



# ICT & Digital

## Updates for Finance and Corporate Services Scrutiny Board

- Asset Registers
- Monitoring of ICT & Digital Systems

15<sup>th</sup> September 2021



# Asset Registers: A high level health check of ICT & Digital assets within the organisation

Our general approach to management across our various types assets is a balancing act....



As an example of the above, as we go through the slides you will see some assets are showing as out of warranty. We assess our assets against the above three principles and utilise extended support agreements, where required, to ensure we get the most value from our assets

## Asset Registers: A high level health check of ICT & Digital assets within the organisation



**Users:** Up to 5500 across Corporate Employees, Non-Payroll Employees, Agency



**Laptops:** 5000 devices

- 4020 in warranty
- 780 out of warranty due for refresh April 2022



**Operating system - Laptops:**

- 4020 Devices running Windows 10, 780 Windows 8 Devices.
- Laptop refresh paused due to Pandemic. Plans to resume April 2022, focusing on Windows 8 Devices.



**Mobile phones:** 2800 devices

- 300 in warranty
- 2500 out of warranty due for refresh 2022/23



**Business Applications:**

- Around 200 line of business applications (the systems that our users use to complete their duties)
- Very mixed estate of modern and older applications
- Where it is economically viable we are increasingly using cloud hosted applications (where the system is provided for use by the supplier without the need for us to have any infrastructure on premise to run it)

# Asset Registers: A high level health check of ICT & Digital assets within the organisation



**Servers:** ~530 servers predominately virtualised, with 70 physical servers:

- 30 in warranty
- 40 out of warranty but with extended support

Server Infrastructure = Specialised computers or hardware that host or run things accessed from another device. Servers will run an operating system and then specialised software to do a specific task/function. This maybe be hosting a website, storing usernames and passwords, holding databases for other applications.

## Operating system - Server:

- Windows Server 2008: During pandemic replaced or decommission 183 servers including upgrading or replacing 35 systems. 5 systems remaining
- Windows Server 2012: Programme in place to upgrade / migrate all 164 servers in this category



## Network assets:

- The majority of our critical network infrastructure was replaced 4-5 years ago and is subject to regular patching and maintenance.
- Currently working on a modernisation programme for how our network works in line with industry best practice



Network Infrastructure = Collection of devices and cables that provide connectivity (allow devices to talk to each other) between buildings, servers and the outside world. This may be routers, switches, wireless access points, fibre etc. (More complicated versions of your home router, being done via multiple devices).

# Asset Registers: A high level health check of ICT & Digital assets within the organisation



## Database platforms: 5 physical servers

- Recently changed approach to improve licensing position and create “easier” disaster recovery position reducing from 18 servers to 5

Database Platform/Server Software = The underlying software used to run/host a database. Such as Microsoft SQL Server, Oracle, Ingress etc. It's like a fridge (database platform), where you put your food (databases). It looks after them, until your ready to consume (or access) data.



## Storage Area Network (SAN)

- Currently migrating data to a new SAN, due for completion this calendar year. General life expectancy of SAN is 5 years.
- The new SAN has a 330TB capacity this is enough storage for:
  - 82.5 million photos; or
  - 165,000 hours of film; or
  - 2.15 billion document pages (word/pdf) equal to 429,000 filing cabinets of paper

Storage Area Network (SAN) = Specialised hardware and software that act as a giant hard disk drive. This is where data, files, folders etc. all gets stored.

Once migrated we will be storing around 240TB of data on the SAN (72% of the total capacity).

It is important that everybody continually undertake housekeeping on the data stored.

Additional capacity can be added to the SAN if required.

