SERVERware

Note:
To change the product logo for your own print manual or PDF, click "Tools > Manual Designer" and modify the print manual template.

Title page 1

Use this page to introduce the product

by Senad Jordanovic · Bicom Systems Ltd

This is "Title Page 1" - you may use this page to introduce your product, show title, author, copyright, company logos, etc.

This page intentionally starts on an odd page, so that it is on the right half of an open book from the readers point of view. This is the reason why the previous page was blank (the previous page is the back side of the cover)

SERVERware

Printed: December 2006 in (whereever you are located)

Publisher

...enter name...

Managing Editor

...enter name...

Technical Editors

...enter name...
...enter name...

Cover Designer

...enter name...

Team Coordinator

...enter name...

Production

...enter name...

Special thanks to:

All the people who contributed to this document, to mum and dad and grandpa, to my sisters and brothers and mothers in law, to our secretary Kathrin, to the graphic artist who created this great product logo on the cover page (sorry, don't remember your name at the moment but you did a great work), to the pizza service down the street (your daily Capricciosas saved our lives), to the copy shop where this document will be duplicated, and and and...

Last not least, we want to thank EC Software who wrote this great help tool called HELP & MANUAL which printed this document.

Table of Contents

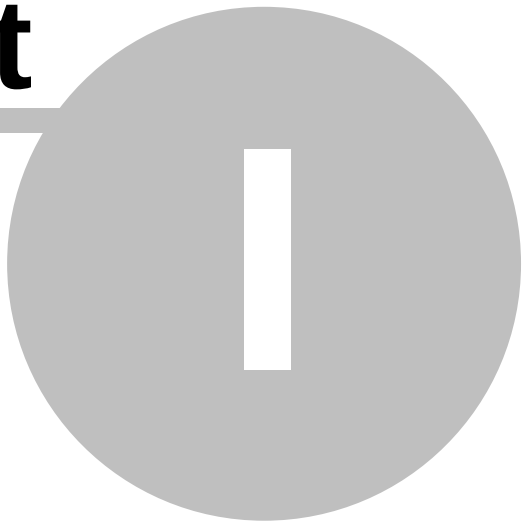
Foreword

This is just another title page
placed between table of contents
and topics

Top Level Intro

This page is printed before a new
top-level chapter starts

Part

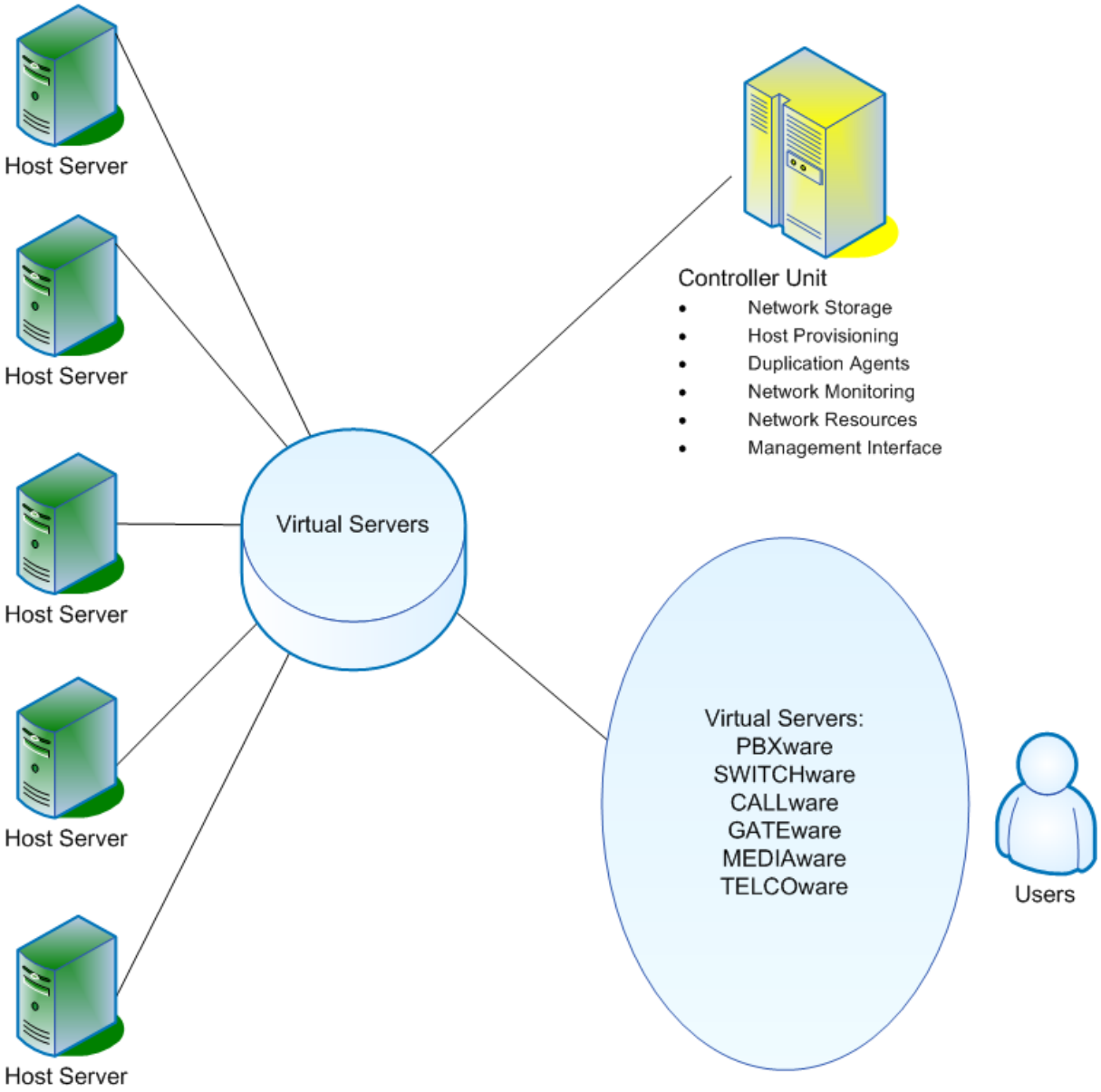


1 Introduction

SERVERware is a next generation communication technology solution delivering a wide range of applications in redundant, high availability or fault tolerant configurations. It features comprehensive management, flexibility, self healing and an unlimited scalability of host and virtual servers needed for today's communications needs.

Features:

- Browser or CLI management
- Highly available virtual servers
- Central network storage
- Network resources monitoring
- Network servers monitoring
- Real time or time based virtual servers duplication
- Auto hosts provisioning
- Virtual servers templates

