

# Paylogix<sup>®</sup>

## Disaster and Recovery Plan



*If you have been working with computers for any length of time at all, you have probably been exposed to a data disaster. Have you ever experienced a hard disk crash and lost everything? What did you do? How did you recover, if you did so? After the crash, did you change anything about how you stored data? Apply now the scenario involving a hard disk crash to corporate data that constitutes Paylogix<sup>®</sup>'s business and its impact on clients on and off the Internet.*

*Our disaster plan will protect Paylogix<sup>®</sup> and its employees not only from hurricanes, blizzards and other severe weather conditions, but also from the losses associated with fire, theft and accidents. In addition, the detailed recovery plan will not only help Paylogix<sup>®</sup> get back in operation after a storm, it can make you a "hero" to those clients and customers desperate for our services and products in the wake of the storm.*

### What is a Disaster Recovery Plan?

**A disaster recovery plan is a working document that prepares a company for survival if all or parts of its operations are rendered unusable. The objectives of this disaster recovery plan include:**

- \*Maximizing safety of customers and personnel*
- \*Minimizing business interruption and economic loss*
- \*Safeguarding assets*
- \*Controlling the legal liability of management and directors*
- \*Reducing the probability of disasters (re)occurring*

### What constitutes a Disaster?

**Paylogix<sup>®</sup> defines a computer-related disaster involving one or more of the following categories of loss or deficiency:**

- \*Loss of information*
- \*Loss of access to or use of computing systems*
- \*Loss or lack of personnel with pertinent knowledge or expertise*
- \*Loss of physical equipment*

### Different types of Disaster

A disaster at Paylogix<sup>®</sup> can strike in many ways. This section examines some of the different types of disaster that can occur and the

steps taken to mitigate a potential disaster.

#### \*Disk Crash

Disk drives contain mechanical parts that can wear out and fail. It should be obvious that, if we lose a disk that contains critical data, the consequences are unplanned downtime until the data is restored. But what about the loss of a system disk that boots the operating system (OS)? We have plans in place to completely restore the OS, the applications, the security structure, etc., and to guarantee all the while that Paylogix<sup>®</sup> can replace the data disk without also having to restore the data to it.

#### \*System Hardware Failure

Our computing systems are considered state-of-the-art, and are extremely reliable. Reliable as they are, however, there is always a possibility that hardware may fail. Most systems that are going to fail will do so during the first seventy-two hours of installation/operation. Though we have established an excellent history of failure free operation, new updates and systems add-ons must be monitored carefully, particularly during the early stages of operation.

#### \*System Software Failure

Disastrous software difficulties can arise from various directions. Existing software running on our system may simply fail for reasons that are not obvious. New software introduced into the system that has previously exhibited no symptoms of malfunction may suddenly cause unforeseen problems. In either case, software limitations may have surfaced due to capacity issues or because of deeply hidden bugs.

#### \*Actions by Users and Administrators

Sometimes actions performed by the users of a computing system can precipitate a disaster. This may come about through insufficient understanding on the part of the user as to how the applications work. Destruction or deletion by employees of critical information

held by the computer is one of the most common disasters affecting a company's data. Sometimes such destruction is intentional. Granting the user greater access rights than he or she should have can be another factor contributing to user-provoked catastrophe. The above observations concerning acts or errors to which the user is prone apply to inexperienced administrators as well.

**\*Viruses**

Any internet-based system may be infected by a virus. Most viruses are man-made, and intentionally spread. For this reason, constant vigilance to protect our system is critical. The Paylogix® system is protected through a multi-layered Norton Anti-virus system, plus a company firewall. The system is continuously monitored for infection or contamination.

**\*Lack of Key Personnel**

It is critical that Paylogix® maintain adequate cross-training of programmer staff, with backups capable of performing key tasks.

**\*Loss of Physical Access to the Data Center**

A true natural disaster or fire may prevent physical access to our site. For this reason, all data and systems maintain off-site backups and redundancy.

