

City of Westminster Disaster Recovery and Business Continuity - Executive Summary Revised - 2018

Purpose

The purpose for this overview is to provide a high level view of the City of Westminster's overall and technology disaster recovery planning status, investment and facility.

Overview of City of Westminster COOP/COG and Disaster Recovery

The City of Westminster has an Emergency Management Coordinator who is responsible for developing the City's all-hazard community risk assessment, emergency operations and recovery plan (EOP), and our continuity of government (COG) /continuity of operations plan (COOP). The risk assessment and plans are undergoing a review and update process that involves all City departments and our community stakeholders from the business sector, volunteers and service organizations, and our citizens. The Community Description of our Community Risk Assessment includes a review of all Critical Infrastructure (CI) Sectors identified in Presidential Policy Directive 21 (<https://www.whitehouse.gov/the-press-office/2013/02/12/presidential-policy-directive-criticalinfrastructure-security-and-resil>) and the City is seeking the active participation of CI stakeholders in the assessment and planning efforts with the intention of creating a seamless partnership of the public and private sector for community preparedness, response, and recovery. The risk assessment also identifies all natural and human-causes hazards of concern to the City and the community. In addition to the traditional natural hazards, the updated hazard assessment includes cyber threats against both information and SCADA systems, infrastructure disruption and cascading effects, and geomagnetic/solar storms. The City actively participates in an 11 county collaborative COOP/COG effort. As one of the participants in this effort, the City uses an Internet-based planning process and training provided by Bold Planning Solutions. This system enables each city department to enter and maintain COOP/COG information that reflects the principles and guidance provided by FEMA's Continuity Guidance Circulars 1 and 2 (<https://www.fema.gov/guidance-directives>). Bold Solutions also provides quarterly web based training and ongoing support to our COOP/COG efforts. The current draft of the COG plan (which needs updates) can be viewed at https://denvermetrocoop.boldplanning.com/coop/reports/main_report.cfm?type=html&template=COMPLETE The City's Emergency Operations Plan (EOP) is based on the 15 Emergency Support Functions (ESF) of the National Response Framework (<https://www.fema.gov/medialibrary/assets/documents/32230s>) and provides a comprehensive approach to managing the human, material, economic, environmental, and operations consequences of all-hazards/disaster. The EOP is currently undergoing its periodic review and update which will incorporate the updated FEMA guidance for community-wide engagement involving a wide range of public and private sector stakeholders. The City's updated plan will retain ESF 14 to address short-term recovery efforts, but we plan to develop a Long-term Recovery Plan to address the needs reflected in the recently developed National Disaster Recovery Framework (http://www.fema.gov/media-librarydata/14660149981234bec8550930f774269e0c5968b120ba2/National_Disaster_Recovery_Framework2nd.pdf) During the past year, several regional and statewide efforts to develop resilience and recovery strategies have been launched in Colorado (<https://sites.google.com/a/state.co.us/coloradounited/resiliency/crwg>). The City's Emergency Management Coordinator is actively involved with these innovative and collaborative efforts. Beginning in February 2016, Westminster Emergency Management began routinely using Facebook (<https://www.facebook.com/WestminsterFireDepartmentCO/>) to promote community disaster

preparedness and resilience. In addition to standard messaging about sheltering and evacuation, this public outreach also routinely includes recommendations for personal, family, and business cyber security, safety and continuity of operations. Cyber security and resilience has also been incorporated into community outreach presentations routinely given by the Emergency Management Coordinator.

Information Technology Disaster Recovery Facility

In 2012, the City of Westminster invested funds to construct a warm disaster recovery (DR) site. The new facility was built to house the disaster recovery equipment and give IT and other City Staff over 700 square feet of space to operate effectively during testing periods and in the event of a disaster. The DR site currently houses three computer racks that are housing eight physical servers, four workstations, three uninterruptible power supplies, and two storage area networks. The facility contains heating, ventilation, and improvements to the AC to include a five ton energy efficient roof mount system dedicated solely to the DR site. A backup generator provides the building an uninterrupted power source in the event of an electrical outage. A physical firewall and a new segmented secure cardkey lock system are in place to secure the room from unauthorized access. The DR site is equipped with an environmental monitor system equipped with two high performance color still cameras with motion sensor, four color IP cameras with a NVR for digital recording, integrated environmental sensors for temperature, humidity, dew point and audible sensor to monitor the room 24/7.

