

E56

Disaster Recovery Concepts for VSE customers

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IBM
SYSTEM z9 AND zSERIES EXPO
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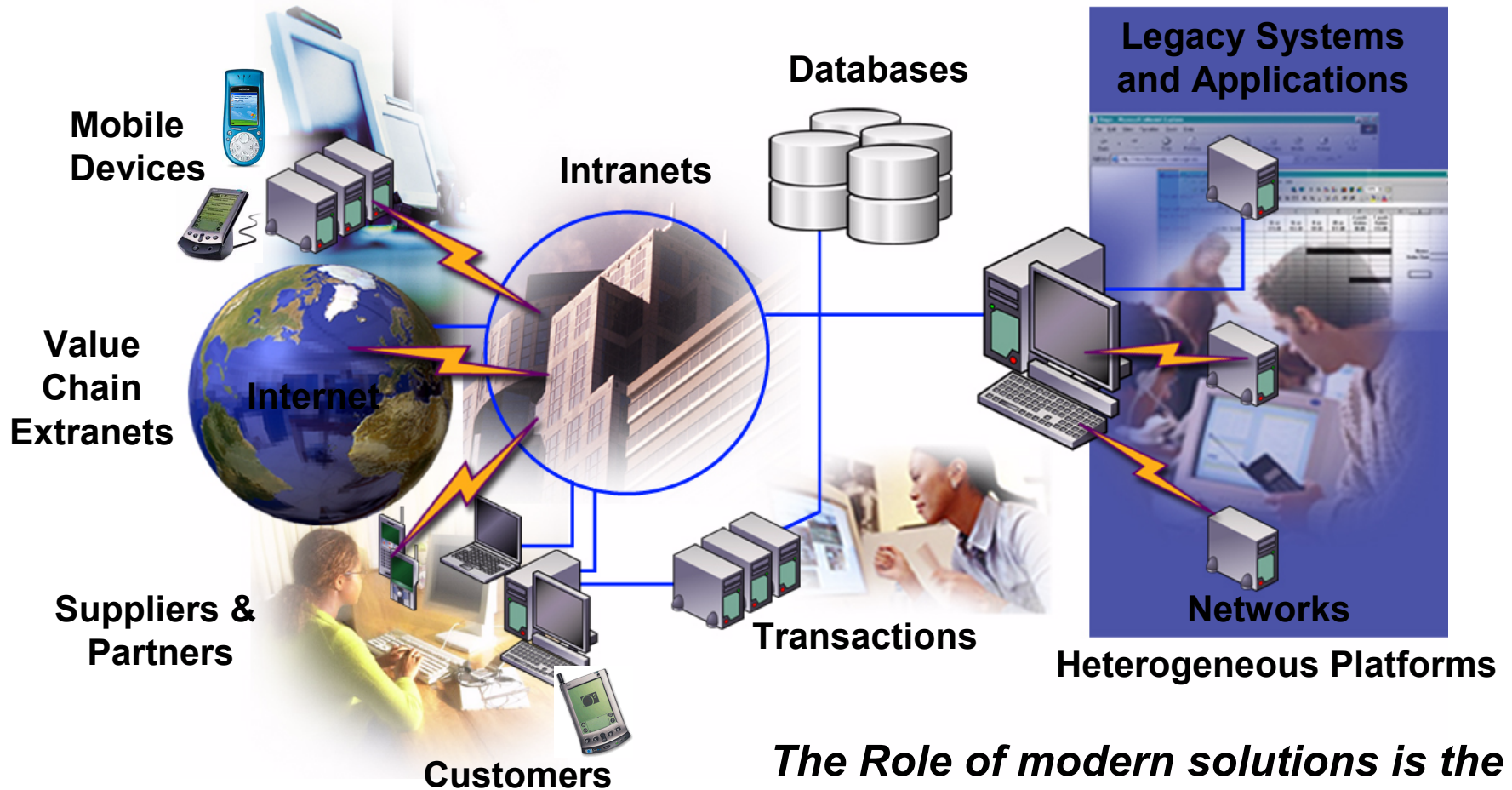
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Today's IT Infrastructure

IT environments are heterogeneous and complex



The Role of modern solutions is the Integration and Optimization

Scenarios for Disaster Recovery with VSE

(1) Concepts of Disaster Recovery (DR)

(2) One active production site and one for DR

(3) Two active sites with production and test

(4) Borrowed Resources for Disaster Recovery

Concepts of Disaster Recovery with VSE

A Disaster Recovery is needed if the main systems are unable to work.