**Disaster and Recovery Program Overview**

The Paylogix® database, the web-site, and document management system each reside on Compaq file servers, with each having mirrored drives and/or utilizing a RIAD 5 array, as well as operating under a Microsoft Windows NT environment. All components of the system are regularly and automatically backed-up, on a daily basis. Additionally, the system is backed up via a separate and redundant backup system twice each week. Maximum loss of data at any time is no more than the last 24 hours of new data entries. Backup storage is on magnetic tape media, stored in a fireproof safe. An identical magnetic tape system is stored off site for rapid integration with the recovery system. A complete listing of necessary hardware and software is also kept off site. This "shopping" list is intended to define minimum standards for the recovery system.

This list is updated along with any system upgrades, and is maintained by our system vendor. "Same day" products are defined as those products that can be obtained from a local source within the context of a few hours. Any equipment or software not available "same-day" requires that a spare be stored off site. We currently have an emergency response agreement with our computer systems consultant and vendor. This agreement provides for an immediate response to our need for assemblage of a recovery system. To ensure minimal downtime, this agreement also provides for temporary housing of systems at their facility, in the event of a loss of Paylogix® physical facilities.

**Preparing for Disaster**

In the event of any disaster, public services may be reduced during the critical recovery periods. Paylogix® has prepared to be relatively self-sufficient during such an event.

Preparing the Paylogix® database for disaster

To prepare for a recovery from a potential disaster, we do the following:

1. Periodically dump all databases to a disk on another computer in another building as well as to a tape device. Transaction logs are handled similarly.
2. All system logs are maintained in a secure fashion. The directory where all SQL Server files are located, including the Master.dat file is securely recorded. Records of all service packs installed for both Windows NT Server and SQL Server are maintained, as well as records of Net-libraries used, the security mode, and the SA password. We keep records of the specified database options.
3. We record in scripts ALL size changes for ALL devices and databases. This is crucial to simplify recovery in this situation.
4. We maintain a base functionality script for quickly assessing minimal capability (see note on following page).
5. We have assessed the following recovery steps ahead of time on another server, and regularly amend the steps as necessary.

Disaster Recovery Assessment provides the verification of the plan, and is achieved by getting sufficient hardware, providing the documented disaster recovery guidelines, and having a backup SA or DBA (someone who is not involved with plan development) recover the system on their computer. We perform periodic Disaster Recovery Assessments to verify the vitality of the current Disaster Recovery Plan.

**NOTE:** Our “base functionality script” is a batch of code that can be used to quickly demonstrate the successful functioning of the database from a specific application’s perspective. At Paylogix®, this is an .sql file with batched SQL commands run into the server from ISQL. For other applications, a .bat file is utilized because it can contain BCP and ISQL commands. This base functionality script is very application-specific, takes many different forms. For example, on the Decision Support/Reporting system, the script is merely a copy of a couple of our key reporting queries; for online transaction processing (OLTP) applications, it is the execution of a batch of stored procedures to execute INSERT, UPDATE, and DELETE statements. The goal is to confirm, from a gross perspective, that everything is working as intended. The base functionality script provides a tool for the SA or the DBA to be able to see that the database is back in a viable state, without depending on the end users for verification.

#### *Readiness Levels*

**Condition 5:** Hurricane or Blizzard Season (June 1-April 30).

Review plan, listings and checklists. The following are approved checklists and procedures. (Forms for these checklists are found in the appendix.)

1. A vehicle checklist to make certain all equipment is in good operating condition. Fill all fluids to the proper levels.
2. A checklist of actions to be taken at the beginning of each readiness level.
3. A checklist of materials needed for storm preparations and emergency repairs after the storm.

4. A checklist of exterior equipment and displays to be moved inside. Also a checklist of those items to be secured to prevent additional flying debris.

5. Complete all updates to information lists.

6. Review all contracts and letters of agreement/cooperation.

7. Form Storm Preparedness Team. Notify the members of their duties.

8. Prepare a map showing all utility disconnects. Include water, gas, fuel, and other materials.

9. Determine the need for emergency equipment.

10. Prepare and execute orders for emergency supplies. For perishable items, prepare listing to be ordered during condition 3 or 4.

11. List files, inventory data, and other materials needed for recovery.

12. List all hazardous materials kept on site, include quantities, reactivity with other materials, and agencies that must be notified in the event of a spill.

