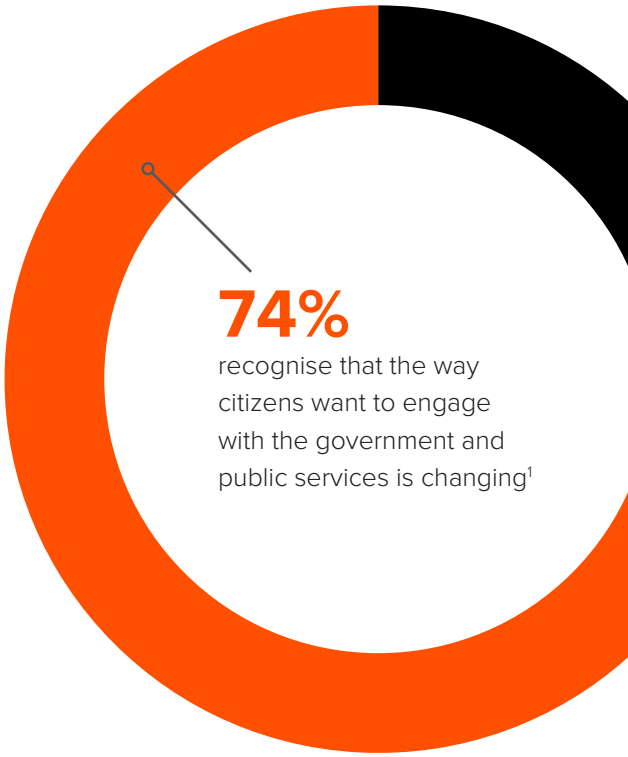
PURESTORAGE®

WHY THE NEXT PHASE OF **DIGITAL TRANSFORMATION** BEGINS WITH **DATA INFRASTRUCTURE**

A point of view paper by Patrick Smith EMEA Field CTO, Pure Storage EMEA

THE CHOICE IS
BLACK & WHITE
AND ORANGE

DIGITAL TRANSFORMATION: HOW TO GET **DATA WORKING HARDER**, NOW



Transitioning to citizen-centric service delivery, Brexit planning, implementing new digital services and adopting an evidence-based policy development are all transformational undertakings for the UK government and its departments. Thankfully, they all have one critical success factor in common: data. It is the fuel of digital transformation and without fast, always-on access to data, everything will stall. By everything, we mean all data-driven ambitions from the development of new models of service delivery that **improve the quality of public services** and **reduce operating costs** to using data, analytics and AI to deliver faster, and **more informed decisioning** into the hands of all frontline and strategic civil servants for the creation of **evidence-based policy**.

The digitalisation of services has already gone a long way to cutting operational costs and improving the efficiency of service delivery, but this is only a fraction of what can be achieved through digital transformation. Putting many public services online does go a long way to positioning citizens at the core of government, yet there is much more that can be achieved to improve outcomes. We recently surveyed government IT leaders to understand their views on the progress being made and what factors are putting the brakes on transformation. Some findings from our 2018 report called Smart Government – The Big Balancing Act, highlights the situation.

- The key drivers for technology investment in government departments are efficiency (**50%**), quality of service delivery (**46%**) and innovation (**41%**), followed by security/safeguarding data (**33%**).
- Nearly three-quarters of IT leaders (**74%**) say they are satisfied with digital transformation progress in their department but only **13%** would say they are extremely satisfied.
- The most significant barriers that are slowing digitisation of citizen services and process automation are investment in data infrastructure (**85%**), lack of digital leadership and vision (**42%**) followed by reluctance to change (**33%**).

With the government's data strategy (2017 to 2020) in mind, which references the need to be able to seamlessly share data across departments, make use of open data, and use data compliantly and securely, it's very easy to see why a new model of data infrastructure is required. This is what we will discover in this paper, along with how a 'fit for purpose' infrastructure model can be built in a way that will help to accelerate digital transformation and support innovation. Before we do that, let's review some of the challenges that government is facing in regards to the current data status quo.

1. Survey of 'Transforming Citizen Outcomes' within the public sector conducted by Insights Avenue, commissioned by Pure Storage

WHY IS A **NEW MODEL** OF **DATA STORAGE** REQUIRED?

The drivers include:

1. TRUST

A 2017 study by the UK Information Commissioner's Office[2] found that only **49%** of Britons trusted national government departments and organisations to store their personal data.

