**IT DC Disaster Recovery Plan (DRP)**

**Version 1.1**

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**Plan and related Business Processes**

|  |  |  |
| --- | --- | --- |
| Business Process | Feature | Relevant Technical Components |
| Digital Bharat Collborative & HO DC | **HIHL, MHS, Telemedicine,**  **MMU, MCTS, ECD. ERP, BIDA Dashboards, NITI, Tableau.** | * AMRIT Applications software stack * Czentrix-CTI * IIS * Apache * MSSQL * PHP * MySql |

# Purpose and Objective

Piramal Foundation developed this disaster recovery plan (DRP) to be used in the event of a significant disruption to the features listed in the table above. The goal of this plan is to outline the key recovery steps to be performed during and after a disruption to return to normal operations as soon as possible.

## Scope

The scope of this DRP document addresses technical recovery only in the event of a significant disruption. The intent of the DRP is to be used in conjunction with the Service continuity plan (SCON) PSMRI has. A DRP is a subset of the overall recovery process contained in the SCON. Plans for the recovery of people, infrastructure, and internal and external dependencies not directly relevant to the technical recovery outlined herein are included in the Service Continuity Plan.

The link to the specific SCON document related to this DRP can be found here:

This disaster recovery plan provides:

Guidelines for determining plan activation;

Technical response flow and recovery strategy;

Guidelines for recovery procedures;

References to key Business Resumption Plans and technical dependencies;

Rollback procedures that will be implemented to return to [standard operating state](#Standard_Operating_State);

Checklists outlining considerations for escalation, incident management, and plan activation.

The specific objectives of this disaster recovery plan are to:

Immediately mobilize a core group of leaders to assess the technical ramifications of a situation;

Set technical priorities for the recovery team during the recovery period;

Minimize the impact of the disruption to the impacted features and business groups;

Stage the restoration of operations to full processing capabilities;

Enable rollback operations once the disruption has been resolved if determined appropriate by the recovery team.

Within the recovery procedures there are significant dependencies between and supporting technical groups within and outside PSMRI. This plan is designed to identify the steps that are expected to take to coordinate with other groups / vendors to enable their own recovery. This plan is not intended to outline all the steps or recovery procedures that other departments need to take in the event of a disruption, or in the recovery from a disruption.

# Dependencies

This section outlines the dependencies made during the development of this disaster recovery plan. If and when needed the DR TEAM will coordinate with their partner groups as needed to enable recovery.

|  |  |
| --- | --- |
| Dependency | Assumptions |
| User Interface / Rendering  Presentation components | * Users (end users, administrators) are unable to access the system through any part of the instance (e.g. client or server side, web interface or downloaded application). * Infrastructure and back-end services are still assumed to be active/running. |
| Business Intelligence / Reporting  Processing components | * The collection, logging, filtering, and delivery of reported information to end users is not functioning (with or without the user interface layer also being impacted). * Standard backup processes (e.g. tape backups) are not impacted, but the active / passive or mirrored processes are not functioning. * Specific types of disruptions could include components that process, match and transforms information from the other layers. This includes business transaction processing, report processing and data parsing. |
| Network Layers  Infrastructure components | * Connectivity to network resources is compromised and/or significant latency issues in the network exist that result in lowered performance in other layers. * Assumption is that terminal connections, serially attached devices and inputs are still functional. |
| Storage Layer  Infrastructure components | * Loss of SAN, local area storage, or other storage component. |
| Database Layer  Database storage components | * Data within the data stores is compromised and is either inaccessible, corrupt, or unavailable |
| Hardware/Host Layer  Hardware components | * Physical components are unavailable or affected by a given event |
| Veeam Backup EP Solution  Backup & Recovery | * Backup and Restoration software solution and its respective Backup Storage repositories availability. |
| Virtualizations (VM's)  Virtual Layer | * Virtual components are unavailable * Hardware and hosting services are accessible |
| Administration  Infrastructure Layer | * Support functions are disabled such as management services, backup services, and log transfer functions. * Other services are presumed functional |
| Internal/External  Dependencies | * Interfaces and intersystem communications corrupt or compromised |

In addition assumptions within the Business Continuity Plan for this work stream still apply.