13. List all key equipment and the method of protection that will be used. Remember to consider damage caused by the storm and conditions that will occur after the storm, i.e., building roof damaged, no electricity, flooding because storm drains are blocked, mildew, cold (late season storms), etc.

14. List all key inventories and the method of protection that will be used.

15. List the machinery and equipment to be shut down and the procedures to be followed.

16. Verify insurance coverage in writing, and the types of damage that are covered. Review all provisions including wind, flood and damages after storm due to damage to building.

17. Inspect premises including roofs, signs and trees for possible damage causing conditions.

18. Establish a pictorial inventory with still pic-

tures and video of buildings, interior, grounds, etc. Keep in a secure place.

**19.** Determine which materials, inventory, and records are to be evacuated from the business location. Plan the evacuation considering low areas and the possibility of downed trees and utility poles blocking the route.

**20.** Prepare and issue employee identification badges. This will help local officials know who are employees and who are not.

**21.** Determine windows and doors that require boarding up or storm shutters. Cut plywood to size, drill necessary holes and label each panel so boarding up of the facility is an orderly process.

**22.** Map all fire extinguisher locations. Check operational status and note the type of each on a floor plan.

**Condition 4:** Alert-Hurricane or Blizzard Advisory

**1.** Inform staff of weather conditions and remind staff of their duties.

**2.** Maintain watch of weather statements on a regular basis.

**3.** Begin outside activity knowing quick action may be required in four days or less if the storm threatens our area.

**4.** If the storm is projected to arrive in the area during holiday or weekend, modify Conditions 3, 2 and 1 to reflect the store, bank and other business closures that will be experienced.

**5.** Check the exterior of the building to remove debris that may cause damage during a storm.

**Condition 3:** Hurricane or Blizzard Watch or approximately 48 hours to forecast landfall.

**1.** Meet with all staff to verify duties. Advise of upgrade to this condition level.

**2.** Activate Storm Team.

**3.** Make final orders for emergency supplies.

**4.** Clean all drains and gutters to provide for

maximum flow of storm water.

**5.** Remove all loose exterior items that may become missiles during the storm.

**6.** Tie down all materials that cannot be moved inside.

**7.** Contact contractors and other service agencies with which Paylogix® has letters of agreement with for recovery services.

**8.** Verify phone numbers of employees.

**9.** Verify items that need to be protected with tarp and/or plastic. If inadequate supply is on hand, purchase now.

**10.** Verify electric circuits that can be turned off prior to the storm strike.

**11.** Verify that Storm Team knows the location of all utility disconnects.

**12.** Complete final check of all emergency equipment such as lights, generators, flashlights, cellular phones and pagers.

**13.** Begin back up of all vital computer files and records.

**14.** Finalize arrangements with banks to secure cash for post disaster needs.

**15.** Fuel all vehicles and check all fluid levels.

**16.** Fill fuel and fluid tanks for all machinery.

**17.** Review scheduling of employees, including repair and recovery duties.

**18.** Review pictures of facility to determine if additional "before" shots are needed.

**Condition 2:** Hurricane or Blizzard Warning or approximately 24 hours to forecast landfall

**1.** Advise staff of new level.

**2.** Obtain cash for post-disaster needs.

**3.** Notify regional or national offices if applicable.

**4.** Load materials, files, and inventory that

must be moved to a safe location.

**5.** Board up, secure and provide additional support for doors and windows.

**6.** Review all preparations to ensure all possible has been done. Do not forget the little items. Make a physical tour of the entire facility.

**7.** Complete Accounting Information Sheets.

**Condition 1:** Twelve (12) hours or less to landfall.

**1.** Remind staff of duties to be performed after the storm has passed.

**2.** Provide alternate numbers and work schedules to all employees. (We may have severe damage and will need all staff available to assist with clean up.)

**3.** Determine if the storm strength will be of a magnitude to endanger Storm Team that will remain on site.

**4.** Provide final briefing to Storm Team.

**5.** Shut off all unnecessary gas and oil. Disconnect all unnecessary electric circuits at main disconnect.

**6.** Leave facility with copies of necessary documents and files to begin operations at new location if need arises.

**7.** Vehicles leaving the area should leave 20 hours before landfall.

**Condition 0:** Landfall.

**1.** Protect yourself and family at all costs.

**2.** Storm Team patrol building, always in the buddy system and with spare flashlights. Look for leaks, pipe breakage, wind damage, etc. During the maximum force of the storm remain in a predetermined safe area.