- Main machines
- Storage subsystems

Reasons for failures:

- Outage of power
- Natural catastrophe (Water, Wind, earthquake,...)
- Technical failures
 - Human error
 - Hardware errors and outages

Impact: Inability to be productive – loss of money

Major discussion areas

- Possible Systems affected
 - Type of systems, relation, how many systems participate in the DR scenario
- System positions – Geographically
 - Distance between them for data mirroring
- Connectivity and attachments
 - Ability to replace each other w/o application/user adjustments
- Separation of Data Stores
 - Logical connected data should reside on same side
- Network topology
 - Types of networks to be interconnected
- Operating Systems and application Landscape
 - Application execution based on operating systems

Objectives for Disaster Recovery with VSE

Following Objectives are the same for Systems and Storage

- Minimize time of outage (0-25 min)
- Minimize affected systems in case of a disaster
- Minimize effort for a restart

Required knowledge in case of a DR:

- Special Communication hardware for the DR case – to avoid busy lines from users
- Documentation of DR Process

System environment Agreements for DR

IBM special Agreements for Recovery:

- IBM Customer Agreement (ICA),
 - IBM Agreement for Programs (IAP),
 - International Program License Agreement (IPLA)
-
- The level of use acquired is documented in a Proof of Entitlement (PoE)
 - “one install”, (w/o other restrictions), allows a copy of the program on more than one machine under the customer’s control, but only one program is authorized to be in use at any given time. Or customer may use the program **temporarily** on another machine, if the Designated Machine is inoperable.

It applies to all programs licensed under these agreements for:

- Backup use,
- Disaster Recovery (DR),
- BRS when a backup and recovery service is involved

System environment Agreements for DR

IBM defines 3 types of situations for programs running or resident on backup machines: "cold"; "warm"; and "hot".

Accepted actions concerning the copy of the program used for backup purposes:

- ❖ cold - a copy of the program may be stored for backup purposes on a machine as long as the program has not been started.
 - ❖ There is no charge for this copy.
- ❖ warm - a copy of the program may reside for backup purposes on a machine and is started, but is "idling", and is **not doing any work of any kind**.
 - ❖ There is no charge for this copy.
- ❖ hot - a copy of the program may reside for backup purposes on a machine, is started and is doing work. However, this program must be ordered.
 - ❖ There is a charge for this copy.

System environment Agreements for DR - continued

For the 'warm' situation - "Doing Work", includes:

- production,
 - development,
 - program maintenance,
 - testing
 - mirroring of transactions,
 - updating of files,
 - synchronization of programs, data or other resources (e.g., active linking with another machine, program, data base or other resource, etc.)
 - any activity or configurability that would allow an active hot-switch or other synchronized switch-over between programs, data bases, or other resources to occur.
-
- A scheduled hardware outage, such as preventive maintenance or installation of upgrades, is NOT considered a backup situation.

System environment Agreements for DR – continued (2)

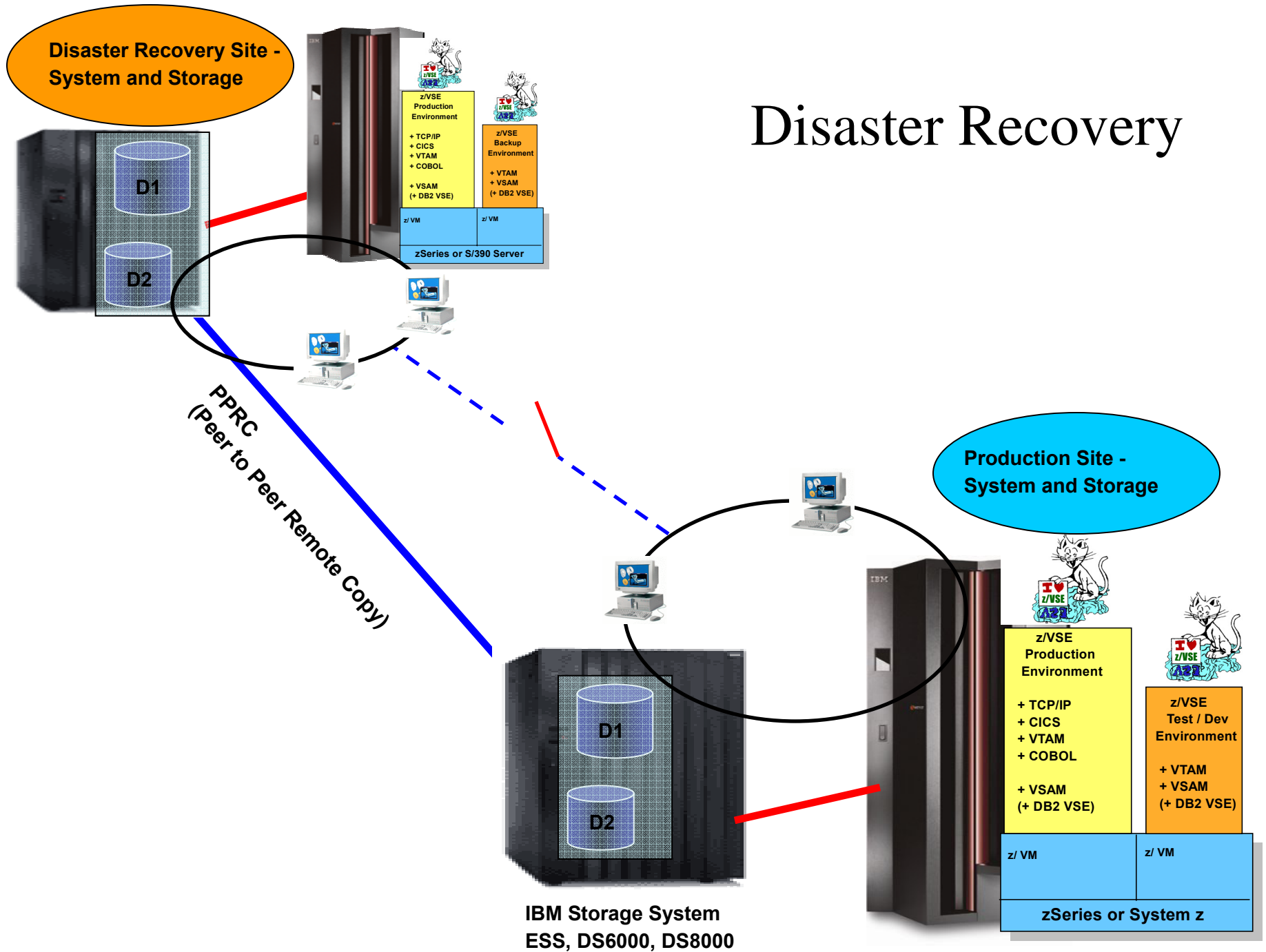
Preparation for emergency backup situations requires periodic tests – based on the requirements of system availability.

