MOVING TO THE CLOUD VS. LOCAL INFRASTRUCTURE

Matt Walton – Consulting Services Manager
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Infoxchange is a not for profit organisation that has supported hundreds of non-profits to use both cloud and infrastructure technologies:
Topics in this session

1. Understanding your technology requirements
2. Trends in NFP technology
3. Cloud based systems
4. Cloud server considerations
5. Local infrastructure
6. Internet and network connectivity
7. Questions
Common technology requirements of NFPs.....

Risk management
- Firewall, anti-virus and security
- Backup and disaster recovery
- Finance, HR, payroll & donation management

Business Systems
- Document management, images, videos & archiving
- Email, calendars and contacts
- Internet connectivity and remote access
- PC’s, laptops, monitors printers & scanners
- Telephony & Mobile devices
- Client Management system
- Customer relationship management system

Devices and access
- Email, calendars and contacts
- Internet connectivity and remote access
- PC’s, laptops, monitors printers & scanners
- Telephony & Mobile devices
- Client Management system
- Customer relationship management system

Technology Requirements

Internal communication
- Intranet and collaboration tools
- Rostering and time and attendance systems
- Video conferencing, instant messaging
- Newsletters and mass communications

External communications
- Public website and social media
- Member portal and external information sharing

Client information & service delivery
- Reporting and reconciliation of funding
- Client Management system
- Customer relationship management system

Technology for social justice | www.infoxchange.org
Key technology trends in the NFP sector

1. Move to cloud based applications
   Client management systems, cloud documents, email, finance/hr systems, social media, web platforms

2. Decrease in local infrastructure
   Reduction in the need for locally hosted servers for email, documents, applications

3. Increased use of mobile devices
   Provide staff with instant access to client details, expectations & history and the ability to work from any location

4. Increased importance of data & information
   Funders are more often asking ‘what outcomes are we achieving with our support’?
Cloud: Most non-profits have moved, or plan to move a significant proportion of their systems to the cloud

Most organisations currently use the cloud in some capacity, and many are planning to move to the Cloud over the next few years.

For organisations not planning to move to the cloud, the barriers potentially preventing them from doing so are listed below. Each figure represents a percentage of the organisations not planning to move that have identified the barrier as applicable in their circumstances.

- **29%** Staff/vendor do not know enough to implement
- **18%** Data security, sovereignty or data privacy concerns
- **16%** Other
- **12%** Expensive or insufficient internet
- **9%** Lack of time to migrate to Cloud
- **8%** Migration cost
- **6%** We have recently invested in our own IT infrastructure

Overall, there has been a 30% increase since last year in organisations using the Cloud.

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\[\text{For organisations not planning to move to the cloud, the barriers potentially preventing them from doing so are listed below. Each figure represents a percentage of the organisations not planning to move that have identified the barrier as applicable in their circumstances.}\]

\[\text{\begin{tabular}{|c|c|c|c|c|c|}
\hline
\text{Barrier} & \text{Very Small - Small} & \text{Small - Medium} & \text{Medium} & \text{Medium - Large} & \text{Large} & \text{Very Large} \\
\hline
\text{Staff/vendor do not know enough to implement} & 29\% & 18\% & 16\% & 12\% & 9\% & 12\% \\
\hline
\text{Data security, sovereignty or data privacy concerns} & 18\% & 11\% & 10\% & 11\% & 11\% & 11\% \\
\hline
\text{Other} & 16\% & 16\% & 16\% & 16\% & 16\% & 16\% \\
\hline
\text{Expensive or insufficient internet} & 12\% & 12\% & 12\% & 12\% & 12\% & 12\% \\
\hline
\text{Lack of time to migrate to Cloud} & 9\% & 8\% & 8\% & 8\% & 8\% & 8\% \\
\hline
\text{Migration cost} & 8\% & 24\% & 24\% & 24\% & 24\% & 24\% \\
\hline
\text{We have recently invested in our own IT infrastructure} & 6\% & 6\% & 6\% & 6\% & 6\% & 6\% \\
\hline
\end{tabular}\]

\[\text{‘Other’ includes: Not needed, Organisation too small, little data to store.}\]
Infrastructure: Microsoft products are most commonly used for PCs, email and file sharing

