



CITY COUNCIL WORKSHOP

CITY OF FAIR OAKS RANCH, TEXAS

March 2, 2023

AGENDA TOPIC: Microsoft Exchange server migration and Microsoft 365 cloud services
DATE: March 2, 2023
DEPARTMENT: Information Technology
PRESENTED BY: Brian LeJeune, IT Manager

INTRODUCTION/BACKGROUND:

In this workshop we will discuss the options available regarding the City's e-mail system, spam filter, and other services we use for conducting business. From a policy and budgeting perspective, this initiative drives the short and medium-term direction of our program of IT controls relative to general services productivity, efficiency, and security. In addition to the immediate need to upgrade the City's email system, this item represents the potential to shift the City's IT management and strategy from legacy on-site system management to cloud-based networking and management.

Accordingly, staff seeks Council guidance and direction to pursue either 1) a mandatory upgrade of its existing Microsoft Exchange Server, or 2) a migration to M365 cloud licensing inclusive of Exchange Online, spam filtering, Office 365, and several other services as noted herein. Both options require an unprogrammed expenditure, so staff intends to present an agenda item for consideration at the March 16th meeting based on Council feedback.

The City currently utilizes Microsoft Exchange Server 2013 for e-mail. This product will reach its end of support this April. Microsoft will no longer release security and feature updates. Therefore, the City will be open to future vulnerabilities discovered by bad threat actors without the hope of Microsoft releasing any patches.

Separately, the City's spam filter also will be discontinued by its provider at the end of March. Unfortunately, the provider did not communicate this message until after the FY 2022-23 Budget was adopted. Given this updated information, it is more efficient for the City to export our configurations to Microsoft's spam filter concurrently with the conversion to an updated email platform (Exchange Online Protection).

Prior to FY19-20, the City did not have an on-site IT Department. The City utilized a third-party vendor to support our systems and resolve computer problems. With the termination of the third-party agreement, the City did not receive adequate configurations and documentation for its technology environment. Therefore, the City has been "catching up" on systems and services that are at or near their useful lives. The IT department has two positions to procure, install, and maintain every IT system in the City. The department had to create its own build documents. Additionally, the department has rebuilt some servers as they have run out of operating space or failed due to other technical issues. Since then, staff has ensured proper documentation for any new servers built, handled timely patching, and planned for future growth. The City does not have a robust replacement schedule for obsolete software and equipment. Resource constraints have

limited the City's ability to keep pace with ever-expanding demands of modern organizational needs.

In February 2021, the City experienced a zero-day vulnerability (a known security issue without a published patch) with its version of the Microsoft Exchange email server. Several hundred thousand organizations around the world running their own fully patched on-premises local Exchange servers, including the City, were impacted by this attack. The City recovered towards the end of April through a lengthy process working with our insurance vendor to assess systems and to look for IOC's (Indicators Of Compromise). Meanwhile, customers of Microsoft's Exchange Online cloud environment were not impacted by this zero-day vulnerability as its environment was not vulnerable.

Most recently in February 2023, the City experienced a power loss from the winter storm resulting in a system failure with the City's on-premises server infrastructure. The City's systems were down for approximately 18 hours, and the City required consulting services to assist with reinitializing the City's servers.

Options: On-premises vs Cloud-Based e-mail server

The City is now in a position in which it must upgrade, at minimum, its email server and its spam filter. The City has at least two possible paths to rectify current e-mail server configurations and possibly provide further enhancements to our infrastructure. The first option is to maintain an on-premises email server by migrating to Microsoft Exchange 2019. The second option is to obtain licensing for Microsoft 365 to include Microsoft Exchange Online, which is a cloud environment. A cloud environment is essentially putting your data on someone else's servers where they assume the risk of patching, maintenance, and availability.

Option 1 (Status Quo): Maintain an on-premises Exchange Server by migrating our data to a newly built Exchange Server 2019.

The City can maintain its current environment by procuring a license and upgrading Microsoft Exchange Server 2019. This also would require the assistance of a third-party firm to provide technical support and to ensure best practices are followed for the initial build and security configurations.

As currently scheduled, both the 2016 and 2019 versions of Exchange will no longer have support in October 2025, at which time the City will no longer receive security and patch updates from Microsoft. Microsoft has yet to officially announce a new on-premises version. In the most likely scenario, the City would have to upgrade again or convert to the cloud within the next three years.

This option provides the City with more control over the server. However, it will require more staffing and resources to maintain (patching, managing resources, and upgrading). The City would be responsible for backing up this environment inclusive of upgrading our on-premises backup appliance at an additional cost. But this option also would not require any additional annual licensing commitments beyond the initial purchase for maintaining an Exchange server because it is a perpetual license.

Option 2 (Migration to Microsoft Cloud): Obtain licensing for Microsoft 365 (M365) to include Microsoft Exchange Online and other enhancements for our organization. This includes a migration plan for e-mail and other information to Microsoft's cloud.

