously.
- Use default settings of the other parameters.
- Click button 'Apply settings'.



Weidmüller Router Configuration
IE-SR-2GT-UMTS/3G

IE-SR-2GT-UMTS/3G **Configuration** State Registration

u-link Remote Access Portal

Enable u-link instance:

VPN connection settings

Initiation by digital input (VPN initiate):

Initiation from u-link web portal:

Inactivity timeout:

Additional settings

Use a system wide HTTP proxy:

Log level:

VPN LED/output controller:

Polarity of digital input (VPN initiate):

Apply settings Reset changes

Router Web interface (Menu u-link)
Screenshot of the enabled u-link instance.

Note:
Settings of u-link parameters are described on the next slide.

4.6 Configuration of the Router

Explanation of u-link configuration parameters

Inactivity timeout (Dropdown box)

The Router automatically will shutdown a VPN connection after the selected time if no traffic was recognized during this time.

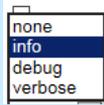


HTTP Proxy (Checkbox)

Enable if the Internet access is passing a Proxy server (Configure Proxy settings in menu Configuration → Network → HTTP Proxy)

Log Level (Dropdown box)

Selection of logging level (Messages shown in the Event Log).



Initiation by digital input (Checkbox)

If enabled the 24VDC digital input can be used for activating a VPN tunnel to the u-link VPN server.

VPN LED / Output controller

If set to “u-link” an active VPN tunnel will be signaled at front LED “VPN” and the digital output “VPN-active”.

“Initiation from u-link web portal” (Dropdown box)

Controls if the u-link VPN tunnel can be activated/deactivated remotely from the u-link Web portal via the WWW (world wide heartbeat) function.

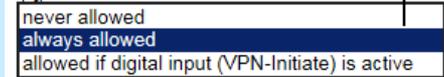
Selections:

Never allowed: Remote activation/deactivation of the VPN tunnel from u-link Web portal never is allowed.

Always allowed: Remote activation/deactivation of the VPN tunnel from u-link Web portal always is allowed.

Allowed if digital input (VPN-Initiate) is active: Means that remote activation/deactivation from u-link Web portal only is allowed when the digital input “VPN-Initiate” is set to 24VDC.

Explanation: If a machine operator at Router location has activated the 24VDC digital input “VPN-Initiate” (eg. by key switch) then the VPN tunnel will be started providing the remote access. But if the service guy will not immediately start the service (means no traffic on the VPN tunnel) then by default the Router automatically de-activates the VPN tunnel after 1 hour of no traffic. But to due to the fact that the key switch still is on (means the access permission is still granted), the remote Service user may re-activate the VPN tunnel remotely. If the key switch again is set to off (24VDC removed from digital input) then the VPN tunnel will be de-activated immediately and the remote Service user no longer is allowed to activate the VPN tunnel remotely.



4.6 Configuration of the Router

Register (Assign) the Router to the defined Router object configured in the u-link Web portal (Step 11)

- For the registration process we need the unique activation code of the Router object. The activation code can be found in the properties of the created Router object (u-link Portal: Menu 'Device Management').
- Select Tab 'Registration'.
- Enter the activation code of the defined Router object in field 'Registration code'.
- Click button 'Register'.
 - Now the Router is initiating the registration process to the u-link Portal server. This process typically takes time of around 30 seconds.
- Please click button "Reload" repeatedly to update the current registration status.

Device Management

Screenshot u-link Portal (Menu Device Management)

Device configuration		Access rights (groups)	New
Properties			
Name	Access Router Machine 1		
Icon			
Device Type	Router/Firewall		
Identification			
Location	Factory Detmold		
Serial Number			
IP	192.168.1.254 (LAN port)		
Activation Code	KP BUT7ANV6TM		
Status-WWH	Inactive		

Router Web interface (Menu u-link / Tab Registration)

Status: Not registered (Registration code already entered)

As result the Router should have the status "registered".

If the registration process has failed please refer to Appendix A (Registration of Router to u-link failed).

ongoing registration process

Successful registration

4.6 Configuration of the Router

Check the status of the u-link connection (Step 12)

➤ Select tab 'State'.

- After successful registration the Router is initiating the WWH communication to the u-link (Status 'Online').

Notes about WWH

The WWH function (World Wide Heartbeat) is an outgoing SSL connection (TCP/443, like HTTPS) to the u-link WWH server and is independent from a VPN connection which will be used for remote access.

The Router sends via this peer connection periodically minutes a „Still alive“ message to the WWH server. The WWH server then signals the u-link Web server that the Router is alive. This status is displayed in the Service Desk of the u-link Web portal.

Via this connection it is possible to activate/de-activate the VPN tunnel of the Router remotely from the u-link Web portal server.

The encrypted WWH connection automatically is started when the Router is powered on, having an Internet connection and is registered to a Router object in a u-link account.

Activating the VPN tunnel via menu "State"

Additionally to the most used methods to initiate a VPN tunnel (remotely via u-link Portal or by 24 VDC digital input) the VPN connection can be activated / de-activated via button 'Connect'.

Now the Router is ready for initiating a remote access session!

Router Web interface (Menu u-link / tab State)
Status:
 • WWH online
 • No VPN connection to the u-link VPN server

u-link Remote Access Portal
 Status Registration u-link Portal: registered

WWH communication
 Status: ONLINE
 Last seen: Monday, 20 Jun 2016, 17:38
 Heartbeat interval: 300s

VPN connection u-link portal
 Status: VPN not connected

Connect

Activate / De-activate a VPN tunnel via button 'Connect / Disconnect'.

Service Desk
 Connection status PC: No VPN connection to u-link Portal

Device Topology
 WDM Engineering Systems
 Access Router Machine 1
 Profinet PLC
 u-remote coupler PN

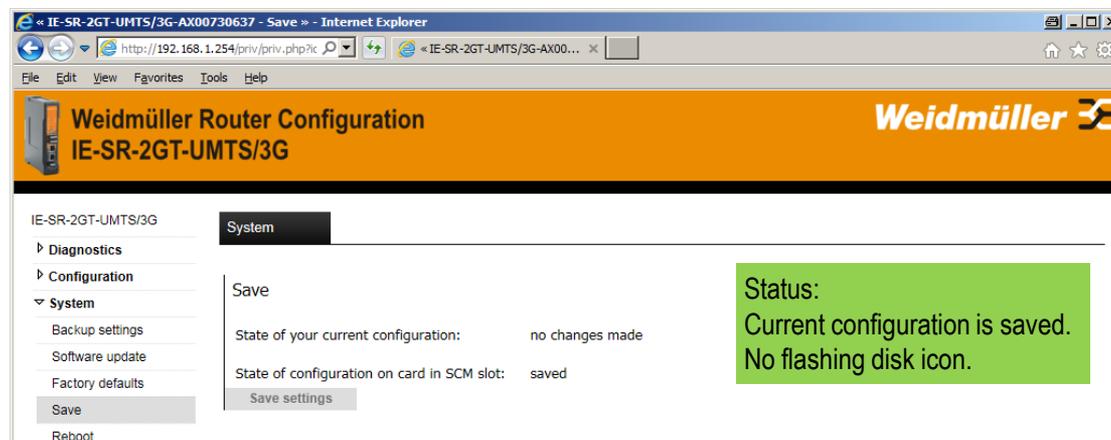
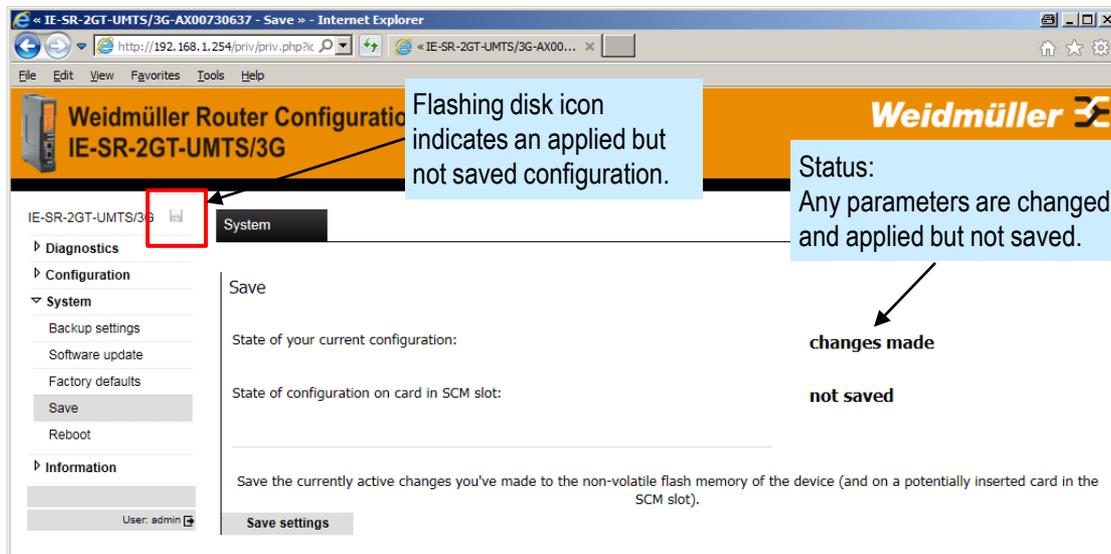
This icon is representing the WWH online status of the Router.