No extra program charges apply for these tests if:

- The number is appropriate (e.g., 1-3 tests per year)
- The duration is adequate, (e.g. 2 to 3 days per test).
- For more frequent tests required (e.g. for on-line systems running 24x7 critical customer business operation)
 - a shorter duration without exceeding the total hours of above guidelines.

There can be no productive output or work done from the tests and no development, program maintenance or testing as part of the tests. IBM has the right to review the customer's rationale for not licensing the IBM Program copy for the backup environment.

Disaster Recovery



Scenarios for Disaster Recovery with VSE

(1) Concepts of Disaster Recovery (DR)

(2) One active production site only and one for DR

(3) Two active sites with production and test

(4) Borrowed Resources for Disaster Recovery

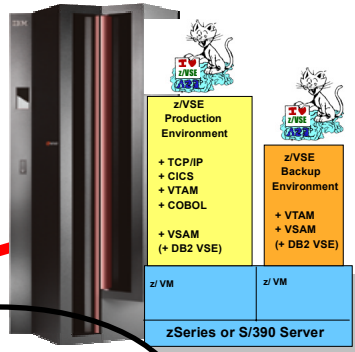
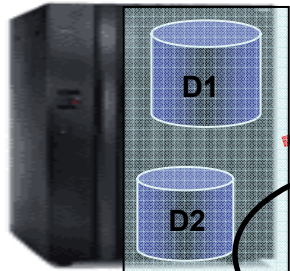
(1) One active production site only and one for DR Environment setup for disaster Recovery

- ❖ **DR System**
 - ❖ **An IBM agreement is done to start this machine with the same power as the production site in Case of Recovery**
 - ❖ **An additional agreement can be made for increased capacity, to decrease the startup time of the VSE systems**
 - ❖ **A COLD environment setup - the System is switched off**
 - ❖ **A WARM environment setup - the System is idling**
 - ❖ **Both Systems are able to connect to both Storage subsystems**
 - ❖ **(on the production and DR site)**

- ❖ **Storage Systems**
 - ❖ **The Production Storage system is connected to the one for DR**
 - ❖ **The DR Storage system is connected to the production Storage**
 - ❖ **Data is mirrored via PPRC (real time or asynchronous)**
 - ❖ **Enablement to switch the PPRC direction**

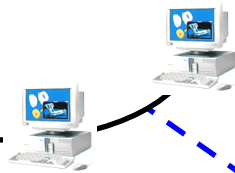
- ❖ **Network**
 - ❖ **Possibility to switch between the productional and DR network**

Disaster Recovery Site -
System and Storage

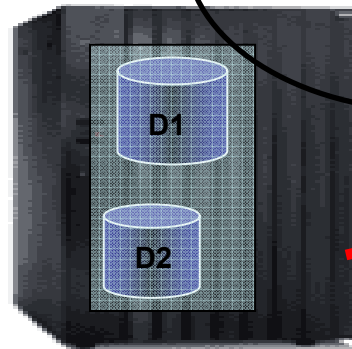


One active production site only
and one for DR

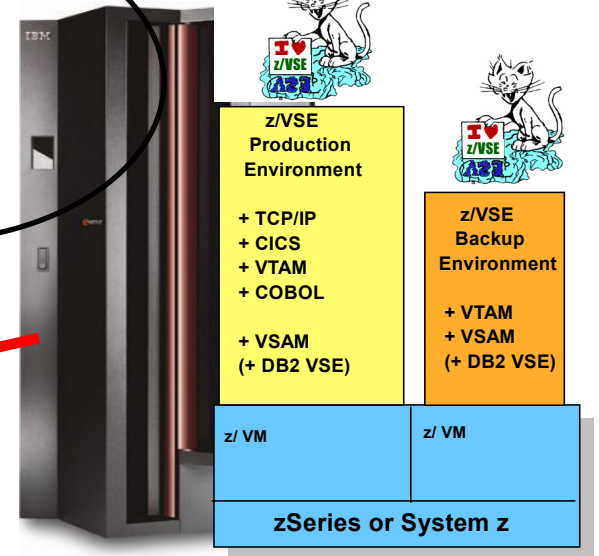
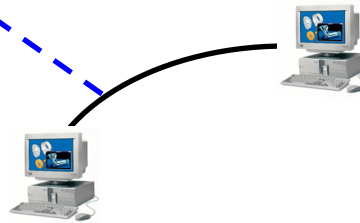
PPRC
(Peer to Peer Remote Copy)



