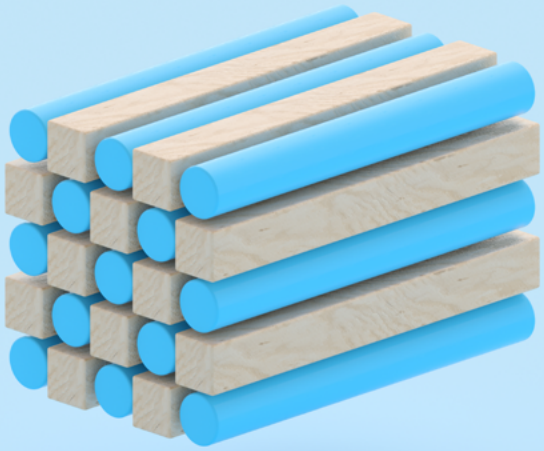
SOLUTION BRIEF

Enabling Data-driven Government

Developing a hybrid multi-cloud strategy to deliver the best digital experience for citizens



NetApp

Introduction

With the release of the "**Cloud Guide for Public Sector**" in March 2020, Crown Commercial Services (CCS) and Government Digital Services (GDS) has provided much-needed guidance on best practice and key commercial, technical and security considerations to assist organisations with their journey to the cloud. It is based on a period of research and the learnings from technical and commercial leads across government and is designed to assist agencies with the development of their cloud strategies and roadmap.

NetApp have a long-standing history of partnering with public sector bodies and supporting the broader objectives of the UK Government. Our market-leading hybrid cloud data services and storage solutions are widely deployed, and we recognise many of the themes in the Cloud Guide from our work with other government agencies and organisations around the world.

The purpose of this paper is to outline how we can support the goals and principals of the Government's "Cloud First" policy whilst also addressing some of the major topics raised in the Cloud Guide. Throughout, we will take a data-centric viewpoint in recognition of the strategic importance that data plays in the broader digital transformation agenda whilst being sensitive to developments in the broader digital and technology landscape.

Our objective is clear: to highlight the importance of making the right decisions when provisioning cloud storage services and to underline the value in adopting a hybrid cloud "data fabric" to deliver the best technical and commercial outcomes.

Data in the cloud: challenge or opportunity?

Data presents something of a conundrum when it comes to determining a cloud strategy. On the one hand, it consumes expensive storage which is often viewed as a commodity and something which adds little or no value to an organisation. All too often, storage is disregarded by developers and furthest from the mind when it comes to architectural discussions: and yet, data storage can represent as much as 45% of cloud consumptions costs and is only likely to grow as digital services mature. Data is also increasingly seen as a strategic asset which must be secured - yet made available to deliver the much sought-after inter and intra-agency sharing and collaboration.

As noted in the National Data Strategy, "**Better use of data can help organisations of every kind succeed – across the public, private and third sectors**." [1]

Leaders are under enormous pressure to harness today's volume of data and apply it to create new value across the entire organisation whilst preserving the trust of citizens. It is recognised that digital transformation in most cases requires IT transformation. Consequently, IT leaders must embrace new technologies and capabilities to place data at the heart of everything. This requires organisations to recognise the new realities that mean data and resources increasingly live across a complex ecosystems of in-house data centres, private and public clouds.

The very real risk in a hybrid cloud model is that "islands of data" will result from information being stored on different platforms in different hosting environments with different service levels and data protection methods. This can stifle innovation and compromise service level objectives (SLOs). It can also act as a barrier to the adoption of technology such as AI and machine learning. Increased levels of security risk and the potential for duplication of information are also very real threats – exposing organisations to greater risk of breaching GDPR and other data protection regulations. There can also be a greater exposure to ransomware and other forms of malicious and/or unauthorised access.

The world's most innovative organisations build data fabrics to drive business outcomes.

NetApp customers are thought leaders who recognize the value of digital transformation. Every day, they're changing their world by leveraging their most valuable business resource—data.

As specialists in cloud data storage, we help our customers build their unique Data Fabric as

a standardised architecture to allow data to be securely ingested, distributed, analysed and stored – irrespective of the point of creation and across a geographically and operationally distributed "workspace". This provides the Single Information Environment (SIE) which is a key component of a mature data strategy. Built on a premise of "simplicity, insights and speed", the NetApp portfolio is based on proven technology which has been successfully deployed across the globe in civilian, defence and wider public sector use cases for many years.