**3.** Monitor all equipment that has been left on line. In the event of failure follow the prescribed shutdown procedures.

**4.** If power fails, monitor areas for fire as

alarms may be out and local emergency services response will not occur.

**5.** Shut off all electric switches in the event of a power failure to prevent equipment restart without necessary checks.

**6.** The Storm Team must monitor equipment that remains in operation that produces fumes or gases, particularly carbon monoxide.

#### *Recovery Plan*

**1.** Determine the structural stability of the building. Upon entering the building, do not use an open flame as a source of light since gas may still be trapped inside; a battery-operated flashlight is ideal.

**2.** Eliminate all sources of leaking gas. Eliminate power to all damaged equipment. Mark circuits and disconnects to prevent accidental circuit activation. Watch for electrical shorts or live wires before making certain that the main power switch is turned off. Do not turn on any lights or appliances until an electrician has checked the system for short circuits. Never connect the generator to the main service panel as this will energize the downed lines, and possibly lead to electrocution of employees or utility workers.

**3.** Determine the status and stability of all hazardous materials.

**4.** Contact insurance agents for damage reporting.

**5.** Contact employees that relocated to safe areas with goods, etc. as to when they are to return. If possible, advise of the best routes that are open and safe.

**6.** Clean all drains and gutters to provide for maximum flow.

**7.** Verify that flues and other vents are not blocked.

**8.** Proceed with immediate cleanup measures to prevent any health hazards. (Perishable items, which may pose a health problem, should be listed and photographed before discarding.)

**9.** Throw out fresh food and previously opened medicines that have come in contact with floodwaters.

**10.** Shovel out mud while it is still moist to give walls and floors a chance to dry. Once plastered walls have dried, brush off loose dirt. Wash with a mild soap solution and rinse with clean water. Always start at the bottom and work up. Ceilings are done last. Special attention at this early stage should also be paid to cleaning out heating and plumbing systems.

**11.** Visit or call the Federal Emergency Management Agency (FEMA) Damage Assistance Center to report the assistance needed for our business. If possible, ask for locations that will be serving employees who have reported to work. They will need to visit or call the DAC center for personal claims. Schedule work to allow for these individual claims. (Note: DAC Centers now allow telephone claims. Advise employees of this procedure.)

**12.** Prepare timetables, work schedules and delivery of goods and services with a mind to reducing personnel burnout. Keep in mind; everyone is under tremendous stress, especially those in a command or decision-making situation.

**13.** Prepare medical/dental forms for employees.

**14.** Advise all employees of incentive and assistance programs as we learn of them.

**15.** Inform all vendors of our operational status. If orders need to be placed on hold or shipping delayed, make the necessary arrangements.

**16.** Make arrangements with banks to continue our operations.

#### ***Recovering the Paylogix® database following a Disaster***

To recover after a disaster has occurred, after acquiring suitable hardware:

**1.** Install Windows NT Server and load the appropriate service pack(s). Verify that the

appropriate domain functionality exists. Verify that file sharing works.

**2.** Install SQL Server and load the appropriate service pack(s). Make sure to place the master database device into the same directory as before. Also select the same Net-library, security mode, and SA password as before.

**3.** Confirm that SQL Server is running properly. If the Windows NT Server name was changed, run the `sp_dropserver` and `sp_addserver` to match the Windows NT Server name.

**4.** Create or alter all devices and databases from the scripts made in step 3 of the previous section above. Databases can be created for LOAD.

**5.** After all device files and databases are sized as they were at the time of the last dump, if either the user logon information or the remote server logon information is significantly different from the dumped master database, proceed with step 5a. Otherwise, if they are not crucial, proceed with step 6.

