

# **Rail Infrastructure Enterprise Asset Management (EAM) on IBM Maximo Application Suite (MAS)**

G Could 14



## Contents

|                                                             |           |
|-------------------------------------------------------------|-----------|
| <b>Service &amp; Solution Overview .....</b>                | <b>1</b>  |
| <b>IBM Maximo Application Suite (MAS).....</b>              | <b>1</b>  |
| <b>Arcadis EAM Solution Benefits &amp; ROI.....</b>         | <b>3</b>  |
| <b>Main Features.....</b>                                   | <b>5</b>  |
| <b>Service Management.....</b>                              | <b>5</b>  |
| <b>Service Level Agreements and Available Credits .....</b> | <b>7</b>  |
| <b>Infrastructure Management .....</b>                      | <b>9</b>  |
| <b>Case Study .....</b>                                     | <b>12</b> |

## Service & Solution Overview

Arcadis Cloud Software solutions are world-class products leveraging best-of-breed software with our industry expertise and knowledge. Coupled with our Cloud Support offering we deliver exceptional value for buyers searching for accelerated deployment products and solutions to manage complex business critical asset management solutions.

Under the services offered in the document, a Maximo SaaS solution, buyers will receive a world-class Enterprise Asset Management system built using the IBM Maximo framework, provided on a securely hosted cloud platform that is fully managed by Arcadis thereby reducing the buyer's risk and responsibility around system installation, support and maintenance. Buyers are encouraged to utilise and configure the system to match their goals and levels of asset and safety management maturity via the SaaS operating model with Arcadis Support, Data Migration, Onboarding and Offboarding services.

## IBM Maximo Application Suite (MAS)

IBM has upgraded the way it hosts and deploys its Maximo 7.6 to be part of the MAS offering, rebranding it as "MAS Manage". This forms one of the suite of applications available to carry out end to end Asset Management. Applications such as Monitor, Health, Predict and Visual inspection are all accessible through a single licensing framework. The Arcadis EAM offer within this document focuses on the Solution built on MAS Manage. We are happy to support customers in adopting our full SaaS Solution or advising and supporting their migration to MAS from 7.6.X.

Our SaaS solution is available through a single part number depending on whether you are a new or existing customer. The AppPoint model allows you to increase your capacity in a tiered approach based on the competency and maturity of your business (basic, advanced, world-class). This flexibility allows Organisations to choose the appropriate level of service to match their requirements. It offers the ability to grow their asset management capability over time without switching solutions with the business disruption this can cause.

Arcadis provides a mobilisation/transition service as part of SaaS onboarding with mobilisation costs optimised to match the level of service required to meet the Buyer's needs. Please refer to our Pricing Document for full details.

| Part Type            | Part Number | Description                                                                                |
|----------------------|-------------|--------------------------------------------------------------------------------------------|
| Subscription         | D28B4LL     | IBM Maximo Application Suite per AppPoint                                                  |
| Subscription Upgrade | D28B5LL     | IBM Maximo Application Suite per AppPoint Upgrade                                          |
| Perpetual            | D28AYLL     | IBM Maximo Application Suite per AppPoint Lic + SW S&S 12 MO                               |
| Renewal              | E0R1HLL     | IBM Maximo Application Suite per AppPoint Annual SW S&S RNWL                               |
| Reinstatement        | D28AZLL     | IBM Maximo Application Suite per AppPoint SW S&S Reinstat 12 MO                            |
| Monthly              | D28B2LL     | IBM Maximo Application Suite per AppPoint Monthly License                                  |
| Perpetual Trade-up   | D29HYLL     | IBM Maximo Application Suite per AppPoint from Eligible Programs Trade Up Lic SW S&S 12 MO |
| Subscription         | D09K7ZX     | IBM Maximo Application Suite Reserved per AppPoint                                         |
| Subscription Upgrade | D0CU5ZX     | IBM Maximo Application Suite Reserved per AppPoint Upgrade                                 |