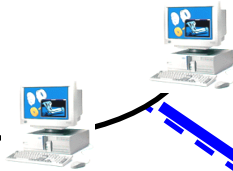
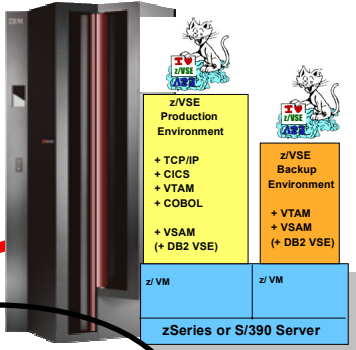
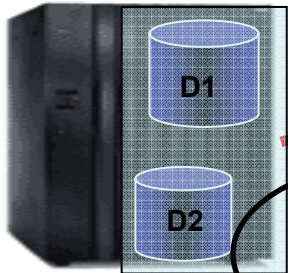
Production Site -
System and Storage



IBM Storage System
ESS, DS6000, DS8000

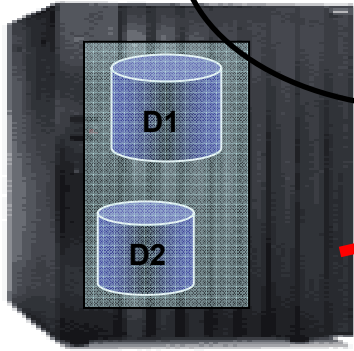


Disaster Recovery Site - IBM Storage System



One active production site only and one for DR

Production Site

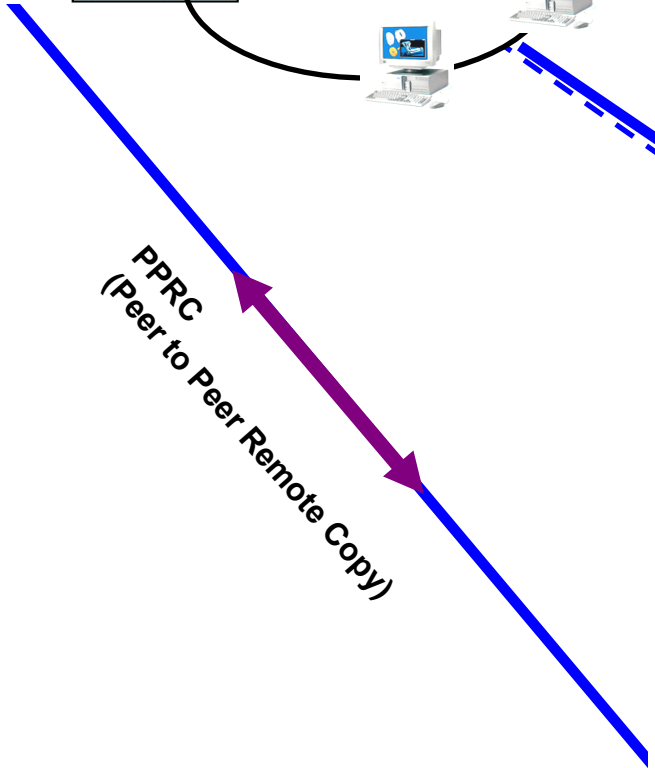


IBM Storage System ESS, DS6000, DS8000



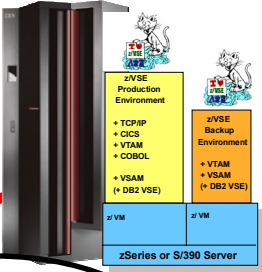
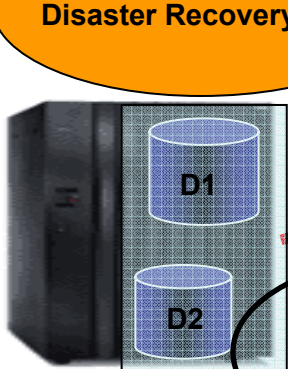
zSeries or System z

PPRC (Peer to Peer Remote Copy)