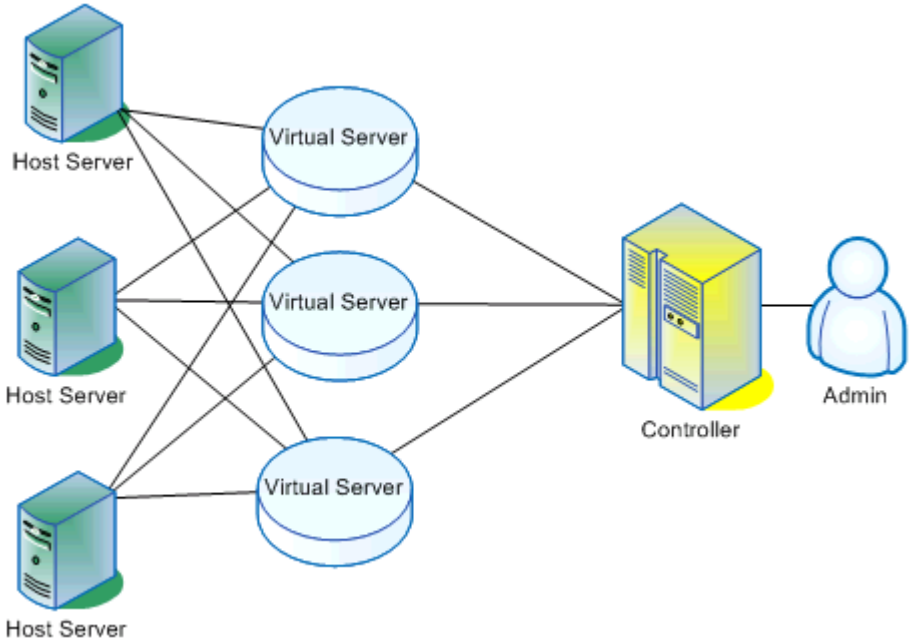


1.1 Management

Management

The controller unit offers command line and web interface management and monitoring of all servers on the network. Command line administration is performed by using SSH while web administration is

supported using Firefox and Internet Explorer web browsers.



1.2 Flexibility

Flexibility
SERVERware features virtual servers allowing any compatible application to be offered to the network. Each host server is able to contain many virtual servers. The number of virtual servers on each host is limited by host hardware specifications and performance. Should a network require additional applications or services, additional hosts can be automatically added. This in turn allows unlimited virtual servers and applications to be delivered to users.

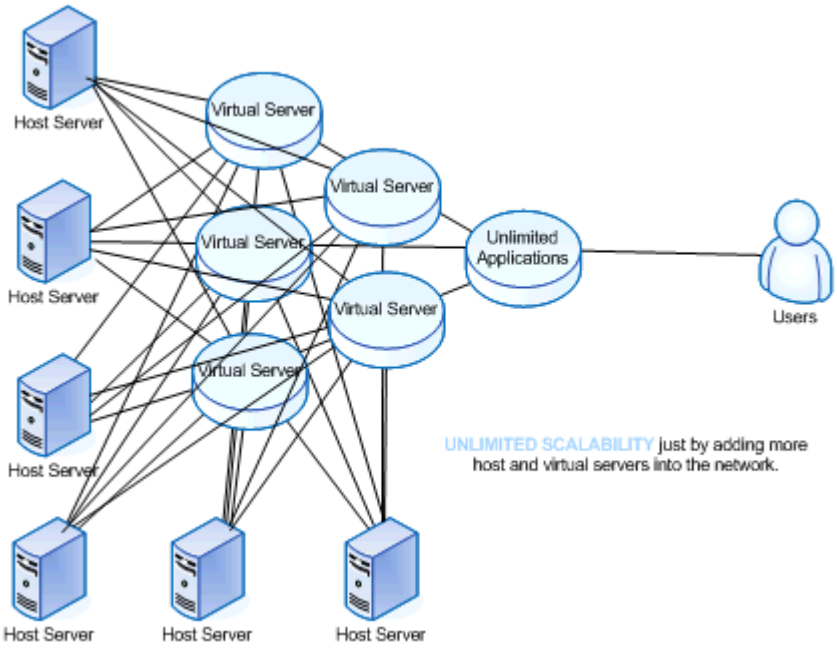
1.3 Self Healing

Self Healing and Redundancy:
Any virtual server can operate from any host server. This means that should any host server fail, the netMON agent will detect the failure and "heal" network by re-starting the virtual server(s) on another host. This is possible because the netDUPLO agents duplicates entire virtual server to the network storage at pre-set time interval.

1.4 Scalability

Scalability
Controller manages up to 256 host and virtual servers per network site. An organization could have

many network sites. This fact allows adding an unlimited number of virtual servers. Since each virtual server can serve many type of applications this results in an organization having an unlimited number of PBX systems, gateways, soft switches, web servers or any other type of applications.



1.5 Available VPSes

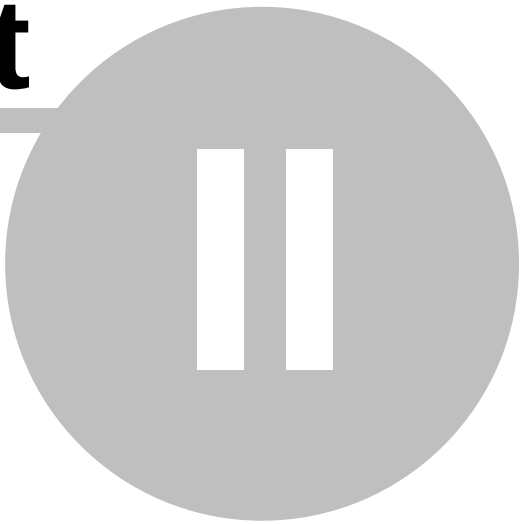
PBXware
SWITCHware
GATEware
CALLware
MEDIAware
TELCOware

Please see www.bicomsystems.com for further details on above.