|                      |         |                                                                                                          |
|----------------------|---------|----------------------------------------------------------------------------------------------------------|
| Perpetual            | D0CU3ZX | IBM Maximo Application Suite Reserved per AppPoint Lic + SW S&S 12 MO                                    |
| Renewal              | E0CU2ZX | IBM Maximo Application Suite Reserved per AppPoint Annual SW S&S RNWL                                    |
| Reinstatement        | D0CU6ZX | IBM Maximo Application Suite Reserved per AppPoint SW S&S Reinststate 12 MO                              |
| Monthly              | D0CU4ZX | IBM Maximo Application Suite Reserved per AppPoint Monthly License                                       |
| Perpetual Trade-up   | D0CU1ZX | IBM Maximo Application Suite Reserved per AppPoint from Eligible Programs Trade Up Lic SW S&S 12 MO      |
| Subscription         | D0GKIZX | IBM Maximo IT per AppPoint License + SW Subscription & Support 12 Months                                 |
| Subscription Upgrade | D0GKLZX | IBM Maximo IT per AppPoint SW Subscription & Support Reinstatement 12 Months                             |
| Perpetual            | D0GKJZX | IBM Maximo IT per AppPoint Monthly License                                                               |
| Renewal              | D0GKHZX | IBM Maximo IT per AppPoint Subscription License                                                          |
| Reinstatement        | D0GKKZX | IBM Maximo IT per AppPoint Subscription License Upgrade                                                  |
| Monthly              | D0GL1ZX | IBM Maximo IT per AppPoint from Eligible Programs Trade Up Licence + SW Subscription & Support 12 Months |
| Perpetual Trade-up   | E0GKGZX | IBM Maximo IT per AppPoint Annual SW Subscription & Support Renewal                                      |
|                      |         |                                                                                                          |

## MAS App Points

When you buy the part number, you will procure a volume of AppPoints, which you can choose to distribute amongst your users and applications. Arcadis can help with optimization considerations such as concurrent vs Authorised users and Limited vs Premium users. The last row in the table shows the applications which require additional installation AppPoints.

|                                 | Self Service User | Limited User | Base User    | Premium User |
|---------------------------------|-------------------|--------------|--------------|--------------|
| Administration Users Authorized | N/A               | N/A          | 10 AppPoints | 15 AppPoints |
| Application Users Concurrent    | 0 AppPoints       | 5 AppPoints  | 10 AppPoints | 15 AppPoints |
| Authorized                      | 0 AppPoints       | 2 AppPoints  | 3 AppPoints  | 5 AppPoints  |

| Applications      | Self Service Applications                                                                                                                                                                                                                | Manage 3 Modules:                                                                                                                                                                         | Manage                                                                                                  | Manage                                                                                                                                                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | •Service Requests<br>•Self-Service (IT)<br>•Desktop Requisitions<br>•Requests (Oil & Gas)<br>•Create/Review Incidents (HSE)<br>•Vehicle Requests (Transportation)<br>•Graphical Appt Book (Scheduler)<br>•Bill review (Service Provider) | •Manage (Linear/Calibration/Spatial)<br>•Manage Industry Solutions<br>•Manage Add-ons<br>•IT<br>•Maximo Mobile<br>•3rd Party Mobile<br><b>Monitor</b><br><b>Assist</b> (requires install) | Includes:<br>•Linear<br>•Calibration<br>•Spatial (requires install)<br>Scheduler<br>IT<br><b>Health</b> | <b>Industry Solutions</b><br>•Oil & Gas, Aviation, Transportation, Utilities, Nuclear, Civil Infrastructure<br><b>Add-ons</b><br>•Asset Configuration Manager, Service Provider, Health Safety & Environment Manager<br><b>Predict</b><br><b>Visual Inspection</b> (requires install) |
| Install AppPoints | SAP/Oracle/Workday Connector (80)<br>Optimizer Limited (60)                                                                                                                                                                              | Civil Infrastructure (50)<br>Optimizer (220)                                                                                                                                              | Visual Inspection (45)<br>Edge (1)                                                                      | Spatial (20)<br>Assist (150)                                                                                                                                                                                                                                                          |

Table 1 IBM Maximo App Point Requirements

## Arcadis EAM Solution Benefits & ROI

Arcadis has undertaken asset management implementations with public and private organisations in the United Kingdom, Europe and the United States by using services available via the Cloud Support offering.