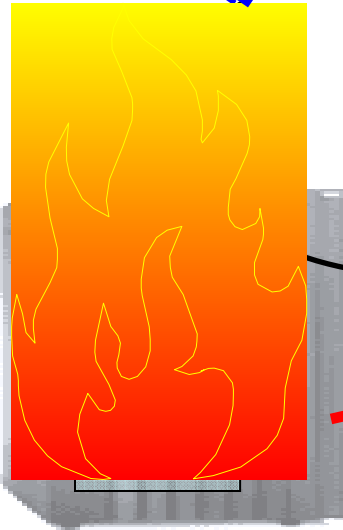
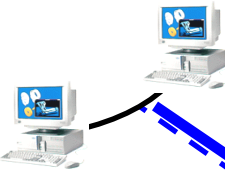


Disaster Recovery Site

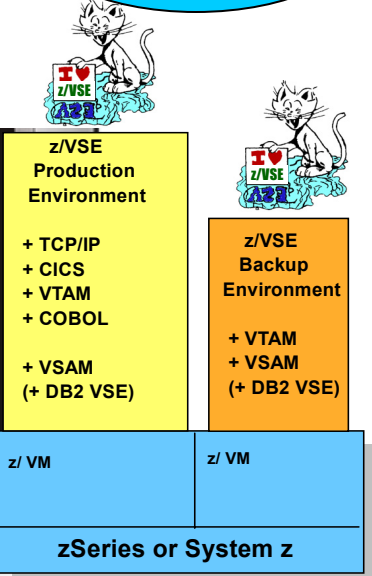
One active production site only
and one for DR



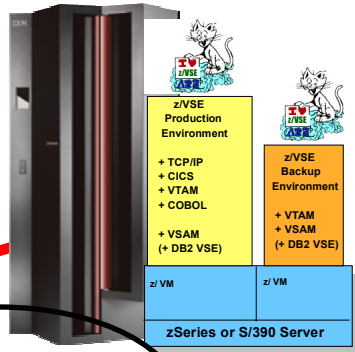
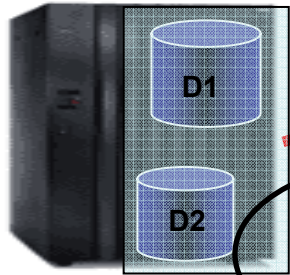
PPRC
(Peer to Peer Remote Copy)



Production Site

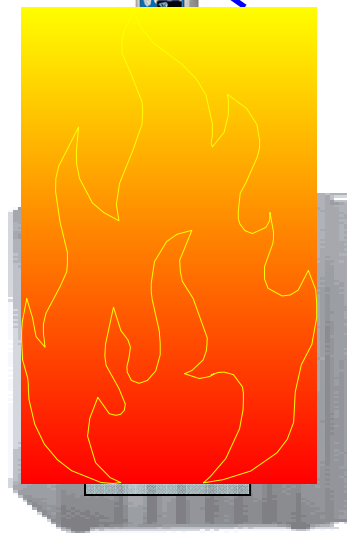
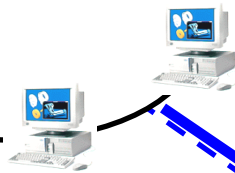


Disaster Recovery Site -
IBM Storage System

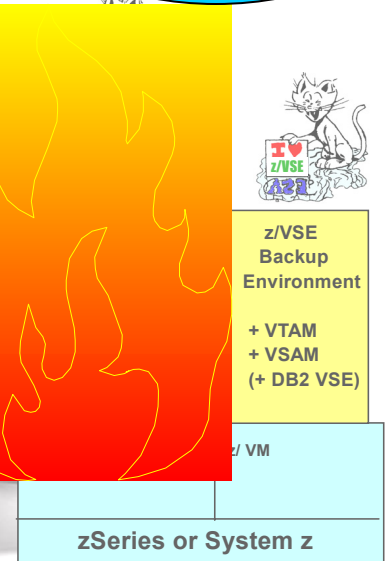


One active production site only
and one for DR

PPRC
(Peer to Peer Remote Copy)



Production Site



Steps in case of a disaster Recovery

- 1. Emergency phones and messaging methods have to be enabled**
- 2. Start z/VM on the Recovery Site (on a COLD environment)**
 - 1. Start the CBU (Capacity Backup Upgrade) if defined – to accelerate start of VSE systems**
- 3. Switch the OSA Adapter Network Connectivity**
- 4. Start Online VSE machines (all CICS partitions should start automatically)**
- 5. After all productional machines are running – the capacity can be reduced to the normal productional capacity**

Note: These Steps must be tested and trained periodically to have a well functioning process in case of a disaster Recovery failure.

