

Enterprise Information System Services

Enterprise Email System Disaster Recovery Scheme

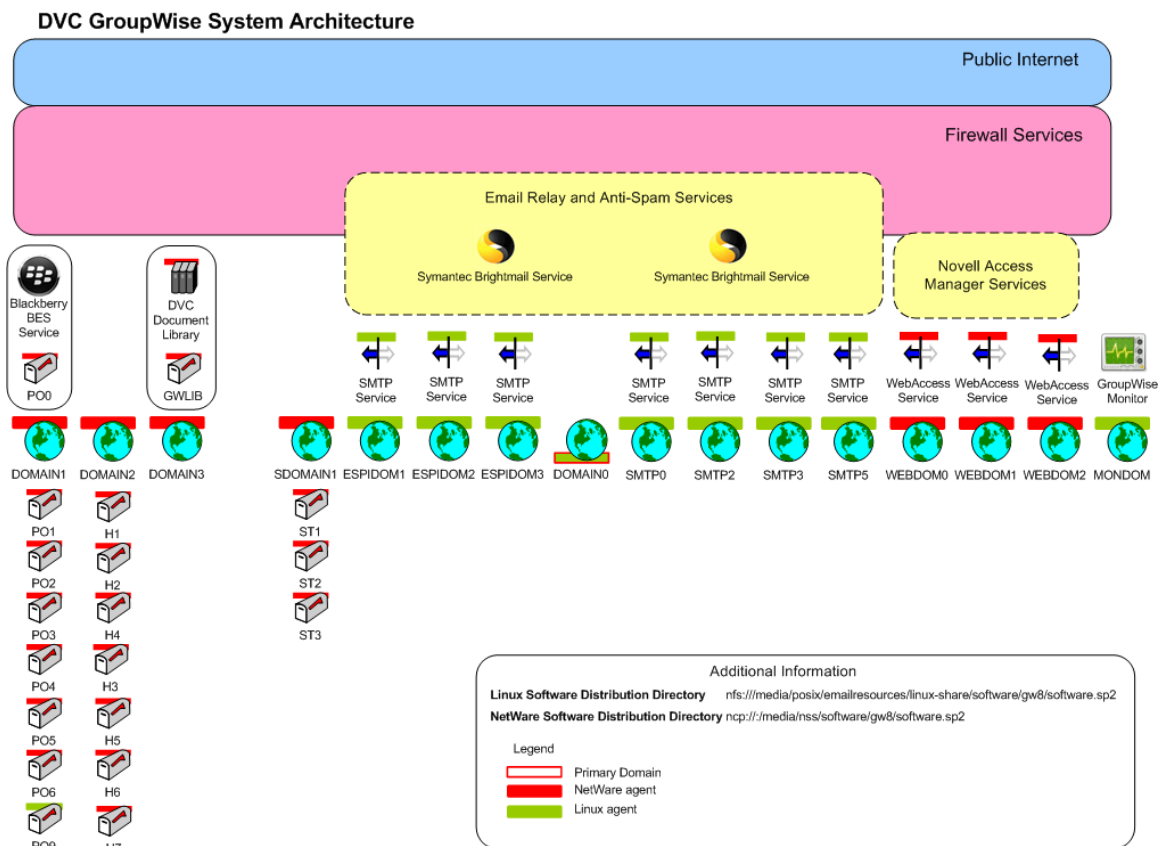
This document describes the high level overview of the information and procedures that will be required to recover the DVC GroupWise Email system in the event of a disaster.

System Requirement Overview

For disaster recovery purposes the GroupWise agents within the system can be abstracted from their existing information system architectures entirely.

The current production system utilizes differing operating system platforms, clustering service technologies, Direct Attached Storage (DAS) and Storage Area Network (SAN) services accessible to them all. The server resources used to host the DR instances of the production services will most likely come from shared and possibly even aggregated computational resources.

Each class of agent and service has common resource requirements. The resources common to all GroupWise agents and services are network addresses, storage, and memory. Each is presented in the following lists in an inventory format. This should allow for reliable implementation planning when agents and services share physical or virtualized computational resources.



