



Emergic _____
CLUSTER Suite

**High Availability
That Works**

Emergic Cluster Suite 1.0

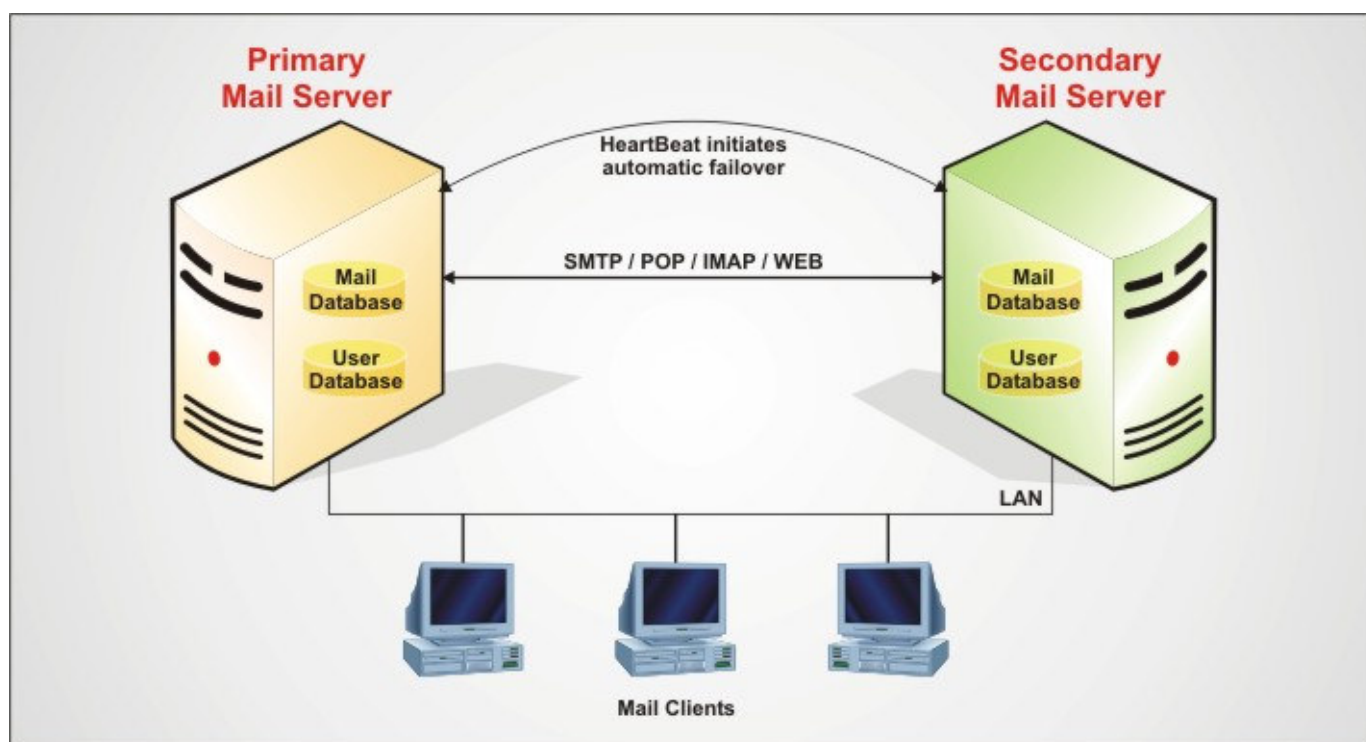
To achieve very high reliability, redundancy or scalability, **Emergic Cluster Suite** can be configured using a combination of several clustering architectures. Each clustering architecture has its own advantages and tradeoffs which you must consider in relation to your business need. The clustering architectures include:

- live replication server using mirroring between two servers
- functionally split across several servers
- traditional shared storage cluster
- domain split across several servers using proxy mode
- three layers model using proxy mode
- Unlimited User Cluster

OPTION I – Live replication (Mirroring)

Using **Emergic Cluster Suite** you can setup two servers to be continually updated "**live replicates of each other**", allowing you to send mail in to either system and read mail back from either server. In this configuration there is no single point of failure and if there is a major hardware problem on either server, you can failover to the second server with no interruption of service. Also, if one system goes down for maintenance, it will auto-resync when it comes back online.

Mirroring is the simplest and most cost effective way of getting a system with high reliability and high redundancy. This is particularly useful if your mail load "can easily" be handled on a single server.



