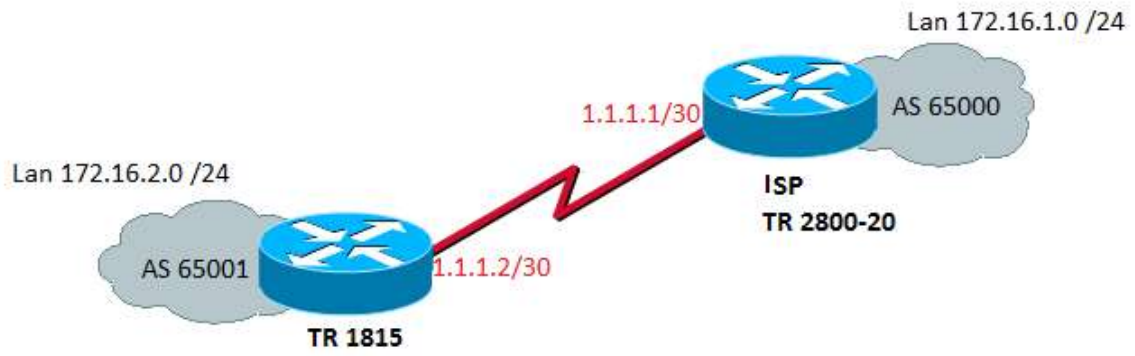
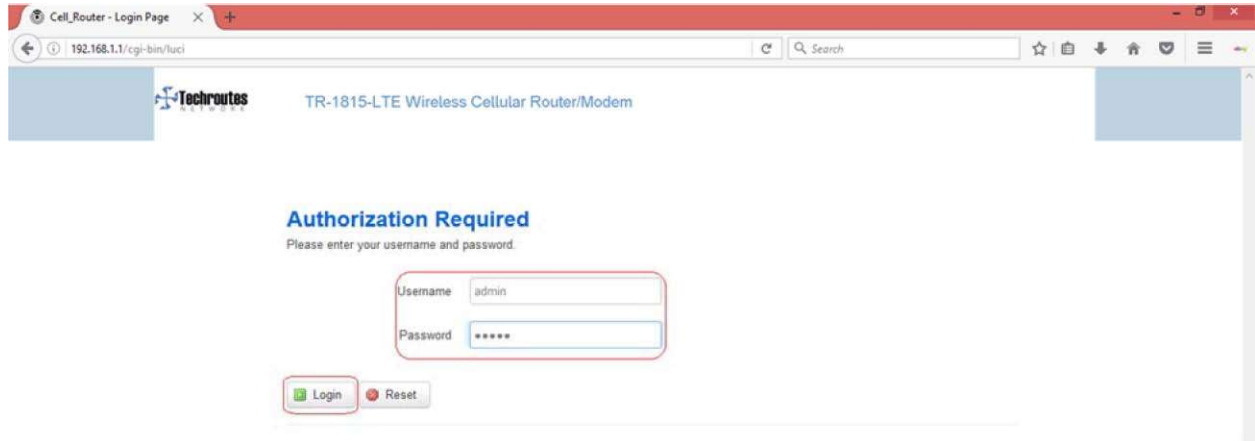


Topology



Login Page

Default login IP is 192.168.1.1 Username: admin Password: admin



Cell_Router - Login Page

192.168.1.1/cgi-bin/luci

Technroutes TR-1815-LTE Wireless Cellular Router/Modem

Authorization Required

Please enter your username and password.

Username

Password

WAN Configuration

Network → Wired WAN

- 1) Select protocol Static address and click Switch Protocol option
- 2) IPv4 Address, IPv4 net mask, and IPv4 gateway (As per your requirement.) Save & Apply.

Techroutes TR-1815-LTE Wireless Cellular Router/Modem

UNSAVED CHANGES: 16 AUTO REFRESH ON

Interfaces - WAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup

Status eth0.2 Uptime: 0h 26m 53s
MAC Address: 90:22:06:00:08:37
RX: 0.00 B (0 Pkts.)
TX: 4.40 KB (31 Pkts.)

