BC Registry Services – IT Recovery Plan

IT Recovery Plan

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## Purpose:

The IT Recovery Plan is a supporting document to BC Registries’ Business Continuity Plan. It defines the preventative controls, recovery strategies and contingency plan to restore a damaged system.

## Scope:

All Registries applications:

Mainframe:

* The Manufactured Home Registry - MHR
* Fee Accounting System – FAS/CNFA
* Companies Branch Registry – COBRS

Java/Oracle/WebMethods

* Corporate Online - COLIN
* OneStop
* Address Change BC
* Societies and Firms Online – SOFI
* Societies – REGI
* Names Requests Online – NRO
* MHR front end – MHR
* Business Number Index and BN hub
* MRAS services and data
* Bambora payment gateway

Openshift Applications & Services

* Namex
* Name Request
* Business Registry (Business Entity Filings)
* Authentication, Account Management & Payments
* Credit Card Payments (Direct Pay)
* The Personal Property Registry (PPR)

Other

* Client Letters
* The scanning application

## Goal:

To identify the processes and resources at BC Registries that are truly critical, develop realistic recovery objectives for them and then develop a plan that can achieve those objectives as simply and cost-effectively as possible

## Risk:

1. All or some of BC Registries applications or supporting infrastructure are unavailable due to a disaster.
2. All or some of BC Registries applications or supporting infrastructure are unavailable due to a hardware failure.
3. All or some of BC Registries applications or supporting infrastructure are unavailable due to a major network outage

## Recovery strategies – legacy applications:

**Preventative Measures**

1. Geographic Dispersion – Applications and their supporting infrastructure are hosted in hardened data centres in Calgary and Kamloops.
   1. Production java/oracle applications hosted in Kamloops. Development and test environments hosted in Calgary.
   2. Mainframe applications were moved to Calgary in January 2011.
2. Nightly incremental and weekly full backups of all applications and data (Rman or data export).
3. Real time production database replication to standby databases in alternate data centre.
4. Oracle database logs replicated between data centres for critical applications.
5. Use of virtual servers with all data located on a Storage Area Network facilitates rapid recovery from a server failure.
6. Cloud based storage of critical technical instructions and documentation in [Service Now](https://bcrs.service-now.com/login.do) .
7. The use of a remote recovery site for mainframe applications that is tested annually during the IT Recovery Exercise – ITRE.

**Recovery Approach**

Recovery from a localized infrastructure failure (e.g. a server) will be managed by SSBC. There is no formal SLA at the server level, but expected time to restore service should be within a day. In the event that a server needs to be recreated, server recovery is from the full or incremental server backup listed below.

Recovery from database corruption is from the full or incremental database backup and application of transaction logs to the point of failure.

Widespread failure (e.g. loss of Kamloops datacenter) would require re-configuring a non-production environment in the remaining datacentre to take on the production load, and switching to the standby databases. In outline, this involves:

1. Identify the servers to be used (likely Test).
2. Deploy current production versions of all applications to the replacement servers.
3. Configure applications to use the standby databases.
4. Configure partner connections.
5. Point all URLs to the replacement applications.

**Backup and Restore Schedules**

|  |  |  |  |
| --- | --- | --- | --- |
| **Application** | **Status** | **Application Recovery Restore From** | **Data Recovery**  **Restore From** |
|  |  |  |  |
| The Manufactured Home Registry – MHR |  | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup |
| Fee Accounting System – FAS/CNFA |  | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup |
| Companies Branch Registry – COBRS | Business critical | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup |
| Corporate Online – COLIN | Business critical | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup  Oracle log replication to a mirrored database |
| OneStop |  | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup |
| Address Change BC |  | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup |
| Societies and Firms Online – SOFI |  | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup |
| Societies – REGI |  | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup |
| Names Requests Online – NRO | Business critical | Nightly incremental backup  Weekly full backup | Nightly incremental backup including namesp and globalp.  Weekly full backup |
| MRAS |  | Nightly incremental backup  Weekly full backup | Nightly incremental backup  Weekly full backup., |
| Payment gateway | Business critical (needed by COLIN and NRO) | Nightly incremental backup  Weekly full backup | No application data |
| Client Letters |  |  | Nightly incremental backup  Weekly full backup |
| The scanning application |  |  | Nightly backup of globalp for scans of corporations, societies, firms, and manufactured homes documents. |