Network Addresses Requirements

All GroupWise system components use DNS names for agent to agent, agent to application, and agent to client connectivity. All network addresses listed for disaster recovery purposes are given in DNS form as the IP address space used is made irrelevant by this practice.

Message Transfer Agent Addresses:

GroupWise Domain Name	Network Address(es)
DOMAIN0	domain0.dvc.com:7100, 7180
DOMAIN1	domain1.dvc.com:7100, 7180
DOMAIN2	domain2.dvc.com:7100, 7180
DOMAIN3	domain3.dvc.com:7100, 7180
ESPIDOM1	espidom1.dvc.com:7100, 7180
ESPIDOM2	espidom2.dvc.com:7100, 7180
ESPIDOM3	espidom3.dvc.com:7100, 7180
MONDOM	mondom.dvc.com:7100, 7180
SDOMAIN1	sdomain1.dvc.com:7100, 7180
SMTP0	smtp0.dvc.com:7100, 7180
SMTP2	smtp2.dvc.com:7100, 7180
SMTP3	smtp3.dvc.com:7100, 7180
SMTP5	smtp5.dvc.com:7100, 7180
WEBDOM0	webdom0.dvc.com:7100, 7180
WEBDOM1	webdom1.dvc.com:7100, 7180
WEBDOM2	webdom2.dvc.com:7100, 7180

Post Office Agent Addresses:

GroupWise Post Office.Domain Name	Network Address(es)
PO0.DOMAIN1	po0.dvc.com:1677, 7181
PO1.DOMAIN1	po1.dvc.com:1677, 7181
PO2.DOMAIN1	po2.dvc.com:1677, 7181
PO3.DOMAIN1	po3.dvc.com:1677, 7181
PO4.DOMAIN1	po4.dvc.com:1677, 7181
PO5.DOMAIN1	po5.dvc.com:1677, 7181
PO6.DOMAIN1	po6.dvc.com:1677, 7181
PO9.DOMAIN1	po9.dvc.com:1677, 7181
H1.DOMAIN2	h1po.dvc.com:1677, 7181
H2.DOMAIN2	h2po.dvc.com:1677, 7181
H3.DOMAIN2	h3po.dvc.com:1677, 7181
H4.DOMAIN2	h4po.dvc.com:1677, 7181
H5.DOMAIN2	h5po.dvc.com:1677, 7181
H6.DOMAIN2	h6po.dvc.com:1677, 7181
H7.DOMAIN2	h7po.dvc.com:1677, 7181
GWLIB.DOMAIN3	gwlibpo.dvc.com:1677, 7181
ST1.SDOMAIN1	st1.dvc.com:1677, 7181
ST2.SDOMAIN1	st2.dvc.com:1677, 7181
ST3.SDOMAIN1	st3.dvc.com:1677, 7181

SMTP Gateway Agent addresses:

GroupWise Gateway.Domain Name	Network Address(es)
ESPIGWIA1.ESPIDOM1	espigwia1.dvc.com:25, 110, 143, 993, 995, 7102, 9850
ESPIGWIA2.ESPIDOM2	espigwia2.dvc.com:25, 110, 143, 993, 995, 7102, 9850
ESPIGWIA3.ESPIDOM3	espigwia3.dvc.com:25, 110, 143, 993, 995, 7102, 9850
SMTPGWIA0.SMTP0	smtpgwia0.dvc.com:25, 7102, 9850
SMTPGWIA2.SMTP2	smtpgwia2.dvc.com:25, 7102, 9850
SMTPGWIA3.SMTP3	smtpgwia3.dvc.com:25, 7102, 9850
SMTPGWIA5.SMTP5	smtpgwia5.dvc.com:25, 7102, 9850

WebAccess Gateway Agent Addresses:

GroupWise Gateway.Domain Name	Network Address(es)
WEBAC80A.WEBDOM0	webacc0.dvc.com:7205, 7211
WEBAC80A.WEBDOM1	webacc1.dvc.com:7205, 7211
WEBAC80A.WEBDOM2	webacc2.dvc.com:7205, 7211

Web Application Addresses:

GroupWise Application URL Address
httpx://webmail1.dvc.com/gw/webacc:80, 443
httpx://webmail2.dvc.com/gw/webacc:80, 443
httpx://webmail3.dvc.com/gw/webacc:80, 443
httpx://webcal.dvc.com/gwcal/calander:80, 443
httpx://gwmonitor.dvc.com/gwmon/gwmonitor:80, 443
httpx://gwmonitor.dvc.com:8200

Service addresses

Many GroupWise agents utilize additional DNS records and DNS record types. Some are used for native hard coded service calls such as the “ngwnameserver.domain” name for example. Others are used for mail exchanger (MX) records and still others for agent load balancing.