Protocol: Static address

Really switch protocol? Switch protocol

Back to Overview Save & Apply Save Reset

Techroutes TR-1815-LTE Wireless Cellular Router/Modem

UNSAVED CHANGES: 16 AUTO REFRESH ON

Interfaces - WAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup **Advanced Settings** Physical Settings Firewall Settings

Status eth0.2 Uptime: 0h 28m 38s
MAC Address: 90:22:06:00:08:37
RX: 0.00 B (0 Pkts.)
TX: 4.57 KB (32 Pkts.)

Protocol: Static address

IPv4 address: 1.1.1.2

IPv4 netmask: 255.255.255.252

IPv4 gateway: 1.1.1.1

LAN Configuration

Network → LAN

Here Configure LAN IP & netmask and Save & Apply.


- Status
- System
- Services
- Network**
- Operation Mode
- Mobile
- LAN
- Wired WAN
- WAN IPv6
- Interfaces
- Wi-Fi
- Firewall
- Static Routes
- Switch
- DHCP and DNS
- Diagnostics
- Loopback Interface

Interfaces - LAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network separated by spaces. You can also use VLAN notation `INTERFACE.VLANNR` (e.g., `eth0.1`).

Common Configuration

General Setup **Advanced Settings** Physical Settings Firewall Settings

Status  br-lan **Uptime:** 0h 7m 14s
MAC-Address: 90:22:06:80:08:37
RX: 248.02 KB (3333 Pkts.)
TX: 885.24 KB (2212 Pkts.)
IPv4: 172.16.2.1/24
IPv6: fdda:dd4c:d465::1/60

Protocol

Really switch protocol?

IPv4 address	<input type="text" value="172.16.2.1"/>
IPv4 netmask	<input type="text" value="255.255.255.0"/>

Firewall

Network → Firewall → Security.

- 1) Select Allow option from side box SSH access from WAN.
- 2) Select Allow option from side box Ping from wan to LAN.
- 3) Tick the box of Enable telnet.



TR-1815-LTE Wireless Cellular Router/Modem

The screenshot displays the configuration interface for the Techroutes TR-1815-LTE Wireless Cellular Router/Modem. The left sidebar shows a navigation menu with categories: Status, System, Services, Network, and Firewall. The 'Firewall' category is selected and highlighted. The main content area is titled 'System Security Configuration' and contains the following settings:

- SSH access from WAN:** Set to 'Allow' (dropdown menu).
- Ping from WAN to LAN:** Set to 'Allow' (dropdown menu).
- Enable telnet:** Checked (checkbox).

Below the System Security Configuration section is the 'HTTPS Access' section, which includes:

- HTTPS port:** Set to '443' (text input).
- HTTPS access from WAN:** Set to 'Allow' (dropdown menu).
- Remote network:** Set to 'Any IP address' (dropdown menu).

Firewall

Network → Firewall → Traffic Rules.

- 1) Allow All LAN Ports Enable Check Box and Save & Apply.
- 2) Open ports on router for Telnet (Name: Telnet, Protocol: TCP+UDP, External Port: 23) first need to click on add button then Save & Apply.
- 3) Open ports on router for BGP (Name: BGP, Protocol: TCP+UDP, External Port: 179) first need to click on add button then Save & Apply.

The screenshot displays the web interface for a Techroutes TR-1815-LTE Wireless Cellular Router/Modem. The left sidebar shows navigation options: Status, System, Services, Network (highlighted), Operation Mode, Mobile, LAN, Wired WAN, WAN IPv6, Interfaces, Wi-Fi, Firewall (highlighted), and Static Routes. The main content area is titled "Firewall - Traffic Rules" and includes a description: "Traffic rules define policies for packets traveling between different zones, for example to reject traffic between certain hosts or to open WAN ports on the router." Below this is a table of existing traffic rules:

Name	Match	Action	Enable	Sort	
Allow-All-LAN-Ports	Any traffic From any host in wan To any host, ports: 1-65535 in lan	Accept forward	<input checked="" type="checkbox"/>	↑ ↓	Edit Delete
Allow-DHCP-Renew	IPv4-UDP From any host in wan To any router IP at port 68 on this device	Accept input	<input checked="" type="checkbox"/>	↑ ↓	Edit Delete
Allow-Ping	IPv4-ICMP with type echo-request From any host in wan To any router IP on this device	Accept input	<input checked="" type="checkbox"/>	↑ ↓	Edit Delete
Allow-SNMP-Remote-Access	Any UDP From any host in wan To any router IP at port 161 on this device	Accept input	<input checked="" type="checkbox"/>	↑ ↓	Edit Delete

Below the table, there are sections for "Open ports on router:" and "New forward rule:". The "Open ports on router:" section has a table with columns for Name, Protocol, and External port. A row for "Telnet" is shown with Protocol set to "TCP+UDP" and External port set to "23". An "Add" button is next to it. The "New forward rule:" section has fields for Name, Source zone, and Destination zone. The Name field contains "New forward rule", Source zone is "lan", and Destination zone is "wan". An "Add and edit..." button is next to it. At the bottom right, there are "Save & Apply", "Save", and "Reset" buttons.

Access

Allow-SNMP-Remote-Access	Any UDP From any host in wan To any router IP at port 161 on this device	Accept input	<input checked="" type="checkbox"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Telnet	Any TCP, UDP From any host in wan To any router IP at port 23 on this device	Accept input	<input checked="" type="checkbox"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Open ports on router:

Name	Protocol	External port	
BGP	TCP+UDP	179	<input type="button" value="Add"/>

New forward rule:

Name	Source zone	Destination zone	
New forward rule	lan	wan	<input type="button" value="Add and edit..."/>

After click on add button you can see Telnet port and BGP port open in Traffic Rules.

Access

Telnet	Any TCP, UDP From any host in wan To any router IP at port 23 on this device	Accept input	<input checked="" type="checkbox"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
BGP	Any TCP, UDP From any host in wan To any router IP at port 179 on this device	Accept input	<input checked="" type="checkbox"/>	<input type="button" value="↑"/> <input type="button" value="↓"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Open ports on router:

Name	Protocol	External port	
New input rule	TCP+UDP		<input type="button" value="Add"/>

New forward rule:

Name	Source zone	Destination zone	
New forward rule	lan	wan	<input type="button" value="Add and edit..."/>

Dynamic Routing

Network → Dynamic Routing.

- 1) Tick the box of Enable Zebra.
- 2) Tick the box of Enable BGP.
- 3) Save and Apply.

The screenshot shows the 'Dynamic Routing' configuration page. The left sidebar has 'Network' and 'Dynamic Routing' highlighted. The main content area is titled 'Dynamic Routing' and contains the following settings:

- Zebra:** 'Enable' checkbox is checked (circled in red). The 'Password' field contains 'zebra'.
- OSPF:** 'Enable' checkbox is unchecked. The 'Password' field contains six dots.
- OSPF6:** 'Enable' checkbox is unchecked. The 'Password' field contains six dots.
- RIP:** 'Enable' checkbox is unchecked.

At the top right of the page, there is a notification: 'UNSAVED CHANGES: 15'.