**Specific Instructions if a database is impacted**

1. Meet to confirm the specific situation and the required resolution
2. Note the exact time of the disaster so that recovery can be rolled forward to that time.
3. Close the application so that no further data can be entered.
4. If CPRD is involved Call  250-387-7000 - for emergency incidents andemail [**dmsteam@dxcas.com**](mailto:dmsteam@dxcas.com)during business hours. **IMPORTANT:** Make sure the redo logs are NOT applied to the standby database.
5. Take a backup of the database before recovery begins.

## Recovery strategies – Openshift applications:

**Preventative Measures**

1. Geographic Dispersion – Applications and their supporting infrastructure are hosted in hardened data centres in Calgary and Kamloops.
2. Openshift application source code is managed in GitHub, a cloud-based repository management system, that is not reliant on the government data centres.
3. Openshift applications use automated build and deployment pipelines to deploy the applications directly from source code stored in the GitHub repositories and is not reliant on the government data centres.
4. Critical technical instructions and documentation are stored in the GitHub entity repo for all Openshift applications. <https://github.com/bcgov/bcregistry-sre/disaster-recovery-plan>
5. Loss of a single data centre, will automatically switch from the primary (Kamloops) to the DR data centre (Calgary) through load balancing offered by the platform in the Gold cluster only. The development team will also need to implement an application failover for each application as well. Once the Gold cluster is available, we will sync our application to the cluster as backup Loss of both data centres, could be addressed by deploying the application to the cloud if required.
6. Openshift application database back-ups are also stored on tape. Data backup services are managed by the OCIO

<https://ssbc-client.gov.bc.ca/services/AppHosting/base.htm#databackup>

**Recovery Approach**

Recovery of the Openshift applications can occur in one of two events. Loss of a single data centre and loss of both government data centres.

1. Loss of a single data centre, the Openshift environment will dynamically switch to the other data centre through load balancing provided the applications reside in the Gold cluster and the teams have set up application fail over for each business critical application as well the database may require restoration separately.
   1. Registries may need to restore the application database from the nightly database back-up or from tape. The postgres databases for the Openshift applications represent a single point of failure. If a database is corrupted or lost, there is no ability to recover to the most recent transaction. Database recovery is up to the last good nightly back-up. Registry teams are working to implement a solution using Enterprise Database (EDB). Currently, this has not been implemented in PROD.
2. Loss of both data centres, the Openshift applications could be deployed to the cloud and traffic redirected using a temporary url. The steps are as follows:
   1. Deploy applications and services to GCP cloud platform.
   2. Restore database from database back-ups or from EDB.
   3. Re-direct traffic to a temporary url.

DRP documentations is available at <https://github.com/bcgov/bcregistry-sre/disaster-recovery-plan>

**Backup and Restore Schedules**

|  |  |  |  |
| --- | --- | --- | --- |
| **Application** | **Status** | **Application Recovery Restore From** | **Data Recovery**  **Restore From** |
| NAMEX | Business critical | No application back-up is required as applications are deployed using automated pipelines directly from source code. |  |
| Name Request | Business critical | Same as NAMEX. | Same as NAMEX. |
| Business Registry | Business critical | Same as NAMEX. | Same as NAMEX. |
| Authentication & Account Management | Business critical | Same as NAMEX. | Same as NAMEX. |
| Payments(PAD, Online Banking& BCOL) | Business critical | Same as NAMEX. | Same as NAMEX. Payment processing requires CAS/PayBC to be available |
| Credit Card Payments (Direct Pay) | Business critical | Same as NAMEX. | Same as NAMEX.  Direct pay credit card processing requires CAS/PayBC to be available Card Payments. |
| The Personal Property Registry (PPR) | Business critical | Same as NAMEX. | Same as NAMEX. |