Arcadis' Cloud Support services and Industry Solutions have been independently benchmarked as world-leading, enabling proven benefits:

- 25-30% cost reduction in maintenance and renewals
- 7-fold improvements in workforce safety
- 40%+ increase in asset performance and reliability compared to traditional Enterprise Asset Management (EAM) solutions.
- In addition to these quantifiable benefits, our clients benefit from significant improvements in their ability to implement continuous improvement in their Asset Management capabilities:
- Manage all assets in a common system platform
- Maintain your entire asset register, preventive maintenance regimes, correct maintenance, labour workforce and asset-related supply chain within a single system with interrelated modules, applications and reports giving a single source of truth and management points for your asset management capability
- Drive best practice industry processes
- IBM Maximo is the best-in-class asset management system as rated by the independent Gartner as part of a report that ranked Maximo against other EAM systems highlighting industry-specific functionality, high customer satisfaction and a mature community of EAM support resources and partners (Arcadis)



Figure 1 Gartner Quadrant Results

- Speed – have an EAM system available in days
- Our rapid deployment ability means a secure environment with the base Maximo platform installed can be provisioned within 4 hours
- Scalability – scale to an unlimited number of users
- The only real limitation on the number of users that can utilise Maximo is linked to the number of users being paid for by the Buyer (licences), our elastic infrastructure approach to hosting allows the platform to be scaled as required to provide optimum system performance
- Solution cost – reduce total cost of ownership
- Operational costs are reduced as Buyers are only paying for the service rather than expensive IT labour and costs associated with managing software instances
- Minimal high up-front cost – Opex (not Capex)
- Minimal high up-front capex costs which used to be typical of introducing major IT solutions to an organisation, costs are now evenly spread over time as opex costs
- Reduced Buyer responsibility and risk (system installation and support)
- Arcadis is responsible for system installation and support, the Buyer can utilise the system safely in the knowledge that the stability and up-time of the solution are being managed by Arcadis
- Arcadis will manage application and infrastructure (deployment, support, maintenance)
- Our Support Division will manage all aspects related to deployment, support and maintenance of both the underlying hosted infrastructure platform and the software itself (excluding any system development which can be leveraged through our Cloud Support offering)
- Configurable platform – adapt to changing business requirements
- Optimised system performance through our cloud-hosted environment

A key differentiating benefit of Maximo as a software platform is its ability to be easily configured to meet client needs e.g. ability to create workflows to manage business processes and amend screen layouts.

Administrative users can be granted such privileges via the inbuilt security model. Arcadis can also provide advanced configurations or developments via our Cloud Support offering.

Additionally, Arcadis Maximo Enterprise Asset Management Cloud Software is capable of integration with Arcadis' Enterprise Decision Analytics cloud software (EDA). EDA is a decision support platform that empowers asset-intensive organisations to better understand their asset portfolios and enables optimal, data-driven decisions that balance and prioritise complex factors including whole life costing, asset and portfolio modelling, and optimal asset investment planning.

The Arcadis Support Division offers a comprehensive range of services targeted at optimising the performance of Asset and Management solutions through their expertise in managing hosted infrastructure.