Canonical Name Records:

DNS Record Type	Primary Host Name (A Record)	Host Alias Name
CNAME (private)	po0.dvc.com	ngwnameserver.dvc.com
CNAME (private)	po2.dvc.com	ngwnameserver2.dvc.com
CNAME (private)	secure.dvc.com	webaccess.dvc.com
CNAME (private)	secure.dvc.com	webmail.dvc.com
CNAME (public)	secure.dvc.com	webaccess.dvc.com
CNAME (public)	secure.dvc.com	webcal.dvc.com
CNAME (public)	secure.dvc.com	webmail.dvc.com

Mail Exchanger Records:

DNS Record Type	Primary Host Name (A Record)	Mail Exchanger Name	Priority
MX (private)		sms1.dvc.com	10
MX (private)		sms2.dvc.com	10
MX (public)	mail.dvc.com	sms1.dvc.com	10
MX (public)	mail.dvc.com	sms2.dvc.com	10
MX (public)	neuro.dvc.com	sms1.dvc.com	10
MX (public)	neuro.dvc.com	sms2.dvc.com	10

MX (public)	paks.dvc.com	sms1.dvc.com	10
MX (public)	paks.dvc.com	sms2.dvc.com	10
MX (public)	psych.dvc.com	sms1.dvc.com	10
MX (public)	psych.dvc.com	sms2.dvc.com	10
MX (public)	psychnts.dvc.com	sms1.dvc.com	10
MX (public)	psychnts.dvc.com	sms2.dvc.com	10
MX (public)	radbcd.dvc.com	sms1.dvc.com	10
MX (public)	radbcd.dvc.com	sms2.dvc.com	10
MX (public)	students.dvc.com	sms1.dvc.com	10
MX (public)	students.dvc.com	sms2.dvc.com	10

Referenced Addresses:

DNS Record Type	Service Address	Description
A	a1.dvc.com	Primary target for LDAPS authentication
A	a2.dvc.com	Secondary target for LDAPS authentication
A	bes.dvc.com	BES Application Instance 1
A	bes2.dvc.com	BES Application Instance 2
A	eiss7db.ad.dvc.com	BES MS SQL Standard named instance
A	sms1.dvc.com	Symantec Mail Security Gateway 1
A	sms2.dvc.com	Symantec Mail Security Gateway 2

Service Load Balancing Addresses:

Load balancing can be implemented using either DNS or Novell Access Manager services.

DNS Record Type	Service Address(es)	Load Balanced Addresses
A	webaccess.dvc.com	webmail1.dvc.com webmail2.dvc.com webmail3.dvc.com
A	mail.dvc.com, smtp1.dvc.com	smtpgwia0.dvc.com smtpgwia5.dvc.com
A	mymail.dvc.com	espigwia1.dvc.com espigwia2.dvc.com

Storage Requirements

All GroupWise agents and services utilize computer storage services. The only relationships that have to be maintained are an agents' access to its respective data store, the network addresses that allow it to participate in the system normally, and the data storage capacities currently being used. Other than current storage capacities the production system storage architecture does not need to be mirrored.