Without citizens having trust that government organisations will not only keep their data safe and secure, but use it without bias and in ways that benefit the individual (rather than just their own organisation) citizens will become increasingly reticent about sharing their data. Why? Because as we see, trust is at a low ebb already. It will drop further if the value exchange i.e. the value that citizens feel they should receive in return for submitting their data is not delivered. As a consequence, the pool of big data that fuels digital transformation will diminish in volume and also in quality. **83%** of IT leaders understand that improving the citizen experience is important in building trust in government.

Trust is also an issue for those civil servants who are becoming increasingly dependent on data to fulfil their job functions. If data is unavailable, complex to access or slow to come to their fingertips they will rapidly lose faith in IT's ability to help them operate efficiently in this new digital era.

> Today, thanks to IoT, digital services, mobile and fixed access, the profile and mix of government data is radically different

2. NEW DATA

The kinds and volumes of data that are now being generated, stored and consumed by government bodies are far different from even a few short years ago. The vast majority of data was structured and cold – emails, letters, service usage records that were not being generated or used for decisioning in real-time. Today, thanks to IoT, digital services, mobile and fixed access, the profile and mix of government data is radically different. Much of it is unstructured, includes voice, video, social media, transactional and sensor data that is 'hot' i.e. it could be used for near real-time analysis. It could be complemented by external, third party sources of contextual data to allow civil servants to unlock new truths and insights for policy development and predictive modelling, as well as to deliver far more personalised, multi-channel services. Just as has been happening in the commercial world for many years.

However, it appears that data is still not yet being used as effectively as it could be.

- Government IT leaders see their department could be making more or better use of data and analytics in improving citizen outcomes (**58%**), delivering cost savings and getting more value from limited budgets (**48%**), informing real-time decision making (**44%**) and informing the development of new services (**43%**).
- **78%** recognise that they can transform citizen outcomes with better use of data.
- Less than a third of IT leaders say data is being used extensively to drive operational decisions (**31%**). Fewer still use it extensively to drive strategic decisions (**22%**).
- More than half say their department could be making better use of data to improve operations/drive efficiency (**57%**). **40%** say the same for making better strategic decisions/informing policy. **35%** say they could use data better to foster more experimental/innovative practices and **32%** to personalise/offer more tailored services to individuals.

2. ICO survey shows most UK citizens don't trust organisations with their data, ICO, 6 November 2017

- Data analytics capabilities which need improving to enhance service delivery include data infrastructure (**89%**), setting protocols for data sharing (**85%**), ability to consolidate (**82%**).

Huge volumes of data, more personal data as well as the need to be able to put it to use for advanced applications such as artificial intelligence and edge analytics means that legacy infrastructure technologies and their design are now outmoded.

3. SILOS

Most citizens will be using the services of more than one government department at any given time. In their lives as consumers, citizens expect to submit their data once and never again. It must be shared across the business so that the front-end digital service of, for example an online retailer, can pull up data held by the financial department and use it to make offers about goods and services, including credit and discount offers in real time.

A consumer would not find it acceptable to submit information in order to receive a personalised front-end (or store front) experience, only to have to resubmit a whole tranche of data to the finance department during the buying portion of their interaction. Citizens expect the same level of seamless personalisation from their interactions with government, especially where they believe there to be responsibility overlaps e.g. HMRC and DWP, or education and social care.

> These silos are preventing deeper personalisation of services

Data is traditionally held by the department who generates it from each service user. These silos are preventing deeper personalisation of services. They also result in efficiencies since data has to be generated over and over again across departments. Multiple instances of cross-over data that must be stored for many years also increases storage costs and results in an inability to create a single view of the citizen in order to understand their needs more deeply and at a holistic level.

4. SECURITY AND COMPLIANCE

While data must become 'fingertip available' to civil servants, access has to be relevant in order to keep it secure. Tracking who has accessed data and how they have used it is key to maintaining not only security but compliant use of data. Taking this notion of relevant availability further, it's vital that data is used in ways that citizens have agreed to and that, should a citizen request it, all data being held on them can be identified, located and when necessary audited. Clearly the General Data Protection Regulation of 2018, as well as the issues around citizen trust (particularly following so many stories over the past five years about data being exfiltrated or lost from organisations) is bringing this issue into sharp focus. Moving forward, IT leaders must be able to demonstrate their multi-layered approach to security and compliance, beginning at the infrastructure level.

