City of
NORTHAMPTON

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EXECUTIVE SUMMARY

The City of Northampton adopted the Business Continuity best practice in August of 2015 as part of a Community Compact agreement signed with the Baker-Polito Administration. Northampton's IT Services Department partnered with the Office of Municipal and School Technology (OMST) at MassIT to develop a Business Continuity Plan and leveraged a Community Compact grant to procure the services of Versatile Communications of Marlboro, Massachusetts to perform a comprehensive IT assessment. The City chose the Business Continuity best practice in part because of a significant IT outage in 2011 which dramatically impacted City business for a prolonged period of time. Northampton's work with OMST and Versatile has better positioned the City to prevent future interruptions from occurring and better secure City technology in general.

<u>Community Profile</u>

The City of Northampton is located in western Massachusetts in Hampshire County. Northampton is known as one of the hubs of the Pioneer Valley, with numerous academic and cultural institutions calling it home, including Smith College and The Three County Fair.

Population is 28,592 residents*
Annual Budget is $90.154M (FY 2017)
Median Household Income is $56,999*
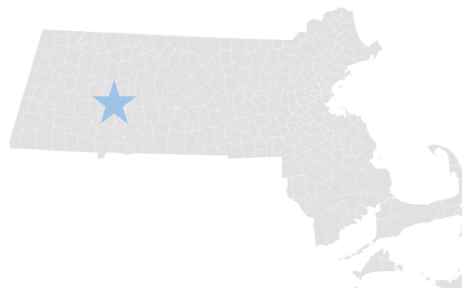*As of 2010 census*

In partnership between:

BACKGROUND

As more municipal services move off of paper and onto computer systems, the urgency of keeping these systems up and running has increased. Safeguarding infrastructure has become less about convenience and more about necessity, especially for public safety services which help first responders save lives.

"Recent major power outages like those that followed Hurricane Irene and the Halloween ice storm in 2011 have shown us how vulnerable our infrastructure is," said Mayor David J. Narkewicz. "It is vital that our City be able to maintain essential services – particularly emergency response services – during these critical times."

In December of 2014, Northampton received an Information Technology Assessment report from the Edward J. Collins, Jr. Center for Public Management at UMass Boston. The report outlined the risk areas surrounding Information Technology in the City, including the (at the time) vacant Information Technology Director role and the lack of a formal business continuity and disaster recovery plan:

"The Center recommends the City develop and publish a formal comprehensive written business continuity/disaster recovery plan," the report read, "by reviewing its back-up and disaster recovery processes to ensure they provide the ability to quickly restore lost data, and that back-ups are maintained in geographically disparate locations that share few, if any, common risks."

This report, compounded by memories of previous outages, prompted Northampton to sign a Community Compact and choose the Business Continuity best practice area.

PROJECT PROCESS

MassIT's Office of Municipal and School Technology partnered with Northampton's Chief Information Officer, Antonio Pagan, to develop a Business Continuity Plan for the City. The Plan consisted of several elements: a Business Impact Analysis, Emergency Response Plans, and Disaster Recovery Plans. OMST also agreed to help Northampton develop a required deliverables matrix and statement of work for their chosen IT assessment vendor.

Northampton's Business Impact Analysis (BIA) Overview

The first step of the process was performing a Business Impact Analysis (BIA) for the City. The BIA process consists of four steps, as outlined in MassIT's business impact analysis diagram (figure left). The BIA process consists of four steps: (1) Identify Essential Functions, (2) Develop Findings for Each Essential Function, (3) Create an Action Plan for Functional Gaps, and lastly (4) Develop Detailed Remediation Plans. These four steps were repeated, cyclically, until the findings were complete and documented in a BIA master document.
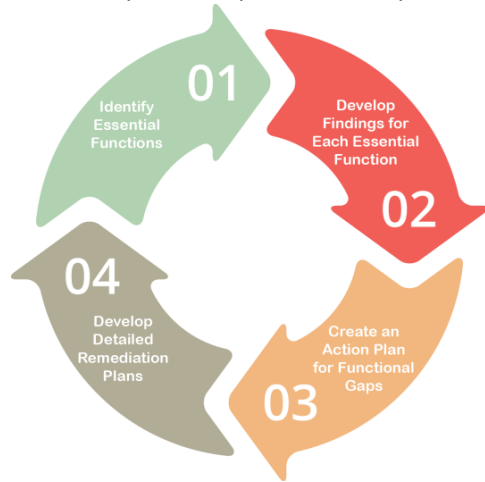
Step 1: Identify Essential Functions
In this first step, Antonio and his team partnered with City departments to document essential functions (EF) which residents heavily depend upon. Following that, recovery time objectives (RTOs) were identified. An RTO is the maximum amount of time a business service can be unavailable without causing issues with business continuity. In addition to RTO's, recovery point objectives (RPO) were also documented. An RPO is the maximum amount of data that can be lost before it becomes unmanageable to reconstruct. A table of Northampton's departments and essential functions is below:

DEPARTMENT	ESSENTIAL FUNCTIONS
Building Department	Enforcing the state building code, plumbing and gas code, electrical code, and the architectural access code.
Central Services	Ensures the integrity and functionality of city facilities for staff and the public; oversees grounds, maintenance, heating / cooling, plumbing, electrical, security, fire detection / protection, custodial, renovations, and construction operations for city and school building; responsible for the maintenance and operation of multiple parking lots, the parking meter system and two parking garages.
City Clerk	Holds and provides access to public records, vital statistics, and general information; serves as official filing agent for the city and accepts, files, records, and supervises the issuance and collection of fees for various commonwealth and city licenses; responsible for conducting elections in accordance with federal, state, and city ordinances.
Collector	Provides current and accurate financial information to the public, financial institutions, the legal community, and other city departments.
Finance	Records and analyzes information about residential, commercial, and industrial properties to classify and make fair and equitable assessments of property values in the City of Northampton; handles abatements and appeals to the Appellate Tax Board and works with the Massachusetts Department of Revenue to set the

	city's tax rate; provides auditing and financial reporting, procurement, accounts payable, and payroll services for city's departments.
Health Department	Responsible for permitting and inspecting businesses that provide services to the public to ensure compliance with local, state and federal law.
Human Resources	Recruitment, hiring, salary administration, benefit administration, employee training, collective bargaining, workers' compensation and I.O.D. claims management, media relations, unemployment administration, DOT / CDL testing administration.
Information Technology Services	The Information Technology Services Department provides computer hardware and software acquisition, telecommunications infrastructure, information security, maintenance, and support to all City departments and the Northampton Public Schools. It is further responsible for computer supplies management, desktop and web publishing, social media management, and voice and data communications. The department shall be responsible for systems development and planning, systems modification and enhancement, operations, central services, and management and administration of the hardware and software for the geographic information system. The department shall be responsible for planning, development and implementation of instructional technology within Northampton Public Schools in support of the established educational goals. The department shall be responsible for safeguarding information technology (IT) resources, achieving confidentiality, integrity and availability of the data and IT resources used to manage the services provided by the City. The department is responsible for computer training and the official City website. The department is the central depository for all electronic information.
Mayor's Office	Performs administrative, political, and ceremonial municipal functions; serves as ex-officio chair of the School Committee, a trustee at the Smith Vocational and Agricultural High School, and on the Board of Trustees for the Academy of Music Theatre and Look Memorial Park.
Parks and Recreation	Municipal recreation activities; issues Raffle & Bazaar Permits; works with DPW to maintain public park/recreation assets.
Planning	Comprehensive and strategic planning to guide growth, conserve natural and built environment, and provide for multi-modal transportation, open space, and recreation; historic preservation; brownfield redevelopment; sustainable transportation; environmental improvements; business growth; geographic, demographic and information systems to support planning needs.

Public Safety	Respond to citizen calls relative to fire, crime prevention, accidents, hazardous materials, and overall quality of life of Northampton residents; Animal Control officer and inspector respond to calls regarding injured, animals, ensure spaying and neutering, and enabling adoptions of homeless animals.
Public Works	Maintenance of City assets, including water and sewer system maintenance and public parks in coordination with Parks and Recreation.
Retirement Board	Management of municipal retirement system in accordance with Commonwealth laws regarding benefits and contribution requirements, as well as accounting and finance structure.
Northampton Public Schools	Education of Northampton Public Schools students.
Senior Services	Identifies needs of seniors in Northampton and provides a range of programs, activities and services to address those needs; Senior Services Director also serves as the City's Americans with Disabilities Act (ADA) coordinator and is the City's liaison to the Disability Commission.
Sustainable Energy	Protect Northampton from rising and unstable energy costs; decelerate impact on global warming; improve air quality and public health; reduce the risks associated with Northampton's dependence on foreign sources of energy; reduce the risks associated with dependence on diminishing energy resources.
Treasurer	Receives and accounts for all money belonging to the City; custody of the city's stabilization fund, retirement funds, trust funds, and investments; pursues tax title cases and manages the city's banking business.
Veterans Services	Assists veterans with receiving the benefits due to them, and to provide food and housing, medical, and employment assistance as necessary.

