



**Report on Environmental Systems
Research Institute, Inc.'s Esri Managed
Cloud Services (EMCS) Advanced System
Relevant to Security, Availability, and
Confidentiality Throughout the Period
January 1, 2022 to December 31, 2022**

SOC 3® - SOC for Service Organizations: Trust Services Criteria for
General Use Report



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Section 1

Independent Service Auditor's Report

Independent Service Auditor’s Report

To: Environmental Systems Research Institute, Inc. (“Esri”)

Scope

We have examined Esri’s accompanying assertion titled “Assertion of Environmental Systems Research Institute, Inc. Management” (assertion) that the controls within the Esri Managed Cloud Services (EMCS) Advanced System (system) were effective throughout the period January 1, 2022 to December 31, 2022, to provide reasonable assurance that Esri’s service commitments and system requirements were achieved based on the trust services criteria relevant to security, availability, and confidentiality (applicable trust services criteria) set forth in TSP Section 100, *2017 Trust Services Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy* (AICPA, *Trust Services Criteria*).

Certain complementary user entity controls that are suitably designed and operating effectively are necessary, along with controls at Esri, to achieve Esri’s service commitments and system requirements based on the applicable trust services criteria. Our examination did not include such complementary user entity controls and we have not evaluated the suitability of the design or operating effectiveness of such controls.

Esri uses subservice organizations to provide data center colocation services and security as a service services. Complementary subservice organization controls that are suitably designed and operating effectively are necessary, along with controls at Esri, to achieve Esri’s service commitments and system requirements based on the applicable trust services criteria. Our examination did not include the services provided by the subservice organizations, and we have not evaluated the suitability of the design or operating effectiveness of such complementary subservice organization controls.

Service Organization’s Responsibilities

Esri is responsible for its service commitments and system requirements and for designing, implementing, and operating effective controls within the system to provide reasonable assurance that Esri’s service commitments and system requirements were achieved. Esri has also provided the accompanying assertion about the effectiveness of controls within the system. When preparing its assertion, Esri is responsible for selecting, and identifying in its assertion, the applicable trust service criteria and for having a reasonable basis for its assertion by performing an assessment of the effectiveness of the controls within the system.

Service Auditor’s Responsibilities

Our responsibility is to express an opinion, based on our examination, on whether management’s assertion that controls within the system were effective throughout the period to provide reasonable assurance that the service organization’s service commitments and system requirements were achieved based on the applicable trust services criteria. Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. Those standards require that we plan and perform our examination to obtain reasonable assurance about whether management’s assertion is fairly stated, in all material respects. We believe that the evidence we obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

Our examination included:

- Obtaining an understanding of the system and the service organization’s service commitments and system requirements.

- Assessing the risks that controls were not effective to achieve Esri's service commitments and system requirements based on the applicable trust services criteria.
- Performing procedures to obtain evidence about whether controls within the system were effective to achieve Esri's service commitments and system requirements based on the applicable trust services criteria.

Our examination also included performing such other procedures as we considered necessary in the circumstances.

We are required to be independent and to meet our other ethical responsibilities in accordance with relevant ethical requirements relating to the examination engagement.

Inherent Limitations

There are inherent limitations in the effectiveness of any system of internal control, including the possibility of human error and the circumvention of controls.

Because of their nature, controls may not always operate effectively to provide reasonable assurance that the service organization's service commitments and system requirements were achieved based on the applicable trust services criteria. Also, the projection to the future of any conclusions about the effectiveness of controls is subject to the risk that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

Opinion

In our opinion, management's assertion that the controls within the EMCS Advanced System were effective throughout the period January 1, 2022 to December 31, 2022, to provide reasonable assurance that Esri's service commitments and system requirements were achieved based on the applicable trust services criteria if complementary subservice organization controls and complementary user entity controls assumed in the design of Esri's controls operated effectively throughout that period is fairly stated, in all material respects.

Coalfire Controls LLC

Westminster, Colorado
January 25, 2023

Section 2

Assertion of Environmental Systems Research Institute, Inc. Management



Assertion of Environmental Systems Research Institute, Inc. (“Esri”) Management

We are responsible for designing, implementing, operating and maintaining effective controls within Esri’s Esri Managed Cloud Services (EMCS) Advanced System (system) throughout the period January 1, 2022 to December 31, 2022, to provide reasonable assurance that Esri’s service commitments and system requirements relevant to security, availability, and confidentiality were achieved. Our description of the boundaries of the system is presented in attachment A and identifies the aspects of the system covered by our assertion.

