Estate Valuations & Pricing Systems, Inc.
Disaster Recovery and Business Continuity

Summary

Estate Valuations & Pricing Systems, Inc. is fully prepared to continue all business operations in the event of a disaster (earthquake, pandemic, fire, power outage, inclimate weather, etc.), including and especially portfolio pricing via EstateVal.

All systems that support the primary business are automated and redundant. The company maintains two active instances of its server-side pricing infrastructure, in two different physical locations, using different sources for both power and Internet connectivity. Both are capable of handling the entire client load individually, from all of EVP Systems' applications: EstateVal, CostBasis, CapWatch, GiftVal, EVP Everywhere and EVP Upload. Should disaster or other issues prevent one instance from being accessed, the other will automatically take all requests.

Two mirrored instances of both the database and filesystem exist, as "hot" backups. Snapshot backups of both the database and filesystem are done on a nightly basis and stored in a different physical location from the production infrastructure. Code is backed-up and versioned, allowing both for auditing and rollbacks.

The configuration of the infrastructure is documented and repeatable, and the system can be completely reproduced at another location within hours on an emergency basis. Failover and disaster testing is done every three months, on alternating sides of the live infrastructure, between 9:00 pm and midnight Pacific Time, on the first Sunday evening of the quarter.

If an employee becomes sick or otherwise incapacitated, EVP Systems has a long tradition of cross-training. Each employee has a back-up within the company who can perform their job function if they are unavailable. Additionally, all job functions can be performed off-site, from anywhere with Internet access, and the company maintains a video conferencing system if on-the-fly cross-training is required. Depending on the number of staff impacted by the event, some in-person interactions—technical and billing support, sales and marketing, Professional Services' evaluations—may be delayed or deferred.

Client-side recovery—in the event an EVP Systems customer suffers a disaster that destroys their access to EVP's software suite—is accomplished by re-downloading the freely available software and reinstalling. Access to already-evaluated estates is a customer responsibility, as EVP Systems does not have access to client's personally identifiable information (PII).

Hosting Details

EVP Systems uses Amazon Web Services to host its infrastructure. Both instances of the infrastructure run in the us-east-1 (Virginia) AWS Region, in different Availability Zones (us-east-1a and us-east-1b). (Details of Amazon's Regions and AZs are available here: bit.ly/12jBkm7.)

The machines in EVP Systems' infrastructure are EC2 instances that run Ubuntu Linux 20.04 LTS. (One of Ubuntu's "long term support" releases, 20.04 will be officially supported until April 2025.) Databases are run on an AWS RDS MySQL (www.mysql.com) instance, using the automatic-failover multi-AZ feature. Files are shared across machines using the AWS Elastic File System.

DNS is provided by Amazon's Route 53 service (hosted across four top-level domains).

From the EVP Office applications, using "Classic" connection mode, the hostname dc1.evpsys.com resolves to an AWS load-balancer that randomly routes traffic to one of the two infrastructure instances. Load-balancer health checks are run every thirty seconds and an unresponsive side will be dropped on two failed checks and returned to service after ten successful checks. For clients who cannot connect to the floating IP address of an AWS load-balancer because of local firewall issues, dc2.evpsys.com resolves to a static Amazon EIP address, currently pointed to the infrastructure hosted in us-east-1a. (In an outage, the EIP can be manually changed to point to the other side in minutes.) The client software automatically tries both hostnames in order when attempting to connect.

Using "Secure" connection mode in the EVP Office applications, the hostname dc.evpsys.com resolves to an AWS load-balancer that randomly routes traffic between one of the two infrastructure instances. Load-balancer health checks are run every thirty seconds and an unresponsive side will be dropped on two failed checks and returned to service after ten successful checks.

EVP Everywhere and EVP Upload, the company's webservice and batch-mode products, are run on a separate virtual private network than the EVP Office back-end infrastructure, but also use the same hosting, operating system, database, and DNS considerations.

Remote system monitoring is done by Uptime Robot (www.uptimerobot.com) every five minutes and an outage will notify support staff via SMS and e-mail 24 hours a day.

Local system monitoring is done by over two dozen automatic log analysis tests at Papertail (www.papertrailapp.com) and by metrics bounds-checking of RAM, CPU, and disk space on servers, load-balancers, and databases with AWS CloudWatch. Anomalies are reported to

support staff via SMS and e-mail 24 hours a day.

Backup Details

In addition to the live copies of both the database and filesystem automatically created by the mirrored infrastructure, EVP Systems' rsyncs every file (including multiple database dumps, kept daily for a week and weekly for two months) to rsync.net (`www.rsync.net`) every day at midnight Pacific Time. `rsync.net` does not use the Amazon infrastructure, so a complete Amazon outage will not prevent access to the data. Nightly snapshots of the database are also kept on the Amazon infrastructure.