Top Level Intro

This page is printed before a new
top-level chapter starts

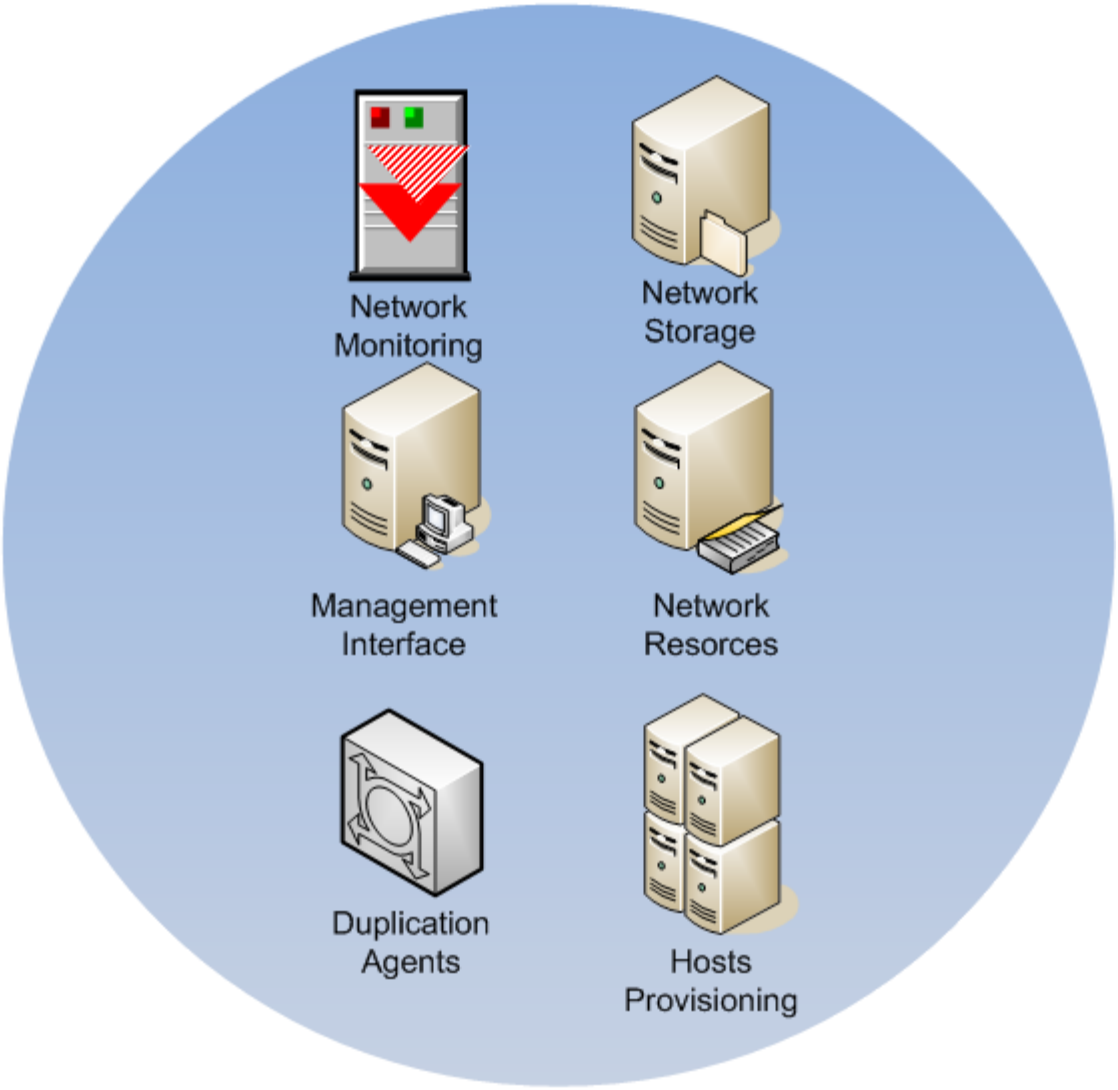
Part



2 Controller Unit

The controller is a "brain" of the SERVERware making sure all hosts, data, applications and services are highly available and present. In its core, SERVERware features essential network services offered to host and virtual servers. Default standard services included are:

- Network Storage
- Host Provisioning
- Duplication Agents
- Network Monitoring
- Network Resources
- Management Interface



Controller Unit Default Services

The above configuration should be installed on a redundant server hardware for maximum uptime.

However, for even better redundancy the controller can be configured in high availability mode using serDUPLO agent responsible to duplication of storage from primary to secondary server. For this configuration, two identical servers are required. Please see optional components for further details.

The controller unit can be setup in redundant, high availability or fault tolerant operation modes:

Redundant
Redundant operation mode features redundant power supplies, RAID disk system and redundant fans

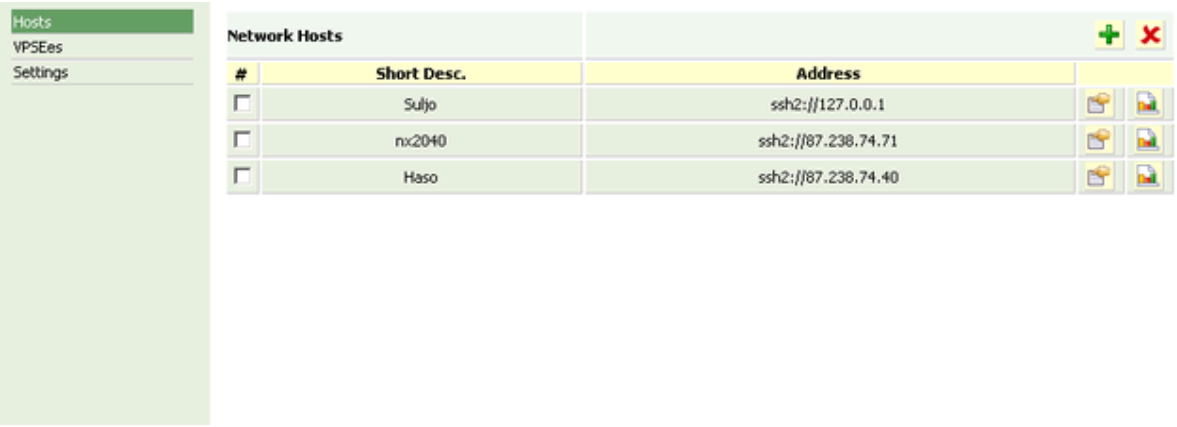
High Availability
This operation mode requires two servers. These servers are then setup in a primary/secondary operation mode. All controller unit services are started on primary server and secondary server is set to monitor the primary server for normal operation. Should secondary server find any operation abnormality, it will within few seconds change its identity to primary server and restart controller services.

Fault Tolerant
Fault tolerant operation mode uses fault tolerant duplicated hardware and software in order to set full fault tolerant operation mode for controller unit. This is achieved by using fault tolerant Linux and step lock technologies. Fault tolerant configuration require use of fault tolerant hardware. Please visit http://www.bicomsystems.com/products/C/P/319/255_2797/ for further details.

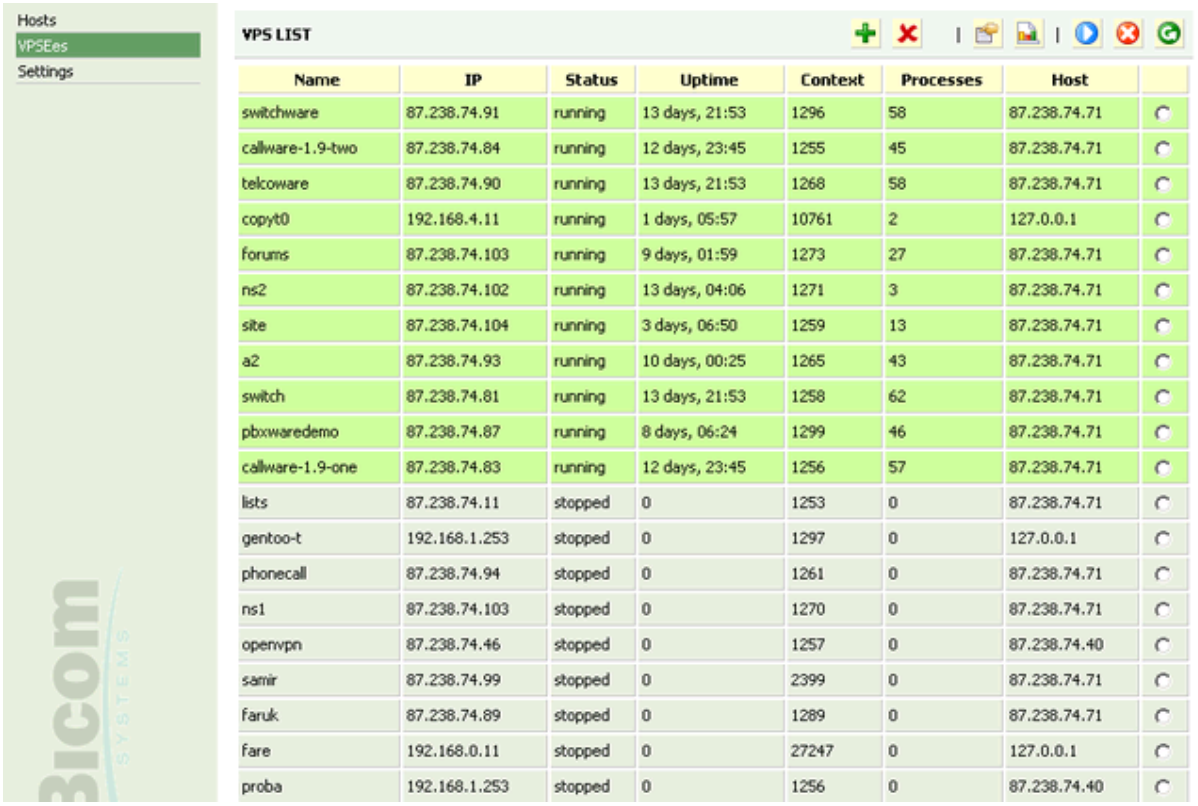
2.1 Server Operations

SERVERware allows an authorized user to perform a variety of essential actions to network hosts and virtual server.