Complementary user entity controls that are suitably designed and operating effectively are necessary, along with controls at Esri, to achieve Esri’s service commitments and system requirements based on the applicable trust services criteria.

Esri uses subservice organizations for data center colocation services and security as a service services. Complementary subservice organization controls that are suitably designed and operating effectively are necessary, along with controls at Esri, to achieve Esri’s service commitments and system requirements based on the applicable trust services criteria.

We have performed an evaluation of the effectiveness of the controls within the system throughout the period January 1, 2022 to December 31, 2022, to provide reasonable assurance that Esri’s service commitments and system requirements were achieved based on the trust services criteria relevant to security, availability, and confidentiality (applicable trust services criteria) set forth in TSP Section 100, *2017 Trust Services Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy (AICPA, Trust Services Criteria)* if complementary subservice organization controls and complementary user entity controls assumed in the design of Esri’s controls operated effectively throughout that period. Esri’s objectives for the system in applying the applicable trust services criteria are embodied in its service commitments and system requirements relevant to the applicable trust services criteria. The principal service commitments and system requirements related to the applicable trust services criteria are presented in attachment B.

There are inherent limitations in any system of internal control, including the possibility of human error and the circumvention of controls. Because of these inherent limitations, a service organization may achieve reasonable, but not absolute, assurance that its service commitments and system requirements are achieved.

We assert that the controls within the system were effective throughout the period January 1, 2022 to December 31, 2022, to provide reasonable assurance that Esri’s service commitments and system requirements were achieved based on the applicable trust services criteria.

Environmental Systems Research Institute, Inc.

Attachment A

Environmental Systems Research Institute, Inc.'s Description of the Boundaries of Its Esri Managed Cloud Services (EMCS) Advanced System

Type of Services Provided

The Environmental Systems Research Institute, Inc. (“Esri” or “the Company”) Managed Cloud Services (EMCS) Advanced system (“EMCS Advanced”) provides a managed cloud environment for storing and publishing geospatial data content (e.g., vector maps, associated attribute data) and hosting custom applications. It can also serve as a portal for collaboration, self-service mapping, and web-based data editing workflows. This offering applies a modern web Geographic Information System (GIS) pattern with secure and reliable web services that support applications and access points. It provides the capability to host and publish content that can be consumed by GIS applications, such as ArcGIS Online, ArcGIS Desktop clients, and other GIS web and mobile applications.

There are three common patterns that a customer may choose to deploy within the EMCS Advanced environment:

1. **Content:** The Content deployment pattern provides a managed cloud environment for storing and publishing geospatial data content such as vector maps and associated attribute data. It provides the capability to host and publish content that can be consumed by GIS applications, such as ArcGIS Online, ArcGIS Desktop clients, and other GIS web and mobile applications.
2. **Application:** The Application deployment pattern stores and publishes geospatial data content and provides a managed cloud environment for hosting custom applications that consume GIS content.
3. **WebGIS:** The WebGIS deployment pattern provides a managed cloud environment that includes a portal for collaboration and self-service mapping as well as storing and publishing geospatial data content. This offering applies a modern enterprise GIS solution with secure and reliable web services that support applications and access points.

EMCS Advanced infrastructure is designed and architected to meet customer-specific requirements, such as the number of users of the system and requirements for high availability.

The boundaries of the system in this section of the report details EMCS Advanced. Any other Company services are not within the scope of this report.

The Boundaries of the System Used to Provide the Services

The boundaries of EMCS Advanced are the specific aspects of the Company’s infrastructure, software, people, procedures, and data necessary to provide its services and that directly support the services provided to customers. Any infrastructure, software, people, procedures, and data that indirectly support the services provided to customers are not included within the boundaries of EMCS Advanced.

The components that directly support the services provided to customers are described in the subsections below.

Infrastructure

EMCS Advanced consists of a scalable cloud infrastructure created to host ArcGIS-powered geospatial solutions in a secure cloud environment. EMCS Advanced enables organizations to leverage the benefits of ArcGIS in the cloud, so they can securely develop and deploy their GIS applications and data assets for access by their user community.

