



HIGH-AVAILABILITY



RSF-1



***Partnering for Success
Maginus***

High-Availability

Implementation Plan

Introduction

This document is intended for use during the implementation phase. It is also possible that components will be useful during pre-sales, post implementation and planning phases but that is not a primary objective of this document.

At High-Availability.Com we believe that good planning and documentation greatly improve the chances of a smooth implementation and good customer perception.

Maginus

Maginus allows retailers and distributors to build a more successful, profitable business by controlling the critical processes that create long-term, satisfied customers. Maginus' vision was to create a comprehensive software platform for a more revenue-driven, customer-focused retail and distribution. Today, over 5,000 users in more than 100 organisations rely on Maginus solutions to maximise their sales potential, optimise margins and deliver a consistently high quality service through every channel.

Maginus solutions give you deep functionality for your core sales, marketing, CRM, logistics, financials and reporting activities, out-of-the-box. You can control catalogue and mail order, call centre, e-commerce, trade counter, field sales and store sales in a single system. Maginus supports the specific requirements of many industries, including computers & electronics, food and drink, publishing, wholesale distribution and fulfilment. It's a uniquely capable and flexible software platform that can be implemented quickly and adapted to support businesses they grow.

Maginus Features and Benefits

Typical implementations of the Maginus system include:

- Catalogue & mail order management - instant access & publishing, CRM and product data.
- Real time E-commerce integration
- Telesales - campaign, CTI, logistics, credit card & web integration
- Trade counter & store
- Sales - quotes, orders, availability, 'up-selling', cross-selling, credit card authorisation & order confirmation
- Marketing - brand management, seamless sales & CRM integration, work flow and reporting tools
- CRM - Single integrated view, help desk, CTI, logging
- Logistics - Advanced inventory, courier links, replenishment, forecasting
- Financials & Reporting - Unified ledgers, multi-company, multi-currency & multi-language, monitoring & alerts, reporting

eXtensible Architecture

Maginus solutions are designed to let customers scale and evolve their retail or distribution business. The solutions are built on a unique eXtensible Architecture that lets customers add new sales channels and new functionality as business dictates while allowing future upgrades. Maginus provides all the core functionality to automate the sales, marketing, CRM and fulfilment activities that underpin a profitable, successful business.

High-Availability.Com

High-Availability.Com (HAC) was formed in 1995 and is well established as an application vendor providing clustering technology to businesses in every sector. The company operates 24x7 and has many high profile customers including the Tokyo Stock Exchange and the US Navy. The company's core product, RSF-1®, has been widely adopted in government and emergency services sectors and is very strong in the UK education market place.

RSF-1 is a middle-ware product that is invisible to the end user, who will benefit from its use but should never be aware of it. RSF-1 dramatically improves reliability by managing failure and automatically re-deploying an application to another location in the event of a failure.

RSF-1 has been tested at certification centres around the world including Sun, IBM, Check Point, Remedy and many others. The product is available on a wide variety of operating systems and integrations have been tested and certified by OS and application vendors (SunTone, StorageProven, Quality Partners, OPSEC etc.).

NetMon is a network interface fail-over facility, which ensures that the most common single point of failure, the NIC, is eliminated. Network interfaces are continually monitored and standby interfaces activated if a problem is detected. NetMon sends out packets on each interface it is monitoring and waits for a response from a defined target. When responses are received NetMon infers that the interface is up and running, even if not configured/plumbed in. If a response fails to be received when expected NetMon can infer that the interface has in some way failed.