# [Disaster Recovery Strategies](#Disaster_Recovery_Strategy)

The overall DR strategy is summarized in the table below and documented in more detail in the supporting sections. These scenarios and strategies are consistent across the technical layers (user interface, reporting, etc.)

# Disaster Recovery Procedures

A disaster recovery event can be broken out into three phases, the response, the resumption, and the restoration. These phases are also managed in parallel with any corresponding business continuity recovery procedures summarized in the business continuity plan.

## Response Phase

The following are the activities, parties and items necessary for a DR response in this phase. Please note these procedures are the same regardless of the triggering event (e.g. whether caused by a Data Center disruption or other scenario).

**Response Phase Recovery Procedures – All DR Event Scenarios**

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Identify issue, Message or call / Designated Responsible Individual (DR TEAM) | DR TEAM | 15 minutes | * Issue communicated / escalated * Priority set |
| Identify the team members needed for recovery | DR TEAM | 15 minutes | Selection of core team members required for restoration phase from among the following groups:   * Operations * Application team * DC N&S Team |
| Establish a conference line for a bridge call to coordinate next steps | DR TEAM or Ops | 15 minutes | Primary line: 040-49451988  Secondary line: 040-49451979  Alternate / backup communication tools: email, communicator |
| Communicate the specific recovery roles and determine which recovery strategy will be pursued. | DR TEAM | 15 minutes | * Documentation / tracking of timelines and next decisions * Creation of disaster recovery event command center / “war room” as needed |

This information is also summarized by feature in [Appendix A: Disaster Recovery Contacts - Admin Contact List](#_Appendix_A:_Disaster).

## Resumption Phase

During the resumption phase, the steps taken to enable recovery will vary based on the type of issue. The procedures for each recovery scenario are summarized below.

## Data Center Recovery

#### Full Data Center Failover

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Initiate Failover | DR TEAM | TBD | * Restoration procedures identified * Risks assessed for each procedure * Coordination points between groups defined * Issue communication process and triage efforts established |
| Complete Failover | DR TEAM | TBD | * Recovery steps executed, including handoffs between key dependencies |
| Test Recovery | DR TEAM | TBD | * Tests assigned and performed * Results summarized and communicated to group |
| Failover deemed successful | DR TEAM | TBD |  |

Below is a sample timeline for recovery actions associated with the failover the technical components between different data centers to provide geo-redundant operations. Coordination of recovery actions is crucial. A timeline is necessary in order to manage recovery between different groups and layers.



#### **Reroute critical processes to alternate Data Center**

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Rebuilding Network for Data center with Internet access | System Administrator | 1 Hour | ISP Provider switch, Switch, Backup Router |
| Initiate DRP for Datacenter: Redirecting traffic to 3rd floor Datacenter (DRS) | System Administrator | 30 Minutes | ISP Provider switch, Switch, Backup Router |

#### **Operate at deprecated service level – prioritize critical feeds**

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Turning ON Backup Production Servers (Telemedicine, MHS,1097 & 1033) | System Administrator | 30 Minutes | Backup Servers at 3rd floor |
| Database restoration in Production Servers and initiating web access | DBA/Application Team | 30 minutes |  |

### Internal or External Dependency Recovery

#### **Reroute operations to backup provider**

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| ISP Provider(Beam) | Network Administrator | As needed | * Public IP |
| Cyberoam Firewall Support | Network Administrator | 30 Minutes |  |

#### **Execute available recovery procedures**

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Inform other teams about technical dependencies | DR TEAM | As needed | Application Support & DBA |

### Significant Network or Other Issue Recovery (Defined by quality of service guidelines)

#### **Reroute operations to backup provider**

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Redirecting network traffic on backup line | Network Administrator |  | * Networking components at DRS |

#### **Execute available recovery procedures**

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Inform other teams about technical dependencies | DR TEAM | As needed | * Hardware (CPU, Memory, Hard disk, Network requirements) |

## Restoration Phase

During the restoration phase, the steps taken to enable recovery will vary based on the type of issue. The procedures for each recovery scenario are summarized below.