<table>
<thead>
<tr>
<th>Primary file sharing application</th>
<th>Primary email application</th>
<th>Types of PCs used</th>
</tr>
</thead>
<tbody>
<tr>
<td>34% (Microsoft Windows server based)</td>
<td>25% (Exchange Online (Office 365))</td>
<td>35% (Desktop)</td>
</tr>
<tr>
<td>21% (Office 365 (includes Sharepoint &amp; OneDrive))</td>
<td>19% (Email provided by your internet service provider)</td>
<td>21% (Laptop)</td>
</tr>
<tr>
<td>17% (Other (please specify))</td>
<td>14% (G suite (previously Google Apps or Google Apps for Work))</td>
<td>12% (22%)</td>
</tr>
<tr>
<td>8% (Dropbox)</td>
<td>9% (Citrix)</td>
<td>11% (Tablet)</td>
</tr>
<tr>
<td>10% (G suite (previously Google Apps or Google Apps for Work))</td>
<td>12% (G suite (previously Google Apps or Google Apps for Work))</td>
<td>6% (Other)</td>
</tr>
<tr>
<td>3% (Linux/Mac server based)</td>
<td>3% (Linux/Mac server based)</td>
<td>3% (Other)</td>
</tr>
</tbody>
</table>
What is the Cloud?

General term for anything that involves delivering IT services over the internet.
What is the Cloud?

A way to provide IT services characterised by:

» **Reliability** – with inbuilt redundancy

» **Expandability** - easy to add or remove users

» **Usage-based pricing** – without capital investment

» **Accessible** over the **internet** – people can work anywhere
## Common cloud applications

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Common Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document management including external sharing</td>
<td>Drop Box, Google Drive, OneDrive or SharePoint</td>
</tr>
<tr>
<td>Discussion and Collaboration in groups</td>
<td>Facebook or Yammer or Office 365 groups</td>
</tr>
<tr>
<td>Email, calendars and contacts</td>
<td>Gmail or Office 365</td>
</tr>
<tr>
<td>Project management</td>
<td>Smartsheet, SharePoint, Planner or Trello</td>
</tr>
<tr>
<td>Surveys</td>
<td>Survey Monkey or Survey Gizmo</td>
</tr>
<tr>
<td>eNewsletters</td>
<td>Mailchimp</td>
</tr>
<tr>
<td>Websites</td>
<td>Wordpress or SquareSpace</td>
</tr>
<tr>
<td>Server hosting</td>
<td>Amazon Web Services (AWS) or Microsoft Azure</td>
</tr>
<tr>
<td>Video conferencing</td>
<td>Skype, Skype for Business, GoToMeeting, Google Hangouts, Zoom</td>
</tr>
<tr>
<td>Productivity applications</td>
<td>Office 365 or Google apps</td>
</tr>
<tr>
<td>Finance</td>
<td>MYOB online, Xero or Reckon</td>
</tr>
</tbody>
</table>
Building the business case for moving to the Cloud

Reduce or eliminate server upgrades and refreshes
saving IT support and server costs

Use videoconferencing applications & teleworking structures
which provide flexibility and reduce travel costs

Defend against hardware failure
with cloud solutions so there’s no need to worry about your server failing and your data is
protected in the cloud

Collaborate effectively
across all locations leading to increased efficiency

Create a single source of truth
for information which saves time looking for files in different locations
Examples of types of cloud services - Microsoft

SaaS
- Office 365
- OneDrive
- Yammer
- Microsoft Dynamics 365
- Microsoft Intune

PaaS
- Your PaaS application: Business Logic and code
  - Web and mobile backend
  - Data and advanced analytics
  - Event streaming and messaging

Azure IaaS
- Your Virtual Network: Infrastructure and data
  - Azure SQL Database
  - SQL Server on an Azure VM
  - Azure Storage

Move-in ready
- Use these prepackaged solutions that are bundled with existing services. Use immediately and with minimal configuration.
  - Office 365
  - Intune
  - OneDrive
  - Dynamics 365

Some assembly required
- Use these existing services as a starting point for your storage solution with additional configuration or coding for a custom fit.
  - Azure Content Delivery Network
  - Azure Media Services
  - HDInsight

Build from the ground up
- Use these storage building blocks, along with coding, to create your own storage solution or apps from scratch.
  - Azure Storage (files)
  - Azure Storage (blobs)
  - Azure Storage (queues)
  - Azure Storage (tables)
What is Office 365?

Can I host my server or application in the cloud too?