HOSTS
Actions possible to hosts are:
Add, Delete, Edit and view host resources statistics.



VIRTUAL SERVERS
Actions possible to virtual servers are:
Add, Delete, Copy, Move, Start, Restart and Edit and view virtual server statistics.

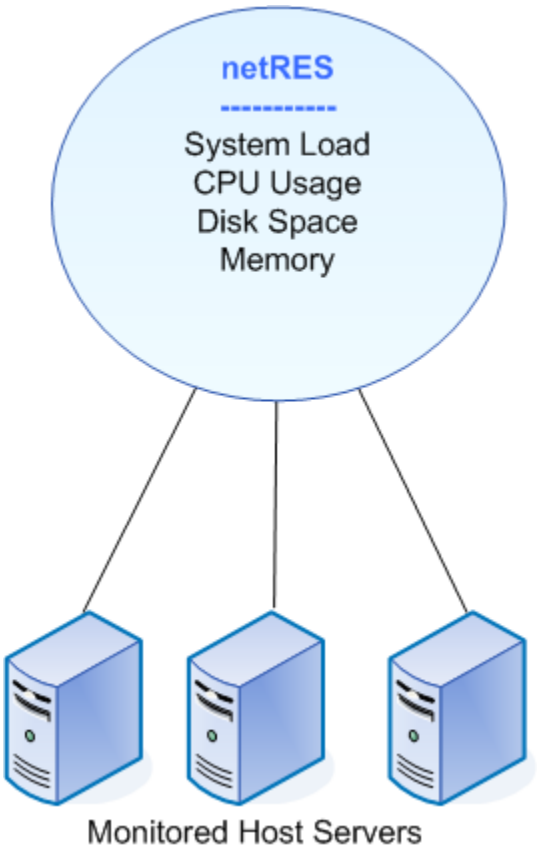


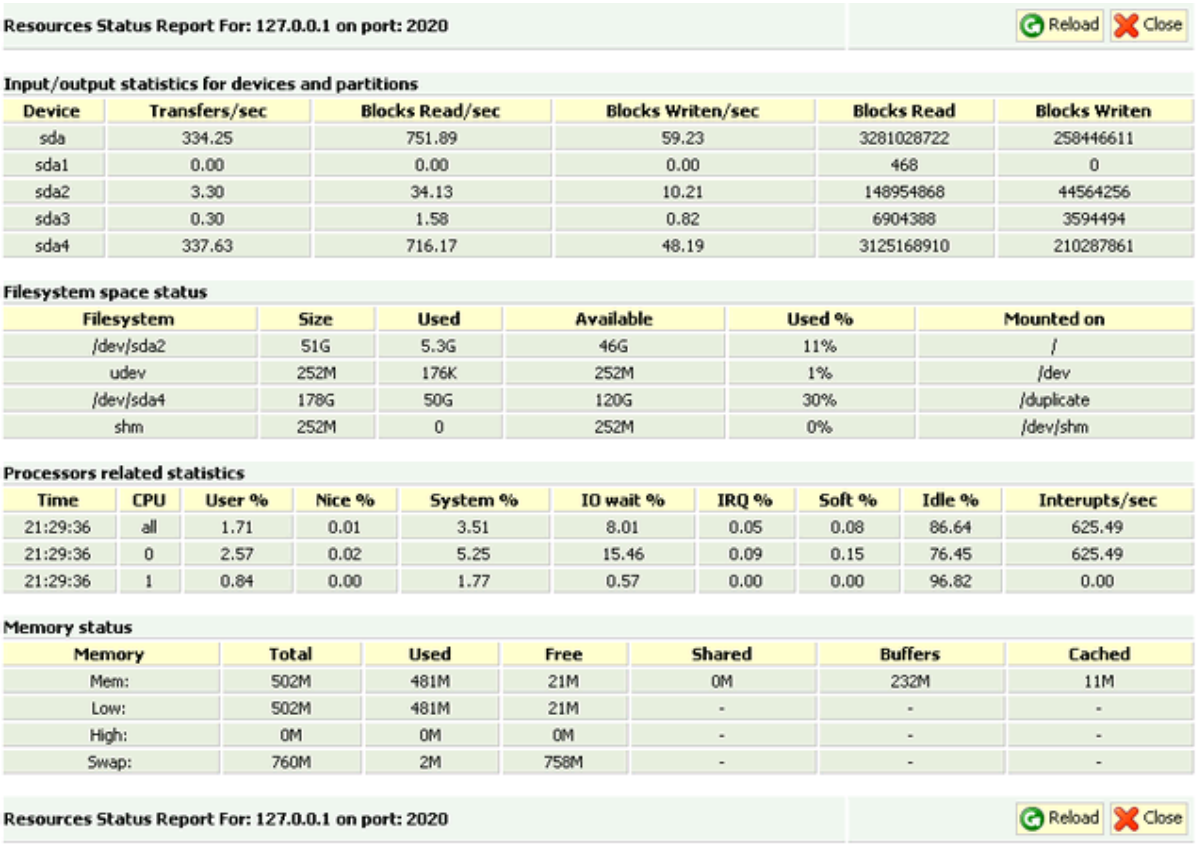
Name	IP	Status	Uptime	Context	Processes	Host	
switchware	87.238.74.91	running	13 days, 21:53	1296	58	87.238.74.71	
callware-1.9-two	87.238.74.84	running	12 days, 23:45	1255	45	87.238.74.71	
telcoware	87.238.74.90	running	13 days, 21:53	1268	58	87.238.74.71	
copyt0	192.168.4.11	running	1 days, 05:57	10761	2	127.0.0.1	
forums	87.238.74.103	running	9 days, 01:59	1273	27	87.238.74.71	
ns2	87.238.74.102	running	13 days, 04:06	1271	3	87.238.74.71	
site	87.238.74.104	running	3 days, 06:50	1259	13	87.238.74.71	
a2	87.238.74.93	running	10 days, 00:25	1265	43	87.238.74.71	
switch	87.238.74.81	running	13 days, 21:53	1258	62	87.238.74.71	
pbxwaredemo	87.238.74.87	running	8 days, 06:24	1299	46	87.238.74.71	
callware-1.9-one	87.238.74.83	running	12 days, 23:45	1256	57	87.238.74.71	
lists	87.238.74.11	stopped	0	1253	0	87.238.74.71	
gentoo-t	192.168.1.253	stopped	0	1297	0	127.0.0.1	
phonecall	87.238.74.94	stopped	0	1261	0	87.238.74.71	
ns1	87.238.74.103	stopped	0	1270	0	87.238.74.71	
openvpn	87.238.74.46	stopped	0	1257	0	87.238.74.40	
samir	87.238.74.99	stopped	0	2399	0	87.238.74.71	
faruk	87.238.74.89	stopped	0	1289	0	87.238.74.71	
fare	192.168.0.11	stopped	0	27247	0	127.0.0.1	
proba	192.168.1.253	stopped	0	1256	0	87.238.74.40	

2.2 Network Resources

netRES

Network Resources Agent (netRES) is responsible for monitoring essential resources on hosts and virtual servers. It keeps an accurate data on all hosts and virtual servers on the network in order to allow other SERVERware components access to its data. Resources monitored are: System load, CPU usage, memory status, file system usage and bandwidth utilization. netRES agent is installed on controller and each host it monitors.