u-link Web portal Menu 'Service Desk'

4.6 Configuration of the Router

Save the Router configuration (Step 13)

- Goto menu System → Save.
 - If you have changed and applied any settings then in each menu a flashing disk icon is displayed, indicating that the applied settings not yet are saved to the flash memory. By clicking on the disk icon the menu 'Save' directly will be opened.
- Click button 'Save settings' to store the configuration in the non-volatile memory.



Chapter 5: Initiating an access to remote LAN devices

Conditions

Device configuration in u-link Web portal has been done.

Software 'u-link VPN client' is installed on Service PC and unlocked (Registered).

Router has been configured and unlocked (Registered).

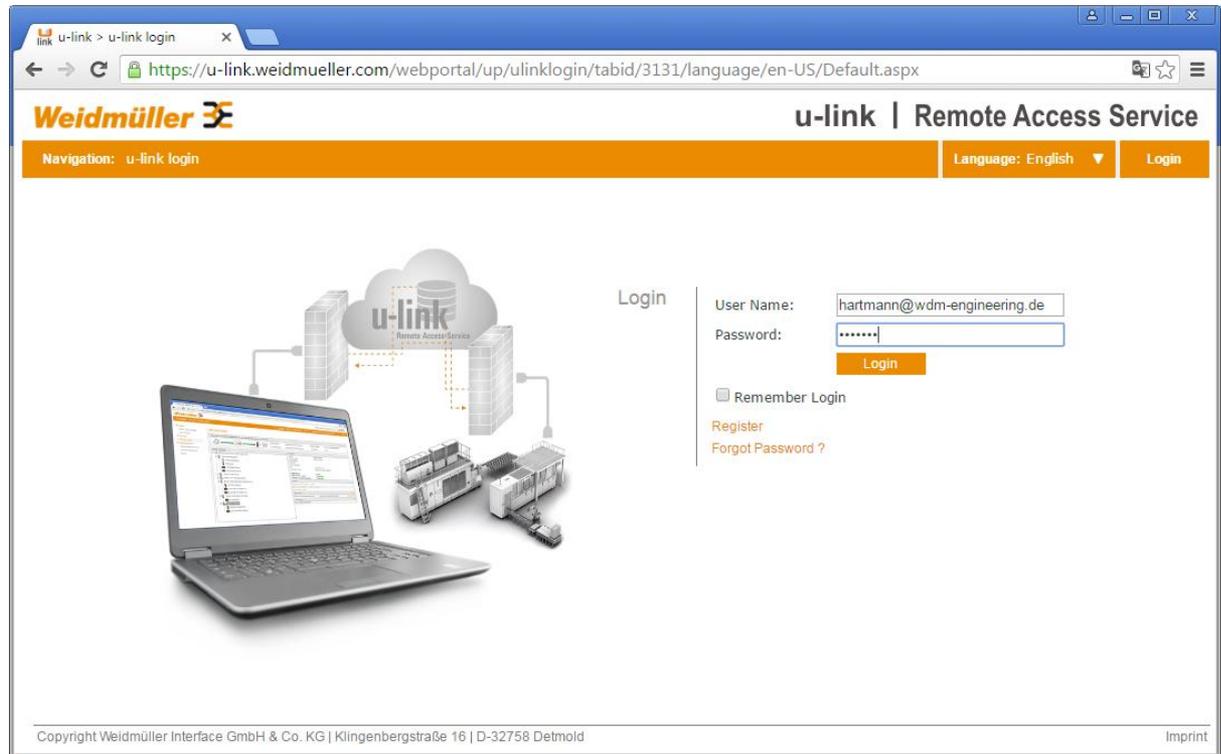
Note:

For demonstrating the access to remote LAN devices we will use the Administrator account.

5.1 Starting a remote access session

Logon to the u-link Web portal using your administrator account (Step 1)

- Enter user name and password of the u-link administrator.
- Click button 'Login'.



5.1 Starting a remote access session

Goto menu Service Desk (Step 2)

- In section 'Device Topology' the same defined objects are displayed which previously have been created in menu 'Device Management'.
- In section 'Connection status PC' the current VPN connection status (of this PC) to the u-link VPN server is displayed.
- In the 'Device Topology' the current connection status of a Router is signaled by following different icon symbols:



- The Router has no connection to u-link.
- Device not configured to use u-link or
 - Device is powered off or
 - Having no Internet access.



The Router has an online connection to u-link WWH server.



The Router has an active VPN connection to the u-link VPN server.



The Service PC has a pass-through VPN connection via the Router to its LAN network.

Service Desk

Navigation: Service > Service Desk | Active license: Entry Version | Language: English | Logged in as: Heinz Hartmann

Connection status PC (u-link VPN client):

- Not connected to u-link

Connection status PC: No VPN connection to u-link Portal

VPN connection Service-PC offline
No Router/Remote network selectable

Device Topology

- WDM Engineering Systems
 - Access Router Machine 1
 - Profinet PLC
 - u-remote coupler PN

Status Router:

