

# RcodeZero Anycast DNS



## SIMPLE, FAST, RESILIENT

In the Domain Name System's language, **rcode 0** stands for: no error condition.  
If a DNS server answers a query with this result code, the service is running properly.  
This is the reason why we named our product RcodeZero Anycast DNS.

# We All Rely on the Domain Name System

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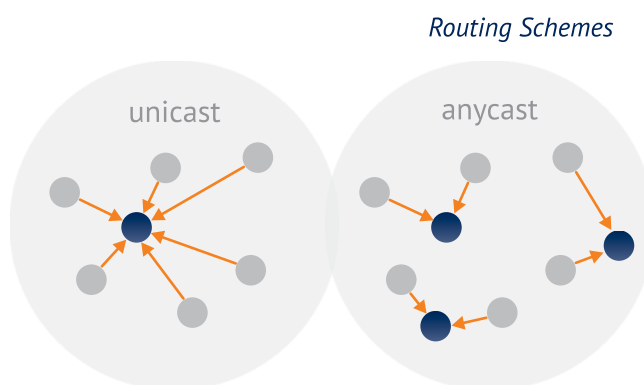
Nowadays an enormous part of business success depends upon the availability of the Internet. All relevant services such as web, e-mail, FTP and media servers are accessed via the Domain Name System (DNS) by people typing in the domain names of these servers. This is why the DNS has to be extremely robust and fail-proof and should be an essential part of a company's security strategy.

With RcodeZero Anycast DNS you will improve the security and reliability of your and your customers' Internet presence.

## An Introduction to Anycast Technology

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The classical addressing method in the Domain Name System is unicast; a DNS server has a dedicated IP address. Queries to this IP address all lead to this one server no matter where in the world the client is located. This may cause delays and timeouts for remote clients. Furthermore, if the server is down or a victim of a DoS attack, the whole service provided under this dedicated IP address is affected and not available anymore.



## Anycast: Fast, Secure and Reliable

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Anycast routing helps to avoid this “single point of failure”; name servers distributed as a “cloud” in different locations (so-called nodes) all advertise the same IP address. If a client looks up a domain name, the nearest anycast instance will respond. Due to several geographically distributed anycast nodes, this technology not only allows shorter response times and better traffic balance but has a set of further advantages:

**THE CAPACITY AND PERFORMANCE** of the service increases with every anycast location.

**DoS ATTACKS** affect only the anycast location nearest to the DoS source. Therefore, other anycast locations usually still answer the DNS queries from other regions in the world, which means that the service remains available.

**ALL LOCATIONS OF THE SERVICE** appear as one global server with one IP address, keeping the size of the DNS responses small. Thus, DNS services based on anycast ensure optimal load balancing, increase reliability, decrease latency and are a highly effective response to DoS attacks.

RcodeZero Anycast is the solution for private companies, internet service providers and domain registries to improve DNS response times, to reduce downtime and to protect themselves against attacks.

# RcodeZero Anycast Cloud: State of the Art Infrastructure

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The RcodeZero Anycast network currently consists of six globally distributed nodes in the following locations:

Seattle, USA; New York, USA; Brussels, Belgium; Frankfurt, Germany; Warsaw, Poland; Dublin, Ireland

with two “command and control” servers in Vienna and Salzburg, Austria. The number of locations is continuously being expanded and by 2013 will reach 12 topologically significant locations.

The number of locations is not the only criterion for a high-performance network; the technical architecture and hardware play an even more important role. This is where we commit ourselves to the highest available standards and quality.

Each RcodeZero Anycast location is served by two different upstream connections, handled by two physically separate routers.

All servers are clustered with redundant disk storage and power supply systems. The capacity of each location mounts up to 500,000 DNS queries per second which adds up to 3 million queries per second for the whole anycast network.