Resources Status Report For: 127.0.0.1 on port: 2020 — Reload — Close

Input/output statistics for devices and partitions

Device	Transfers/sec	Blocks Read/sec	Blocks Writen/sec	Blocks Read	Blocks Writen
sda	334.25	751.89	59.23	3281028722	258446611
sda1	0.00	0.00	0.00	468	0
sda2	3.30	34.13	10.21	148954868	44564256
sda3	0.30	1.58	0.82	6904388	3594494
sda4	337.63	716.17	48.19	3125168910	210287861

Filesystem space status

Filesystem	Size	Used	Available	Used %	Mounted on
/dev/sda2	51G	5.3G	46G	11%	/
udev	252M	176K	252M	1%	/dev
/dev/sda4	178G	50G	120G	30%	/duplicate
shm	252M	0	252M	0%	/dev/shm

Processors related statistics

Time	CPU	User %	Nice %	System %	IO wait %	IRQ %	Soft %	Idle %	Interupts/sec
21:29:36	all	1.71	0.01	3.51	8.01	0.05	0.08	86.64	625.49
21:29:36	0	2.57	0.02	5.25	15.46	0.09	0.15	76.45	625.49
21:29:36	1	0.84	0.00	1.77	0.57	0.00	0.00	96.82	0.00

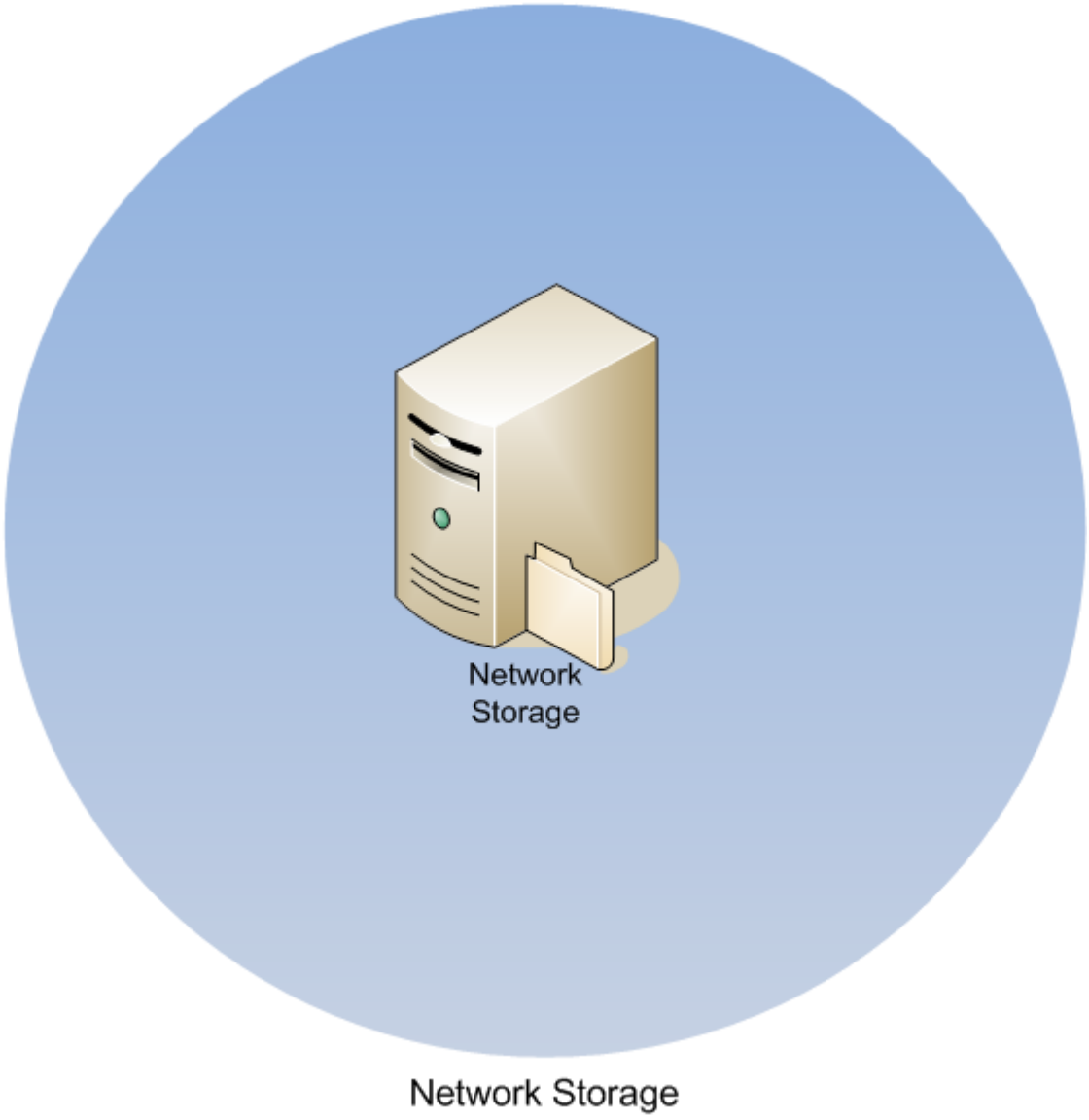
Memory status

Memory	Total	Used	Free	Shared	Buffers	Cached
Mem:	502M	481M	21M	0M	232M	11M
Low:	502M	481M	21M	-	-	-
High:	0M	0M	0M	-	-	-
Swap:	760M	2M	758M	-	-	-

Resources Status Report For: 127.0.0.1 on port: 2020 — Reload — Close

2.3 Network Storage

Network storage within the controller is a directory set to accept data form network hosts or other approved network services. The duplication agent netDUPLO, uses network storage to duplicate virtual servers data and its configuration. The duplication time is preset for each host. Since netDUPLO duplicates virtual servers to network storage this allows SERVERware to perform a variety of actions to virtual servers.