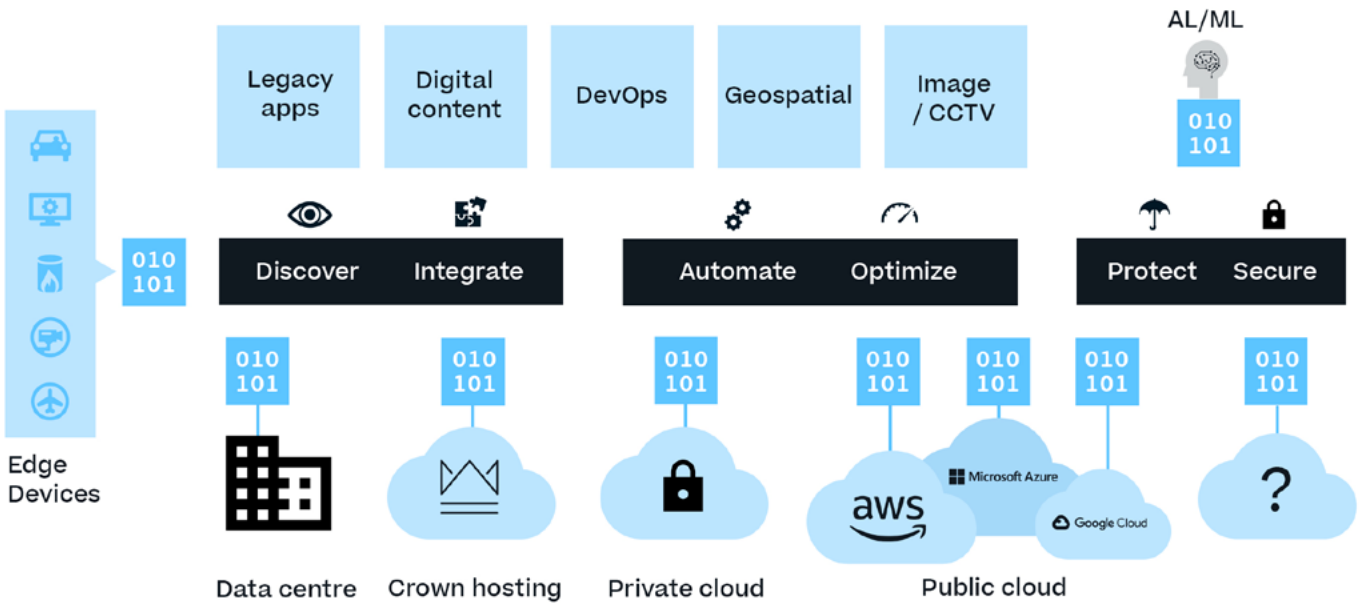
A Data Fabric should be infrastructure agnostic where possible and fully application-agnostic to deliver the widest possible value to the organisation. When built using NetApp foundations, a Data Fabric uses a virtualised data abstraction layer with wide protocol and API support that is "disaggregated" from the underlying storage layer – allowing data to efficiently flow across diverse networks to and from remote systems, connected devices, regional datacentres and/or cloud environments.

We take cloud seriously and have long-term partnerships and close integrations with Microsoft Azure, Amazon Web Services and Google Cloud. Together, we make cloud storage work harder for you.

Our **Cloud Volumes** offerings deliver highly optimised unified shared storage services for both primary and secondary workloads. They offer inherent data management capabilities in the form of compression, deduplication, caching, tiering, backups, monitoring and compliance as a service delivering unmatched performance at the lowest possible cost. With Cloud Volumes and Azure NetApp Files we invented 'Volume Shaping' - an API that changes both the capacity and service tier at run time, matching the performance requirements to the workload's peaks and valleys. We uniquely offer customers the ability right size their storage at run time, both in terms of capacity and throughput as the application needs.