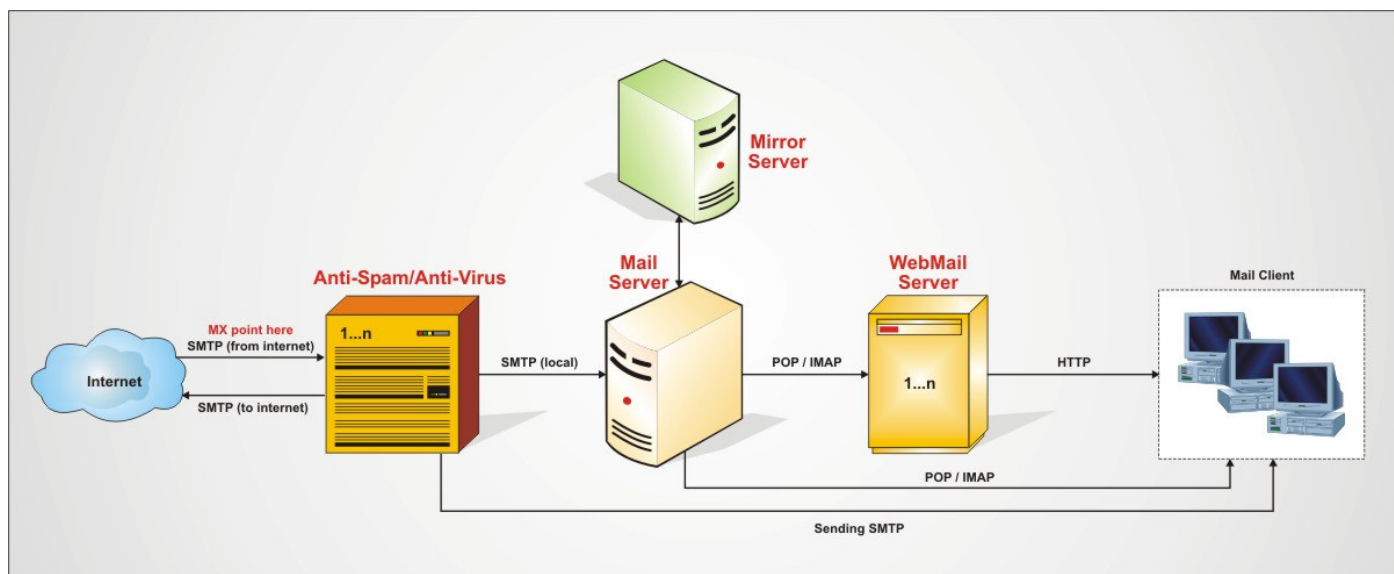
- All connections (POP/IMAP/SMTP/Webmail) go to one server and failover to the second server if the first server stops responding for a period.
- Both Primary and Secondary are connected to Local Network and Cross Over Cable back to back.
- The server failover software running in the secondary server detects the failure by observing the status of the cross over cable (Watchdog) line.
- Operations resume with minimal interruption and confusion. Most system users are unaware when a failover occurs.

OPTION II – Functionally split

Cluster Suite can be functionally split across several servers. The main reason to use this is if your mail load is too large for one server (eg 5000 user+) and / or you have a particularly heavy spam loading or webmail client loading.

You can pick and match what you want to support on each server, but typically you would setup say 2 front end systems for spam and virus filtering. A single mail system to handle storage of local mail including access to this using POP and IMAP. And one or more webmail systems which handle the webmail load and talk to the primary mail server when necessary using IMAP.

This is the most efficient way to implement a high reliability system with a high level of scalability.



Other considerations:

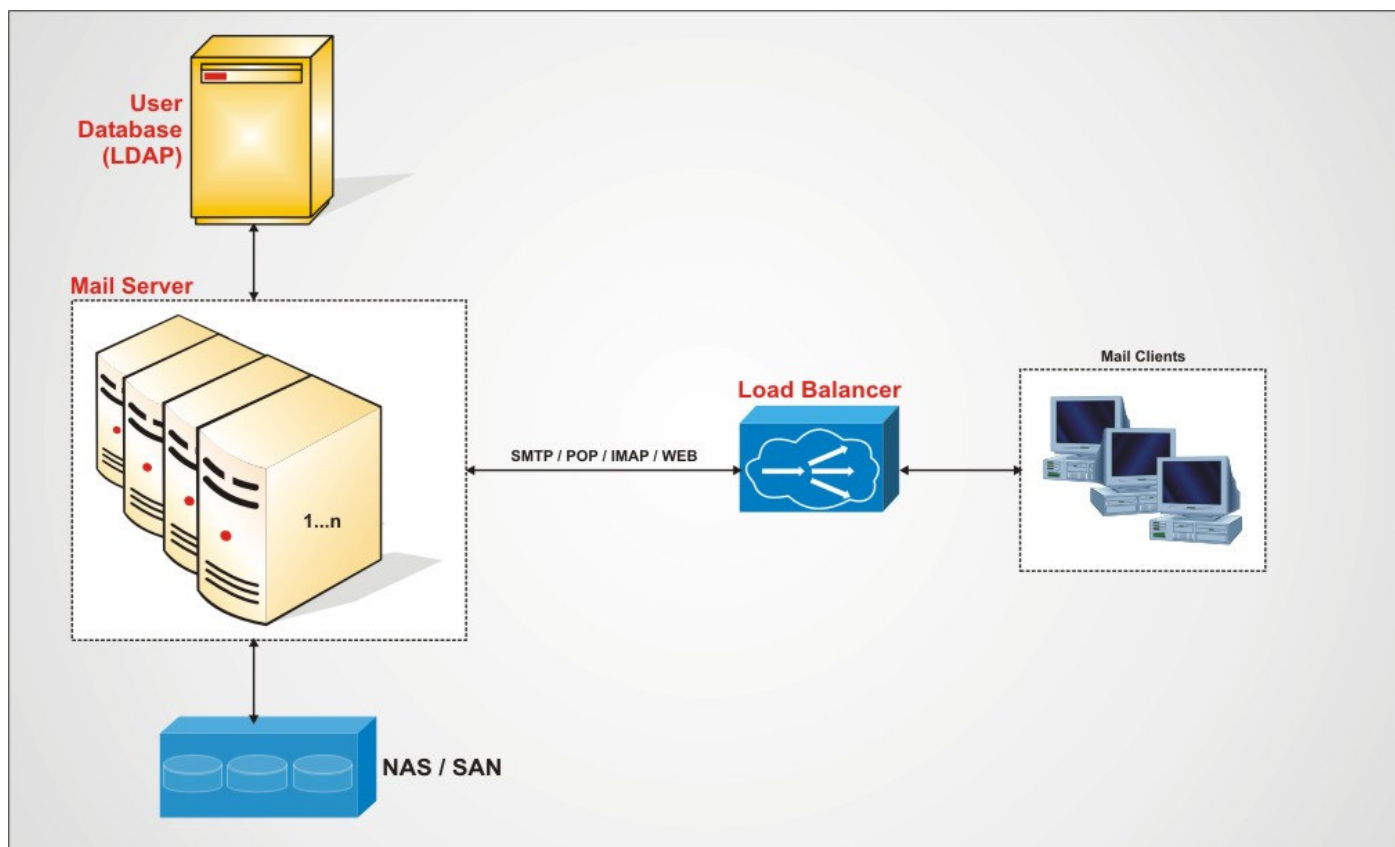
- A functionally split architecture can be combined with mirroring. You would simply introduce one more system into the above architecture which is a mirror of the primary mail system. As per mirroring this removes the single point of failure (with associated mail data loss) you would otherwise have if your main mail system were to fail.
- Mail will continue to be accepted by the filter systems if there is a problem with your primary mail system.

OPTION III – Shared Storage Cluster (NAS / SAN)

Cluster Suite can be configured in a more traditional shared storage cluster configuration using an NFS (or other) shared storage device for providing standard mail services.

In this configuration you have several servers all running Mail servers handling all mail services storing users mail using the same central storage. The incoming connection load is shared between all servers using an appropriate technique.

This is typically a hardware based load balancing router.