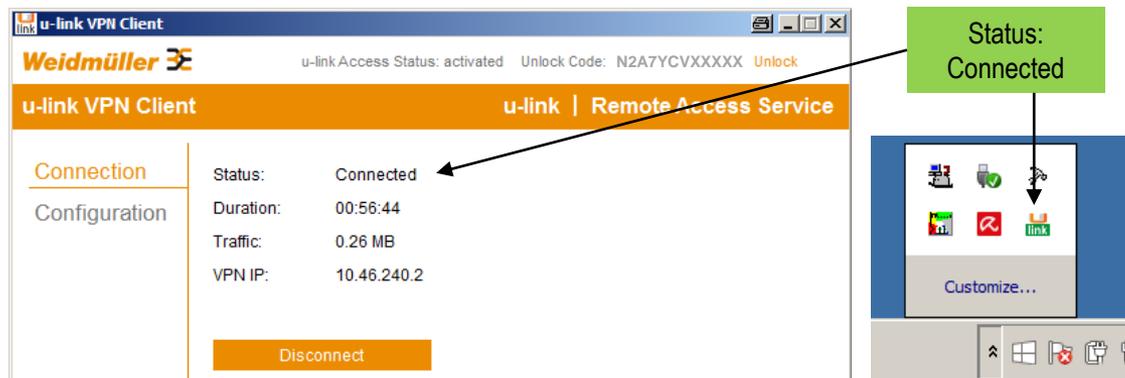
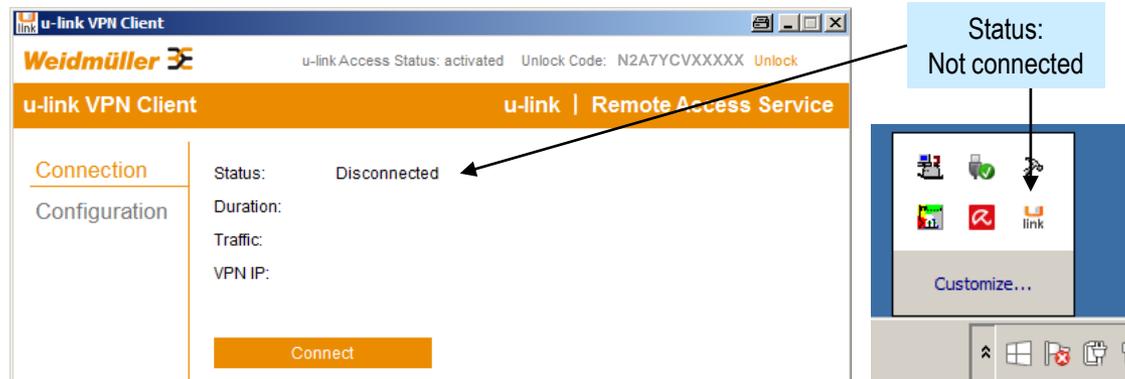
- Connected to u-link via WWH communication
- No VPN connection

For initiating a remote access session the Router must have at least one of these both states.

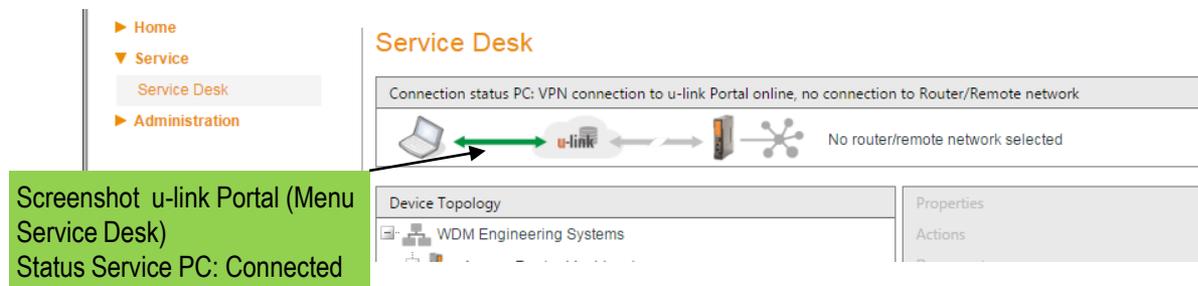
5.1 Starting a remote access session

Connect the Service PC to u-link VPN server (Step 3)

- Start program 'u-link VPN client'.
- Click button 'Connect'.
 - When successfully connected the status and some additional information will be displayed in the program window.
 - The u-link icon in the task bar is displaying a connected status.



- Go back to menu 'Service Desk' of the u-link Web portal.
- The PCs connection to the u-link VPN server will be signalized by a green colored double arrow.
 - Now you are connected to the u-link VPN server but at this time you still do not have a pass-through connection to a Router/Remote network.



5.1 Starting a remote access session

Start the Router VPN connection remotely via Portal (Step 4)

- The VPN connection of the Router to the u-link VPN server can be activated via WWH communication. The permission to activate the Router VPN tunnel remote via u-link Portal can be set or prohibited in menu 'u-link' of the Routers Web interface (default allowed).

- Select the Router by clicking on the Router object (Icon or name) to display the object parameters (Properties, Actions, ...)
- Start the VPN connection by clicking button 'Connect VPN Router ↔ u-link' (Section Actions).
 - Now a 'VPN activate command' will be sent to the Router via WWH connection.
 - Wait around 30...40 seconds then the new status 'Connected' will be displayed.
- Finally both the Service PC and the Router are connected to the u-link VPN server but no pass-through connection via the u-link VPN server is established until now.

Service Desk

Connection status PC: VPN connection to u-link Portal online, no connection to Router/Remote network

No router/remote network selected

Device Topology

- WDM Engineering Systems
 - Access Router Machine 1
 - Profinet PLC
 - u-remote coupler PN

Properties

Name	Access Router Machine 1
Device Type	Router/Firewall
Identification	
Location	Factory Detmold
Serial Number	
IP	192.168.1.254 (LAN port)
Activation Code	KPBUT7ANV6TM
Status-Whh	Active
Status-VPN Router ↔ u-link	Disconnected
Status-VPN PC ↔ u-link ↔ Router	Disconnected

Actions

- Connect VPN Router ↔ u-link
- Connect VPN PC ↔ u-link ↔ Router
- Open Router Web page

Documents Add

Status Router **before** clicking 'Connect VPN Router ↔ u-link'

- Active WWH communication to u-link
- No VPN connection

Service Desk

Connection status PC: VPN connection to u-link Portal online, no connection to Router/Remote network

No router/remote network selected

Device Topology

- WDM Engineering Systems
 - Access Router Machine 1
 - Profinet PLC
 - u-remote coupler PN

Properties

Name	Access Router Machine 1
Device Type	Router/Firewall
Identification	
Location	Factory Detmold
Serial Number	
IP	192.168.1.254 (LAN port)
Activation Code	KPBUT7ANV6TM
Status-Whh	Active
Status-VPN Router ↔ u-link	Connected
Status-VPN PC ↔ u-link ↔ Router	Disconnected

Actions

- Disconnect VPN Router ↔ u-link
- Connect VPN PC ↔ u-link ↔ Router
- Open Router Web page

Documents Add

Status Router **after** clicking 'Connect VPN Router ↔ u-link'

- Active WWH communication to u-link
- VPN connection to u-link VPN server established

5.1 Starting a remote access session

Initiate a pass-through connection between Service PC and remote Router (Step 5)

- Click button 'Connect VPN PC ↔ u-link ↔ Router' to establish a pass-through connection between Service PC and the Router.
- A successful pass-through connection is displayed in section 'Connection Status PC' containing following information:
 - Connected to: Name of the selected accessible Router / remote network.
 - Accessible remote network: IP range of accessible remote network.
 - Router VPN IP: Additional VPN-IP address of the Router beside LAN/WAN IP's. Exists as long as the pass-through connection is established. Via this VPN-IP the Router's Web interface also is accessible.
 - Routing to remote network: Status 'active' means that the Service PC has accepted an additional setting in its routing table how to access devices at the remote network.

