EcoNAT

The most high-performance CG-NAT for telecom providers

RDP — Research & Development Partners

World network solutions vendor
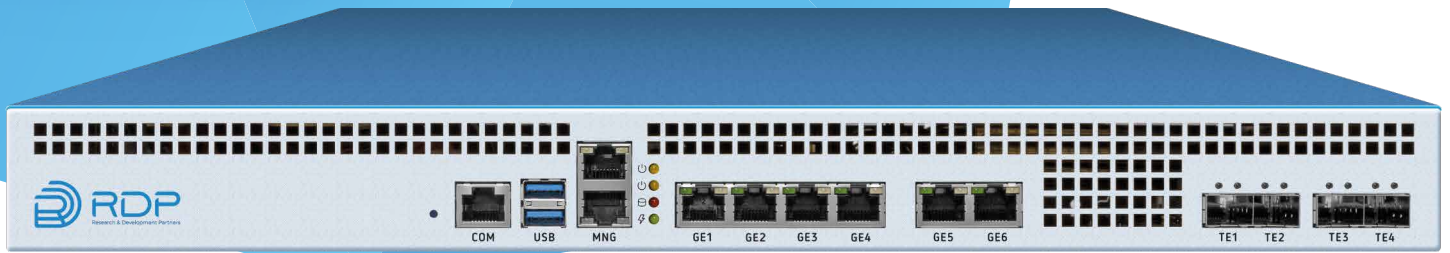
EcoNAT — is a carrier grade equipment oriented for service providers that helps to solve the problem of IPv4 address depletion, while maintaining the existing IPv4 infrastructure, and smoothly migrate to IPv6 in the future.

Typical location for this solution in the service provider's network is between the edge router PE (Provider Edge) and core network routers — BGN/BRAS/Core. Links that pass through the **EcoNAT** may consist of several physical joints of 10G, combined into one or more logical channels, by LACP for example.

Features and benefits

Smart Wire™ — device is transparent for all service type traffic including routing protocols BGP, OSPF, ISIS, STP, LACP, BFD.

Logger — devices allow to log an information of all translations and user connections at speeds up to 6 million connections per second.
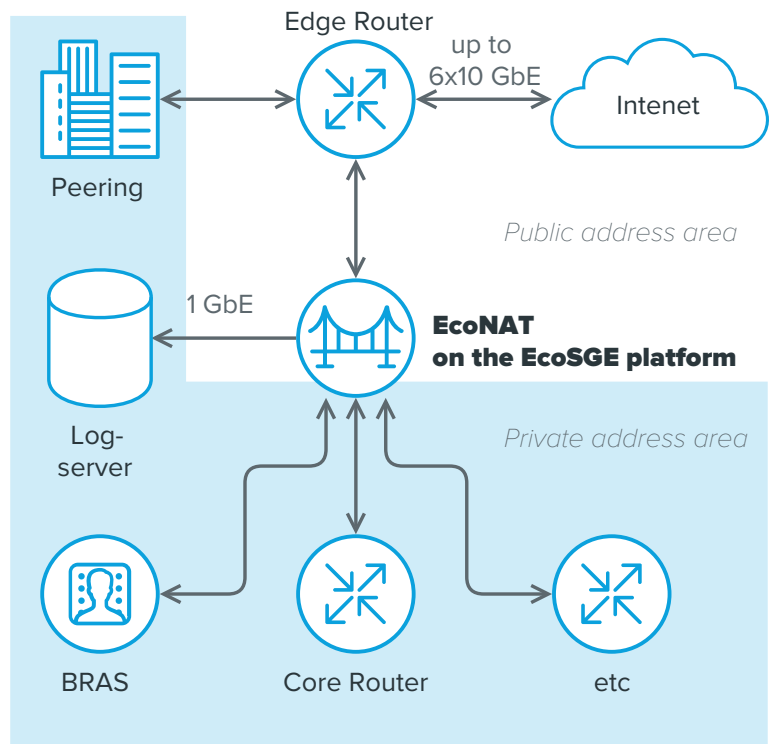
Universal platform EcoSGE	2020 / 2040	4080	4120 / 4160
Throughput	24 / 34 Gbps	60 Gbps	120 / 160 Gbps
Connection Setups Per Second	2.3 M	2.5 M	5 M
Concurrent Sessions	32 million	40 million	150 million
Network Interface			
10 GE Fiber (SFP+)	2 / 4	8	12 / 16
1 GE Copper	6	-	-
Logging Interface	1 x 10/100/1000BaseT	1 x 10/100/1000BaseT	1 x 10/100/1000BaseT
Management Interface	1 x 10/100/1000BaseT	1 x 10/100/1000BaseT	1 x 10/100/1000BaseT
Console Port	RJ45 (RS232C)	RJ45 (RS232C)	RJ45 (RS232C)
System Storage	CF Industrial SLC	CF Industrial SLC	CF Industrial SLC
Power Consumption Typical/Max	140W / 170W	250W / 285W	340W / 400W
Power Supply	Dual 200W RPS 100-240 VAC (-36-72 DC)	Dual 500W RPS 100-240 VAC (-40-72 DC)	Dual 500W RPS 100-240 VAC (-40-72 DC)
Cooling Fan	Standard Fans	Hot Swap Smart Fans	Hot Swap Smart Fans
Dimensions	430mm x 400mm x 44mm	440mm x 570mm x 44mm	440mm x 570mm x 44mm
Rack Unit (Mountable)	1U	1U	1U