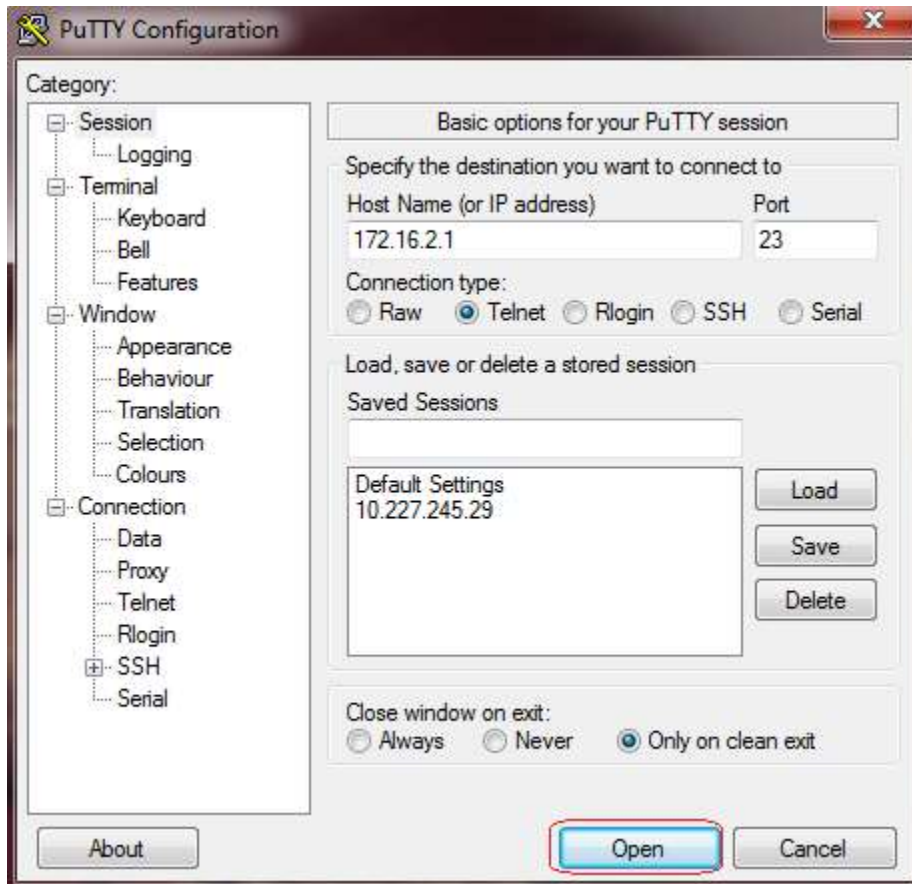
This screenshot shows the bottom portion of the 'Dynamic Routing' configuration page. The left sidebar has 'Dynamic Routing' highlighted. The main content area shows the following settings:

- RIP:** 'Enable' checkbox is unchecked. The 'Password' field contains six dots.
- RIPng:** 'Enable' checkbox is unchecked. The 'Password' field contains six dots.
- BGP:** 'Enable' checkbox is checked (circled in red). The 'Password' field contains 'zebra'.

At the bottom of the page, there are three buttons: 'Save & Apply' (circled in red), 'Save', and 'Reset'.

Telnet TR 1815 Router via local LAN IP.

- 1) Local Username: router Password: admin!@#.
- 2) Again Tenet local LAN with BGP port no 2605 and type password zebra.
- 3) Here can do BGP Configuration via cmd.



The screenshot shows a PuTTY terminal window titled "172.16.21 - PuTTY". The terminal output is as follows:

```
WARNING: telnet is a security risk.
TR-1815-LTE login: router
Password:
BusyBox v1.23.2 (2017-03-19 12:19:00 CST) built-in shell (ash)

=====TR-1815-LTE=====
root@TR-1815-LTE:~# telnet 172.16.2.1 2605
Entering character mode
Escape character is '^]'.

Hello, this is Quagga (version 0.99.22.4).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

User Access Verification
Password:
TR-1815-LTE>
TR-1815-LTE>
```

Red annotations with arrows point to specific parts of the terminal:

- "Login router Password: admin!@#" points to the password prompt.
- "Again telnet router LAN IP with BGP Port No" points to the telnet command.
- "Here type password zebra then start BGP configuration in router." points to the password prompt.

BGP Configuration Command and Snapshot

```
TR-1815-LTE> enable
TR-1815-LTE# config t
TR-1815-LTE(config)#
TR-1815-LTE(config)# router bgp 65001
TR-1815-LTE(config-router)#
TR-1815-LTE(config-router)# bgp router-id 1.1.1.2
TR-1815-LTE(config-router)#
TR-1815-LTE(config-router)# network 172.16.2.0/24
TR-1815-LTE(config-router)#
TR-1815-LTE(config-router)# redistribute connected
TR-1815-LTE(config-router)#
TR-1815-LTE(config-router)# redistribute static
TR-1815-LTE(config-router)#
TR-1815-LTE(config-router)# neighbor 1.1.1.1 remote-as 65000
TR-1815-LTE(config-router)#
TR-1815-LTE(config-router)# exit
TR-1815-LTE(config)#
TR-1815-LTE(config)# exit
TR-1815-LTE#
TR-1815-LTE# wr
```

User Access Verification

Password:

TR-1815-LTE>

TR-1815-LTE>

TR-1815-LTE>

TR-1815-LTE> enable

TR-1815-LTE#

TR-1815-LTE# config

% Command incomplete.