# |

## Main Features

The main product features available within our Arcadis Maximo Enterprise Asset Management Cloud Software, are:

- **Asset Management**  
Manage assets and make investment decisions to repair or replace throughout the asset lifecycle
- **Work Management**  
Manage both planned and unplanned work activities, from initial request through completion and recording of actuals (resource utilisation)
- **Service Management**  
Define service offerings, establish service level agreements (SLAs), proactively monitor service level delivery and implement escalation procedures
- **Contract Management**  
Gain complete support for purchase, lease, rental, warranty, labour rate, software, master, blanket and user-defined contracts
- **Inventory Management**  
Know the details of asset-related inventory and its usage including what, when, where, how many and how valuable
- **Procurement Management**  
Support all phases of enterprise-wide procurement such as direct purchasing and inventory replenishment
- **Mobile Ready**  
With Maximo Everyplace you can access the solution wherever you have connectivity from a smartphone or other supported mobile device, gaining real-time visibility into your operations
- **Operational Reporting**  
Access to a large variety of reports spanning all applications including analysis, drill down, hierarchical and graphical reports with over 100 out-of-the-box reports available, there is also the ability to leverage Business Intelligence (BI) reporting through Cognos BI which comes as a product with Maximo (for assistance in enabling Cognos BI, please refer to our SCS offering)

## Service Management

The philosophy of Arcadis Customer Support is to build and maintain a collaborative and open relationship with Buyers and harness this to provide an unparalleled support offering which is fully aligned with the evolving needs of our clients.

### Clients of the Arcadis Support Services benefit through:

- Improved system performance through our Arcadis cloud-hosted environment (Cloud Software offering)
- Access to industry expert consultants in Asset & Safety management to shape and drive ongoing continuous improvements and evolution of Asset and Safety management capability (via our Cloud Support offering)
- Access to highly skilled technical skills to ensure ongoing optimisation of the infrastructure and applications estate (via our Cloud Support offering)
- Our Service Management offering can be procured at 3 levels based on the level of SaaS offering required. You choose to opt for (basic, advanced, world-class). The distinction between these levels centres around the number of service hours' allocated available each month as follows:

## Basic support service:

- Included free of charge as part of the basic Cloud Software solution
- Includes 20 support hours to be utilised for the resolution of incidents or service requests
- Services provided above and beyond the allocated hours will be charged as per the SFIA rate card  
Additional services are also available through our Cloud Support offering

## Advanced support service:

- Refer to the Pricing Document for current pricing
- Includes 40 support hours to be utilised for the resolution of incidents or service requests
- Services provided above and beyond the allocated hours will be charged as per the SFIA rate card
- Additional services are also available through our Cloud Support offering

## World Class support service:

- Refer to the Pricing Document for current pricing
- Includes 60 support hours to be utilised for the resolution of incidents or service requests
- Services provided above and beyond the allocated hours will be charged as per the SFIA rate card
- Additional services are also available through our Cloud Support offering

## Key features of our service management offering are:

- Business Process Analysis and Improvement Consultancy (Cloud Support offering only)
- Ability to analyse a client's use of the system(s) being supported and relate it to business processes, to define improvements to accelerate them to world-class
- Asset Management System Support

We can support a range of packaged systems solutions covering the full spectrum of solution sets (i.e. core EAM; Mobility solutions and associated app stores; middleware integration platforms; data warehouse/BI toolsets) and integrations to external or 3rd party systems such as ERP (Enterprise Resource Planning) and Financial systems

## Service Desk Management

- Utilising and adhering to the ITIL Framework for Service Management, service desk management is provided through best-in-class Zendesk software; Arcadis provides a tailored support package which can include full level 1,2,3 support provision; integration with client IT support process and software; and comprehensive, transparent service management reporting

## Incident Management

- Full incident management, incorporating automated adherence to service level agreements and unavailability of service credit models
- Service Management and Reporting
- Comprehensive and transparent service management reporting

## Service Monitoring

- Proactive monitoring and reporting of all aspects of the service provision from software to infrastructure, aim of identifying potential problems before they become incidents
- Change Management (Cloud Support offering only)
- Identification and management of changes to the production environment, including full regression testing to ensure solution stability

## Configuration Management

- The identification and management of upgrades and patches required to maintain a fully supported software environment

## Information Security Management & Governance

- Arcadis ensures all service provisions are compliant with the Client security management protocols and standards; Arcadis policy; and international security management standards are in line with ISO27001 and ISO27002:2013
- Systems Accounting and Auditing
- Proactive tracking and central storage of log files, as well as the ability to provide auditable evidence of any problems or incidents