- ▶ Home
- ▼ Service
 - Service Desk
- ▶ Administration

Service Desk

Connection status PC: VPN connection to u-link Portal online, no connection to Router/Remote network

No router/remote network selected

Device Topology

- WDM Engineering Systems
 - Access Router Machine 1
 - Profinet PLC
 - u-remote coupler PN

Name	Access Router Machine 1
Device Type	Router/Firewall
Identification	
Location	Factory Detmold
Serial Number	
IP	192.168.1.254 (LAN port)
Activation Code	KPBUT7ANV6TM
Status-WWH	Active
Status-VPN Router ↔ u-link	Connected
Status-VPN PC ↔ u-link ↔ Router	Disconnected

Actions

- Disconnect VPN Router ↔ u-link
- Connect VPN PC ↔ u-link ↔ Router**
- Open Router Web page

Documents Add

Click button to start a pass-through connection between Service PC and Router.

- ▶ Home
- ▼ Service
 - Service Desk
- ▶ Administration

Service Desk

Connection status PC: Connected to Router/Remote network via u-link Portal Disconnect

Connected to: Access Router Machine 1 Accessible remote network: 192.168.1.0/255.255.255.0 Router VPN IP: 10.46.240.4 Routing to Remote network: active

Device Topology

- WDM Engineering Systems
 - Access Router Machine 1
 - Profinet PLC
 - u-remote coupler PN

Name	Access Router Machine 1
Device Type	Router/Firewall
Identification	
Location	Factory Detmold
Serial Number	
IP	192.168.1.254 (LAN port)
Activation Code	KPBUT7ANV6TM
Status-WWH	Active
Status-VPN Router ↔ u-link	Connected
Status-VPN PC ↔ u-link ↔ Router	Connected

Actions

- Disconnect VPN Router ↔ u-link
- Disconnect VPN PC ↔ u-link ↔ Router
- Open Router Web page

Documents Add

Changed Router icon signaling a pass-through connection to this Service PC

Established pass-through connection between Service PC and Router.

Now the remote devices (any IP address) connected to LAN port of remote Router can be accessed.

5.1 Starting a remote access session

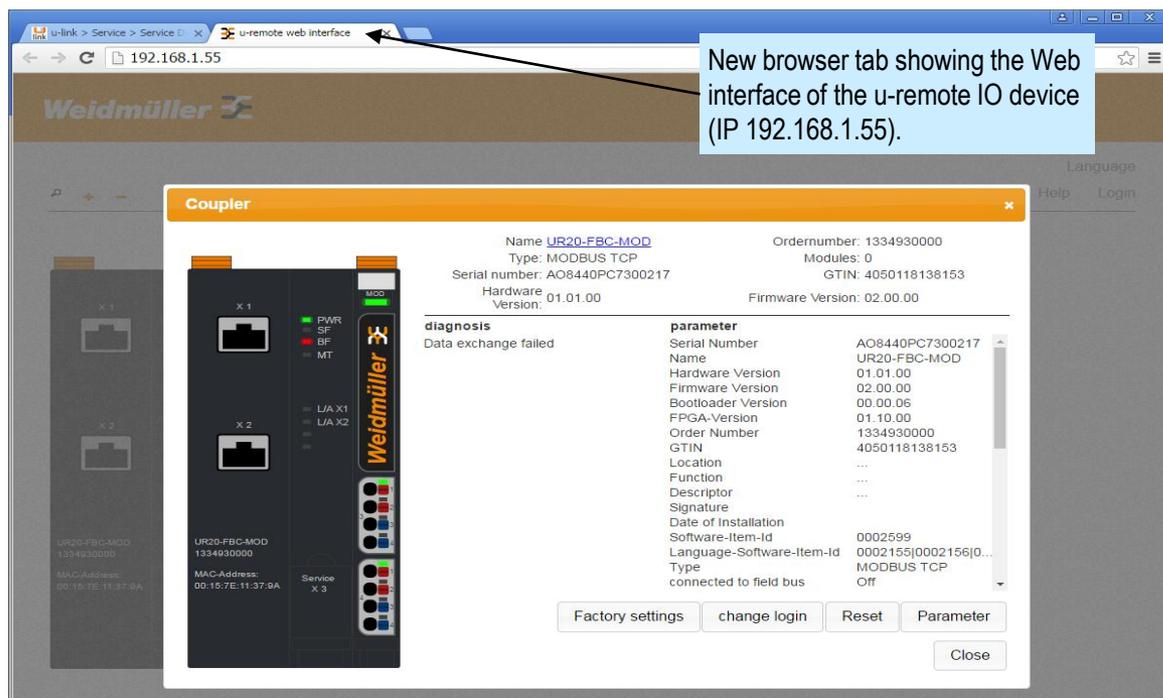
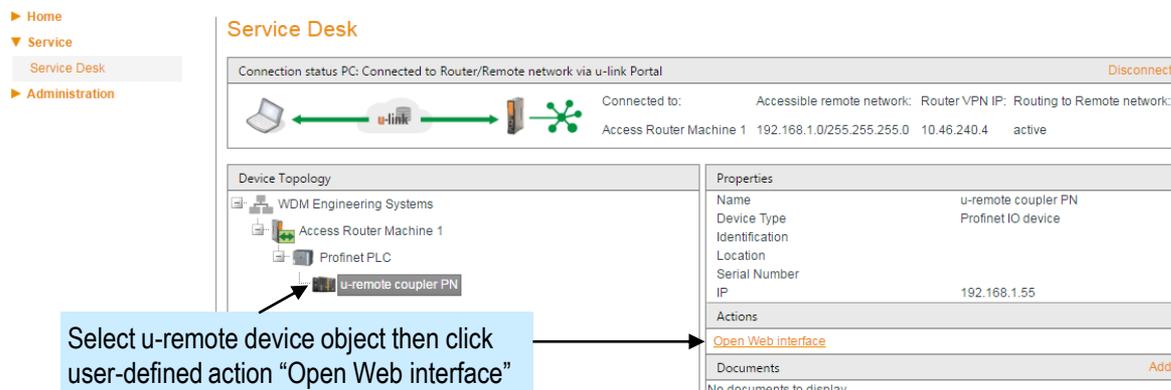
Accessing a remote LAN device (Step 6)

Example shows a Web access to an u-remote IO device.

- When having a VPN pass-through connection then generally all devices at the remote network - matching the LAN net/subnet - are accessible by the Service PC. In this example we will access the Web interface of device 'u-remote coupler PN' (is of type 'User defined end device') via IP 192.168.1.55. For the Web access we use the action "Open Web interface" defined for this object in menu 'Device Management'.
- Select (Highlight) item 'u-remote coupler PN'.
- Click button 'Open Web interface' in section Actions.
- Now a new browser tab will be opened showing the Web interface of the u-remote IO device.
- If no action is defined open a browser manually and enter the directly the IP address into the input line.

Note:

- For security reasons currently only a Web access can be defined as an u-link action.
- But as long as the pass-through connection is established you can run any program or application which needs access to an IP of the remote network.



5.2 Closing the remote access session

Disconnect from the selected Router / remote network (Step 7)

(Finish the remote access session)

- First close all active sessions or programs which are accessing IP addresses of the remote network.
- Click button 'Disconnect'.
 - Now you will have the previous status that both the Service PC and the Router are still connected to the u-link VPN server but you have no longer a pass-through connection.
- Select the Router item and click 'Disconnect VPN Router ↔ u-link' to shutdown the Routers VPN tunnel.

- ▶ Home
- ▼ Service
- Service Desk
- ▶ Administration

Step 1: Close the VPN pass-through connection of the Service PC to Router / remote network (Use one of the 2 options).

- ▶ Home
- ▼ Service
- Service Desk
- ▶ Administration

Step 2: Shutdown the Router VPN connection to the u-link VPN server.

Status 3: New Router status after VPN shutdown showing an active WWH connection.