Scenarios for Disaster Recovery with VSE

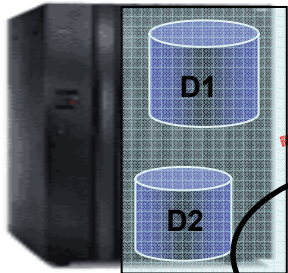
(1) Concepts of Disaster Recovery (DR)

(2) One active production site and one for DR

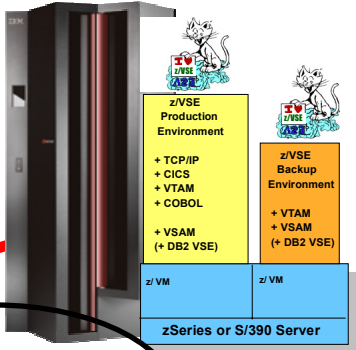
(3) Two active sites with production and test

(4) Borrowed Resources for Disaster Recovery

Disaster Recovery Site - IBM Storage System

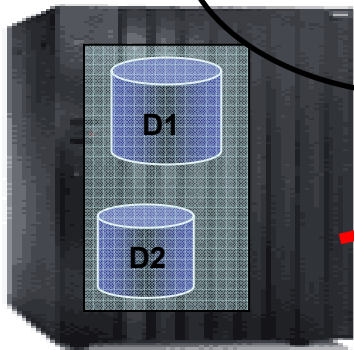


Development/Test CBU

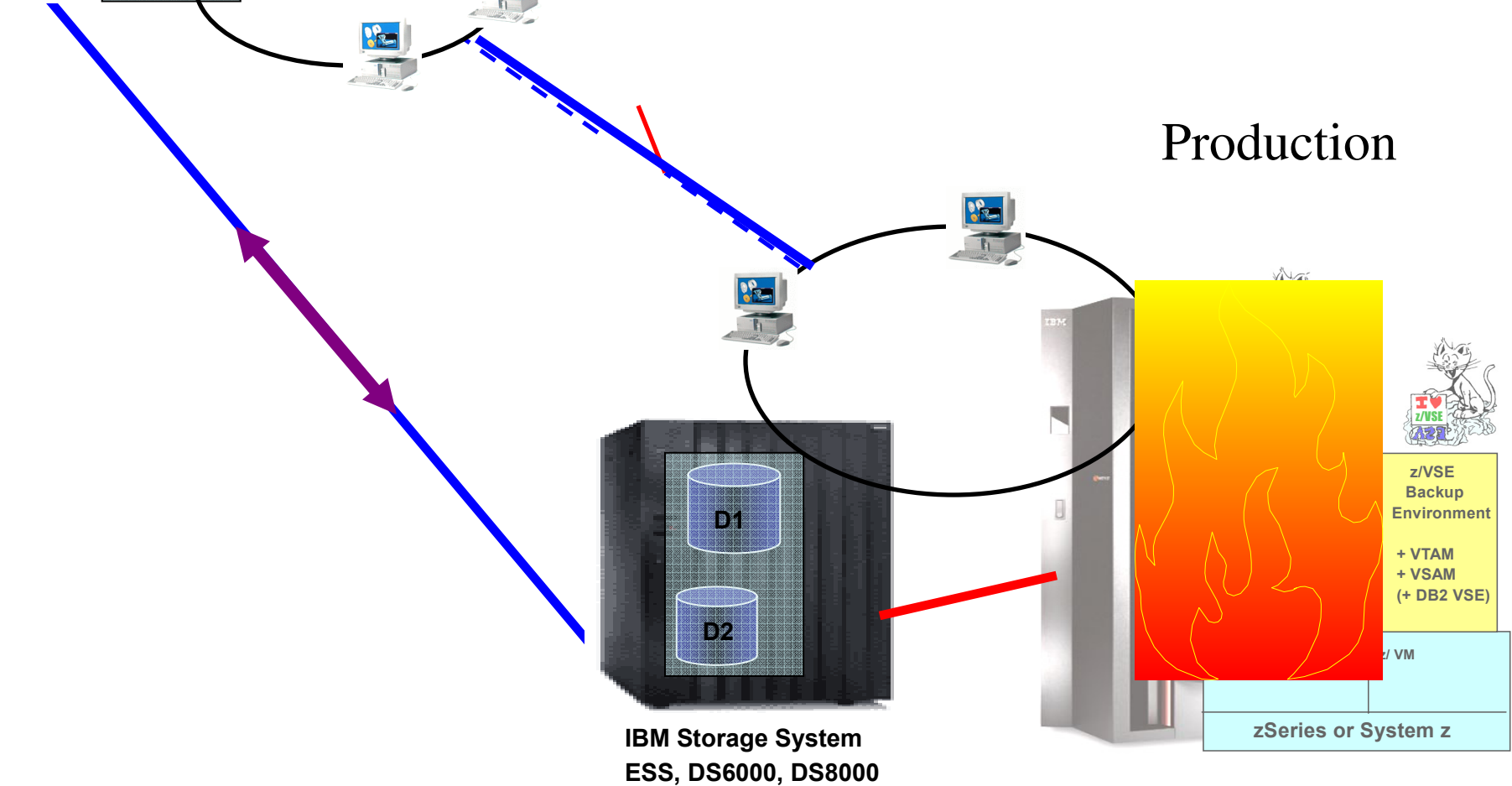
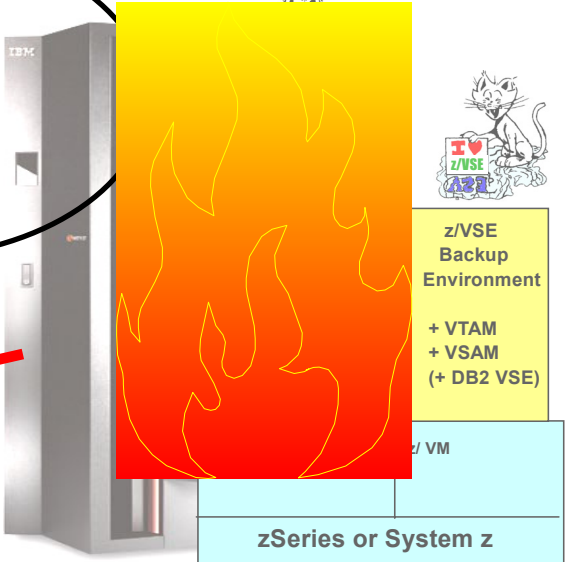