Code is controlled via git, using a private repo on GitHub (`github.com`). git provides code branching, auditing and rollback capabilities should they be required during development or after an upgrade. A copy of the latest source files and the current production build of the executables are also stored in the `rsync.net` back-up.

Documentation Details

EVP Systems maintains a document that describes the configuration of its infrastructure, including the exact steps required to rebuild it. These instructions are hosted on Google Workspace (`workspace.google.com`) Drive, allowing the entire staff to access the latest version from anywhere. Printed copies are also kept at the company's Woodland Hills, California and Santa Barbara, California offices.

The document is used to rebuild a stand-alone copy of the infrastructure every year, to ensure that it remains accurate. This is done on a different EC2 instance than the live infrastructure and after testing, it is discarded.

Testing Details

Between 9:00 AM and midnight Pacific Time on the first Sunday after quarter end, EVP Systems tests the failover functionality of its server-side infrastructure, by alternately disabling one side and then the other. To accomplish this, they shut down the server software that handles requests from the client applications on the appropriate side, and evaluations are then run using EstateVal. The following securities are priced for a Date of Death from the 15th of the previous month:

CUSIP	Shares	Type
459200101	100	Stock
131618803	100	Mutual Fund
257375AG0	100000	Corporate Bond

60416QFV1	100000	Municipal Bond
912810QW1	100000	Treasury Bond
912540KU4	100000	Series E/EE

The results are compared against an evaluation run before the test began, to ensure that all three reports match.

The test ensures that the load-balancer detects the outage of a side and routes all traffic to the surviving instance, and that entry-to-report functionality remains available during an outage of either side of the infrastructure. It also tests that the Uptime Robot checks are functioning as expected, as well as the local metric gathering.

During this time, random spot checks are also done on the `rsync.net` data, to ensure that its backup is up-to-date.

Business Function Details

In addition to its server-side pricing infrastructure, EVP Systems' keeps as much of its business functionality in cloud-based services, allowing for easy relocation and access in case of disaster.

E-mail is hosted on Google Workspace's Gmail (`mail.google.com`), and can be accessed via IMAP or the Web. All in-office files are stored and versioned via Dropbox Business (`www.dropbox.com/business`), including outsourced client portfolios. Client contact information, including invoice generation capabilities and new account activation functions, are hosted in the redundant AWS infrastructure along with the EVP Systems Web site, client management system, internal toolset, and in-house wiki.

Interoffice communication is hosted on Slack (`www.slack.com`), a cloud service, and notes and task logs are stored in Microsoft OneNote (`www.onenote.com`), another cloud-based system. Video conferencing is handled via Google Meet (`meet.google.com`).

Business Continuity Details

In the event of a disaster that disables one of the AWS us-east-1 Availability Zones, the surviving side of the parallel infrastructure will continue to function, and EVP Systems' clients will be unaffected. When the damaged side returns, the multi-AZ RDS and EFS instances will self-heal. If the damaged side cannot return, it will be rebuilt in a different AZ.

In the event of a disaster that disables the entire AWS us-east-1 Region, EVP Systems will rebuild the infrastructure using the documentation in the AWS us-west-2 (Oregon) Region, and

the off-site backup will be loaded from `rsync.net`. The outage window is estimated at four hours.

In the event of a disaster that disables all of Amazon's Internet presence, EVP Systems will rebuild the infrastructure using the documentation at either Digital Ocean or Linode, two other cloud providers, and the off-site backup will be loaded from `rsync.net`. As Amazon's DNS infrastructure would also be off-line, manual changes would be made at the hostname registrar, to point DNS resolution to the new provider. The outage window is estimated at eight hours.

In the event of a disaster that closes one or both of the EVP offices in Woodland Hills, California or Santa Barbara, California, staff would be told to find safety and then connect to the cloud-based services that provide business functions using company laptops and private or publicly available Internet (through homes, libraries, coffee houses, hotels or other businesses). The company landlines would be forwarded via the telco to personal or company cellular telephones. E-mail would be available from Gmail via the Web, and files via Dropbox's website or a Dropbox folder installed on the new machines. Slack, Google Meet, and OneNote would be used for coordination.

In the event of a health, weather or other emergency where EVP Systems' personnel are unable to safely commute to their respective offices, they would follow the same contingencies for the closure of that office, as referenced above. The company is capable of running indefinitely without in-person contact between its employees.