Multiple translation type support

EcoNAT supports up to 32 concurrent NAT pools. They may vary by the type of translation, public IPv4 address ranges, limiting of the connections number for subscribers and the ranges of UDP and TCP ports allocated during the translation.

ACLs

Access control lists associated with each pool are the selection criteria for the pools. ACLs are analyzed in order of priority of the pools, and may include both Source and Destination address of the IP packet. Therefore, along with the main goal, service providers may use this solution to participate in peer-to-peer networks with overlapping IP ranges.

EcoNAT supports various types of translation simultaneously: CGNAT/PAT, Basic NAT, static NAT 1:1

BNAT

BNAT (Basic NAT) – is a classic NAT, when the user leases the temporary allocated public IPv4 address during the session, and only the addresses are translated (ports remain the same). This mode has two options: 'transparent', allowing incoming connections for any ports and 'closed', allowing connection from the outside only for ports initiated from within by the user.

1:1

In the static mode (known as 1:1 translation), each public IP address is statically and administratively attached to each IP address of user. The service provider is able to provide users with a static public IP address without changing the settings of the CPE of the user by using this method.

CG-NAT

CGNAT / PAT (Port Address Translation) – is the main operation mode of the EcoNAT, that allows to share the use of public IPv4 addresses among multiple users. Addresses and ports are translated in this mode. The number of the TCP and UDP ports simultaneously used per user, may be limited.

Full Cone NAT (EIM/EIF)

Full Cone NAT is the feature that identify CGNAT from the basic NAT/PAT and provides maximum transparency CGNAT for a whole range of applications, including mobile, P2P, games etc. EIM/EIF allows any external host to establish a connection from the outside on those ports, for which the stream was previously initiated by the user.

Port Block Allocation (PBA)

EcoNAT implements PBA (Port Block Allocation) to reduce the amount of data is necessary to log. Translation ports are given to users by the continuous blocks with the 64-512 range of ports instead of one. Thus, you have only two entries in the log for all port block: the allocation of the block and upon release of the block.

IP pairing

All of the user connections assigned to one pool, are attached to the same IP address to ensure the best transparency of the CGNAT.

Hairpinning

Hairpinning enables two users within the NAT to communicate with each other through the NAT, whitout sending packets outside.

Aging

During long inactivity (it depends on the pool settings and connection status), idle connections have to be closed, releasing the ports. The port block is considered free in that case when the user has released all ports in the range for that block and the timeout occurred.

User quotas

EcoNAT allows putting restriction to the number of ports and connections for a user individually for each pool. Using the hot reconfiguration, and multiple pools this feature allows the provider to allocate resources efficiently between IPv4 corporate and individual users.

Translation logging

EcoNAT provides the opportunity to log users network translations using standard Syslog interface (Local_IP, Global_IP, Global_Port_Range, Protocol). The volume of logged information is ten times reduced due to the PBA (the ports are allocated in the blocks of 64-512 units).

Connection logging

Supports logging of all connection (Local_IP, Local_Port, Global_IP, Global_Port, Destination_IP, Destination_Port, Protocol).

Logging protocols: Syslog, Netflow v9

Live reconfiguration

The device is able to apply configuration changes without breaking existing user connections, which is an advantage over competing solutions. You may reduce the port restrictions or expand pools of public addresses "on the fly".

Management

• Dedicated network interface management (the Console via SSH)
• Dedicated serial port RS-232C
• Command line interface (CLI)
• SNMP, Syslog, Alerting, TACACS+ (AAA)