Two active sites with production and test

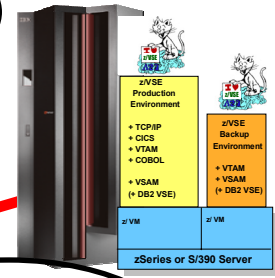
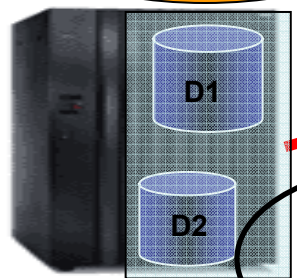
Production



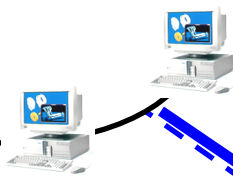
IBM Storage System ESS, DS6000, DS8000



Disaster Recovery Site

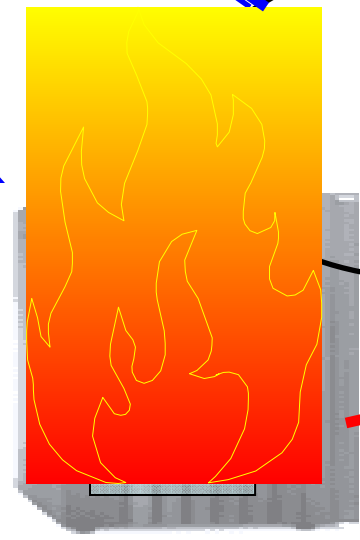


Development/Test CBU

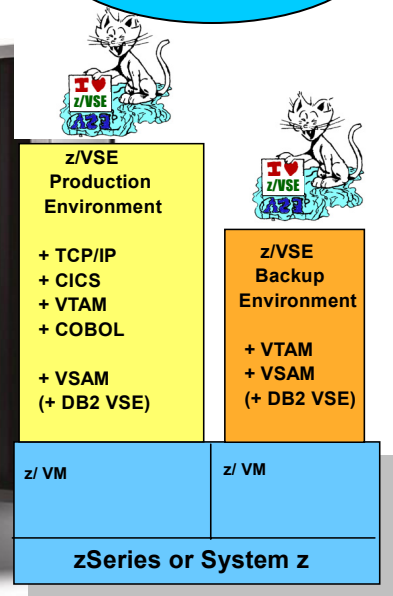


Two active sites with production and test

PPRC (Peer to Peer Remote Copy)



Production Site



(1) Two active sites with production and test Environment setup for disaster Recovery

- ❖ **DR System**
 - ❖ **An IBM agreement is done to increase the machine for DR capacity with the power of the production site, using CBU (Capacity Backup Upgrade)**
 - ❖ **In a WARM environment setup - the System is idling**
 - ❖ **In a HOT Environment setup – the system is very fast ready to take over the production workload**
 - ❖ **Both Systems are able to connect to both Storage subsystems**
 - ❖ **(on the production and DR site)**

- ❖ **Storage Systems**
 - ❖ **The Production Storage system is connected to the one for DR**
 - ❖ **The DR Storage system is connected to the production Storage**
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 - ❖ **Enablement to switch the PPRC direction**

- ❖ **Network**
 - ❖ **Possibility to switch between the productional and DR network**

Steps in case of a disaster Recovery

1. **Emergency phones and messaging methods have to be enabled**
2. **Start the CBU (Capacity Backup Upgrade)**
3. **Switch the OSA Adapter Network Connectivity**
4. **Start the Online VSE machines if not already started (all CICS partitions should start automatically)**
5. **After all productional machines are running – the capacity can be reduced to the normal productional capacity**

Note: These Steps must be tested and trained periodically to have a well functioning process in case of a disaster Recovery failure.