5.2 Closing the remote access session

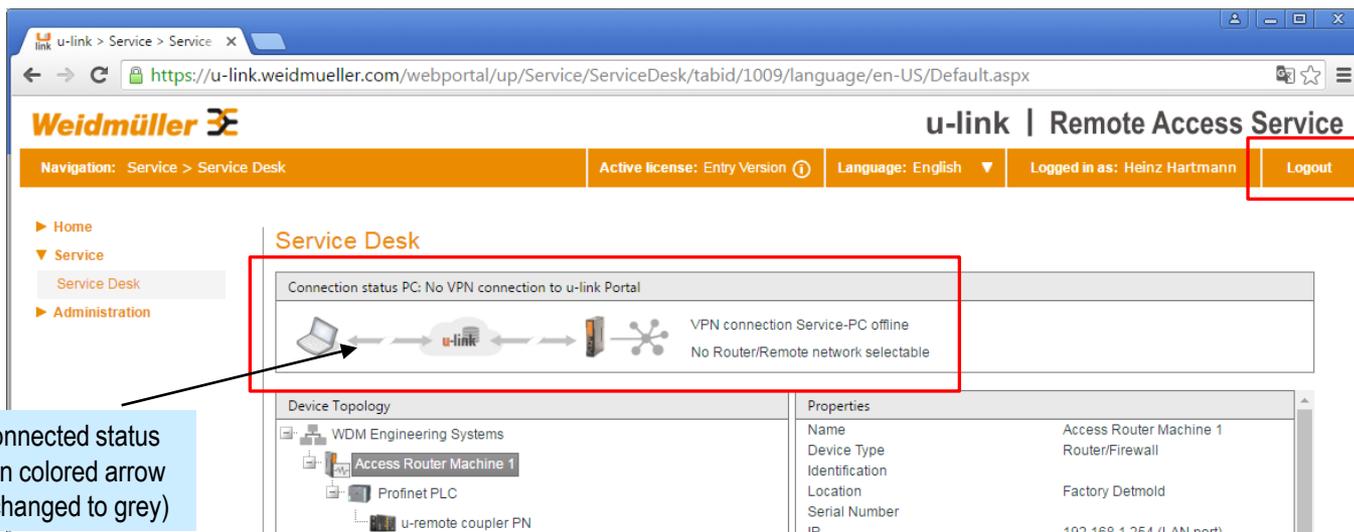
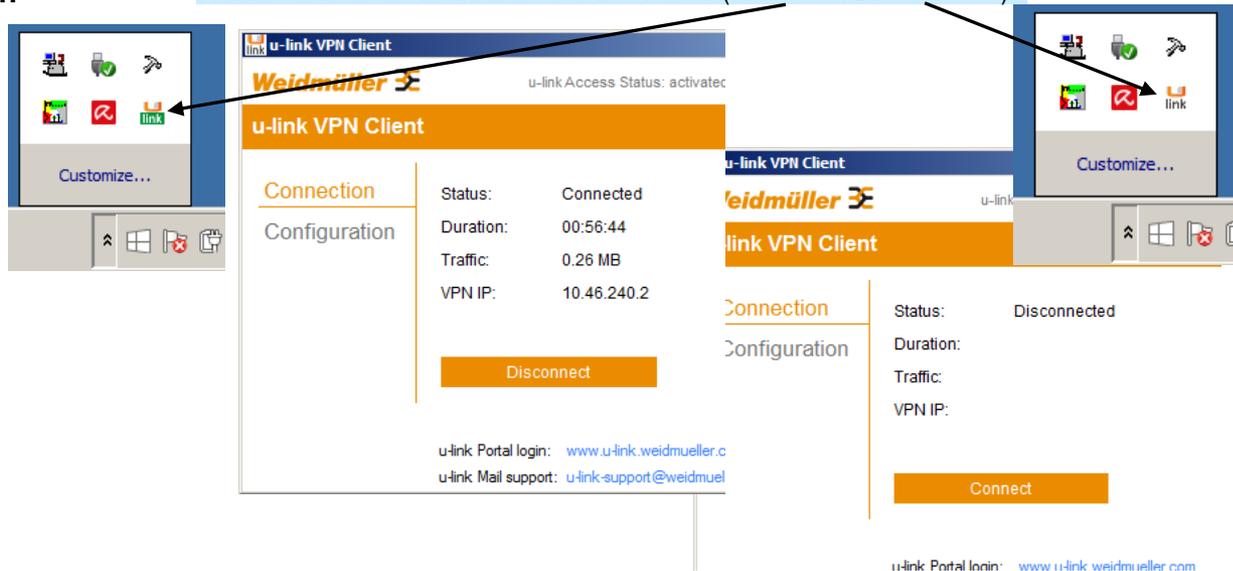
Shutdown the VPN connection of the Service PC / Logout from u-link Portal (Step 8)

- Open the window of the 'u-link VPN client' by clicking the u-link taskbar icon.
- Click button 'Disconnect'.

- Go back to menu 'Service Desk' of the u-link Web portal.
 - After some seconds in section 'Connection status PC' the disconnected status is displayed.
- Click button 'Logout' to close the u-link portal session.

- Finally exit program 'u-link VPN client'.

u-link icon in the notification area of the task bar (Connected/Disconnected)



Remote access procedure is finished!

Disconnected status (green colored arrow has changed to grey)

Appendix

- 1 – Registration of Router to u-link failed (How to solve)
- 2 – General support in case of Router problem issues
- 3 – Functional diagram of u-link
- 4 – Connection requirements of u-link VPN clients (Service PC / Router)
- 5 – Activating / de-activating Router VPN connection by digital input
- 6 – Technical u-link support

A1 - Router registration failed

Failure message 1: *Registration failed - Check registration code, ensure that status of activation code in u-link portal is set to 'not used' or 'Released for additional activation'*

Following issues can cause this error:

Error 1 - A wrong activation code was entered.

- Please verify the activation code. If entered wrong repeat the registration process.

Error 2 - Values Date / Time of the Router are not set correctly.

- Goto menu 'General settings → Date&Time', enter values for Date/Time manually and enable checkbox NTP synchronization. Then click button 'Apply settings'. Then repeat the registration process.

The screenshot shows the 'Registration' tab of the 'u-link Remote Access Portal' configuration page. The status is 'registration failed - (Check registration code, ensure that status of activation code in u-link portal is set to "not used" or "Released for additional activation")'. The registration code entered is 'KPBUS7ANVGTM'. The page includes 'Register' and 'Reload' buttons. A blue callout box on the right side of the screenshot contains the text: 'Router Web interface (Menu u-link / Tab Registration) Status: Registration failed!'.

A1 - Router registration failed

Failure message 1 continued

Error 3 - The entered activation code already has been used either for registering another Router or you have tried to register this Router a second time.

A registration / activation code may be used only one time for registering a Router. The activation code is used to dedicate uniquely a physical Router to a configured u-link Router object (u-link Device Management). In order to avoid an un-controlled multiple use of the same activation code an additional use has to be released before re-registering.