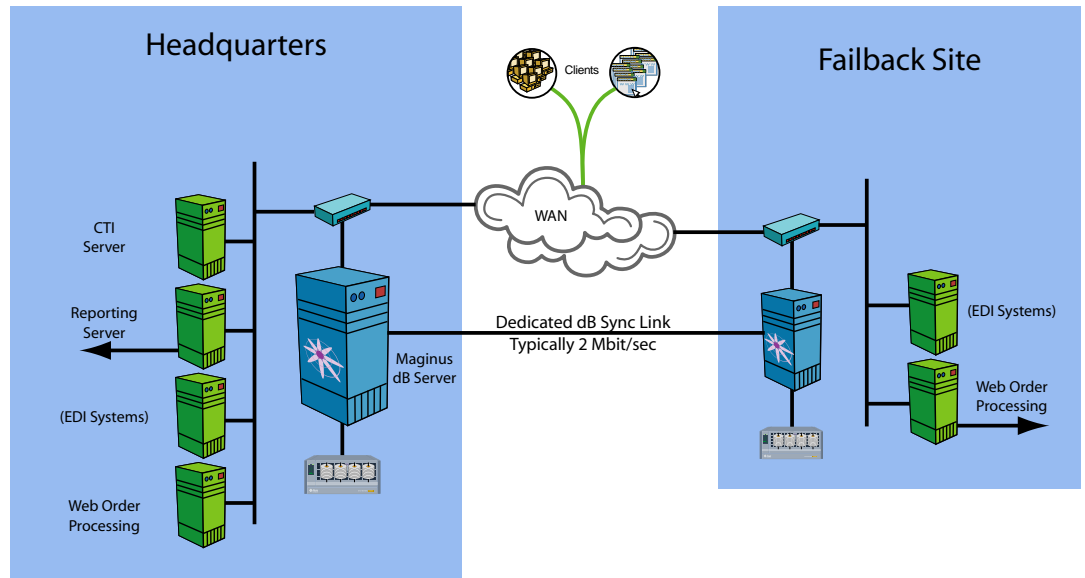




Architecture

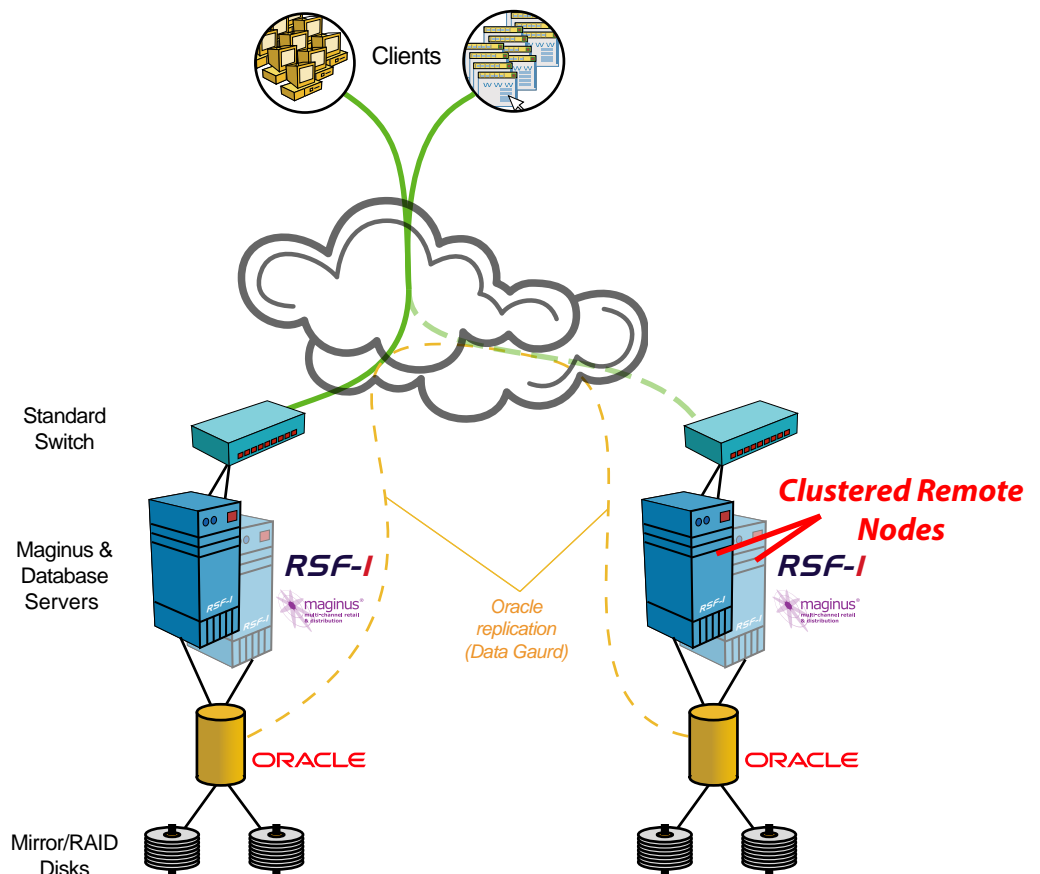
Maginus is an 'off-the-shelf' solution which can be readily customised to the requirements of each customer. At the 'heart' of Maginus is a database server, this is integrated with systems such as web store and CTI. Where resilience is required, the solution is typically deployed with clustering and a fail back site, for some customers the clustering also extends to the clustering site.