A Data Fabric provides value in the following ways:

- **Cross-functional collaboration** – by ensuring that Data is made available at the right time and in the right location to provide authorised users with the information they need to be effective in their role
- **Reducing technical lock-in** – by applying consistent data management standards and protocols across the major cloud and hosting providers and providing seamless data mobility between clouds
- **Managing costs** – by automatically applying storage efficiency measures as data is ingested, replicated and backed up to reduce storage consumption costs by up to 70%
- **Enhanced data security** – through the adherence to the National Cyber Security Centre (NCSC) "Cloud Security Principles" such as data-in-transit



protection, secure multi-tenancy, access controls and identity authentication, auditing and malicious behaviour detection

- **Legacy modernisation** – by consolidated legacy infrastructure estates to reduce complexity, improve utilisation and lower data centre hosting costs whilst at the same time, providing seamless cloud connectivity

Application Driven Infrastructure (ADI)
We also recognise that application developers today build and deploy fast on the backbone of continuous integration and continuous deployment (CI/CD) with microservice architectures, utilising the underlying resources they need through API's. The Public Clouds have become the default platforms for all new application development.

However, infrastructure details are not often considered early in the development cycle which can result in production services being deployed on overprovisioned storage and compute instances, which collectively can account for up to 70% of cloud consumption costs today. Rhetorically, we have heard evidence of this from our engagement with customers who have identified poor utilisation, inefficiency and added expense through analysis of their cloud costs. The Home Office example cited in the cloud guide highlights the importance of this "right-sizing" and optimisation to ensure best value for the public purse.

NetApp have a goal of delivering an Application Driven Infrastructure (ADI) solution critical to the CloudOps teams by extending the CI/CD model to include Continuous Optimisation (CO). ADI translates the applications workload patterns and automatically delivers optimal performance and availability while minimising the cost for storage and compute, all done while maintaining the contracted SLA and SLO.

Through our acquisition of Spot.io, we can provide API-driven services that mange and optimise the compute needed for workloads while maintaining its contracted SLA and SLO. It does so by using a blend of compute types: on-demand, reserved and spot instances driven by years of monitoring and AI based decisioning. Together, Spot and NetApp will deliver savings of up to 90% on compute and storage – across all the major cloud platforms.

Legacy modernisation
It is recognised that few, if any, public sector organisations are able to undertake a wholesale adoption of the cloud for all production workloads. Some services will continue to be delivered on-premises due to security constraints or reasons of data sovereignty. Technical, commercial and resource constraints will necessitate the migration of services over a protracted length of time.

Unfortunately, it's not always easy to get infrastructure funding to replace legacy systems. However, there is a danger that each new tactical improvement built without best practice architectures adds to technical debt, which means extraneousness and delays in building anything cool in the future. A unified data services stack can solve several problems.

Here's how to build it

1) Prioritize the systems that can be retired or rearchitected then decide which of those should be moved to public cloud.
Nailing down and documenting your multi-cloud strategy is a first and essential step to laying out your common data architecture. Assess the technology that exists that is squarely aimed at solving the problem of multiple data subsystems. Your goal is to standardize on a solution that provides predictability and common management, independent of the data centre or public cloud it runs on.

2) Select new cloud-based solutions.
Think about where you have opportunities for automation, then you can plan for debt repayment throughout the lifecycle of the system (in other words, continuous improvement of deployed cloud solutions).

3) Reduce compound technical debt by partnering with stakeholders.
Make sure to include all domains of IT and beyond (especially enterprise architecture and application development teams) so that you can manage debt that's outside of their direct purview.

Conclusion

As an established provider of data management and storage technology solutions to UK Public Sector, we welcome the publication of the Cloud guide. We believe it provides clear guidance and direction to organisations in support of the Governments digital transformation agenda.

We are confident that our differentiated solutions can deliver the performance and availability needed to deliver traditional business-critical enterprise applications whilst also providing “stepping-stones” needed to transition to an agile cloud-first future mode of operation underpinned by a right-sized, efficient and cost-optimised infrastructure.

It positions us as the ideal partner to work alongside GDS and Crown Commercial Services to help deliver on the promise of “data-driven government.”

About NetApp

In a world full of generalists, NetApp is a specialist. We’re focused on one thing, helping your business get the most out of your data. NetApp brings the enterprise-grade data services you rely on into the cloud, and the simple flexibility of cloud into the data center. Our industry-leading solutions work across diverse customer environments and the world’s biggest public clouds.

As a cloud-led, data-centric software company, only NetApp can help build your unique data fabric, simplify and connect your cloud, and securely deliver the right data, services and applications to the right people—anytime, anywhere. Learn more at www.netapp.com.

1 The National Data Strategy, published 9 September by Department for Digital, Culture, Media and Sport **https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy**

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