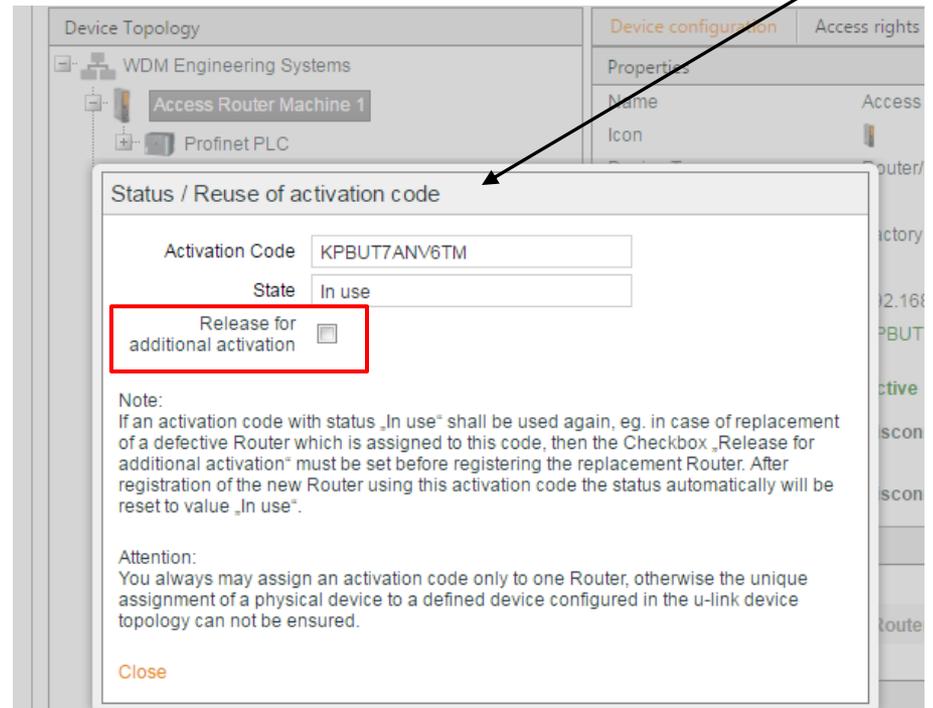
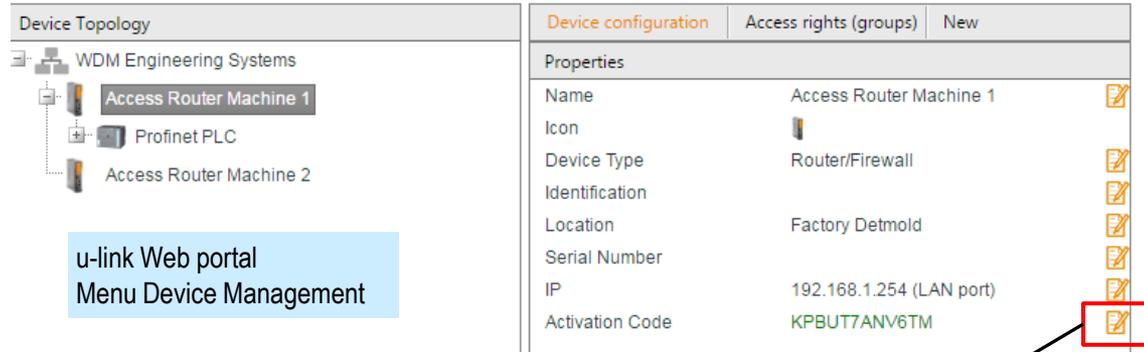
Normally there are only 2 use cases for additional use of an activation code:

1. A defective u-link Router has to be replaced by a new device (manually configured like the defective Router).
2. The configuration of an u-link Router was overwritten (eg. un-registered) or a reset to factory defaults has been done.

How to release for additional use:

- Logon-on to the u-link Web portal.
- Open menu 'Device Management' and highlight the Router object.
- In section 'Device Configuration' click icon 'Edit' of parameter 'Activation code'.
- Then enable checkbox 'Release for additional activation'.
- Now try again to register the Router.

Note: The checkbox only can be set if the status is 'In Use', a new not assigned activation code displays the status 'Not used'.



A1 - Router registration failed

Failure message 2: *Registration failed - Network error (Check network and proxy settings)*

1. Investigate generally the Internet accessibility in terms of configured network parameters:

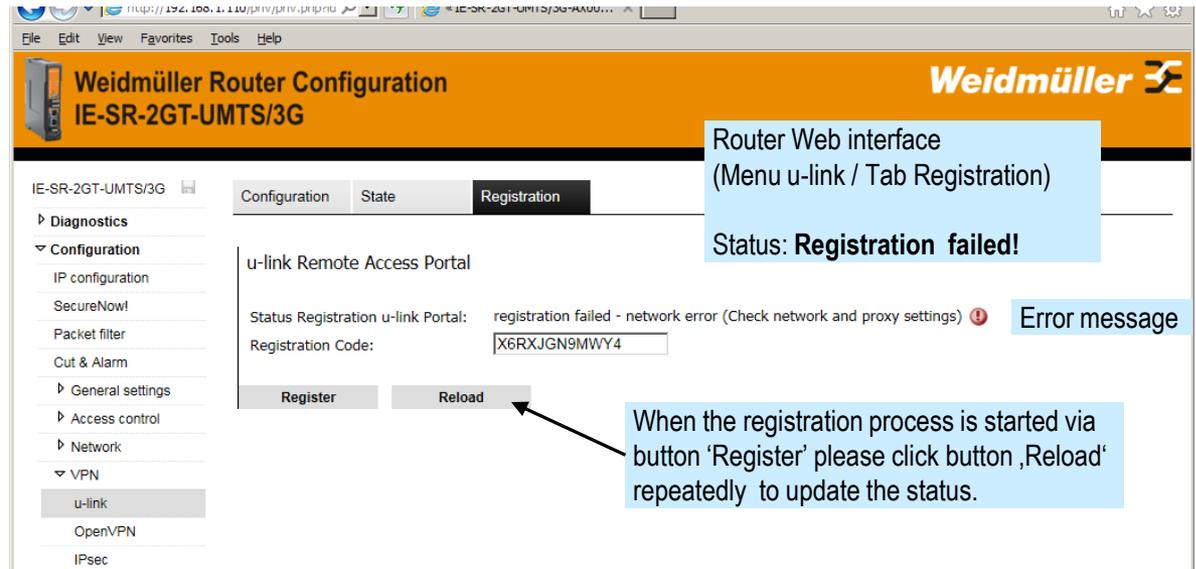
- Check via menu 'Diagnostics → Ping test' if an Internet IP (eg. 8.8.8.8) is accessible.
- Check via menu 'Diagnostics → Ping test' if an Internet device via DNS name (eg. www.google.com) is accessible.
- Please read Chapter 4.6 (Setup of a remote access scenario / Configuration Router).

2. Router Internet access is blocked by company-based Firewall rules

- Please read Appendix (Required Protocols and ports for u-link).
- Clarify with IT department to allow the outgoing u-link communication based on the required protocols / ports.

3. Router Internet access is passing a company-based Proxy server which requires an authentication to establish an Internet connection

- Configure in menu 'Network → HTTP proxy' the required settings (provided by IT department).
- Enable checkbox "Use system wide HTTP proxy" in menu u-link → Configuration.

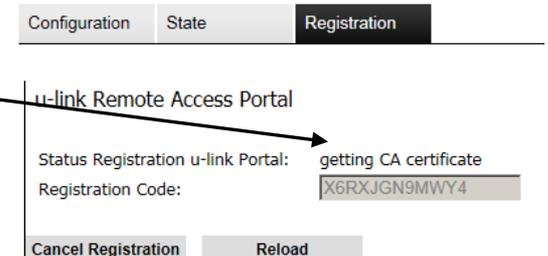


When the registration process is started via button 'Register' please click button 'Reload' repeatedly to update the status.

Note:

If during the registration process - before displaying the final status 'Registration failed' – only the status "getting CA certificate" is displayed in the meantime (and not the status 'enrolling certificate') then this is an Indication that a corporate Firewall or Proxy server is blocking the registration process.