**a.** Stop the SQL Server

**b.** Start the SQL Server in single user mode from the command `"SQLSERVER -c -m"`

**c.** Load the master database from the last dump of it before the catastrophe occurred.

**d.** After successful load, stop and restart the SQL Server normally, continue with step 6.

**6.** Load each of the user databases from the dumped files (and transaction log dumps too, if appropriate).

**7.** Stop and restart the SQL Server.

**8.** Verify the availability of the system. If the master database was not reloaded in step 5c, set the database options for each database. Run a functionality script to ensure the adequate operations of the SQL Server. Before the users are released onto the system, run `DBCC CHECKDB` and `NEWALLOC` on each database, and `DBCC TEXTALL` and `TEXTALLOC` on those databases and tables containing text fields. (This is to ensure that the migration process did not alter the files in an undesirable fashion.)

**Appendix - Storm Team**

Prepared by: \_\_\_\_\_ Date: \_\_\_\_\_

Name:	Area of Responsibility:	Phone#	Emergency#
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**Chain of Command:**

*The following is a simple chain of command. Paylogix® already has an organizational chart prepared that can be modified for the Emergency Plan. Specific detailed duties will be provided with the chart. Finally, a route of ascension in the event of vacation, or injury is provided.*

Manager: \_\_\_\_\_  
Assistant: \_\_\_\_\_  
Storm Team Leader: \_\_\_\_\_  
Employee Relations: \_\_\_\_\_  
Database Administrator: \_\_\_\_\_  
Other: \_\_\_\_\_

**Forms/Checklists At Risk Status Form**

This facility is located At: \_\_\_\_\_

Use of this property: \_\_\_\_\_

Distance from open water: \_\_\_\_\_

Flood district: \_\_\_\_\_

Lowest floor elevation: \_\_\_\_\_

(if multiple lower levels list all including elevator pits, equipment pits, etc. Label as many floor levels in the specific area as possible)

Building construction type: \_\_\_\_\_

Roof type: \_\_\_\_\_

Roofing material: \_\_\_\_\_

Flooding potential...

Category 1: \_\_\_\_\_ Category 2: \_\_\_\_\_

Category 3: \_\_\_\_\_ Category 4 & 5: \_\_\_\_\_

Storm Water: \_\_\_\_\_

Exposures unprotected from wind source: \_\_\_\_\_

Trees, poles, etc. that could cause damage: \_\_\_\_\_

Fuels and other petroleum products stored on site: \_\_\_\_\_

Bottled gasses stored on site: \_\_\_\_\_

Other hazardous materials stored on site: \_\_\_\_\_

Underground tanks on site: \_\_\_\_\_

(Describe use, contents and size)

**Hazardous Materials Listing**

Prepared by: \_\_\_\_\_ Date: \_\_\_\_\_

Telephone Listings for: employees, contractors, vendors, suppliers, insurance agencies, governmental agencies, home office, etc.:

Name:	Area of Responsibility:	Phone#	Emergency#
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Hazardous Material name: \_\_\_\_\_

Locations: \_\_\_\_\_

Quantity: \_\_\_\_\_

MSDS sheets attached: \_\_\_\_\_

**Emergency Equipment Needs**

Type:	Size:	Qty.:
Generators: _____	_____	_____
Flash Lights: _____	_____	_____
Cel Phones: _____	_____	_____
Beepers: _____	_____	_____
Radios: _____	_____	_____
Laptops: _____	_____	_____
Modems: _____	_____	_____
Lighting: _____	_____	_____
Shovels: _____	_____	_____
Tarps: _____	_____	_____
Tape: _____	_____	_____
Hand Tools: _____	_____	_____
Cleanup Tools: _____	_____	_____
Cleaning Supplies: _____	_____	_____
First Aid Kit: _____	_____	_____

**Accounting Information**

*Print copies of all Corporate and Client account data records from Chase, Schwab and any other financial institutions.*

Bank Deposit Summary: \_\_\_\_\_

Date of Deposit: \_\_\_\_\_

Time of Deposit: \_\_\_\_\_

Location of Deposit: \_\_\_\_\_

Deposit Number: \_\_\_\_\_

Total Cash: \_\_\_\_\_

Listing of Checks: \_\_\_\_\_

Inventory...Last available Inventory Report (attached): \_\_\_\_\_

Shipping...Copies of Un-reconciled portions of shipping book (attached): \_\_\_\_\_

Petty Cash...Final Count of Petty Cash Drawer: \_\_\_\_\_