Message Transfer Agent and Gateway Storage Requirements:

GroupWise Domain Name	Storage Required	Gateway Hosted
DOMAIN0	10 GB	
DOMAIN1	2 GB	
DOMAIN2	2 GB	
DOMAIN3	2 GB	
ESPIDOM1	2 GB	ESPIGWIA1.ESPIDOM1
ESPIDOM2	2 GB	ESPIGWIA2.ESPIDOM2
ESPIDOM3	2 GB	ESPIGWIA3.ESPIDOM3
MONDOM	2 GB	
SDOMAIN1	2 GB	

SMTP0	10 GB	SMTPGWIA0.SMTP0
SMTP2	10 GB	SMTPGWIA2.SMTP2
SMTP3	10 GB	SMTPGWIA3.SMTP3
SMTP5	10 GB	SMTPGWIA5.SMTP5
WEBDOM0	10 GB	WEBAC80A.WEBDOM0
WEBDOM1	10 GB	WEBAC80A.WEBDOM1
WEBDOM2	10 GB	WEBAC80A.WEBDOM2

Post Office Agent Storage Requirements:

GroupWise Post Office.Domain Name	Storage Required
PO0.DOMAIN1	20 GB
PO1.DOMAIN1	300 GB
PO2.DOMAIN1	300 GB
PO3.DOMAIN1	250 GB
PO4.DOMAIN1	300 GB
PO5.DOMAIN1	250 GB
PO6.DOMAIN1	60 GB
PO9.DOMAIN1	60 GB
H1.DOMAIN2	60 GB
H2.DOMAIN2	20 GB
H3.DOMAIN2	25 GB
H4.DOMAIN2	15 GB
H5.DOMAIN2	45 GB
H6.DOMAIN2	20 GB
H7.DOMAIN2	7 GB
GWLIB.DOMAIN3	7 GB
ST1.SDOMAIN1	65 GB
ST2.SDOMAIN1	85 GB
ST3.SDOMAIN1	130 GB

Blackberry Enterprise Service Storage Requirements:

BES Server components	Storage Required
BES Application Instance 1	150 GB
Microsoft SQL Standard	
BES Application Instance 2	75 GB

Documentation Repository Storage Requirements:

Documentation Components	Storage Required
Internal Documentation Repository	200 MB
KeePass application database	NA

Logical Component Storage Requirements:

Logical Component Name	Storage Required	Description
DVC Document Library	10 GB	Document Mgmt Service 1
GW802_SYSTEM	65 GB	Software Repository
DVC eDirectory Tree	350 MB	User Authentication Store
Service eDirectory Tree	50 MB	Service tree for DR instance GroupWise system

Total Storage Required	2.56 TB
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Memory Requirements

Domain Memory Requirements:

GroupWise Domain Name	MTA memory required	Gateway Memory Required
DOMAIN0	20 MB	
DOMAIN1	100 MB	
DOMAIN2	100 MB	
DOMAIN3	20 MB	
ESPIDOM1	20 MB	8 GB
ESPIDOM2	20 MB	8 GB
ESPIDOM3	20 MB	8 GB
MONDOM	20 MB	
SDOMAIN1	50 MB	
SMTP1	20 MB	80 MB
SMTP2	20 MB	80 MB
SMTP3	20 MB	80 MB
SMTP5	20 MB	80 MB
WEBDOM0	50 MB	400 MB
WEBDOM1	50 MB	400 MB
WEBDOM2	50 MB	400 MB

Post Office Agent Addresses:

GroupWise Post Office.Domain Name	POA Memory Required
PO0.DOMAIN1	100 MB
PO1.DOMAIN1	300 MB
PO2.DOMAIN1	250 MB
PO3.DOMAIN1	250 MB
PO4.DOMAIN1	250 MB
PO5.DOMAIN1	250 MB
PO6.DOMAIN1	200 MB
PO9.DOMAIN1	200 MB
H1.DOMAIN2	300 MB
H2.DOMAIN2	200 MB
H3.DOMAIN2	200 MB
H4.DOMAIN2	200 MB
H5.DOMAIN2	200 MB
H6.DOMAIN2	200 MB
H7.DOMAIN2	50 MB
GWLIB.DOMAIN3	50 MB
ST1.SDOMAIN1	250 MB
ST2.SDOMAIN1	300 MB
ST3.SDOMAIN1	250 MB

Blackberry Enterprise Service Memory Requirements:

BES Server components	Memory Required
BES Application Instance 1	8 GB
Microsoft Windows 2003 Server	
Microsoft SQL Standard	
BES Application Instance 2	4 GB
Microsoft Windows 2003 Server	
Total Memory Required	35 GB

Physical Server Components

These components are currently deployed as physical hosts. The re-deployment of these components can be either virtual or physical but physical is recommended.