## Recovery Times

The business recovery times for key business processes are stated in the Registries’ Business Continuity Plan. This plan will align with and supports Registries business recovery times and objectives.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Application** | **Phase 1**  **25-72 Hours** | **Phase 2**  **4-7 Days** | **Phase 3**  **8-14 Days** | **Notes** |
| The Personal Property Registry – PPR | X |  |  |  |
| The Manufactured Home Registry – MHR (including front end) |  | X |  |  |
| Fee Accounting System – FAS/CNFA | X |  |  | The agreement with DXC is to recover all mainframes application within 72 hours. |
| Companies Branch Registry – COBRS | X |  |  |  |
| Corporate Online – COLIN | X |  |  |  |
| OneStop |  | X |  |  |
| Address Change BC |  | X |  |  |
| Societies and Firms Online – SOFI |  | X |  |  |
| Societies – REGI |  | X |  |  |
| Names Requests Online – NRO | X |  |  |  |
| Business Number Index & BN Hub |  | X |  |  |
| MRAS |  | X |  |  |
| Payment gateway | X |  |  |  |
| Client Letters |  | X |  | Database is on the test database server |
| The scanning application |  | X |  | Located in the library building |
| NAMEX | X |  |  |  |
| Name Request | X |  |  |  |
| Business Registry | X |  |  |  |
| Authentication and Account Management | X |  |  |  |
|  |  |  |  |  |

## BC Registries Key Contacts

|  |  |
| --- | --- |
| **BUSINESS HOURS**  **8:30 AM – 5:00 PM** | **Call the Operations Desk. If nobody answers immediately please leave a message with your phone number and call the next person on the list**   1. Operations Desk 250 952-0568 (business hours)   Call in order for legacy applications:   1. Bob Bowles, 250 356-8681 (d), 250-888-1887 (c), 2. David Roberts, 778 698-1403 (d), 250-361-5385 (c) 3. Ian Bott, 250 516-3914 (c) 778 698-1409 (d)   Call for Openshift applications:   1. Kaine Sparks, 250-415-3957 (c) |
| **AFTER BUSINESS HOURS Emergency support only** | |
| **Registries does not provide after hours support. Support is on a best effort basis** | **Call in order**   1. Call 7-7000 (option 3) and raise a ticket. 2. Identify Ian Bott 250 516-3914 (c) 250 655-0159 (h) as the BCRS escalation contact. |
| **Escalation after 60 minutes.** | **If you do not hear back within 60 minutes, please call the following people in order, leaving a message.**   1. Dwayne Gordon, 250 885-8852 (c) |
| **Outside normal business hours** | **If you have tried all the other numbers with no response and it is an emergency, call**   1. 250 216-6739, Carol Prest, Registrar |

## SSBC Key Contacts

Reference IT continuity plan. Key contacts for application hosting, hardware and network support

|  |  |  |
| --- | --- | --- |
| Service Desk | 250 387-7000 |  |
| AES DMS Team  Application support | 250-387-7000 - for emergency incidents. | [dmsteam@dxcas.com](mailto:dmsteam@dxcas.com) -during business hours. |
|  |  |  |
|  |  |  |

## Working from Home

All employees who are designated as Key Business Contacts or who are part of the IT recovery team (AMS team members) should be able to work from home. You can do this using a laptop or your home computer. You will need SpanBC VPN access to connect to the BC Government network to access files email and applications.

**Laptop**

If you have a BCRS issued laptop with VPN take it home with you every night. Verify that you are able to log onto TSS application and/or document servers and that you have normal access to your work environment.

You may apply for VPN access for your laptop by requesting approval from your manager or supervisor.

**Personal Computer**

If you don’t have a laptop or wish to use your home computer, you may apply for VPN access by requesting approval from your manager or supervisor.

**Communications**

Telephone communications in the event of a disaster may be interrupted especially in the event of a wide area disaster when physical infrastructure (phone lines) may be out of service. Ensure that you have a cell phone and that you have provided that number as part of your contact information. Remember that cellular communications may experience a peak demand after a wide area disaster and may be unavailable initially.