Figure 1.
High-Level Maginus Architecture



This high level (Figure 1.) view of an installation can be usefully expanded to show the underlying components in a more resilient solution. Figure 2. Shows the logical connections between the replicated databases. Figure 2. also shows the clustered dB servers. This architecture is resilient to multiple simultaneous failures.

Figure 2.
Maginus dB Replication & Clustering





Where NetMon is being used then two interfaces should be connected to each LAN for each server.

Each network interface (servers, disk arrays, terminal servers etc.) should be configured with the appropriate IP address and connectivity testing completed to verify that the machines are working correctly.

An installation sheet should be completed and left with the equipment so that other engineers can quickly identify the components and their configuration information. A sample configuration sheet is to be found in Appendix B.

The following lines should typically be added to `/etc/system` on each node;

* Primary Oracle dB - Max 1000 processes = $1000 * 2 + 10$, but allow 500 extra semmns contingency

```
set semsys:seminfo_semmni=100
set semsys:seminfo_semmns=2510
set semsys:seminfo_semmnl=512
set shmsys:shminfo_shmmax=4294967295
set shmsys:shminfo_shmmin=1
set shmsys:shminfo_shmmni=100
set shmsys:shminfo_shmseg=10
```

* Disable the console break / stop key - safety measure with clustering

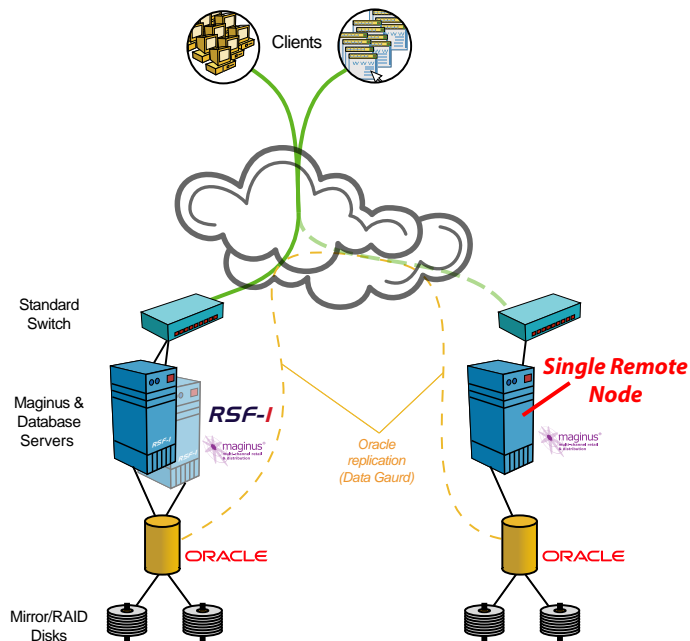
```
set abort_enable=0
```

Maginus Install

The systems are now ready for Maginus to complete the installation and configuration of Oracle and the Maginus application suite. Maginus provide detailed information for this process and often customisation for each site is required, however, the notes in this document are targeted at clustered environments specifically.

Oracle should be installed on the appropriate nodes; only one node in a cluster needs the installation if the binaries are being installed onto the shared disk - which is normal for Maginus installations.

Figure 4.
Example of Two
Clustered Nodes and a
Single Remote Node



Maginus scripts in a cluster environment depend on RSF-1 scripts contained in HAC product packages (HACbase and HACrsf), which must be installed on all nodes. If clustering will not be used, as with 'Single Remote Node' in Figure 4. above, then `/etc/rc2.d/S97rsfrc` can be removed. The current packages can be found on the web <http://www.high-availability.com/Downloads/>.

The `ORACLE_SID` must be set to the correct value; e.g.:- NISBETS. Note that Data Guard nodes may have a different value, E.g.:- NISBETSSB. Check `/var/opt/oracle/oratab` & `~oracle/.profile` & other scripts.

Setup and check the Maginus Data Guard scripts in `$ORACLE_BASE/admin/dgd/`; `dbautostart.sh` & `dbautostop.sh`.