GroupWise Component	Hardware Specifications
BES Application Instance 1 Microsoft Windows 2003 Server Microsoft SQL Standard	Meet hardware and software requirements
BES Application Instance 2 Microsoft Windows 2003 Server	Meet hardware and software requirements

Dependant Service Components

These components are infrastructure services that the GroupWise system DR instance is dependant on. The DR instances of these components can be either virtual or physical and are assumed to be provisioned.

Service Component	Description
DNS Service	Contains GroupWise system network address records Can also be used for load balancing services
DVC Tree eDirectory Service	Contains user authentication store
LDAPS Service	Provides Access to GroupWise authentication store
Backup-Restoration Service	Used to restore file system and logical components
Firewall Services	Used to manage access to DR network resources

Optional Service Components

These optional components are infrastructure services that the GroupWise system DR instance can benefit from if they exist in the DR infrastructure.

Service Component	Description
Novell Access Manager	Can be used for GroupWise service load balancing
Symantec Mail Security Gateway	Can be used to manage host level access to Email services and provide anti-spam Services

Logical Components

Many GroupWise systems provide services other than Email. In the case of the DVC system these are limited to document management services, software repository services, and "Trusted Application" services.

Document Management Services

GroupWise Document Management Services use computer storage for document repositories. These document repositories are referred to as "Libraries". Libraries are tied to a specific post office permanently by configuration. They also utilize storage services independent of the post office message store.

Library Post Office.Domain Name	Library Distinguished Name
GWLIB.DOMAIN3	DVC Document Library.DOMAIN3.EMAIL.DVC

Software Repository Services

All GroupWise systems have at least one software repository. At least one software repository is configured/registered within the system so it can be identified and made accessible to GroupWise system agents and clients. Once the software repository is configured/registered with a GroupWise system it is referred to as a "Software Distribution Directory" (SDD). Most GroupWise systems have multiple SDD's spanning several GroupWise software versions.

GroupWise SDD Name	GroupWise SDD Network Path
GW802_SYSTEM (NCP)	/media/posix/emailresources/ncp-share/software/gw8/
GW802_SYSTEM (POSIX)	/media/posix/emailresources/linux-share/software/gw8/

Software Required

Copies of the physical media and all respective license information, files, and certificates if applicable for all entries in this table should be acquired for the DR effort.

Software Type/Name	License Required	Software Version
OS / NetWare	YES	6.5 SP8
OS / Microsoft Windows Server	YES	2003
OS / Microsoft Windows	YES	XP SP3
OS / Suse Linux Enterprise Server	YES	10 SP3
OS / Novell Open Enterprise Server	YES	2 SP2A (or better)
APP / Novell Clustering Services	YES	1.8.3 (or better)
APP / Blackberry Enterprise Server	YES	4.6
APP / GroupWise	YES	8.0.2 (or better)
APP / Microsoft SQL	YES	2000
APP / Secure Shell Client	NO	NA
APP / Novell Client	NO	4.91 SP5 (or better)
APP / ConsoleOne	NO	1.3.6H
APP / iManager (Workstation)	NO	2.7 (or better)
APP / GroupWise Mgmt Snapins	NO	8.0.1 (or better)
APP / KeePass	NO	1.17 (or better)

Documentation and Expertise Required

The documentation and knowledge required to perform the procedures described in this document will come from three separate locations.

Information or Expertise source	Information or Expertise Location
Staff skill sets	DVC human resources
Internal Documentation	Restored or mirrored file systems
Vendor Documentation	http://www.novell.com/documentation

GroupWise System DR Implementation Checklist

Inventory Item Checklist	Completed	Documentation Reference
Infrastructure Services Present		
- Firewall services		Page 6
- DNS services		Page 6
- File restoration services		Page 6
- DVC Tree eDirectory tree services		Page 6
- LDAPS access to DVC eDirectory tree		Page 6
- Novell Access Manager services (optional)		Page 7
- Symantec Mail Security Gateway (optional)		Page 7
Required Software		Page 7
Required Hardware		
- Core Email service requirements		Page 4-6
- Blackberry service requirements		Page 6
Documentation - Expertise Requirements		Page 8

Service Restoration Priorities

The DR instance of any system should meet the current, or a pre-determined minimum, level of service provided by the production instance. Additionally, if the DR instance of a system does not already exist the availability of services may need to be prioritized during the provisioning process.