2.4 Network Status

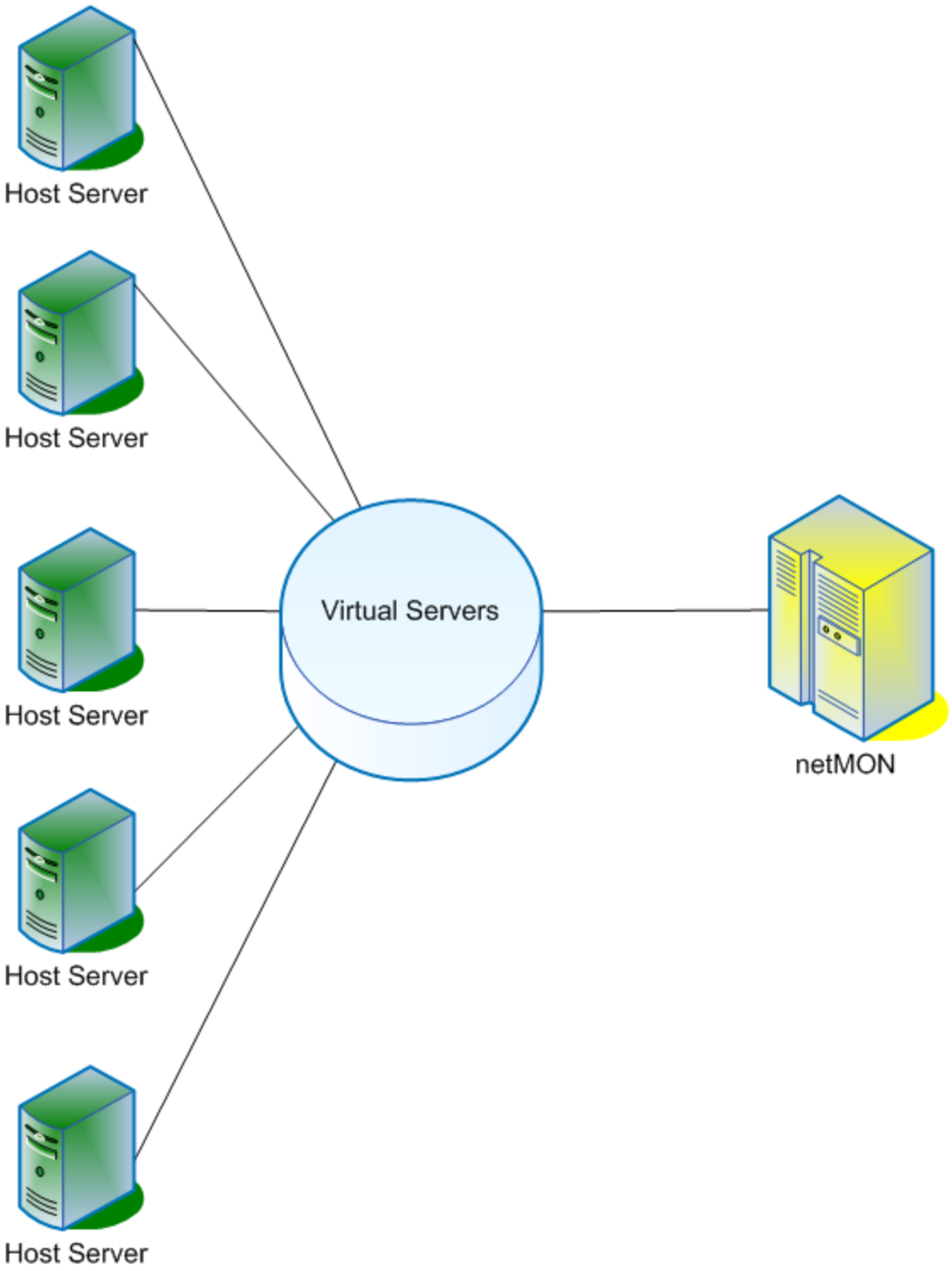
netMON
Network monitor agent (netMON) monitors hosts and virtual servers default services for normal operations. Should netMON find a virtual or host server not responding to default services within preset time value it will try getting the status of each virtual server operating from that host. Should those virtual servers not respond it shall contact resMON agent to determine at which host(s) to re-start the non responsive virtual servers.

NetMON will then within few seconds:

1. Start the virtual servers on the controller/storage host while copying the virtual server to appropriate host

2. Once the copy is complete virtual server(s) will be restarted on new host.

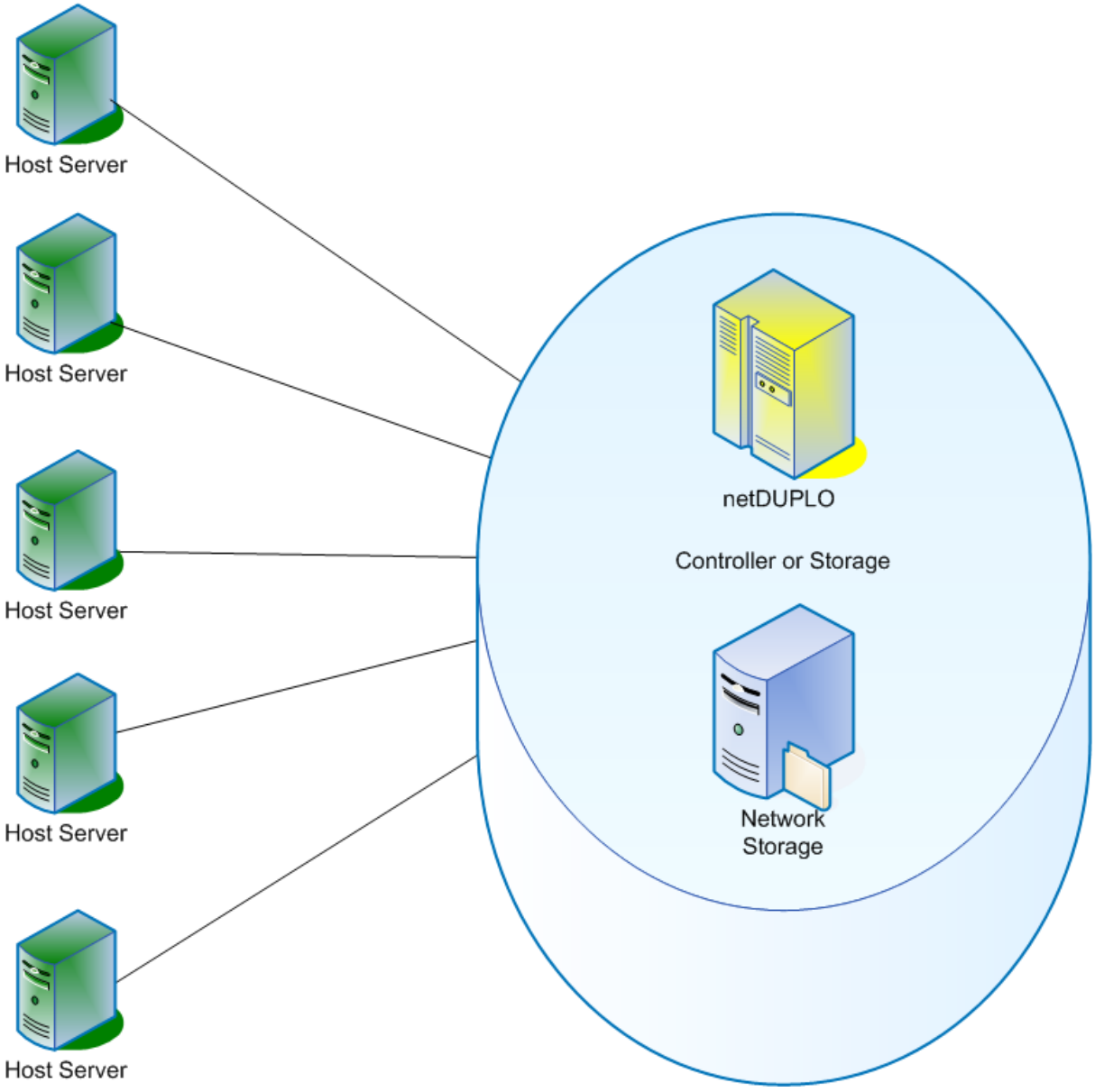
Above setup insures the minimum possible downtime.