In the event that an EVP Systems employee is incapacited by injury or illness, their work will be handled by the alternate employee who has been cross-trained in their job function—albeit with a slower expected response time. In the event that enough employees are incapacitated to limit the jobs that the remainder can perform, the work with a lesser immediate impact on existing clients—sales and marketing, software development, billing, reception—would be shut down, and their functions deferred until after the disaster or until staff can be increased. (All EVP Systems applications and their back-end infrastructure run automatically, and can be maintained indefinitely with minimal staff intervention.)

EVP Systems intentionally closes each office once a year, to test the ability to remotely work in an emergency. Each office is stocked with a survival kit, including supplies for fires, earthquakes, chemical and biological events, and pandemics. Annual training on the appropriate response to various disasters is also done.

In the event of the incapacitation of key personnel (which EVP Systems' defines as the company's President and owner, Michael A. Walker), executive and financial control would pass according to the succession plan. As EVP Systems is privately held, this plan is not publicly available.

Client-Side Recovery

In the event of a disaster at an EVP Systems' customer site that causes access to the EVP applications—EstateVal, CostBasis, CapWatch and GiftVal—to be lost, customer personnel can return to evaluating estates by first getting to safety and then finding an Internet-attached Windows machine, running Windows XP or higher—for example, at home, a coffee house, or library. They can download EVP Office from `www.evpsys.com/software` free of charge and without restriction, and then call (via 818-313-6300) or e-mail (via `support@evpsys.com`) EVP Systems for an installation key. Entering the key will fully enable the software for use.

Access to already-evaluated reports, however, is the customer's responsibility, as EVP Systems does not collect or have access to client personally identifiable information (PII). EVP customers should follow their own disaster recovery plans to retrieve any stored portfolio files.

Disaster Response Team

The EVP Systems Disaster Recovery Team consists of the following individuals, available at the following phone numbers and e-mail addresses:

Servers:

Mike Walker	(310) 963-6402, mike@evpsys.com, mike@justanexplorer.com
Greg	(818) 606-2228, greg@evpsys.com, greg@extramoon.com

Offices:

Mike Walker	(310) 963-6402, mike@evpsys.com, mike@justanexplorer.com
Christina	(805) 455-5052, christina@evpsys.com

Test History

EVP Systems disaster recovery procedures have been tested as follows:

March 2, 2013	Pass (Test: GK)
June 1, 2013	Pass (Test: GK)
September 7, 2013	Pass (Test: GK)
January 4, 2014	Pass (Test: GK)
March 1, 2014	Pass (Test: GK)
June 7, 2014	Pass (Test: GK)

October 4, 2014	Pass (Test: GK)
January 3, 2015	Pass (Test: GK)
April 6, 2015	Pass (Test: GK)
July 4, 2015	Pass (Test: GK)
October 3, 2015	Pass (Test: GK)
January 2, 2016	Pass (Test: GK)
April 2, 2016	Pass (Test: GK)
July 2, 2016	Pass (Test: GK)
October 1, 2016	Pass (Test: GK)
January 7, 2017	Pass (Test: GK)
April 1, 2017	Pass (Test: GK)
July 5, 2017	Pass (Test: GK)
October 7, 2017	Pass (Test: GK)
January 6, 2018	Pass (Test: GK)
April 7, 2018	Pass (Test: GK)
July 7, 2018	Pass (Test: GK)
October 6, 2018	Pass (Test: GK)
January 5, 2019	Pass (Test: GK)
April 6, 2019	Pass (Test: GK)
July 6, 2019	Pass (Test: GK)
October 5, 2019	Pass (Test: GK)
January 4, 2020	Pass (Test: GK)
April 4, 2020	Pass (Test: GK)
July 4, 2020	Pass (Test: GK)
October 3, 2020	Pass (Test: GK)
January 2, 2021	Pass (Test: GK)
April 3, 2021	Pass (Test: GK)
July 3, 2021	Pass (Test: GK)
October 2, 2021	Pass (Test: GK)
January 2, 2022	Pass (Test: GK)

Approval

This plan has been reviewed and approved by the President of EVP Systems, Michael A. Walker, on the following dates:

July 1, 2013	[Signed:] Michael A. Walker
July 1, 2014	[Signed:] Michael A. Walker
July 1, 2015	[Signed:] Michael A. Walker
July 1, 2016	[Signed:] Michael A. Walker
July 1, 2017	[Signed:] Michael A. Walker
July 1, 2018	[Signed:] Michael A. Walker
July 1, 2019	[Signed:] Michael A. Walker

July 1, 2020 [Signed:] Michael A. Walker
July 1, 2021 [Signed:] Michael A. Walker

Last update: January 2, 2022