## Business Continuity/ Service Recovery

- Robust hosted solutions aimed at providing 99.9% uptime at all times, ability to failover and restore service within minutes rather than hours
- Automated Load, Performance and Functional Testing (Cloud Support offering only)
- Utilising enhanced toolsets to provide automated testing and analytics

## On-Call Support

- A support centre that is on-call for your business needs
- Software Licence Compliance Model
- Ability to monitor and report on licence compliance for software managed by Arcadis
- Training Support and Delivery (Cloud Support offering only)
- Ability to provide day-to-day training and support to clients (outside of major programmes) for all solutions and products supported by Arcadis

## AI-Enhanced Enterprise Asset Management Solution

- Arcadis integrates its AI Studio approach with IBM Maximo Application Suite to deliver intelligent asset management capabilities across the asset lifecycle. This is achieved through the use of native IBM AI functionality, predictive analytics, Maximo Assist and generative AI, combined with Arcadis' industry expertise and proven EAM solutions and services. Where appropriate, Arcadis can implement Model Context Protocol (MCP) services and enterprise knowledge repositories to provide Large Language Models (LLMs) with secure, governed access to asset information, work management records, technical documentation and operational data held within Maximo and connected business systems.  
This enables AI-driven agents to deliver more accurate, contextual and auditable insights while maintaining robust security, governance and human oversight. Solutions are implemented within a secure and scalable framework that ensures AI augments human expertise and delivers measurable operational, maintenance and asset performance outcomes.

## Service Level Agreements and Available Credits

| Priority          | Definition                                                                                               | Response Time   | Target Resolution Time | Measured           |
|-------------------|----------------------------------------------------------------------------------------------------------|-----------------|------------------------|--------------------|
| <b>P1: urgent</b> | A critical fault leading to the software being unavailable for use or a major security or privacy breach | 15 minutes      | 4 business hours       | Core support hours |
| <b>P2: high</b>   | Fault impacting core functionality critical to the user's task or that is impacting a subset of users.   | 30 minutes      | 8 business hours       | Core support hours |
| <b>P3: normal</b> | Fault not critical to the completion of the user's task, but where no reasonable workaround is possible  | 1 business hour | 24 business hours      | Core support hours |

|                |                                                                                                       |                  |                   |              |
|----------------|-------------------------------------------------------------------------------------------------------|------------------|-------------------|--------------|
| <b>P4: low</b> | Fault not critical to the completion of the user's task and where a reasonable workaround is possible | 8 business hours | By agreement only | Not measured |
|----------------|-------------------------------------------------------------------------------------------------------|------------------|-------------------|--------------|

*Table 2 Arcadis Service Level Agreement Priorities*

An outage will be deemed to have started from the receipt of an incident relating to the outage to the Provider's Service Desk. The following are the targets for response to incidents based on priority. The response made within the response target will guarantee a resolution or plan to resolve being made available to the Buyer.

The Buyer will determine, acting reasonably, into which severity category an issue falls. The Provider shall use reasonable endeavours to respond to requests for Support Services promptly.

To provision an Out of Hours – On Call support facility, the Provider will ensure a support agent is available to respond to P1 calls. The support agents will be rotated to cover the agreed SLA.

A forward schedule will be made internally. All incidents will route to the Provider's out-of-hours support agent through automated call forwarding that is triggered from the Provider's service desk solution even if a call is raised via email (once it has the correct severity).

The Provider shall ensure that its response to a request for Support Services shall include the following information to the extent such information is relevant to the request: an acknowledgement of receipt of the request, where practicable an initial diagnosis concerning any reported error, and an anticipated timetable for action to the request.

The Provider shall use all reasonable endeavours to resolve issues raised through the Support Services promptly, and in any case under the SLA severity definitions above. Actual support hours for any incident depend on support party availability for an affected service component as defined in the working assumptions below, as well as on the agreed severity of the incident.