2.5 Duplication Agents

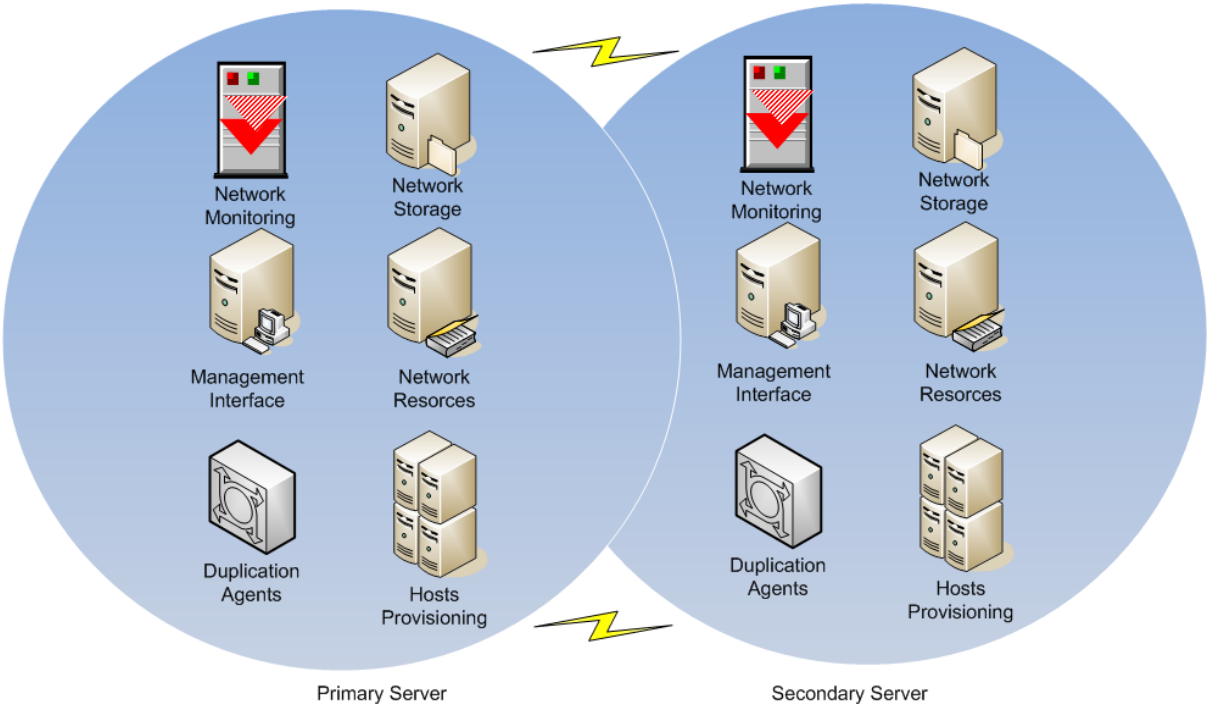
Duplication agents are responsible for duplicating the virtual servers, the hosts and other important data across servers and network. It ensures that the data is current and available in case it is needed to be used on another host or virtual server. SERVERware includes two types of duplication agents: **serDUPLO** and **netDUPLO**.

netDUPLO
netDUPLO resides on the controller unit or separate storage server. It monitors file system changes on remote servers and copies the changes in regular time interval. This ensure that if one of hosts fails its data or virtual servers can be normally used on another host server.



serDUPLO
serDUPLO duplicates a disk partition from primary to secondary controller or if separate storage server

exists, it duplicates storage from primary storage server into secondary storage server. serDUPLO performs duplication of all data in a given disk partition in real time using high speed ethernet or dedicated interconnect technology. serDUPLO achieves this by "intercepting" all disk activity on the primary server and then sending the data to primary and secondary servers at the same time. Since netDUPLO already duplicates virtual servers onto this disk partition, this agent allows creation of extra high availability setup for controller or storage servers.



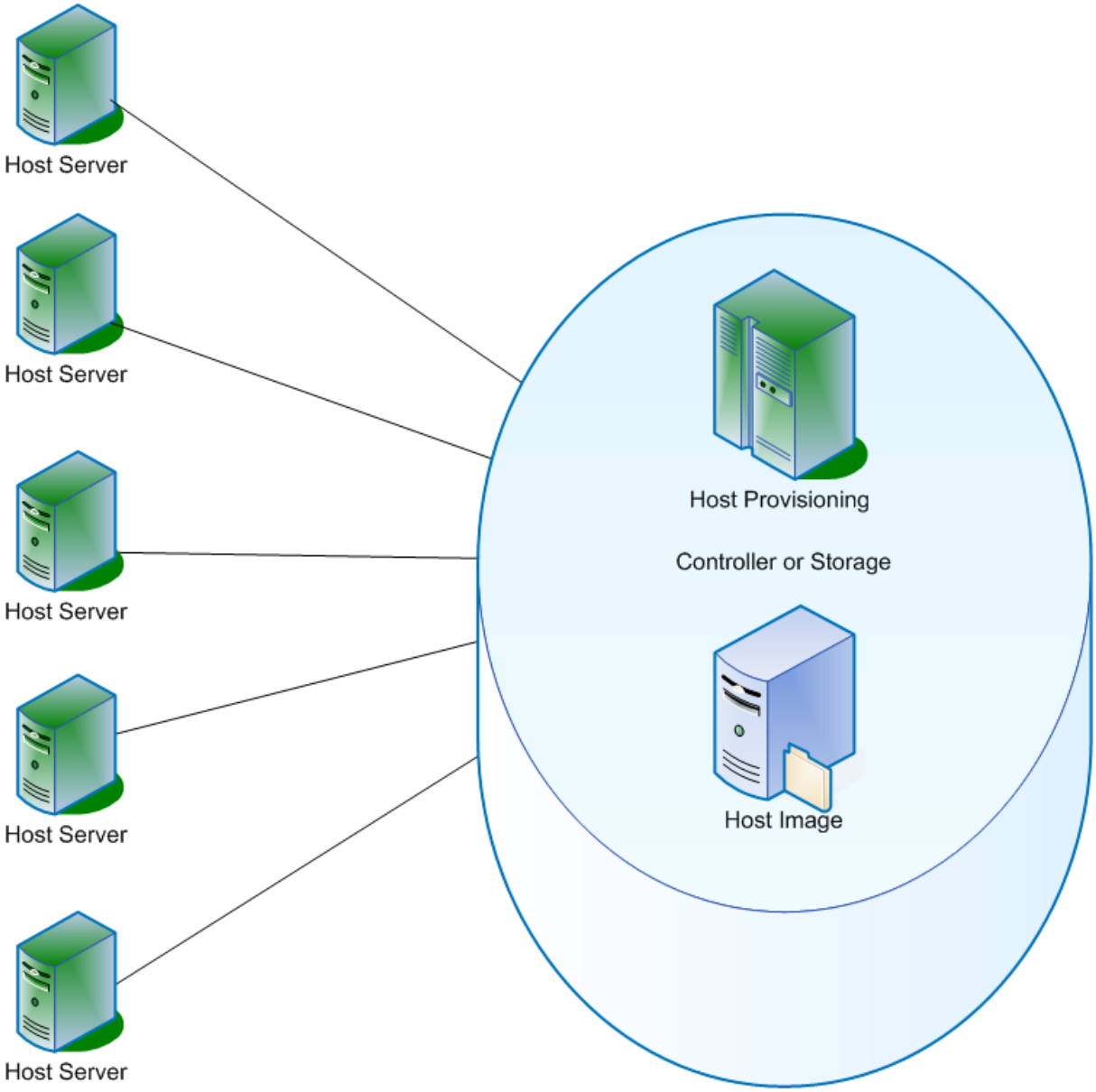
Controller Unit configured in high availability mode

PLEASE NOTE:
SerDUPLO is an optional component available for controller/storage using high availability configuration.

2.6 Hosts Provisioning

Hosts provisioning service is responsible for allowing additional hosts to be added into the network. It stores the necessary hosts operating system template images and it starts a TFTP services in as transporting mechanism.

Normally to add a host into a network requires OS installation and configuration. This takes time, it is prone to errors and above all it costs monies. Hosts provisioning service on the other hand contains a pre-configured, fully tested Linux image. This image can be requested by a host on the network and once downloaded a host will be configured and able to host virtual servers. The whole process takes few minutes, and it is fully automatic.