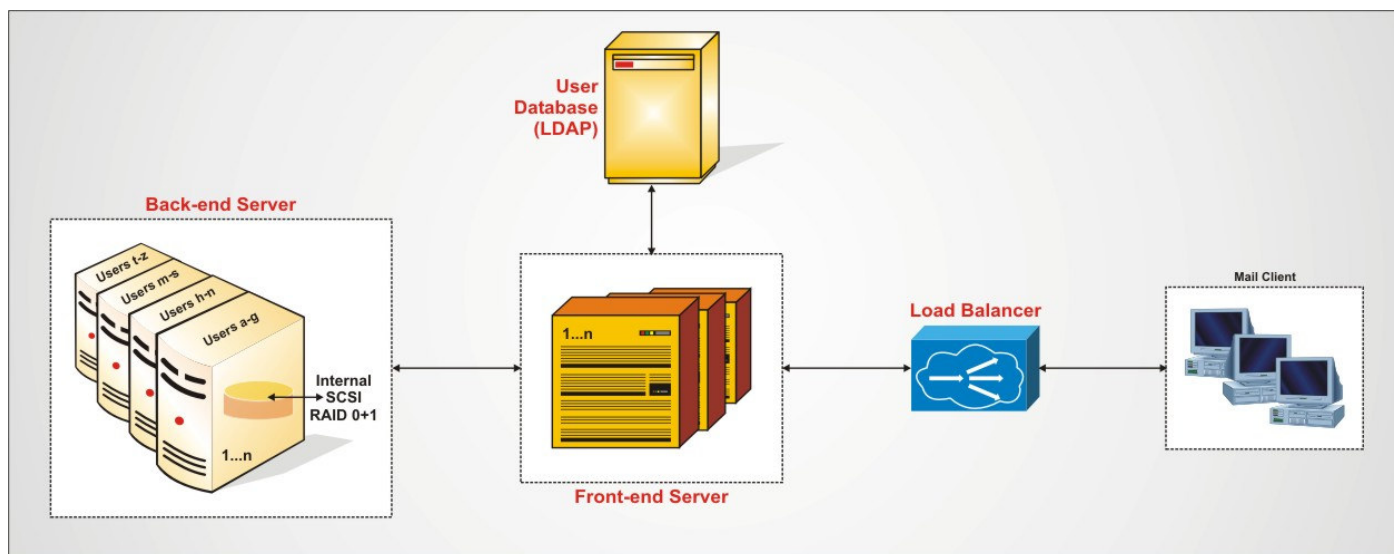


This configuration has the advantage that it is truly symmetric and you can easily add in one or more servers if required and can scale for 100000+ Users

OPTION IV – Domain split (Proxy mode for huge systems)

Proxy mode allows a domain to be split across several physical servers. This system allows both infinite scaling, and 3 layer security. Incoming POP/SMTP connections arrive at one of several front end 'proxy' servers (running Mail server in proxy mode) these servers then lookup the user in the networked user database (via LDAP) and along with the normal response an extra response code of 'tohost=backend.host.name' is returned, the proxy then redirects the user to the appropriate back end system.

So you might run 4 back end systems, each with X users, and 2 front end systems. To add more users you just add as many front end and back end servers as needed to cope with the load.



Each user is only on one of the back end systems, the only piece in the system that has to handle all the users is the user database, which is a relatively trivial task as the quantity of data per entry is so small.

Disadvantages:

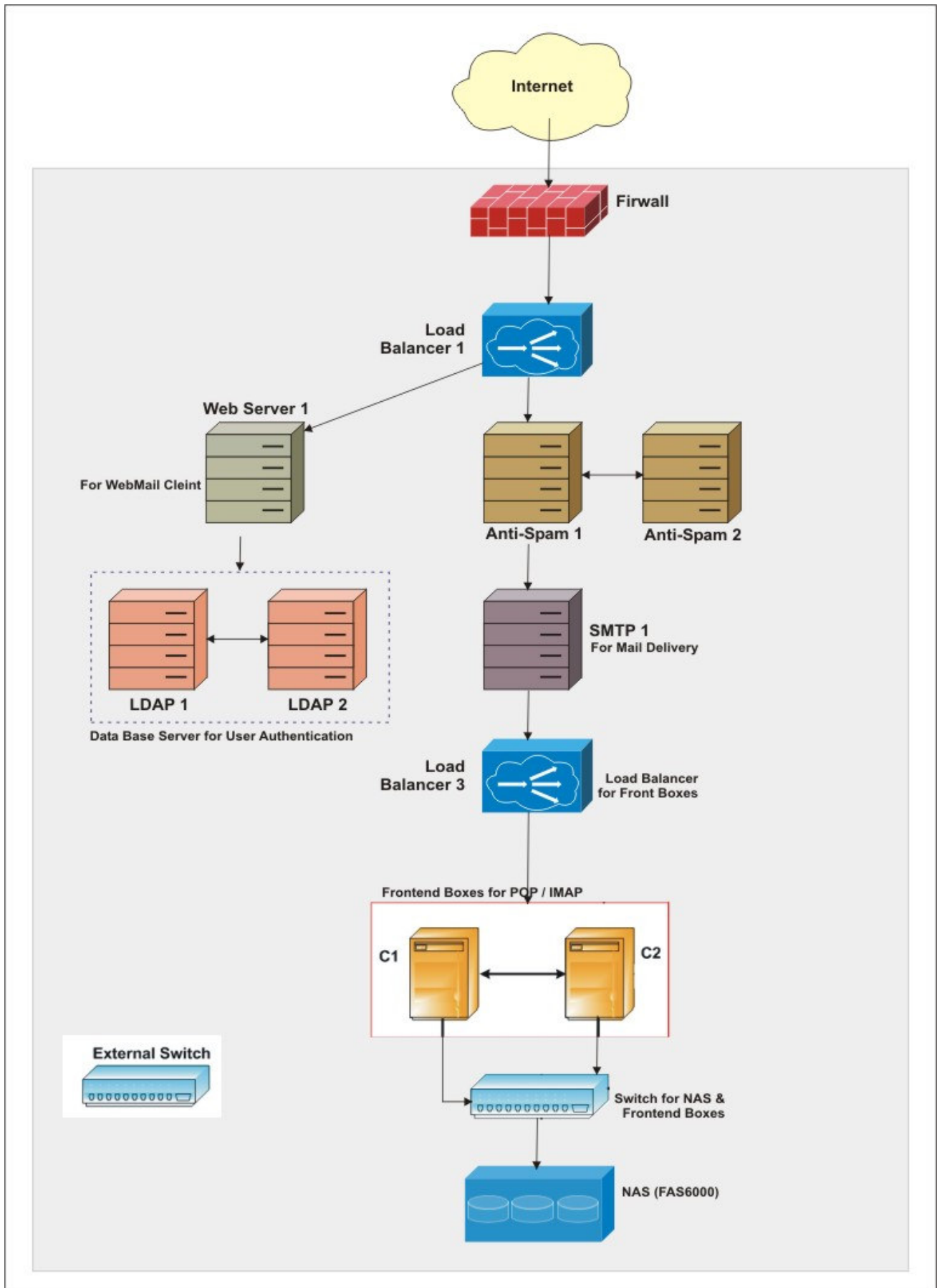
- If any of the Back-end servers fail then users on that server would not be able to access mail
- Data is distributed over multiple servers so management and backup could be a problem

OPTION V – High End Cluster with 99.9% uptime

In a High End Cluster Suite, mail servers can be configured in a more traditional shared storage cluster configuration using an NFS (or other) shared storage device for providing standard mail services.

The Anti-spam Services and SMTP Relaying and Webmail are kept on different servers for scalability

In this configuration you have several servers all running Mail servers handling all mail services (POP/IMAP) storing users mail using the same central storage. The incoming connection load is shared between all servers using an appropriate technique



- | | |
|-------------------|---|
| 1) LVS1 | - Load Balancer for ECM, Database and HTTP Servers |
| 2) HTTP Server | - For Webmail Clients |
| 3) ECM | - Anti Spam and Anti Virus |
| 4) SMTP Server | - For Mail Delivery |
| 5) LVS3 | - Load Balancer for FrontEnd Boxes |
| 6) FrontEnd Boxes | - for IMAP and POP (Mailboxes) |
| 7) LDAP Server | - DATA Base Server for User Authentication |
| 8) NETAPP | - Data Storage Box |
| 9) Switch1 | - For Local Network to connect FrontEnd Boxes and NAS |
| 10) Switch2 | - For connecting rest of the Servers |

By themselves the clustering techniques compare as follows:

	Mirror	Functionally split	Shared Storage	Domain split (proxy)	High End Cluster
Provides processing redundancy	Some	Yes	Yes	No (but can be added by splitting to functionally split or shared storage clusters)	Yes
Provides data redundancy	Yes	No (but can be added using mirroring)	Yes (by adding mirroring in NAS/SAN)	No (but can be added using mirroring)	Yes (SAN/NAS)
Provides load sharing	Some	Yes	Yes	Yes	Yes
Use of basic mail features					
SMTP	Yes	Yes	Yes	Yes	Yes
POP	Yes	Yes	Yes	Yes	Yes
IMAP	Yes	Yes	Yes	Yes	Yes
Webmail	Yes	Yes	Yes	Yes	Yes

Prestigious Clients:

- IDBI Bank – Mumbai
- GIC – Mumbai
- Semb Corp Logistics – Chennai
- Bombay Dyeing

Netcore's other Products:

- [Emergic MailServ](#) (*Linux Mail Server*)
- [Emergic CleanMail](#) (*Anti-Spam & Anti-Virus*)
- [Emergic FlexiMail](#) (*Hosted Mail Management*)
- [eKrypt](#) (*Email Encryption*)

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