TR-1815-LTE#

TR-1815-LTE# config t

TR-1815-LTE (config)#

TR-1815-LTE (config)# router bgp 65001

TR-1815-LTE (config-router)#

TR-1815-LTE (config-router)# bgp router-id 1.1.1.2

TR-1815-LTE (config-router)#

TR-1815-LTE (config-router)# network 172.16.2.0/24

TR-1815-LTE (config-router)#

TR-1815-LTE (config-router)# redistribute connected

TR-1815-LTE (config-router)#

TR-1815-LTE (config-router)# redistribute static

TR-1815-LTE (config-router)#

TR-1815-LTE (config-router)# neighbor 1.1.1.1 remote-as 65000

TR-1815-LTE (config-router)#

TR-1815-LTE (config-router)# exit

TR-1815-LTE (config)#

TR-1815-LTE (config)# exit

TR-1815-LTE#

TR-1815-LTE# wr

Configuration saved to /etc/quagga/bgpd.conf

TR-1815-LTE#

Check BGP Status Command

- 1) show ip bgp summary
- 2) Show ip bgp neighbor
- 3) Show ip bgp

```
TR-1815-LTE#
TR-1815-LTE# show ip bgp sum
TR-1815-LTE# show ip bgp summary
BGP router identifier 1.1.1.2, local AS number 65001
RIB entries 5, using 360 bytes of memory
Peers 1, using 2528 bytes of memory

Neighbor      V    AS MsgRcvd MsgSent   TblVer  InQ  OutQ Up/Down  State/PfxRcd
1.1.1.1       4 65000    20     20       0    0    0 00:07:53      2

Total number of neighbors 1
TR-1815-LTE#
TR-1815-LTE#
TR-1815-LTE#
```

```
TR-1815-LTE#
TR-1815-LTE# show ip bgp
BGP table version is 0, local router ID is 1.1.1.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network        Next Hop         Metric LocPrf Weight Path
*  1.1.1.0/30     1.1.1.1           0             0 65000 ?
*>
*> 172.16.1.0/24  1.1.1.1           0             0 65000 i
*  172.16.2.0/24  0.0.0.0           1            32768 ?
*>
*>                0.0.0.0           0            32768 i

Total number of prefixes 3
TR-1815-LTE#
TR-1815-LTE#
```

```
TR-1815-LTE# show ip bgp ne
TR-1815-LTE# show ip bgp neighbors
BGP neighbor is 1.1.1.1, remote AS 65000, local AS 65001, external link
  BGP version 4, remote router ID 172.16.1.1
  BGP state = Established, up for 00:08:37
  Last read 00:00:07, hold time is 90, keepalive interval is 30 seconds
  Neighbor capabilities:
    4 Byte AS: advertised and received
    Route refresh: advertised and received(old & new)
    Address family IPv4 Unicast: advertised and received
  Message statistics:
    Inq depth is 0
    Outq depth is 0

```

	Sent	Rcvd
Opens:	1	1
Notifications:	0	0
Updates:	2	3
Keepalives:	19	18
Route Refresh:	0	0
Capability:	0	0
Total:	22	22

```

  Minimum time between advertisement runs is 30 seconds

For address family: IPv4 Unicast
  Community attribute sent to this neighbor(both)
  2 accepted prefixes

  Connections established 1; dropped 0
  Last reset never
Local host: 1.1.1.2, Local port: 54568
Foreign host: 1.1.1.1, Foreign port: 179
Nexthop: 1.1.1.2
Nexthop global: fe80::9222:6ff:fe06:262f
Nexthop local: ::
BGP connection: non shared network
Read thread: on Write thread: off
```