## Data Center Recovery

## Full Data Center Restoration

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| Determine whether failback to original Data Center will be pursued | DR TEAM | 8 Hours | * Restoration procedures determined |
| If Original data center restored | DR TEAM | 3 Days | * Server Farm level recovery |
| Complete Failback | DR Team | 3 Days | * Failback steps executed, including handoffs between key dependencies |
| Test Failback | DR Team | 1 Day | * Tests assigned and performed * Results summarized and communicated to group * Issues (if any) communicated to group |
| Determine whether failback was successful | DR TEAM | 1 Day | * Declaration of successful failback and communication to stakeholder group. * Disaster recovery procedures closed. * Results summarized, post mortem performed, and DRP updated (as needed). |

The following section contains steps for the restoration procedures.

## Internal or External Dependency Recovery

## Execute available recovery procedures

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Owner | Duration | Components |
| BSNL PRI line on Backup Line | DR TEAM | As needed | * Call Forwarding to Mobile Number |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

# Appendix A: Disaster Recovery Contacts - Admin Contact List

The **critical team members** who would be involved in recovery procedures for feature sets are summarized below.

|  |  |
| --- | --- |
| Feature Name | Contact Lists |
| Vijay Kumar N | 9154622513 |
| Saleem | 9502811577 |
| Ramana V | 8008855563 |
| Surya Venkata Ramana | 8008855563 |
| Sachin Kadam | 9676436665 |
| GNK Reddy | 9000390777 |
| Rajasekhar Kalki | 9000990246 |
| Ishmeet Sing | 7702236688 |
| Pallav Patnakar | 96184 79104 |
| CEO | 7673930333 |

For the key internal and external dependencies identified, the following are the primary contacts.

|  |  |
| --- | --- |
| Dependency Name | Contact Information |
| BSNL | 198 |
| Act Fiber | 040-67293232 |
| Excel Media | 09701151888/8897511888 |
| Tata ISP | 1800 266 1515 |
| Sophos Firewall Vendor | 09000721166 |

# Appendix B: Document Maintenance Responsibilities and Revision History

This section identifies the individuals and their roles and responsibilities for maintaining this Disaster Recovery Plan.

**Primary Disaster Recovery Plan document owner: Ramana Vadapalli, SP Manager**

Primary Designee: Syed Saleem, Infra Manager

Secondary Designee: Vijay Kumar N, System Administrator

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of Person Updating Document | Date | Update Description | Version # | Approved By |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