The table below indicates the monthly service credits available to the Buyer should the SLA's detailed in section 3.1 not be achieved resulting in a reduction in application availability. The unavailability caused by an outage as a result of an incident or problem will be logged and tracked in Zendesk with the total length of time the unavailability occurred recorded. This empirical data will be used to calculate any service credits for the month. We would require a review of these within 3 months once we have taken the service into support and gone beyond an agreed grace period with the Buyer.

| <b>Application Availability (%)</b> | <b>Service credit (% of subscription)</b> |
|-------------------------------------|-------------------------------------------|
| <b>99.9</b>                         | 0%                                        |
| <b>99.98 - 98.90</b>                | 1%                                        |
| <b>98.89 - 97.90</b>                | 2%                                        |
| <b>97.89 - 96.90</b>                | 3%                                        |
| <b>96.89 - 95.90</b>                | 4%                                        |
| <b>95.89 - 94.90</b>                | 5%                                        |
| <b>94.89 - 93.90</b>                | 6%                                        |
| <b>93.89 - 92.90</b>                | 7%                                        |
| <b>92.89 - 91.90</b>                | 8%                                        |
| <b>91.89 - 90.90</b>                | 9%                                        |
| <b>90.89 - 89.90</b>                | 9%                                        |
| <b>&lt;89.90</b>                    | 10%                                       |

## Infrastructure Management

Our cloud infrastructure is deployed utilising either Amazon Web Services (G-Cloud certified) or IBM SoftLayer (G-Cloud certified). Our infrastructure consultants are highly skilled with experience in managing virtual cloud environments as well as Maximo software deployments meaning single instance optimised environments for Buyers can be provisioned within 4 hours.

Utilising AWS or SoftLayer creates a shared responsibility model between Arcadis and the infrastructure provider. The provider will operate, manage and control the components from the host operating system and virtualisation layer down to the physical security of the facilities in which the services operate. In turn, Arcadis assumes responsibility for and management of the guest operating system (including updates and security patches), other associated application software (Maximo), as well as the configuration of the provided security group firewall. This approach ensures that any hosted environment that is provisioned can be done so to meet the requirements of Buyers utilising G-Cloud services.

As part of our Arcadis Support offering, we provide capacity management of any hosted infrastructure and applications that we provide to clients. Under this approach, we proactively monitor the performance of both aspects and report on them to the client through the monthly service management meetings. This allows informed decisions to be taken with regard to when to upscale or downscale environments to keep in line with the workload demand placed on them.

The services applied to the management of this infrastructure are:

- Patch Management
- Security Management
- Systems Monitoring
- Capacity Planning
- Incident Management
- Operational Testing
- Disaster Recovery
- Service Desk

All of the above services are managed by a skilled hosting manager who also acts as an application support manager to the benefit of our clients as they receive a more complete insight into the total operations of the application under support.

## Use Case – DLR Metro: Docklands Light Railway (Keolis Amey Docklands)

The DLR Metro Production environment and Test environments are hosted within a single VPC (Virtual Private Cloud) which is segregated into 2 Public/Private Subnets for both Production and Test respectively. Internet-facing components such as the IBM HTTP Server (IHS) is hosted within the Public subnets while content hosting aspects of the infrastructure related to DLR Metro such as Application Servers and Database Servers are secured in the Private subnet away from direct external access. Each of the Public/Private environment pairs is hosted within a different Amazon Availability Zone, eu-west1-a for Production and eu-west1-b for Test. An availability zone approximately equates to a physical hosting data centre from which the design leverages an element of fault tolerance. Should the Production availability zone become inaccessible for a significant period, then a failover capability to the Test availability zone can be utilised to maintain service availability.