Please press button 'Reload' repeatedly to monitor the temporary status messages.



A2 - General Router support by Weidmüller

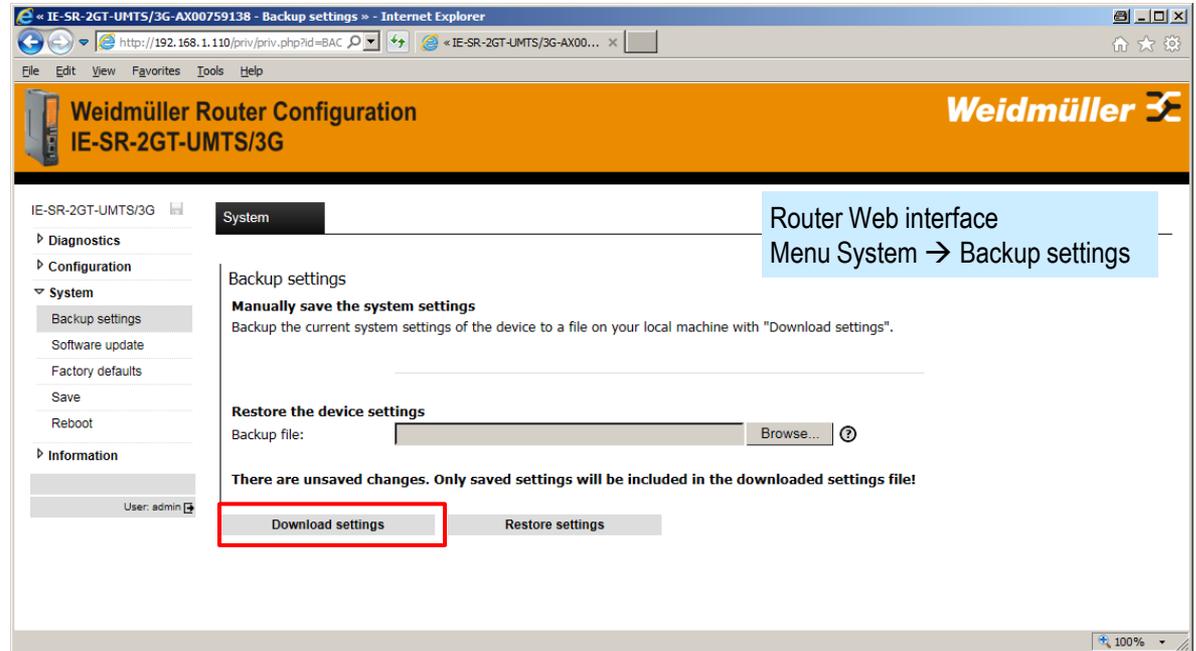
If any problems in terms of u-link connectivity or other Router features require support from Weidmüller please proceed as described below.

- Goto menu 'System → Backup settings'
- Click button 'Download settings' to export the configured Router settings (a file with extension .cf2) will be created.

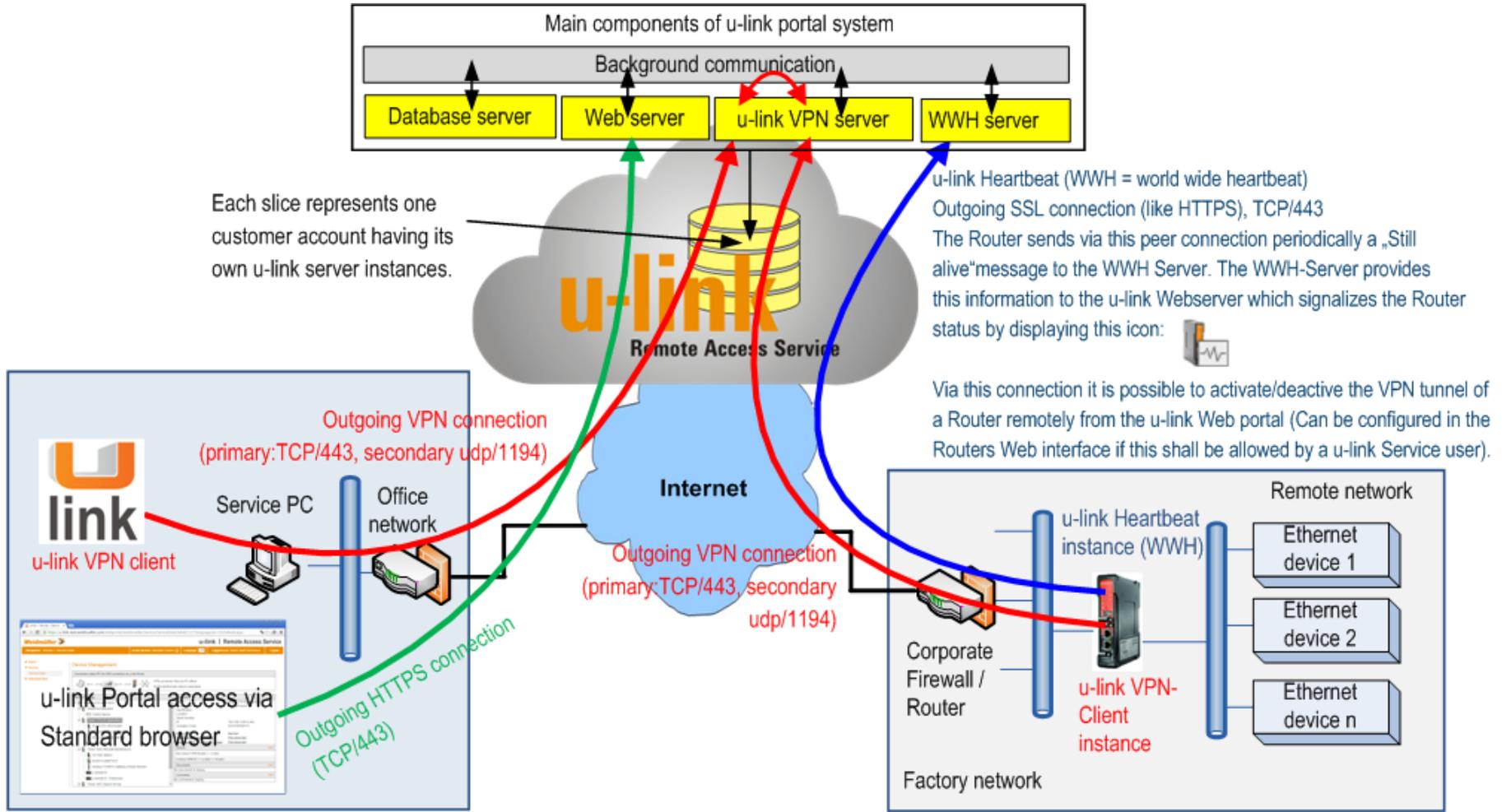
Note:

Only a saved configuration will be exported into a backup file. If you have changed and applied Router parameters but still not saved then you need to save the configuration before creating the backup file.

- Send the cf2-file to mail address u-link-support@weidmueller.com.
 - The u-link support department then will analyze the issue and contact you to solve the problem.