Step 2: Develop Findings for each Essential Function

DEPARTMENT	ESSENTIAL FUNCTIONS	GAP IDENTIFIED	GAP FINDING
Information Technology Services	The Information Technology Services Department provides computer hardware and software acquisition, telecommunications infrastructure, information security, maintenance, and support to all City departments and the Northampton Public Schools. It is further responsible for computer supplies management, desktop and web publishing, social media management, and voice and data communications. The department shall be responsible for systems development and planning, systems modification and enhancement, operations, central services, and management and administration of the hardware and software for the geographic information system. The department shall be responsible for planning, development and implementation of instructional technology within Northampton Public	**Documented RTO and RPO were excessive compared with key departments' business continuity objectives.**	**Potential down time and data losses were excessive with existing process and infrastructure.**

	Schools in support of the established educational goals. The department shall be responsible for safeguarding information technology (IT) resources, achieving confidentiality, integrity and availability of the data and IT resources used to manage the services provided by the City. The department is responsible for computer training and the official City website. The department is the central depository for all electronic information.			

Step 3: Create Action Plan for Gap Findings

DEPARTMENT	ESSENTIAL FUNCTIONS	GAP IDENTIFIED	GAP FINDING	ACTION PLAN
Information Technology Services	The Information Technology Services Department provides computer hardware and software acquisition, telecommunications infrastructure, information security, maintenance, and support to all City departments and the Northampton Public Schools. It is further responsible for computer supplies management, desktop and web publishing, social media management, and voice and data communications. The department shall be responsible for systems development and planning, systems modification and enhancement, operations, central services, and management and administration of the hardware and software for the geographic information system. The department shall be responsible for planning, development and implementation of instructional technology within Northampton Public Schools in support of the established educational goals. The department shall be responsible for safeguarding information technology (IT) resources, achieving confidentiality, integrity and availability of the data and IT resources used to manage the services provided by the City. The department is responsible for computer training and the official City website. The department is the central depository for all electronic information.	Documented RTO and RPO were excessive compared with key departments' business continuity objectives.	Potential down time and data losses were excessive with existing process and infrastructure.	Information Technology Services will develop data protection domains for critical assets at a remote site within the virtualized infrastructure to increase the frequency of external snapshots and minimize the recovery time.

Step 4: Develop Detailed Remediation Plans

OMST staff hosted several Business Continuity Practice workshops that Northampton participated in. OMST also provided Northampton with emergency response plan and disaster recovery application templates. Informed by the BIA findings, Northampton leveraged MassIT's tools and developed detailed remediation plans for all the gaps identified.

IT Assessment Overview

Northampton leveraged a Community Compact grant to hire Versatile Communications to complete an IT assessment of the City, with a particular focus on business continuity strategy, while their BIA work was ongoing. Versatile was also tasked with designing required network changes to make the City more resilient against network and power failures which could impact server and storage resources. These changes would be implemented as Antonio prepared to relocate some of Northampton's IT infrastructure from the municipal building to the new data center at Northampton Fire Department headquarters.

Versatile delivered their assessment document in June of 2016, with the following agreed upon tasks and deliverables:

REQUIRED TASKS	DELIVERABLES
Analyze the current wide-area network (WAN) routing infrastructure to determine best practice for virtualization replication between City Core and Fire Station HQ	
Determine and propose a solution for migrating primary core routing topology from City Core to Fire station HQ and maintain connectivity to rest of the town services	• **IT stakeholder meeting notes** • **Proposed network design change documentation with bill of materials** • **IT roadmap of any possible upfront network remediation and/or possible new project initiatives**
Analyze and recommend strategy for deploying future converged services through WAN. This includes but is not limited to the new Voice and or Video initiatives.	

Recommendations and Conclusion

MassIT recommends that Northampton continue to revisit the emergency response and disaster recovery application materials on a regular basis. Business continuity plans are most effective when they are regularly updated as changes are made to the environment or as new threats to operations emerge. Regular BIA updates are also recommended as departments take on new or revised functions or implement new systems. Northampton's work in business continuity is a great example of how a City can confront a challenge head on and develop a comprehensive, continually evolving plan to respond to it.

"Smart use of technology will lead to smarter government, cost savings, and better services."

Mayor David J. Narkewicz
City of Northampton