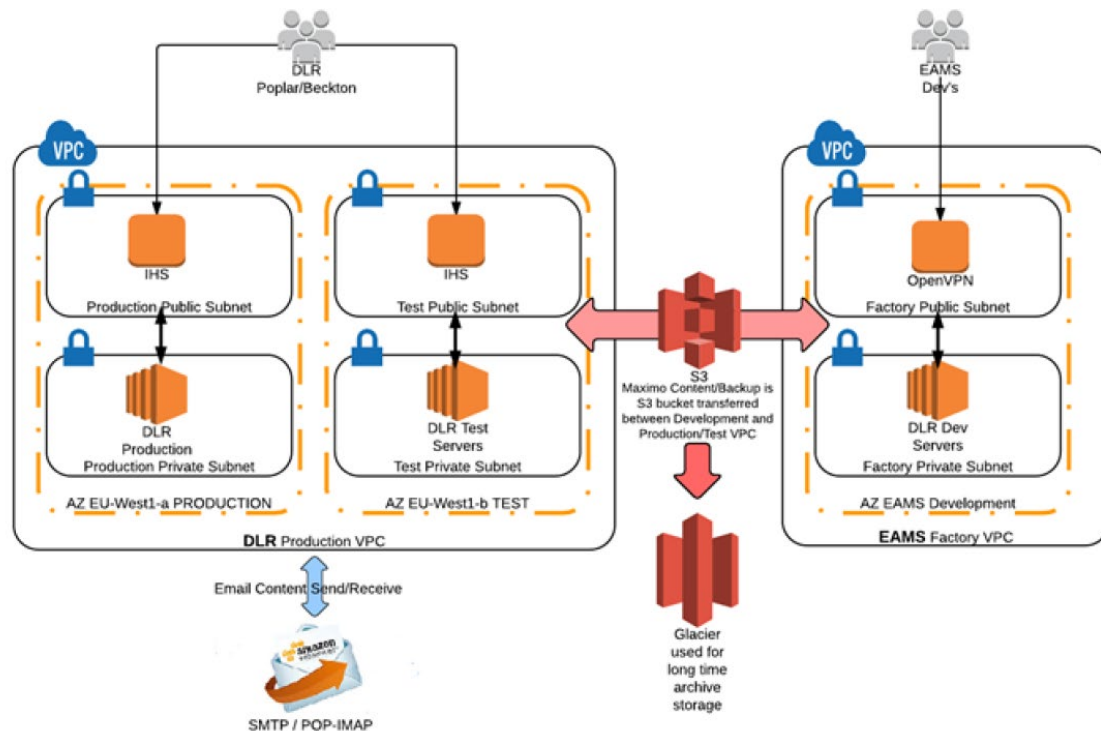


Figure 2 Docklands Light Raile Infrastructure Schematic

The Cloud Security Guidance published by CESG lists 14 essential principles to consider when implementing cloud services. Arcadis works closely with our infrastructure providers to ensure that the required levels of security and information governance are provided in all of our hosted solutions. Arcadis ensures all service provisions are compliant with the Client security management protocols and standards; Arcadis policy; and international security management standards in line with ISO27001 and ISO27002:2013.

### Principle 1: Data in transit protection

- Buyer data transiting networks should be adequately protected against tampering (integrity) and eavesdropping (confidentiality).
- Network protection (denying your attacker access to intercept data)
- Encryption (denying your attacker the ability to read data)

### Principle 2: Asset protection and resilience

- Buyer data, and the assets storing or processing it, should be protected against physical tampering, loss, damage or seizure.
- Physical location and legal jurisdiction
- Data centre security
- Data at rest protection
- Data sanitisation
- Equipment disposal
- Physical resilience and availability

### Principle 3: Separation between customers

- Separation between different Buyers of the service prevents one malicious or compromised Buyer from affecting the service or data of another.
- SaaS services built upon IaaS offerings may inherit some of the separation properties of the underlying IaaS infrastructure

## **Principle 4: Governance framework**

- Arcadis has a security governance framework that coordinates and directs our overall approach to the management of the service and information within it.