The City can begin its migration to the Cloud by procuring M365 licensing. Like Option 1, this migration also would require assistance from a third-party firm to assist with the configuration of our environment. M365 also would require annual licensing payments to Microsoft for cloud services, while it would reduce both the need for local licensing and additional labor and resources associated with maintaining an on-premises server. The City essentially would shift the risk to Microsoft in terms of handling the security of our data along with maintaining the availability of service. The City would continue to be responsible for backing up this cloud environment to a separate service at additional cost. The City can enter an Enterprise Agreement (EA) with Microsoft to lock pricing for three (3) years until the EA expires and a new license is entered with updated pricing.

M365 does not have a planned date for end of support like the on-premises version of Exchange. Further, M365 plans include Exchange Online, Azure AD (Active Directory), and other enhancements that are outlined further in the table below.

The City has already started using many features of Microsoft 365. Most notably, for the last four years the City has been replacing traditional Microsoft Office PC licenses with Office 365 licenses that are user-based with an annual fee. This ensures the latest versions of Office are utilized throughout the organization. This licensing has centralized and simplified the patching process because most machines now run the same versions of the software.

Microsoft has since rebranded most its cloud-based software to the umbrella of “M365.” For the comparison below, we will define Office 365 (O365) as the traditional programs with which we are familiar – Excel, Word, Outlook, PowerPoint. The Microsoft 365 (M365) plan includes all of Office 365 and several other features.

Feature/Software	Exchange 2019	M365	Comments
Exchange 2019 Migration: Fair Oaks Ranch on-premises virtual server providing e-mail services (e-mail, calendar, contacts, and tasks) along with webmail and mobile device access.	X		Exchange Server 2019 is the latest version currently available for on-premises Exchange server customers.
Exchange Online: Microsoft Cloud hosted e-mail services (e-mail, calendar, contacts, and tasks) along with webmail and mobile device access.		X	Included natively with M365. Also has a detonation chamber feature for testing e-mail attachments and links to reduce exposure/risk.
Exchange Online Protection (Spam Filter): configured to protect the e-mail environment and control mail routing when you have either on-premises or cloud hosted e-mail.	X	X	Included natively with M365. Additional cost if purchased for Exchange Server 2019.

Feature/Software	Exchange 2019	M365	Comments
Active Directory (AD): a hierarchical structure to store information about objects on the network (i.e. user accounts, passwords, computers, and servers).			Cannot authenticate with outside services. Traditional on-premises AD required (currently utilized) for Exchange Server 2019 to be installed.
Azure Active Directory (Azure AD) and Single Sign On (SSO): a comprehensive identity and access management cloud solution that combines core directory services, application access management, and advanced identity protection.		X	Ability to link with outside services for authentication (Brightly, ClearGov, NeoGov, etc.) reducing the need to maintain individual accounts on each platform we utilize as well as the administrative overhead associated with maintaining individual accounts.
SharePoint: cloud-based file server that helps organizations share and manage content, knowledge, and collaborate across the organization. Often worked with in conjunction with Teams.		X	Included with M365. Additional cost if purchased for Exchange Server 2019. We would need to purchase additional licenses and server resources if we wanted to host our own SharePoint server on-premises.
Office 365 (O365): Traditional productivity software including Word, Excel, PowerPoint, and Outlook plus enhancements such as Teams, OneDrive online storage, Planner, Bookings, (below) and other integrated apps and services.		X	Included natively with M365. Separate cost if purchased for Exchange Server 2019.
OneDrive: online storage space in the cloud for individual licensed users in an organization. Helps protect work files, access and collaborate across multiple devices from any location. 1TB/user default storage space.		X	Included with O365 and M365.

Feature/Software	Exchange 2019	M365	Comments
Teams: Stay connected with colleagues through video meetings, chat, or collaborative channels to work live on the same document together. Often worked with in conjunction with SharePoint.		X	Included with M365. The City currently purchases a separate 25-user license. M365 would include telephony with the capability to migrate our entire phone system. M365 also could replace the need for Zoom (savings/centralization).
Bookings Software: includes a web-based booking calendar and integrates with Outlook to optimize staff's calendar and give customers flexibility to book a time that works best for them. E-mail and SMS text notifications reduce no-shows and enhances customer satisfaction.		X	Included with M365. The City currently uses a 3 rd party annual subscription to handle this for on-premises.
eDiscovery: can help the organization respond to legal matters or internal investigations by discovering data where it lives.	X	X	Limited to e-mail with on-premises. M365 offers the search capability through additional services hosted in the cloud. File search currently is a time-intensive manual process.
Legal Hold: ability to preserve content that might be relevant to an eDiscovery.	X	X	Will be an enhancement to the on-premises Exchange 2019 server and comes native with Exchange Online (M365).
DLP (Data Loss Prevention): An organization's data is critical to its success. Its data needs to be readily available for decision-making, but it needs to be protected so that it isn't shared with audiences that should not have access to it.		X	Only available through M365 to log/block the dissemination of important data categories such as Personally Identifiable Information (PII), Protected Health Information (PHI), etc.
Always-On VPN (Virtual Private Network): a laptop configuration to automatically create a connection back to the network through the Microsoft Cloud.		X	VPN that will connect back to Microsoft Cloud and also to our network automatically after logging into the network.