# Appendix C: Server Details:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Project Server Name | Primary IP | Type | Operating system | DB | Application Softwares | Bulid Version |
| Bihar 104 REP | 192.168.45.111 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| Jharkhand 104 REP | 192.168.45.114 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| MMU | 192.168.45.138 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| Assamasbtc web | 192.168.46.208 | VM | Windows 2016 STD | MSSQL | IIS and SQL |  |
| Sanjeevani | 192.168.45.23 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| Swymed HP | 192.168.35.223 | Physical | Windows 2016 STD | NA | Swymeb Applicaiotn package |  |
| 104 UAT | 192.168.45.55 | Physical | Czentrix-UAT | NA |  |  |
| NACO Live | 192.168.35.239 | Physical | Centos7 | NA |  |  |
| Veeam-Backup | 192.168.45.136 | VM | Windows 2016 STD | MYSQL 5.7 | Veeam Backup replication EP console and Dashbaord | 2.4.7 |
| Sanofi & MUFG Live | 192.168.45.74 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| STFC Live | 192.168.45.178 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| ERP PSMRI Live | 192.168.45.14 | VM | Ubuntu-14 | POSTGRES |  |  |
| GR AHEX | 192.168.35.110 | VM | Ubuntu-20 | NA |  |  |
| BIDA | 192.168.45.115 | VM | Windows server 2008R2 | NA |  |  |
| Bayer Live | 192.168.45.74 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| AHEX | 192.168.46.209 | VM | Ubuntu | NA |  |  |
| GR | 192.168.45.54 | VM | Ubuntu-20 | NA |  |  |
| APA\_AHEX | 192.168.45.99 | VM | Ubuntu | NA |  |  |
| NACO 1097 | 192.168.35.219 | VM | Cent OS 6 (64 Bit) | NA |  |  |
| CM Api AHEX | 192.168.46.209 | VM | Ubuntu Linux | NA |  |  |
| NITI | 192.168.35.244 | VM | Ubuntu Linux | NA |  |  |
| Yatharth | 192.168.35.246 | VM | Ubuntu Linux | NA |  |  |
| BIDA MDMS | 192.168.45.29 | VM | Ubuntu Linux | NA |  |  |
| APL Live | 192.168.45.166 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| ARAKU DIGWAL Live | 192.168.45.109 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| NITI ERP | 192.168.35.220 | VM | Ubuntu 14.01 64-bit | NA |  |  |
| BPL-BPSL-Jharkand Live | 192.168.45.131 | VM | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| BIDA Automation Live | 192.168.45.97 | VM | Windows 2016 STD | MYSQL 5.7 | Python 3.11, VS code, Pycharm, NP++ |  |
| Swymed Live | 192.168.45.242 | Physical | Windows 2016 STD | NA | Swymeb Applicaiotn package |  |
| NACO 1097 Live | 192.168.35.218 | Physical | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| ARAKU | 192.168.35.109 | Physical | Windows 2016 STD | MYSQL 5.7 | Wildfly 11.0.1-Final, Redis 3.0.503, Open KM and Apache  Tomcat 7.0.53, Java/Jre 1.8.0.202, NotePad++, .NetUpdates 2013, 2015. | 2.4.7 |
| AMRIT Docker Repo Live | 192.168.45.80 | VM | Ubuntu 20 lts | NA |  |  |
| MAJULI | 192.168.45.145 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| MAJULI | 192.168.45.156 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| APL DB REP | 192.168.45.110 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| Assam DB REP | 192.168.45.216 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| STFC DB REP | 192.168.45.113 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| Bayer DB REP | 192.168.45.219 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| Bihar 104 DB REP | 192.168.45.217 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| Digwal DB REP | 192.168.45.218 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| Sanofi MUFG DB REP | 192.168.45.221 | VM | Windows 2016 STD | MYSQL 5.7 | MSQL WB | 2.4.7 |
| BIDA Live Tableau 10 License | 192.168.45.225 | VM | Windows 2016 STD | NA | Tableau 2022.3.1 | 2202.3.1 |
| NACO GR Live | 192.168.35.150 | VM | Ubunut 20Lts | MYSQL 5.7 |  |  |

# Appendix D: Glossary/Terms

**Standard Operating State**: Production state where services are functioning at standard state levels. In contrast to recovery state operating levels, this can support business functions at minimum but deprecated levels.

**Presentation Layer:** Layer which users interact with. This typically encompasses systems that support the UI, manage rendering, and captures user interactions. User responses are parsed and system requests are passed for processing and data retrieval to the appropriate layer.

**Processing Layer:** System layer which processes and synthesizes user input, data output, and transactional operations within an application stack. Typically this layer processes data from the other layers. Typically these services are folded into the presentation and database layer, however for intensive applications; this is usually broken out into its own layer.

**Database Layer**: The database layer is where data typically resides in an application stack. Typically data is stored in a relational database such as SQL Server, Microsoft Access, or Oracle, but it can be stored as XML, raw data, or tables. This layer typically is optimized for data querying, processing and retrieval.

**Network Layer**: The network layer is responsible for directing and managing traffic between physical hosts. It is typically an infrastructure layer and is usually outside the purview of most business units. This layer usually supports load balancing, geo-redundancy, and clustering.

**Storage Layer:** This is typically an infrastructure layer and provides data storage and access. In most environments this is usually regarded as SAN or NAS storage.

**Hardware/Host Layer**: This layer refers to the physical machines that all other layers are reliant upon. Depending on the organization, management of the physical layer can be performed by the stack owner or the purview of an infrastructure support group.

**Virtualization Layer**: In some environments virtual machines (VM's) are used to partition/encapsulate a machine's resources to behave as separate distinct hosts. The virtualization layer refers to these virtual machines.

**Administrative Layer:** The administrative layer encompasses the supporting technology components which provide access, administration, backups, and monitoring of the other layers.