## **Principle 5: Operational security**

- Arcadis has processes and procedures in place to ensure the operational security of the service. The service is operated and managed securely to impede, detect or prevent attacks against it.
- Configuration and change management
- Vulnerability management
- Protective monitoring
- Incident management

## **Principle 6: Personnel security**

- All Arcadis employees will undergo an appropriate level of security screening for those individuals with access to Buyer's information or with the ability to affect their service.

## **Principle 7: Secure development**

- Services are designed and developed to identify and mitigate threats to their security. Services which are not designed securely may be vulnerable to security issues which could compromise Buyer data, cause loss of service or enable other malicious activity.

## **Principle 8: Supply chain security**

- Arcadis ensures that its supply chain and any 3rd party entities satisfactorily support all of the security principles that the service claims to implement.

## **Principle 9: Secure Buyer management**

- Upon mutual agreement, Buyers would be provided with the tools required to help them securely manage their services. Management interfaces and procedures are a vital security barrier in preventing unauthorised people from accessing and altering Buyers' resources, applications and data.
- Authentication of Buyers to management interfaces and within support channels Separation and access control within management interfaces

## **Principle 10: Identity and authentication**

- Buyer and service provider access to all service interfaces is constrained to authenticated and authorised individuals only. All cloud services will have some requirement to identify and authenticate users wishing to access service interfaces. Weak authentication or access control may allow unauthorised changes to a Buyer's service, theft or modification of data, or denial of service.

## **Principle 11: External interface protection**

- All external or less trusted interfaces of the service should be identified and have appropriate protections to defend against attacks through them. If an interface is exposed to Buyers or outsiders and it is not sufficiently robust, then it could be subverted by attackers to gain access to the service or data within it. If the interfaces exposed include private interfaces (such as management interfaces) then the impact may be more significant.

## **Principle 12: Secure service administration**

- The methods used by Arcadis administrators to manage the operational service are designed to mitigate any risk of exploitation that could undermine the security of the service.

## Principle 13: Audit information provision to Buyers

- Upon mutual agreement, Buyers would be provided with the audit records they need to monitor access to their service and the data held within it.

## Principle 14: Secure use of the service by the Buyer

- Arcadis will always ensure that, access to and use of the service for the Buyer and Arcadis
- Arcadis administrators remain secure
- Additional reference Resources
- Amazon Web Services
- AWS Compliance
- AWS Security Centre
- IBM SoftLayer
- SoftLayer Compliance
- Arcadis Information Security Governance Policy available upon request

# Case Study

## GTR Mainline Rolling Stock Maximo

### Background:

In mid-2016 Arcadis was selected by Govia Thameslink Railway (GTR), the UK's largest Train Operating Company (TOC), to undertake a major new programme to implement our Mainline Rolling Stock Industry solution across their four brands: Gatwick Express, Great Northern, Southern and Thameslink.

This program consolidates several GTR legacy systems onto Arcadis' industry Mainline Rolling Stock Solution, itself built on the leading Asset Management platform IBM Maximo.

### Why Arcadis:

The Arcadis implementation team consists of experienced Chartered Engineers and Consultants who understand the Rail Industry and FM and work on-site with the core GTR team and the local Maintenance Depot Teams to ensure a successful implementation and roll-out of the new group-wide solution.

### The Solution:

Our Mainline Industry Solution includes best practice business processes, established asset hierarchies, unique & fully integrated applications such as Fleet Availability Management (FAM), a mature suite of 'smart mobile' applications and hundreds of predefined reports that drive reliability and efficiency.

### Outcomes and benefits:

GTR is currently facing challenges, but the Arcadis Mainline solution will bring lasting benefits to GTR and its customers by improving rolling stock reliability and increasing business efficiency as we have done for all our other customers.

In addition to the implementation of Mainline, Arcadis will provide hosting and support over the lifetime of the GTR franchise, and we look forward to building a long-term relationship with this important new client by delivering continuous improvement and value whilst supporting them on their 'Journey to World Class Engineering Asset Management'.

## About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people, active in over 70 countries that generate €3.3 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

[www.arcadis.com](http://www.arcadis.com)