Prioritization for the provisioning of services hosted by the DVC GroupWise system has already been determined. A hierarchical list of those prioritizations is given below.

GroupWise services are to be provisioned in the following order:

GroupWise System Service	Description
1. GroupWise Domains and Post Offices	Provides users with access to the existing message store and the ability to send and receive dvc.com Email messages
2. Mobile Messaging Services	Provides BES enabled users with access to the existing message store and the ability to send and receive dvc.com Email messages
3. SMTP services for native Email clients	Provides users with GroupWise clients and and BES enabled users the ability to send and receive dvc.com and non-dvc.com Email messages
4. SMTP services for non-native Email clients	Provides users with third party Email clients and non-BES enabled devices the ability to send and receive dvc.com and non-dvc.com Email messages
5. Web Client Services	Provides users with the ability to access, send, and receive dvc.com and non-dvc.com Email messages with a web browser
6. Non-Essential Services	GroupWise monitoring and test resources

Procedures

The procedures that follow are not step by step instructions on how to implement the DR instance of the DVC GroupWise Email system. Rather they are high level concise task descriptions intended to be carried out by an experienced GroupWise engineer.

The presented DR plan incorporates areas of technical ambiguity intended to be resolved by platform, configuration, and best practice decisions. Because the DR infrastructure is unknown these can only be made at the time of implementation. System requirements are broken down to a minimal set of common denominators that can be met by virtually any supported OS platform in use at DVC. The model also allows for the aggregation and use of differing hardware and even virtualization platforms. This significantly enhances the usability of this particular DR model and allows for the availability of the particular skill sets and staff that may be available in the event of an actual disaster.

1. **Configure a workstation with all required system and service management utilities**
 - a. An administrative system should have all of the required system and service management utilities required by the platforms used
2. **Enter all required network addresses in the DR DNS service instance**
 - a. Determine what IP address space will be used for all components
 - b. Determine if load balancing technologies for WebAccess, POP/IMAP, and SMTP services will be implemented.
 - i. If they will be used, configure them with the appropriate network address information in the chosen load balancing systems.
 - ii. If they will not be used configure the appropriate network address information for the selected services hosts.
 - c. Determine if Symantec Mail Security Gateway services will be implemented.
 - i. If they will be used, configure the appropriate network address information.
 - ii. If they will not be used configure the appropriate network address information for the selected services hosts.
3. **Enter all required network addresses in the DR firewall service instance**
 - a. Determine which services will be accessible through the firewall and configure the access for those network addresses.
These could include:
 - i. GroupWise SMTP services
 - ii. GroupWise POP/IMAP services
 - iii. GroupWise post offices
 - iv. GroupWise WebAccess services
4. **Configure all required hardware resources for the DR implementation**
 - a. Provision all stand alone server resources for Blackberry services
 - b. Provision all raw storage and memory resources
These could be provided by:
 - i. Stand alone server hardware
 - ii. Shared storage resources
 - iii. Virtualized server and storage resources
5. **Install software on provisioned hardware where applicable**
 - a. Install and configure operating system software on allocated stand alone hardware
 - i. Be sure to include native applications and services required to meet GroupWise requirements on the respective platform
 - b. Install and configure application software on allocated hardware