Microsoft Azure is hosted in Australia and eligible charities can get a $5000 credit for:

<table>
<thead>
<tr>
<th>Compute</th>
<th>Storage and backup</th>
<th>Web and mobile</th>
<th>Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual servers</td>
<td>Storage blobs and files</td>
<td>Web hosting</td>
<td>Machine learning</td>
</tr>
<tr>
<td>Cloud Services</td>
<td>Backup</td>
<td>Mobile apps</td>
<td>HD Insight</td>
</tr>
<tr>
<td>In built licensing</td>
<td>Import/Export</td>
<td>Apps API</td>
<td>Stream analytics</td>
</tr>
<tr>
<td>Application hosting</td>
<td>Site recovery /DR</td>
<td>API management</td>
<td>Data factory / Data lake</td>
</tr>
<tr>
<td>Network</td>
<td>Data</td>
<td></td>
<td>And more…</td>
</tr>
<tr>
<td>Virtual network</td>
<td>SQL DB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express route</td>
<td>Document DB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic manager</td>
<td>Search</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tables</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cloud server considerations

» Microsoft Azure offering $5,000 credits for NFPs
» Will your internet connectivity support cloud server?
» Are your routers compatible to cloud environment and VPNs?
» What will be your ongoing storage or bandwidth costs?
» Do you still need backups?
» Is Azure compatible with your application – eg SQL databases or Terminal services often not suitable.
» Integration with Office 365 and Dynamics

http://www.connectingup.org/blog/microsoft-azure-credits-now-available-eligible-not-profit-organisations
Tips when considering the Cloud

» Consider security and what information you are willing to store with an overseas or Australian cloud provider

» First move systems where the benefit/effort equation is high

» Plan an architecture for your client information and documents to reduce duplication

» Ensure staff can work offline if they need to

» Upgrade your internet connection. Have a backup plan for business continuity?

» Consider a hybrid scenario that mixes local and cloud infrastructure
Do you need local server infrastructure?
# Local Infrastructure considerations

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modem</td>
<td>Connects internet from your provider to your network</td>
</tr>
<tr>
<td>Switch</td>
<td>Connects all your infrastructure together</td>
</tr>
<tr>
<td>Firewall</td>
<td>Protects your network against threats</td>
</tr>
<tr>
<td>Router</td>
<td>Controls and directs network traffic</td>
</tr>
<tr>
<td>Server</td>
<td>Hosts applications, files, user accounts and manages your PC network</td>
</tr>
<tr>
<td>NAS</td>
<td>Storage Device for file shares or backups</td>
</tr>
<tr>
<td>UPS</td>
<td>Backup battery and surge protection for server/ infrastructure</td>
</tr>
<tr>
<td>Tape Drive</td>
<td>Records data to backup data</td>
</tr>
<tr>
<td>Patch Panel</td>
<td>Connects cables to the switch/server</td>
</tr>
<tr>
<td>PABX</td>
<td>Manages your telephone system</td>
</tr>
</tbody>
</table>

Nb: not all infrastructure is required for all organisations. For example some devices perform multiple functions eg modem/router/firewall
Top reasons to keep a server

» Locally hosted applications or databases that aren’t ready to be moved to the cloud (*including some client management systems*)

» Storage of large files, videos and images

» Poor or expensive internet connectivity

» More than 20 PCs requiring centralised updates and management via group policy

» Active Directory (single source of usernames and passwords)*

» Users moving regularly between PCs

* Starting to change with Windows 10 & AD in the Cloud
The Cloud or local infrastructure

vs

» Ongoing monthly costs
» Reliant on internet
» Hosted externally
» Automated updates
» Combined software/hardware
» Local copies required for offline

» Initial upfront capital purchase
» Reliant on local network
» Stored locally
» Ongoing maintenance required
» Purchase software and hardware
» Offsite Backups required

Note: There are many types of ‘Cloud’ services – e.g.
• Servers can be hosted in the Cloud
• Office 365 (including Exchange/SharePoint) is a cloud service without a traditional ‘server’ & are upgraded automatically
• A number of larger organisations use Citrix to access files and applications in the Cloud
Example scenarios

Small (cloud)
<5 staff who regularly work from home:
» Laptops
» Email, videoconferencing, systems & file sharing in the Cloud
» Client management system in the cloud
» Finance and payroll in the cloud
» No server

Medium (mostly server)
50 staff, single office, rare to work out of the office:
» Email in the Cloud
» Local server for file sharing and client application
» Central management of PCs and users
» Custom client management system requiring server
» Large images and videos stored locally
» Locally hosted finance system
» Offsite backups in cloud