It should also be noted that our Office 365 subscription (providing our Email, Teams, Intranet etc.) gives us access to 58TB of file storage of which we are using 5.5TB

# Asset Registers: A high level health check of ICT & Digital assets within the organisation

## Proactive:



- Scheduled Monthly Maintenance windows: where servers are patched, upgraded and maintained with the latest bug and security fixes. Including other routine maintenance to keep things running.
- Scheduled Network Maintenance windows: where network/connectivity/firewall devices are patched and maintained with the latest bug and security fixes. Including resiliency testing and other routine maintenance to keep things running.
- Continued patching and maintenance of laptops. Changed to a 14 day patching cycle in line with National Cyber Security Centre recommendations.
- Constant checking of system lifecycles / end of support dates to keep us up to date, compliant and secure.

## Challenges:



- Such a broad range of service area's, with different technology needs across the organisation
- Balancing the need for maintenance and upgrading of systems and infrastructure with organisational needs and expectations.
- Handful of 'Legacy' systems that create a challenge, especially regarding external compliance, in terms of the age of infrastructure required for them to run.
- Mobile phones
  - Looking to control costs, reduce budgets but demand for mobile phones is increasing. Growing assumption that every employee is entitled to/requires a mobile phone.
  - Increasingly stringent security requirements i.e. need to block older and/or non-updated personal and corporate devices from accessing council systems.

## Monitoring of ICT & Digital systems: How systems are monitored and what the uptime of our core systems is

As demonstrated on previous slides, there are a number of components that enable our systems to run.

This makes monitoring system uptime quite complicated.

Similar to warning lights on a car dashboard, a warning on an individual component does not necessarily mean that the car (system) is not working.

We continue to be on a journey in developing and enhancing how we monitor our systems – especially our public facing systems



## Monitoring of ICT & Digital systems: How systems are monitored and what the uptime of our core systems is



Over the last 12 months we have been developing our use of a monitoring system called UptimeRobot.

This checks systems periodically to see if they are accessible (I.e. up or down). Primarily this has been used to monitor systems that are public facing (accessible via the Internet), more recently we have developed our approach to include a level of monitoring on our internal systems.

At present we are monitoring 47 of our systems/services using this method

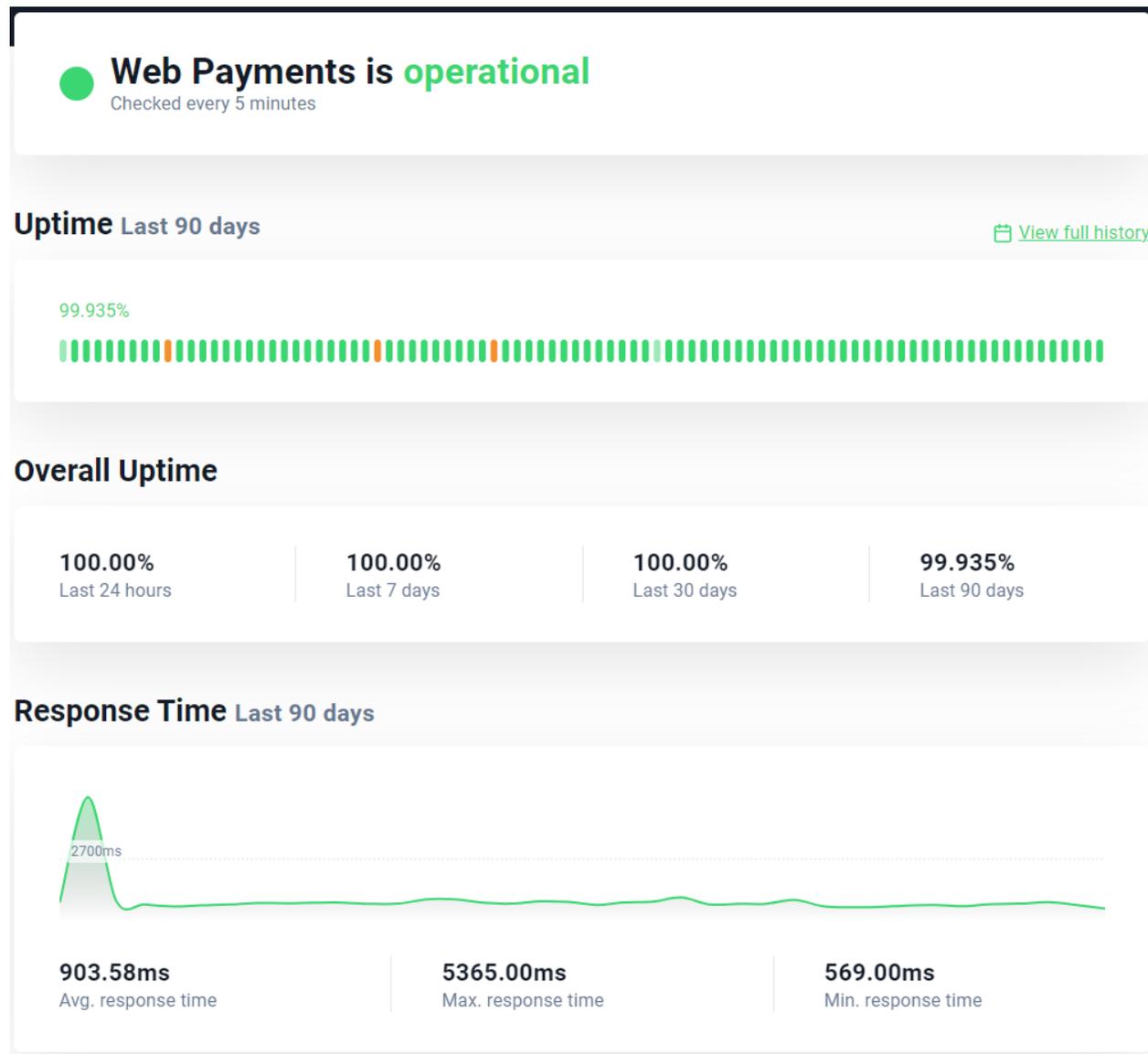
Example summary monitor:



UptimeRobot monitors end systems, we also have in depth and more technical monitoring of infrastructure components. Teams within ICT & Digital use these monitoring tools to check the health of the underlying components for our infrastructure.

# Monitoring of ICT & Digital systems: How systems are monitored and what the uptime of our core systems is

Detailed example using the monitor of our Web Payments solution:



## Recent events

- Running again**  
July 25, 2021, 07:20 GMT +00:00
- Down for 3 minutes**  
The reason was **Connection Timeout**.  
**Details:**The response took so long that the connection timed out.  
July 25, 2021, 07:16 GMT +00:00
- Running again**  
July 11, 2021, 06:43 GMT +00:00
- Down for 8 minutes**  
The reason was **Connection Timeout**.  
**Details:**The response took so long that the connection timed out.  
July 11, 2021, 06:34 GMT +00:00
- Running again**  
July 11, 2021, 04:12 GMT +00:00

# Monitoring of ICT & Digital systems: How systems are monitored and what the uptime of our core systems is

## Looking forward:



- Continue to develop and enhance our approach to monitoring to include more systems and other asset types
- Looking to develop an approach to monitor system performance as well as availability. For example a system might be available but if it takes 30 minutes to log in or perform a search it would be pretty much unusable. We are looking at ways to monitor system performance/usability.

## Challenges:



- Monitoring uptime can result in a number of false positives and false negatives due to complexity of how systems are delivered
- Measuring a system can be accessed does not necessarily mean that it is usable
- Organisational “operating hours” need to be redefined, especially since working through the pandemic, to define when systems are needed to be operational
- The higher the level of availability expected from the organisation does create pressure on out of hours support and creating space for system maintenance windows
- Over the pandemic we have had a number of issues reported that have been related to users home internet connections – it is not easy to monitor or manage infrastructure that is outside of our control.
- We need to start to understand usage patterns and expectation from both our customers and our users. Ensuring systems are available 9-5, 5 days a week is no longer enough as people are working different patterns and customers are expecting to be able to access services at different times.



Thank you