- i. Software packages like MS SQL and the GroupWise client software
 - c. Install an “Application” eDirectory service instance for use with the GroupWise service DR instance
 - d. Configure all required storage in their respective volume manager environments.
 6. **Perform all required file system restorations or data mirroring operations**
 - a. Restore the Primary GroupWise Domain file system to one of the configured volumes accessible to the management workstation
 - b. Restore or update all other domain, post office, and library Document Storage Area file systems to the most current version available
 - c. Restore or update all Software Repository and Documentation store file systems to the most current version available
 - d. Restore and configure NCP access to the following file systems:
 - i. - \\NET3\SHARE\ITSS\SERVADMN\DOCUMENTATION
 - ii. - \\NET3\SHARE\ITSS\SERVADMN\NETOPS\KEEPASS
 - iii. - /media/posix/emailresources/ncp-share
 7. **Prepare the Application instance of eDirectory for use with GroupWise**
 - a. Graft the DVC GroupWise system into the Application instance of eDirectory. Allow the grafting process to create any eDirectory objects required
 - b. Create and configure any service or agent proxy users required by applications or platforms.
 8. **Implement the GroupWise core Email service components**
 - a. Install and configure GroupWise agent software for all required agents from restored Software Repositories
 - i. Configure all agents with their respective network address information
 - ii. Configure all agents to use their respective restored file systems
 - iii. Grant all agent objects any required trusteeships to objects or file systems respective of platform
 - b. Configure and enforce LDAPS connectivity for the DR GroupWise service instance for all agents and clients connecting to the hosted services
 - i. Use the existing DR DVC eDirectory instance if it exists
 - ii. Restore a discreet DVC eDirectory instance to use if it does not
 9. **Stop and test all existing agent connectivity**
 - a. Verify all domains can communicate and that communication links utilize a start topology
 - b. Verify all post offices can communicate with their parent domains
 - c. Verify post offices can send and receive Email and status messages inter-post office and across domains
 - d. Verify GroupWise clients can communicate with their respective post offices from both sides of the DR firewall instance
 10. **Implement the mobile messaging service**
 - a. Install and configure the Blackberry Enterprise Server (BES) software on the selected hardware
 - i. The server serving as BES Application instance 1 will host the BES software, the MS SQL software, and named SQL database
 - ii. The server serving as BES Application instance 2 will host the BES software and the GroupWise client software
 - iii. BES Application instance 2 will connect to the named MS SQL database on BES Application instance 1 server remotely to utilize database services

- iv. BES Application instance 2 will authenticate to the “PO0” GroupWise post office using the “BESAUTH” proxy user for it’s application connectivity to the DVC GroupWise system
 - b. Restore the MS SQL named database instance to the BES Application instance 1 server
 - 11. Stop and test the Blackberry Enterprise Server service**
 - a. Verify the ability to send and receive messages to dvc.com addresses using BES enabled Blackberry devices
 - 12. Implementing the SMTP service for native clients**
 - a. Install and configure GroupWise agent software for all required agents from restored Software Repositories
 - i. Configure all agents with their respective network address information
 - ii. Configure all agents to use their respective restored file systems
 - iii. Grant all agent objects any required trusteeships to objects or file systems respective of platform
 - 13. Stop and test the native client SMTP services**
 - a. Verify the ability to send and receive messages to non-dvc.com addresses using the GroupWise client software
 - b. Verify the ability to send and receive messages to non-dvc.com addresses using BES enabled Blackberry devices
 - 14. Implementing the SMTP service for non-native clients**
 - a. Install and configure GroupWise agent software for all required agents from restored Software Repositories
 - i. Configure all agents with their respective network address information
 - ii. Configure all agents to use their respective restored file systems
 - iii. Grant all agent objects any required trusteeships to objects or file systems respective of platform
 - 15. Stop and test the non-native client SMTP services**
 - a. Verify the ability to send and receive messages to non-dvc.com addresses using supported third party Email client software
 - 16. Implementing the web client services**
 - a. Install and configure all web service software for all required web servers from restored Software Repositories
 - b. Install and configure GroupWise agent software for all required agents from restored Software Repositories
 - i. Configure all agents with their respective network address information
 - ii. Configure all agents to use their respective restored file systems
 - iii. Grant all agent objects any required trusteeships to objects or file systems respective of platform
 - 17. Stop and test the web client services**
 - a. Verify the ability to use the web client service from both sides of the DR instance firewall
 - b. Verify the ability to send and receive messages to dvc.com and non-dvc.com addresses using the web client software
 - 18. Implement non-essential services**
 - a. Install and configure the GroupWise Monitor service using software from restored Software Repositories
 - i. Install and configure the GroupWise Monitor Agent
 - ii. Install and configure the GroupWise Monitor Application
 - b. Test the GroupWise Monitor Service
 - c. Implement the SYSTEST post office if required using the procedures referenced in step 8