Feature/Software	Exchange 2019	M365	Comments
Device Management: a cloud-based endpoint management solution. It manages user access along with simplifying app and device management across all devices. Protect access and data on organization-owned and users' personal devices.		X	Included natively with M365. Would need additional software to handle this on-premises. Ability to reimage devices in the event of a security issue (time savings.)
Phone System Integration: Phone System service enabling call control and Private Branch Exchange (PBX) capabilities in the Microsoft 365 cloud with Microsoft Teams. Public Switched Telephone Network (PSTN) access may be enabled for external calls through a calling plan.		X	Available through M365 as integration with Teams Phone and replacement of desk phones. A phone plan would need to accompany this for phone access in the Microsoft Cloud (M365). Would require additional licensing with current phone system to be available outside the organization for offsite work. Also, current phone system server needs additional upgrade work to be planned for next fiscal year.
PowerBI Data Analytics: lets you easily connect to your data sources, visualize and discover what is important, and share that with anyone or everyone you want.		X	Native with M365 for utilization with Finance, Public Works, and other departments to correlate data.
Multi-factor Authentication (MFA): a process in which users are prompted during the sign-in process for an additional form of identification. If you only use a password to authenticate a user, it leaves an insecure vector for attack.		X	Included with M365. Expected to be added with Access Control phase of City Hall Remodel project.

Feature/Software	Exchange 2019	M365	Comments
Threat Analytics: reports generated to display new threats emerging frequently and prevalently. Displays resilience against or exposure to the threats along with actions you can take to stop or contain the threats.		X	M365 can correlate services running on computers, on-premises servers, and Microsoft cloud servers. Currently, we would have to correlate many services and log locations to build a timeline of events.
Access Reviews: efficiently manage group memberships, access to enterprise applications, and role assignments for data access.		X	Included as a reporting capability with M365 for all Microsoft services. Manual process today for on-premises. Also allows for management of guest access.

Summary

Options 1 and 2 above provide the choice between maintaining a “status quo” environment with required upgrades and a future-leaning cloud environment that migrates virtually all Microsoft and other services to the cloud. Hypothetically, there are some “a-la-carte” options with many of the services and features described above. The immediate need is the mandatory upgrade of our Exchange Server while addressing the spam filter as well.

Microsoft Exchange Server 2019 has lower upfront costs without recurring annual licensing costs. It also requires staff intervention at all levels with costs for maintaining the upgrading equipment that are not included in the base price. There is also a high likelihood that the City will have to upgrade again in 2-3 years as Exchange Server reaches its end of support, resulting in effectively a double purchase with a second migration.

The M365 suite has expanded features that we do not currently have today as well as many features that can consolidate separate, existing systems in the City’s IT environment. M365 will benefit the City in the long run regarding cybersecurity, compliance, centralization of services, reduced operational overhead, and future regulations. However, the upfront costs and annual licensing are higher with M365.

POLICY ANALYSIS/BENEFIT(S) TO CITIZENS:

The City must maintain a supported email and IT environment to ensure the continuity and security of City operations. The item begins to address several projects identified in Priority 5.5 of the Strategic Plan to Evaluate and Update IT Infrastructure, Software, and Security including:

- 5.5.1 Define and Develop and Implement Core components of IT Master Plan
- 5.5.10 Phone system upgrade
- 5.5.16 Decommission IT hardware

- 5.5.22 Data Retention
- 5.5.24 Encrypted Emails
- 5.5.28 Multi-Factor Authorization
- 5.5.32 Cybersecurity Framework

LONG-TERM FINANCIAL & BUDGETARY IMPACT:

The short-term budgetary impact ranges from approximately \$100,000 to \$140,000 with recurring costs depending upon the option(s) selected. Staff anticipates the budget of the upgrade can be identified through General Fund projected savings in the current fiscal year. Staff may bring forth a budget amendment later in the fiscal year if projected savings are used for other purposes.

RECOMMENDATION/PROPOSED MOTION:

Staff seeks Council guidance and direction to pursue either 1) a mandatory upgrade of its existing Microsoft Exchange Server, or 2) a migration to M365 cloud licensing inclusive of Exchange Online, spam filtering, Office 365, and several other services as noted herein. Staff intends to present an agenda item for consideration at the March 16th meeting based on Council feedback.