## RcodeZero Anycast Product Features

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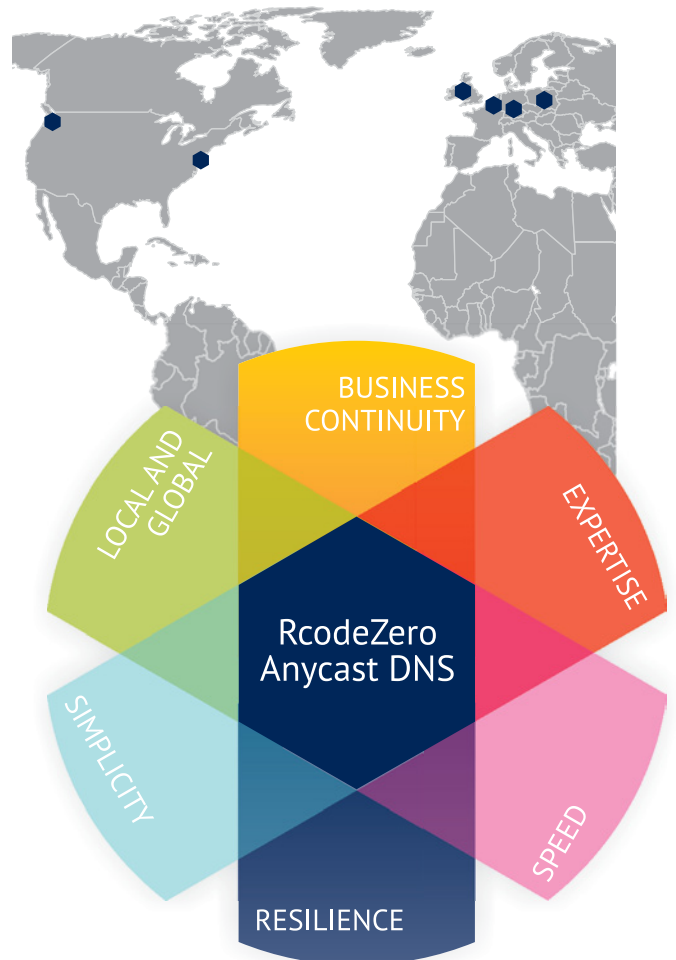
In addition to the state of the art technical architecture described above, RcodeZero Anycast DNS is characterized by the following features and services:

**SERVICE MONITORING AND SUPPORT** All services are monitored 24 hours a day year round. As soon as an error is reported, recovery measures are taken immediately. Emergency and support hotlines guarantee minimal response times and personal customer care.

**STATISTICS** Our comprehensive monitoring system delivers a wide range of statistics, which are made available to customers depending on their needs and the product selected. We offer basic, daily per-zone DNS statistics, long term traffic statistics and raw traffic dumps.

**MANAGING RcodeZero Anycast DNS** Our anycast services can be easily managed via a DNS editing interface or via a web API. Any information given to the command and control servers via these interfaces is validated and automatically deployed in the anycast network.

This capacity allows hosting of over 50 million customer zones in an extremely robust and latest state-of-the-art environment. The RcodeZero technical architecture complies with the respective RFC (request for comments) 4786 of the IETF (Internet Engineering Task Force).



**DNSSEC** RcodeZero Anycast DNS supports the DNSSEC standard. DNSSEC is a mechanism for securing that certain information provided by the Domain Name System is authenticated with the help of a digital signature. Many domain registries have already launched DNSSEC in their zones, and it is only a question of time until registrars and end customers will implement it as well. With RcodeZero Anycast DNS you are prepared for this development.

**IPv4 AND IPv6** The RcodeZero Anycast nodes provide name service via both IPv4 and IPv6.

**BRANDING OF THE NS HOST NAME** Customers are given the possibility to brand the host name with their preferred name (eg. ns1.customer.com instead of ns1.rcodezero.at) while pointing to the IP address of RcodeZero Anycast DNS.

## WHO IS IPCom?

IPCom is a subsidiary of nic.at, the Austrian domain registry. nic.at has managed the .at-zone for more than 12 years on a highly professional and reliable level. The RcodeZero Anycast network has been developed by nic.at's R&D department and has been successfully in use for the .at zone. External name service monitoring by RIPE NCC proves that .at is one of the most reliable top level domains.

Rely on our experience for your DNS diversity and resilience.

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