Large (mostly cloud)
200 staff, multiple offices, central office has marketing team who work heavily with videos & other multi-media:
» Email in the Cloud
» Majority of files stored on an Intranet in the cloud
» Server at central office for multimedia files, cloud backup
» Most applications cloud based
Do I need to upgrade my internet connection to access the cloud?
## Internet connectivity types

<table>
<thead>
<tr>
<th>Internet type</th>
<th>General description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dial Up</td>
<td>Old style phone line based connection</td>
</tr>
<tr>
<td>3G/4G/5G</td>
<td>Mobile connections through the phone network</td>
</tr>
<tr>
<td>ADSL</td>
<td>Standard home or small business connection eg .6mb up, 9mb down</td>
</tr>
<tr>
<td>ADSL2</td>
<td>Standard ADSL connection with slightly faster speeds eg .9mb up, 12mb down</td>
</tr>
<tr>
<td>Fixed Wireless</td>
<td>Suitable when ground cabling not possible in your building</td>
</tr>
<tr>
<td>Ethernet</td>
<td>Dedicated symmetrical speeds on standard lines eg 20mb/20mb</td>
</tr>
<tr>
<td>Fibre</td>
<td>Higher quality dedicated symmetrical connection eg 100mb/100mb</td>
</tr>
<tr>
<td>NBN</td>
<td>Recently upgraded infrastructure (various types and speeds based on provider, plan and location)</td>
</tr>
</tbody>
</table>

*Nb: not all connections are the same, it is dependent on your location and provider*
## Internet connectivity scenarios

<table>
<thead>
<tr>
<th>Example Scenarios</th>
<th>Performance &amp; Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single user at home on consumer ADSL2 or 3G (OK signal) using</td>
<td>Generally good. Skype call reliability affected if downloading /uploading large files/emails</td>
</tr>
<tr>
<td>• e-mail, Skype (IM/audio/video), SharePoint &amp; OneDrive for file sync</td>
<td></td>
</tr>
<tr>
<td>Office of 10 people, on business grade ADSL2 using</td>
<td>Should perform appropriately</td>
</tr>
<tr>
<td>• Email, Skype (instant messaging only)</td>
<td></td>
</tr>
<tr>
<td>Office of 10 people, on business grade ADSL2 with</td>
<td>Audio likely to drop out &amp; Skype call reliability affected if downloading /uploading large files/emails or significant use of the Internet.</td>
</tr>
<tr>
<td>• Email, Skype (IM &amp; intermittent audio calls)</td>
<td></td>
</tr>
<tr>
<td>• Case/client management system in the Cloud</td>
<td></td>
</tr>
<tr>
<td>• One offsite office where people remote in to a local terminal server to use the finance/accounting package</td>
<td></td>
</tr>
<tr>
<td>Organisation of 30 staff, 20 in central office, other 10 across 3 remote offices.</td>
<td>Should perform appropriately Without QoS (Quality of Service) network traffic prioritisation, risk of audio &amp; video dropouts exist during periods of high internet traffic</td>
</tr>
<tr>
<td>Central has symmetric 10Mb link, others have business grade ADSL2 with Annex M for improved upload. VPNs. QoS prioritisation</td>
<td></td>
</tr>
<tr>
<td>• e-mail, Skype (IM/audio/video), SharePoint &amp; OneDrive for file sync</td>
<td></td>
</tr>
<tr>
<td>• Server for AD. Case/client management &amp; Finance s/w in the cloud</td>
<td></td>
</tr>
<tr>
<td>Office of over 50 staff accessing cloud based applications and video conferencing</td>
<td>Should provide a high quality connection enabling access to internet based applications</td>
</tr>
<tr>
<td>Requires a symmetric connection of approximately 20mb upload and 20mb download.</td>
<td></td>
</tr>
<tr>
<td>Fibre of 100mb may be also suitable and cost efficient if available at the location</td>
<td></td>
</tr>
</tbody>
</table>
Top tips for designing your technology solution

1. Base your design on your future business model
   *What will your organisation look like in 5 years? How will your staff work? Will you grow?*

2. Determine your requirements for applications
   *What systems do you need? Are these systems available in the cloud?*

3. Know how your staff need to work
   *Are staff accessing information from remote locations or home or on mobile devices?*

4. Stage the transition and do what adds most value first
   *When does your current infrastructure reach end of life? What system is most urgent?*

5. Consider a hybrid model of both cloud and infrastructure
   *What local infrastructure do you need in the short term? What cloud systems can I move to easily?*

6. Get expert advice
   *Do you have a staff member, board member or support provider that has expertise in this area?*
THANK YOU

PLEASE GET IN TOUCH

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