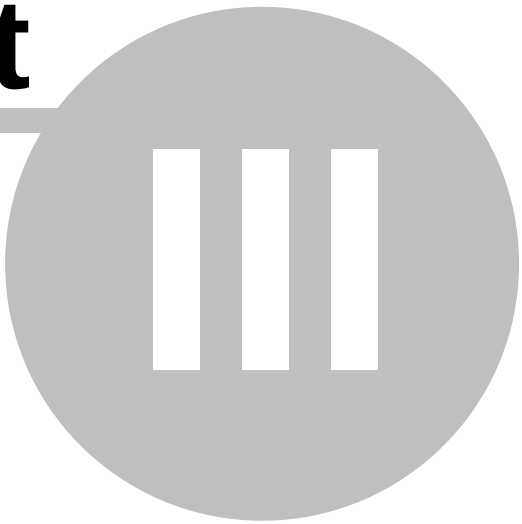


PLEASE NOTE:
Above is not implemented yet

Top Level Intro

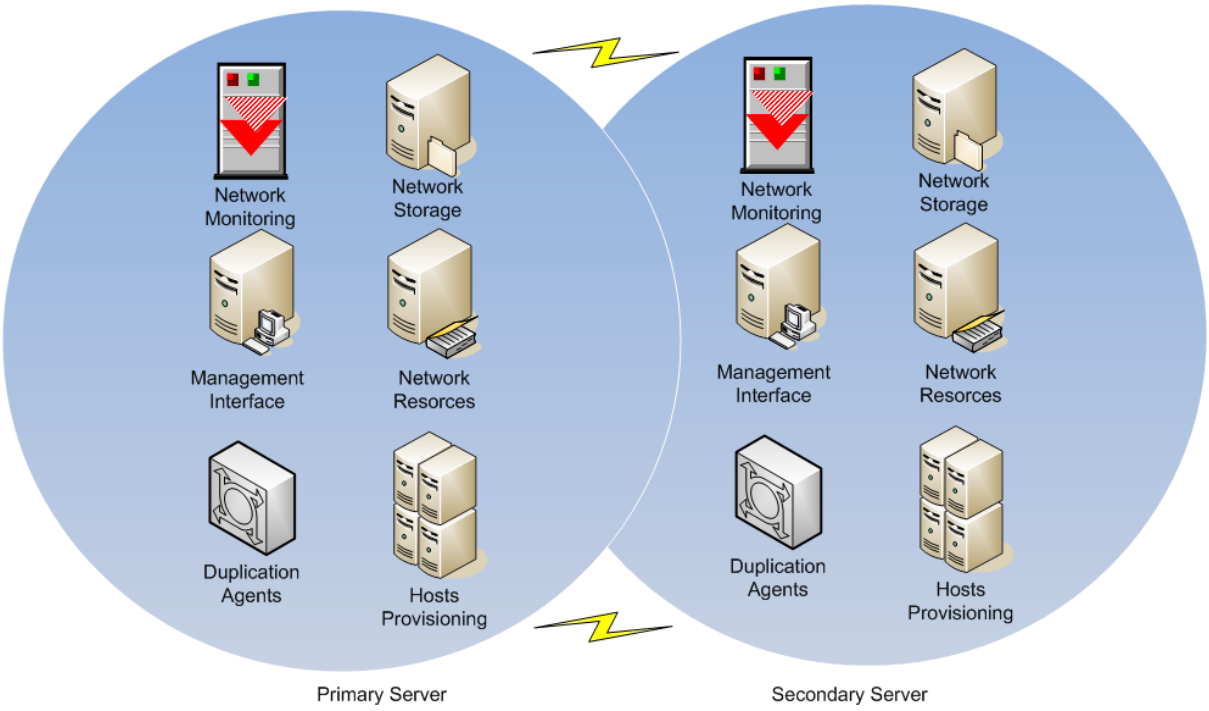
This page is printed before a new top-level chapter starts

Part



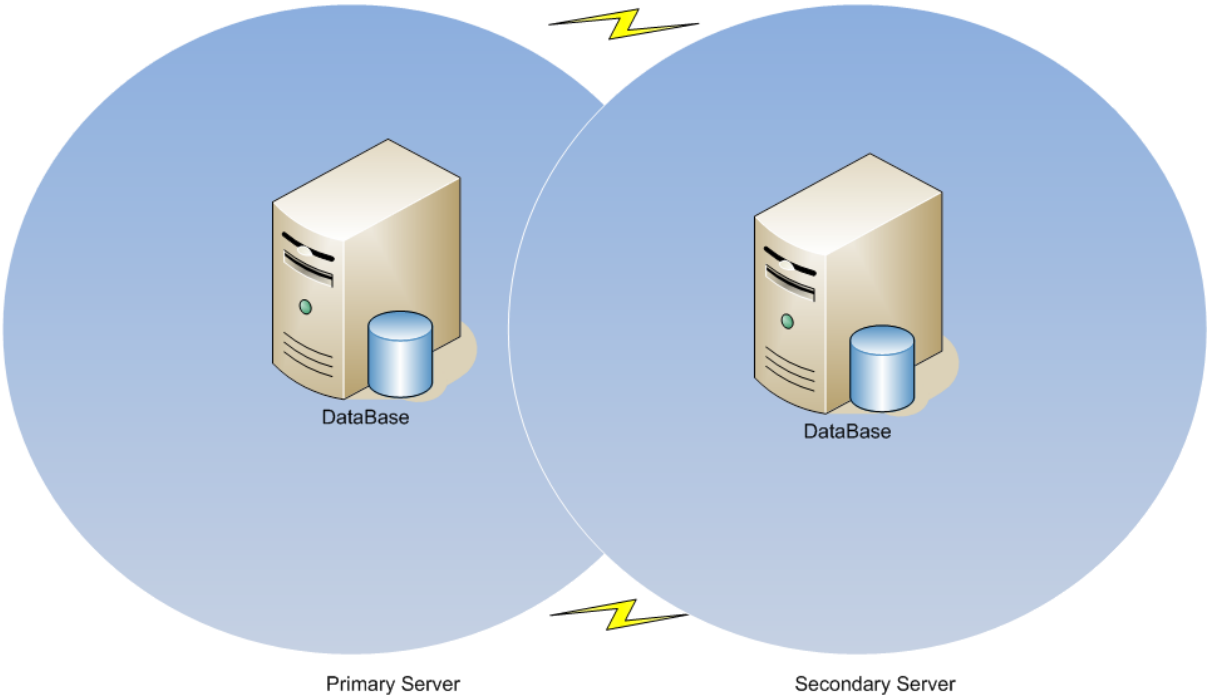
3 Optional Components

High availability controller or storage
High availability services served from controller(s) could be setup in high availability (HA) operation mode. Two controllers are needed for this setup. Primary and Secondary.
Primary controller hosts all the services while secondary controller monitors the primary for normal operation status. Should secondary controller find an abnormal operation status, it will within set period of time (usually set to few seconds) assign the high availability IP address and start all services within that controller. This ensures network services are highly available in case of primary controller hardware failure giving the opportunity to network administrator to perform hardware investigation.



Controller Unit configured in high availability mode

Database Replication
Further redundancy can be achieved by implementing database replication between controllers. This is achieved by replicating database from one server to another.



DataBase Cluster
A set of databases configured to work in a redundant and scalable cluster using a number of servers sharing the load.

Endnotes 2... (after index)

Back Cover