Scenarios for Disaster Recovery with VSE

- (1) Concepts of Disaster Recovery (DR)
- (2) One active production site and one for DR
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Borrowed resources for Disaster Recovery

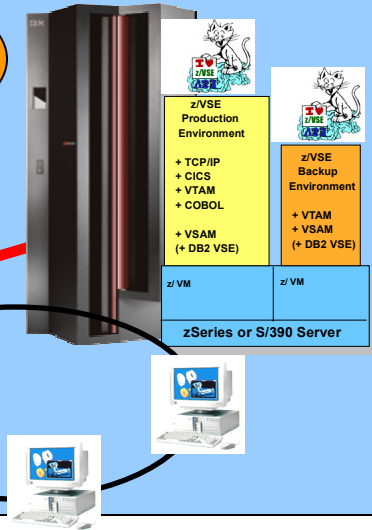
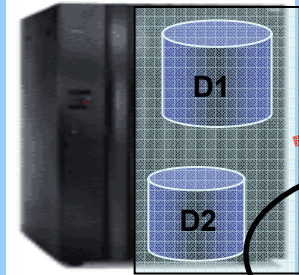
A Disaster Recovery Site can be made offsite with IBM equipment.

Necessary Agreements are required:

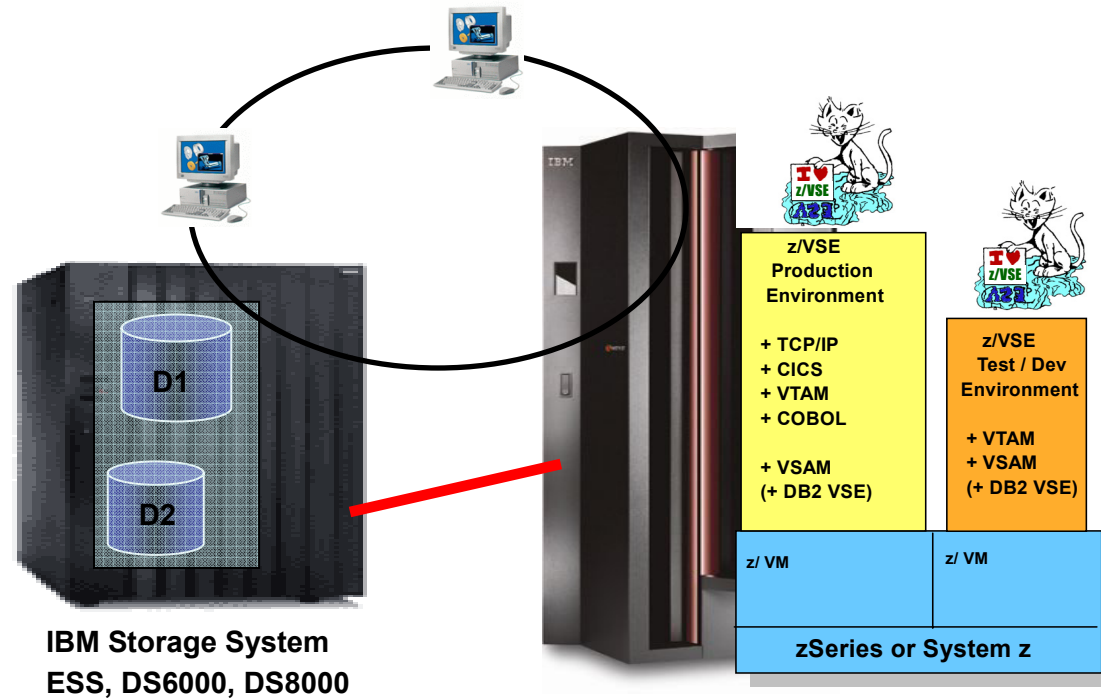
- An contract with HW details
- The DR procedure must be well defined and described
- Data for the DR case are provided periodically to the DR Center
- Training is done periodically and the DR procedure is verified

IBM

Disaster Recovery Site -
System and Storage



Borrowed resources
for Disaster Recovery



z/VSE on the web

z/VSE Solutions

The screenshot shows the IBM z/VSE website. The address bar displays <http://www.ibm.com/servers/eserver/zseries/zvse/>. The navigation menu includes Home, Products, Services & solutions, Support & downloads, and My account. The left sidebar contains a list of links: z/VSE, About VSE, How to buy, News, Events, **Solutions** (circled in red), Products & components, Documentation, Service & support, Downloads, Education, Partners, FAQ, and Contact VSE. The main content area features a large banner for 'Announcing z/VSE V3.1' with a '40 YEARS' logo. Below the banner is a section titled 'Redesigned z/VSE homepage' with a paragraph of text and a link to the 'VSE team'. A section titled 'z/VSE Version3 Release 1' lists supported hardware and software configurations. The right sidebar includes sections for 'We're here to help', 'Mark your calendar' (with an event for 'Guide Share Europe'), 'Spotlights', and 'Middleware'.

👉 New Web presence: ibm.com/servers/eserver/zseries/zvse/solutions

Additional Informations

- z/VSE Home Page

<http://www.ibm.com/servers/eserver/zseries/zvse/>

- z/VSE Solutions and Utilities

<http://www-1.ibm.com/servers/eserver/zseries/zvse/solutions/>



- e-business Solutions for VSE/ESA

SG24-5662

- e-business Connectivity for VSE/ESA

SG24-5950

- CICS Transaction Server for VSE/ESA

CICS Web Support

SG24-5997-00

- ***WebSphere Handbook (Connectors to z/OS and VSE)*** ***SG24-7042***

z/VSE Contact: zvse@de.ibm.com