In 2017, The City of Westminster entered into an intergovernmental agreement with Adams County to share fiber and conduit. The IGA also allowed the City to create a tertiary disaster recovery site outside city limits to hold compressed backups.

IT Systems Redundancy and Recovery

Major upgrades to the Dell Compellent SAN to 400 TB improved capabilities for producing VMWare replicas with the Veeam Backup and Replication SW Ver. 9.5. This, along with increasing the total number of VMHosts at the DR to three, has produced an environment that has expanded the overall scope of the DR to encompass backup retention, business continuity center, and a “hot” DR site. The replica servers are produced daily and have the capability of assuming the role of production servers in less than 20 minutes at the DR site. IT has also been able to replicate the SQL Database Cluster to the DR and through a combination of Virtual machine replication and SAN datastore replication can restore that environment in a couple of hours.

Critical IT infrastructure servers, including the primary domain controller, are replicated and positioned to produce a Failover Domain the event of a disaster at the primary data center.

Key Business and service systems that are replicated include the PWU Water Production (SCADA) system, Utility Billing, Financial and HR, ESRI GIS, Sales Tax, Building Permit, three major file repositories, Fleet and Building Maintenance, internal and external City websites and Police Record Management. Reverse incremental backups for over 200 VMware servers, including all replicated servers, are produced daily and retained for a period of 30 days on a repurposed Dell Compellent SAN. In the event of a disaster, backups can also be mounted as production servers.

Any replica or backup server mounted as a production server during a disaster event can be failed back to a restored primary data center. This function can substantially increase the recovery time and business continuity.

A comprehensive DR/BCC Plan is currently being developed to include purpose, scope, responsive, resumption and restorative phases and procedures.

DR Data Center Network Connectivity

Comprehensive improvements in Network architecture over the past 12 months have not only substantially increased connectivity to the DR but also network redundancy and speeds to all City facilities. The installation of a 10 Gbps fiber transit directly connecting the City Hall datacenter with the DR has allowed for increased network speeds to DR servers and Storage Area Networks. The improvements include (8) 10 Gbps dedicated network connections to the Dell Compellent SAN, 20 Gbps dedicated Ether Channel to the DR backup server. The improvements have increased network speeds 10 times between City Hall and the DR data center.

Four additional redundant, fiber connected, 1 Gbps routes have been added that connect the DR data center to various other facilities. These new redundant connections give the DR site a multitude of options for delivering data and receiving data to and from City owned resources. When included with the primary 10 Gbps connection, the DR data center services now has high availability that guarantees non-stop data throughput.

The DR data center can reach the Internet via 3 load balanced Comcast 50 Mbps Broadband connections that are hosted at different facilities granting 150 Mbps total availability, as well as a pair of a 40 Mbps Metropolitan Optical Ethernet (MOE) Internet circuits for all Ingress and C-Block advertisements out to the Internet. One side of the load-balanced pair of MOE's is hosted at the DR data center directly to guarantee availability in case of a link failure and maintains access to all City Web sites for citizen and employees remain operational in case of an actual Disaster Recovery.

In order to maintain the integrity of the software applications, databases, and other services that are backed-up to the DR site, a complete emulation of the key systems in the production environment has been created. This emulation allows for full testing of both live and backed-up systems simultaneously. With this ability to test all functions regardless of the fact that the backed-up systems have duplicate IP Addresses we ensure that all functionality can be reproduced in case an actual disaster were to take place.

All networking hardware, to include routers and switches, are backed up nightly utilizing a Solar Winds application and all hardware configurations can be replicated in case of emergency.