3. Survey of 'Transforming Citizen Outcomes' within the public sector conducted by Insights Avenue, commissioned by Pure Storage

IT leaders have significant concerns about securing data at all levels, as illustrated by these findings from our Smart Government report:

- **75%** of UK IT leaders believe their department has sacrificed technology performance (or tolerated performance degradation) to have enhanced security.
- Over the next two years **28%** expect investment in application security to increase and **27%** say they see infrastructure security investment increasing. Most see this remaining the same.

5. PERFORMANCE

Digital services don't work, efficiencies aren't raised, and money isn't saved when data is slow or unavailable at the moment of need. This is a challenge, especially when more and more data is being analysed at the edge, thanks to IoT applications, or in near-real time for personalised service experiences. IOPs isn't the be-all and end-all when it comes to performance, in this always-on data era, government CIOs must also assess more effective ways to dedupe and compress data sets, as well as the way they provision disaster recovery services. Today there are more agile ways of ensuring sites, people and data remain always connected with zero downtime and therefore zero impact on citizens. All of which can be achieved for a fraction of the cost of traditional disaster recovery capabilities.

Stepping up the digital transformation game with Data-Centric Architecture

Since government began its digital services transformation several years ago so much has changed:

- Citizens expectations
- The rise of analytics and AI to deliver deep insights and automate processes
- Technological innovation that has changed the mix and volume of data being generated and consumed by government departments
- A new regulatory framework
- New ways to architect the technology infrastructures that house and make data rapidly available to relevant applications and users.

Moving forward to build webscale applications that drive new services, embracing the efficiencies of DevOps, or deploying AI in frontline decisioning and policy development requires IT leaders to take digital transformation to the next stage. To do this, IT leaders must acknowledge that it is time to migrate from legacy storage technologies. Spinning disk is largely outmoded, exorbitantly expensive to maintain and cannot provide the agility, elasticity and performance required by modern data-intensive workloads. This belief is backed by our research which found that **68%** of IT leaders think legacy infrastructure is holding up their digital transformation progress.

Why Data-Centric Architecture is the accelerant of Digital Transformation

In deploying all-flash, it's vital that in order to future-proof your investment and your data capabilities, you develop an architecture that serves data up to applications and users as a service. A data-centric architecture, similar to that deployed in the public cloud data centres to support multi-cloud environments for vast scalability and cost effectiveness. Now is most definitely the time to consider a new data infrastructure strategy because, like most organisations, storage has been developed as a tactical response to business needs, not a strategic one. Consequently, data centres typically contact a plethora of apps, development environments and analytics island each attached to a data silo of SANs, NAS, analytics tools, scale-out apps and more. It's messy, complex and costly. And it is very difficult to see a cohesive plan that ensures data is positioned as the strategic asset it is.

> Now is most definitely the time to consider a new data infrastructure strategy

What is Data-Centric Architecture?

It's where a suite of data services allow data to be freely shared by different types of applications with different demands; really we are talking traditional applications versus AI and webscale applications. In this new digital era, data is required on-demand to power decisions, for high-speed transactions, and for rapid analysis. It's 'hot' and in an almost continuous state of use, not buried-away 'cold' data. It is the fuel of every government organisation rather than the historical backstory of what happened with each service user.

As the nature of data is changing (from cold to hot), so are the applications being built. They are scale-out and distributed. As a result, we have evolved from big compute stacks where each had little dedicated storage islands, to a world where lots of little, stateless compute must have shared access to a vast pool of data delivered 'as a service'. These shared data services connect on-demand, through fast networks, to a diverse set of compute services. This architecture achieves two things: it rightfully positions data as a strategic asset while allowing IT leaders to radically simplify storage, with the consequential cost reductions involved.

What does all this change result in?

A new model of data storage with high speed connectivity, that looks like the diagram below:

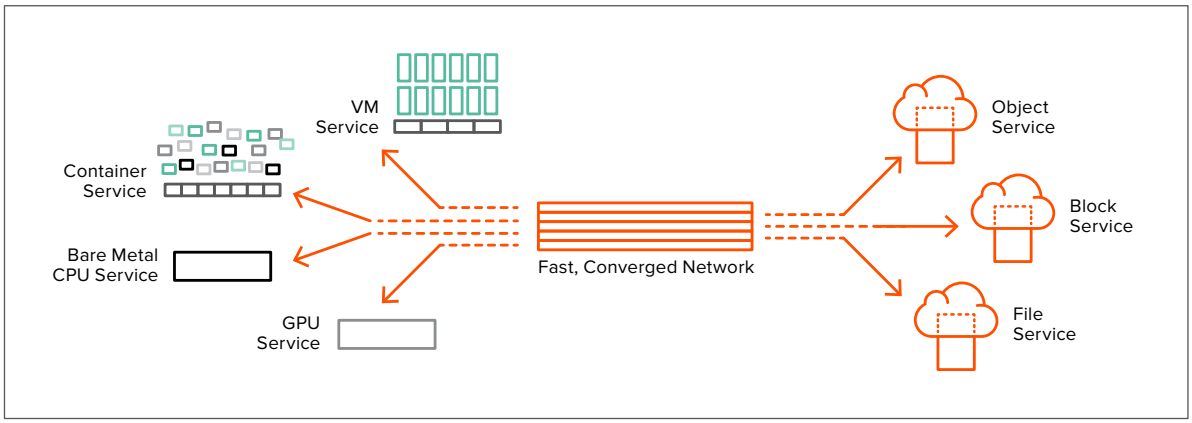
Data-Centric Architecture is a journey, not a single hop

Getting to Data-Centric Architecture can't be achieved overnight. But it can happen in months and future-proofed for the long-term. As with any transformation, it's vital that you assess the 'business' needs of your organisation and work with a partner who not only has the vision, but can support you with the practicalities of design, data migration, testing and deployment to a production environment.

One organisation that is well on the path to being able to achieve more efficient services, a key tenet of the government's digital transformation strategy, is **North Ayrshire Council**.

North Ayrshire Council
Comhairle Siorrachd Àir a Tuath

The IT team's digital transformation focus had been to improve application workloads so that employees could deliver key services more efficiently. The strategy includes streamlining across departments, delivering efficiencies to all teams, and consolidating environments to drive cost-savings and to accelerate service levels. However, the council's legacy equipment was nearing its end of life. Warranty costs were increasing, and the team knew it would be more cost-effective to replace than upgrade.



The council's Head of IT bought all-flash from Pure Storage for their Virtual Desktop Infrastructure (VDI) environment supporting 2,600 users. Initially buying a FlashArray// M10 from Pure Storage to support its VDI, the council upgraded this to an //M20 when it deployed Pure Storage across its wider environment. Pure Storage's Evergreen Gold subscription meant the organisation benefited from UpgradeFlex, which meant only paying the difference between the old controller and the new, thus fully protecting the original investment. It's a unique way of ensuring government organisations have always-on, non-disruptive access to the latest Pure Storage innovation.

The council is well on its way to redesigning its data strategy around Data-Centric Architecture, but the value and benefits can be realised very quickly at every step of the journey, so it is never a case of waiting years for value; it's always immediate.

Some of the specific benefits the council has achieved in working with Pure Storage include:

- Improved speed, performance and data reduction in a consolidated environment
- Five legacy storage arrays consolidated into two Pure Storage FlashArrays
- Data reduction of 125TB into 45TB on its primary Pure Storage FlashArray with subsequent cost reductions
- The Pure Evergreen™ Storage model provides the council with a 10+ year storage lifecycle, compared to three years from their previous vendor.

Pure Storage is experienced in the government sector. We believe the next phase of transformation can only be achieved from the ground up with a new approach to storage. Our technologies are designed to address many of the challenges government IT leaders are concerned about. Take security as one example. Data is always encrypted and access to storage is always logged and analysed to help prevent misuse of data – a big component in building citizen trust and storing data compliantly. Our architecture is designed to break down data silos, so that government can become the smart, analytics-driven, citizen-centric organisation it wants to be, capable of delivering highly responsive and personalised services. And hugely capable of modelling policies and their outcomes as well as predicting service users' needs and being clever with resource planning.

Our commercials position us as a hugely stable and independent partner for the long-term future, and the way we provide access to innovative technology keeps costs far lower than competitors' – even so far as cutting some 30% of your storage costs by shifting from traditional disaster recovery to always-on, elastic business continuity.

> Our technologies are designed to address many of the challenges government IT leaders are concerned about

If you would like to learn more about how our vision, our technology and our experience is so perfectly aligned to help you further your digital transformation goals, please reach out to us on +44 (0) 203 870 2633, or download UK smart government 2019 – data-driven transformation.

For more information visit Purefla.sh/Gov

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