A3 - Functional diagram of involved u-link components



A4 - Overview of used u-link connection parameters

Required protocols / ports for outgoing connections of u-link VPN Clients (PC and Router) :				
	Protocol / Port	Target IP	Target DNS names	Connection type
Client registration	TCP / 80	217.119.57.24	u-link.weidmueller.com, www.big-linx.de	Outgoing
Establishing a VPN tunnel (Main access)	TCP / 443 (Priority 1)	217.119.57.23	idaprof2.ads-tec.de	Outgoing
	UDP / 1194 (alternatively if TCP/443 is blocked)			
Establishing a VPN tunnel (Redundant access)	TCP / 443 (Priority 1)	217.119.57.22	idaprof.ads-tec.de	Outgoing
	UDP / 1194 (alternatively if TCP/443 is blocked)			
Heartbeat Router (WWH):	TCP / 443 (SSL/TLS) / Priority 1	217.119.57.27	wwh.big-linx.de	Outgoing
	TCP / 443 (SSL/TLS) / Alternatively	217.6.47.168	wwh2.big-linx.de	Outgoing

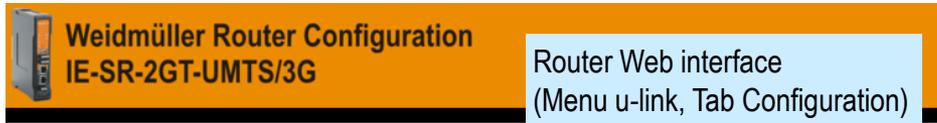
Note: If a Service PC (u-link VPN client) or Router is passing a corporate firewall to access the Internet please clarify with the responsible IT administration - if you have any connection problems - that the listed connection types are allowed.

A5 - Activating / de-activating a VPN tunnel via 24 VDC digital input

Start/Stop VPN tunnel:

- Activate VPN tunnel by connecting Pin 2 (VPN initiate) to 24 VDC and Pin 4 (GND) to ground of power supply.
- Deactivate VPN tunnel by removing 24 VDC from Pin 2.
- Status of VPN tunnel is signalized by Pin 3 (Digital output, VPN active). For output signalizing you need to connect Pin 1 (VCC) to 24 VDC.

Pin number	SIGNAL NAME
1	24V DC (VCC)
2	Initiate VPN (24 V In)
3	VPN active (24 V Out)
4	GND



u-link Remote Access Portal

Enable u-link instance:

VPN connection settings

Initiation by digital input (VPN initiate):

Initiation from u-link web portal:

Inactivity timeout:

Additional settings

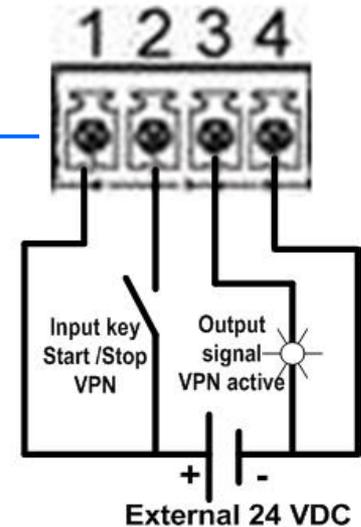
Use a system wide HTTP proxy:

Log level:

VPN LED/output controller:

Polarity of digital input (VPN initiate):

Apply settings **Reset changes**



A6 - Change LAN IP address/netmask of a remote Router via u-link VPN connection

Situation (Example):

- Current IP configuration of remote Router:
LAN port IP/Subnet: 192.168.1.110 / 255.255.255.0
WAN port IP/Subnet: 192.168.99.206 / 255.255.255.0

Requirement:

- The LAN port IP/Subnet shall be changed via u-link to:
IP address: 192.168.50.254
Subnet mask: 255.255.255.0

Solution:

- Connect to the remote Router via u-link.
 - The u-link VPN client (PC) now has got route settings how to access the IP networks 192.168.1.0/24 (Router LAN) and 192.168.99.0/24 (Router WAN). See upper screenshot.
 - The Routers Web interface can be accessed via LAN IP, WAN IP or via the Routers u-link VPN IP (see upper screenshot). Due to the fact that we want to change the LAN-IP we may not use the current LAN-IP for accessing the Web interface but we can use the Router VPN IP.
- Open the Routers Web interface by using the Routers VPN IP.
- Goto menu IP configuration.
- Change IP address data of LAN port.
- Click button 'Apply settings'.
 - Now the new LAN-IP address is active and the connected devices at Routers LAN port must be adapted to the new IP range.
- Save the configuration (Menu System → Save).

The screenshot shows the Weidmüller Service Desk interface. At the top, there's a navigation bar with 'Service Desk'. Below it, a 'Service Desk' section displays connection status: 'Connected to: Access Router Machine 2'. It lists 'Accessible remote network: 192.168.99.0/255.255.255.0' and 'Router VPN IP: 10.46.240.6'. A 'Device Topology' section shows a tree view with 'Access Router Machine 1', 'Access Router Machine 2', 'Access Router Machine 3', 'SE-Konverter', and 'Switch'. A blue callout box points to the 'Accessible remote network' and 'Router VPN IP' fields, stating: 'Accessible networks at Routers LAN/WAN ports' and 'Router VPN IP'. Another blue callout box contains a note: 'Note about provided accessible networks: If the Router is connected to Internet via DHCP-enabled WAN port then the WAN network will not provided as accessible network (only the LAN side). If the Router is connected to Internet via WAN port with static IP address then both network sides (LAN and WAN) are provided as accessible networks.'

The screenshot shows the 'Weidmüller Router Configuration' web interface for 'IE-SR-2GT-UMTS/3G'. The 'Configuration' menu is open, and 'IP configuration' is selected. The 'Operational mode' is set to 'IP router'. Under 'WAN:', 'IP assignment' is 'static', 'IP address' is '192.168.99.206', and 'Subnet mask' is '255.255.255.0'. Under 'LAN:', 'IP assignment' is 'static', 'IP address' is '192.168.50.254', and 'Subnet mask' is '255.255.255.0'. A blue callout box points to the 'IP address' field under 'LAN:', stating: 'Screenshot shows the already set new IP address at LAN port.'

A6 - Change LAN IP address/netmask of a remote Router via u-link VPN connection

Note:

The connected PC still has the routing entries to previous Router LAN and WAN IP networks 192.168.1.0/24 and 192.168.99.0/24.

To update the PCs routing table do following:

- Disconnect the PC from the remote Router.
- Disconnect the Router VPN connection to u-link.
 - Wait until the Router icon changes to this symbol: 
- Connect the Router again to u-link.
 - Wait until the Router icon changes to this symbol: 
- Finally re-connect the PC to the remote Router.
 - As result the PC's routing table should be updated and the new accessible networks **192.168.50.0/24** and 192.168.99.0/24 should be displayed in the connection status of the Service desk.

New accessible networks at Routers LAN/WAN ports

Connected to:	Accessible remote network:	Router VPN IP:	Routing to Remote network:
Access Router Machine 2	192.168.99.0/255.255.255.0	10.46.240.6	active
	192.168.50.0/255.255.255.0		

Device Topology

- WDM Engineering Systems
 - Access Router Machine 1
 - Access Router Machine 2**
 - Access Router Machine 3
 - SE-Konverter
 - Switch

Properties

Name	Access Router Machine 2
Device Type	Router/Firewall
Identification	
Location	
Serial Number	
IP	192.168.1.110 (LAN)
Activation Code	X6RXJGN9MWW4
Status-WWH	Active
Status-VPN Router ↔ u-link	Connected
Status-VPN PC ↔ u-link ↔ Router	Connected

Actions

- Disconnect VPN Router ↔ u-link
- Disconnect VPN PC ↔ u-link ↔ Router**
- Documents [Add](#)
- No documents to display.
- Comments [Add](#)
- No comments to display.

A7 – Technical customer support

For any technical issues or support requests in terms of the u-link Remote Access Service
please send a mail to address

u-link-support@weidmueller.com.