Cluster Install - HAC

RSF-1 and NetMon¹ will be installed and licensed and will include the following tasks;

RSF-1 & OS Setup

Serial heartbeat setup and configuration

E.g.:- To use serial port /dev/ttyb - /usr/sadm/bin/smserialport configure -p <root_passwd> -- -n b -x device=modemdialout -b 38400 -c

"RSF-1 Heartbeat" -x service=y'

Disk heartbeat configuration

Network heartbeat configuration

Verify shared file system mount points exist

Ensure DNS is not relied upon for cluster component name resolution

Enable eeprom "local-mac-address?=true"

Create matching "rsfpasswd -u _rsfadmin" passwords on all nodes

RSF-1 Service Setup

Service configuration

Floating IP address setup

Set appropriate disks to be mounted by each service

Move any start service(application) scripts to /opt/HAC/RSF-1/etc/rc.<servicename>.d/

Run rsfmlink to link the start scripts to stop scripts in the correct order

RSF-1 Oracle Service Specific - all nodes

Check /var/opt/oracle/oratab setup, should end 'N' if Data Guard is in use, 'Y' if not.

Copy the following directories from the node on which Oracle was installed on to the other node(s);

/usr/local/bin

/var/opt/oracle

Set the Oracle listener to listen on the floating IP address

Appendix A - Planning Questionnaires

Customer

Primary Location - Normally HQ	
Location Name	
Primary Machine Name	
Primary Machine IP Address	
Secondary Machine Name	
Secondary Machine IP Address	
Domain Name	
Netmask	
Gateway IP Address	
DNS Server 1	
DNS Server 2	
DNS Domains to Search	
Maginus Service (floating) IP Address	
Oracle Service (floating) IP Address	
Console Concentrator IP Address	
Disk Array IP Address	
Number of network ports available - total	
Access Restrictions?	

¹ - NetMon is an option, so may not be installed



Secondary Location - Disaster Recovery - Optional	
Location Name	
Primary Machine Name	
Primary Machine IP Address	
Secondary Machine Name	
Secondary Machine IP Address	
Domain Name	
Netmask	
Gateway IP Address	
DNS Server 1	
DNS Server 2	
DNS Domains to Search	
Maginus Service (floating) IP Address	
Oracle Service (floating) IP Address	
Console Concentrator IP Address	
Disk Array IP Address	
Number of network ports available - total	
Access Restrictions?	

Maginus

Solaris Version Required	Solaris 9
Total Disk Space Required	
Oracle primary partition mount point	/oracle/oradata1/
Oracle redo / log partition size	32Gb RAID 0 less a small partition for RSF-1 Heartbeats * these two partitions together on own physical disks
Oracle redo / log partition mount point	/archive
Volume Management	Solaris Volume Management (Solstice Disk Suite)
Desired Disk Volume Group Name	Maginus

Hardware Supplier

Primary Location - Normally HQ	
Solaris Patch Version	
Primary Machine hostid	
Primary Machine 'root' password	
Secondary Machine hostid	
Secondary Machine 'root' password	
Disk Array Password	

Secondary Location - Optional	
Solaris Patch Version	
Primary Machine hostid	
Primary Machine 'root' password	
Secondary Machine hostid	
Secondary Machine 'root' password	
Disk Array Password	

Appendix B - Sample Configuration Sheets

Primary Location	
Primary Machine RSF-1 License	
Primary Machine NetMon License	
Primary Machine Oracle 'system' Password	
Secondary Machine RSF-1 License	
Secondary Machine NetMon License	
Secondary Machine Oracle 'system' Password	
'_rsfadmin' Password	
Secondary Location	
Primary Machine RSF-1 License	
Primary Machine NetMon License	
Primary Machine Oracle 'system' Password	
Secondary Machine RSF-1 License	
Secondary Machine NetMon License	
Secondary Machine Oracle 'system' Password	
'_rsfadmin' Password	

Primary Location Server Example Cabling

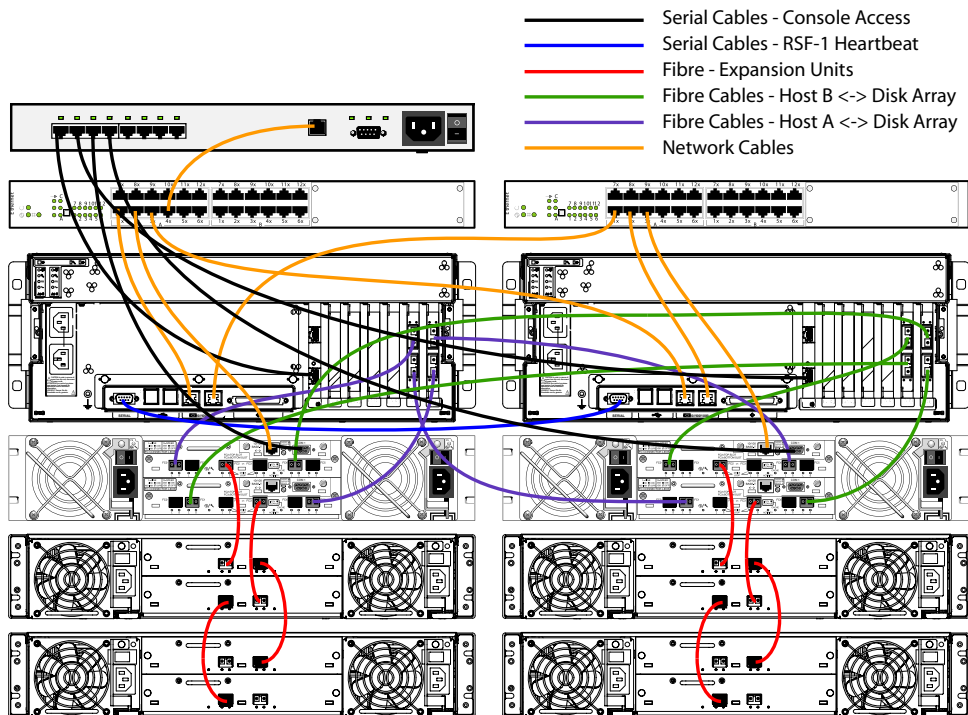


Figure 5.
Example Server
Cabling Diagram

Secondary Location Server Example Cabling

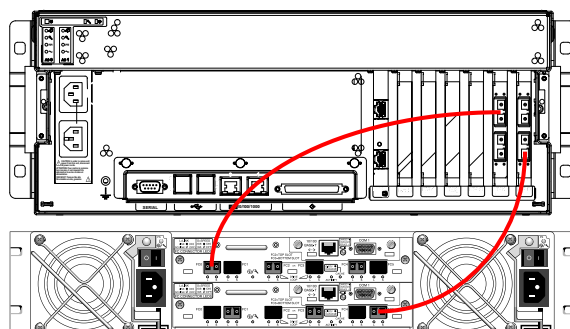


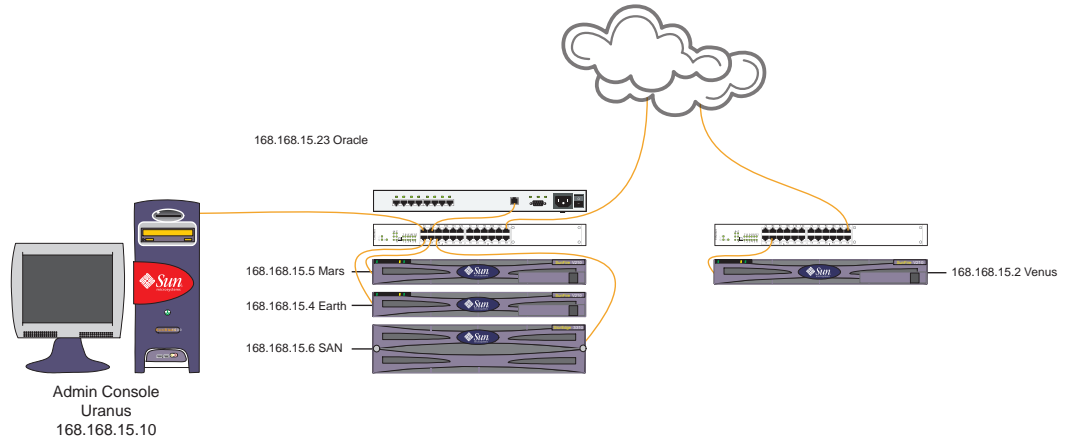
Figure 6.
Example Single Server
Cabling Diagram



Appendix C - Validation & Testing Configuration

The following diagram depicts the systems setup at GE Access for cluster integrated test, validation and demonstrations purposes.

Figure 7.
GE Access Reference
Model Setup



This is included appendix here purely for reference purposes.

Appendix D - Recommended Configurations

The following example configurations provide a good basis for delivering highly available system;

Two node - Collocated

This configuration provides resilience against the most common faults and provides excellent recovery reliability and minimal downtime.

Three node - Geographically Disparate

This configuration provides off-site fail over capability with near real time replication of data. The primary fail over machine would remain the collocated machine but in the event of site failure the other location would take over.

Figures 8. & 9.
Approved HA
Configurations