The EMCS Advanced information system capabilities are implemented around the following four information system layers:

1. **Application Infrastructure Layer (platform-as-a-service [PaaS] or software-as-a-service [SaaS]):** The foundational component of this layer includes ArcGIS Enterprise, which provides tools that allow for mapping and spatial reasoning, so users can explore data and share location-based insights. In addition to ArcGIS Enterprise, the file geodatabase and enterprise geodatabase are containers that hold a collection of datasets either stored as folders in a file system or in a relational database. These are the core application components that an organization uses to develop and deploy its geospatial solutions in the cloud.
2. **Customer Infrastructure Layer:** These components are provided by the customer and can include customer client applications, eAuthentication Security Assertion Markup Language (SAML) 2.0 Identity Provider (IdP), and secure domain name systems (DNSs).
3. **Security Infrastructure or Software Layer:** This layer includes the central management and administration functions of EMCS Advanced, as well as threat management, including intrusion detection systems (IDSs) and security information and event management (SIEM).
4. **Cloud Infrastructure Layer (infrastructure-as-a-service [IaaS]):** This layer is provided by AWS and Microsoft Azure and includes the physical infrastructure and hypervisor.

Software

ArcGIS Enterprise is a key component of the Commercial Off the Shelf (COTS) Esri ArcGIS platform. It provides organizations with a complete GIS that runs on-premises or in the cloud and works with the organization's enterprise systems and policies. ArcGIS Enterprise is a full-featured mapping and analytics platform that includes a powerful GIS server plus a dedicated web-based GIS infrastructure to organize and share GIS.

ArcGIS Enterprise consists of four software components:

1. **ArcGIS Server:** Powers mapping and analysis in GIS.
2. **Portal for ArcGIS:** Enables customers to create, share, and manage maps, applications, and data with collaborators in the organization.
3. **ArcGIS Data Store:** Provides data storage for hosting and federated servers used with a customer's deployment.
4. **ArcGIS Web Adapter:** Integrates ArcGIS Server and Portal for ArcGIS with a customer's existing web servers and the organization's security infrastructure.

Software consists of the programs and software that support EMCS Advanced (operating systems, middleware, and utilities). People

The Company develops, manages, and secures EMCS Advanced Functional roles are established for individuals and teams supporting EMCS Advanced. Access is restricted based on the defined role of the individual.

Procedures

Procedures include the automated and manual procedures involved in the operation of EMCS Advanced. Procedures are developed and documented by the respective teams for a variety of processes, including those relating to product management, engineering, technical operations, security, information technology (IT), and HR. These procedures are drafted in alignment with the overall information security policies and are updated and approved as necessary for changes in the business, but no less than annually.

Data

Data refers to transaction streams, files, data stores, tables, and output used or processed by the Company. Through the application programming interface (API), the customer or end-user defines and controls the data they load into and store in the EMCS Advanced production network. Once stored in the environment, the data is accessed remotely from customer systems via the Internet.

Esri supports EMCS Advanced customers with the management, security, and availability of their geospatial content. Acceptable data formats are those compatible with Esri COTS software. EMCS Advanced customers are expected to evaluate the EMCS Advanced security controls and determine whether the system has adequate security in place to meet their specific data classification and information system security needs.

Customer data is managed, processed, and stored in accordance with relevant data protection and other regulations and with specific requirements formally established in client contracts.

Attachment B

Principal Service Commitments and System Requirements

Principal Service Commitments and System Requirements

Commitments are declarations made by management to customers regarding the performance of EMCS Advanced. Commitments are communicated in master service agreements (MSAs) and privacy statements.

System requirements are specifications regarding how EMCS Advanced should function to meet the Company’s principal commitments to user entities. System requirements are specified in the Company’s policies and procedures.

The Company’s principal service commitments and system requirements related to EMCS Advanced include the following:

Trust Services Category	Service Commitments	System Requirements
Security	<ul style="list-style-type: none"> • Esri will implement, use, and maintain reasonable administrative, technical, and physical safeguards to protect data and guard against accidental loss, destruction, alteration, or unauthorized access. 	<ul style="list-style-type: none"> • Employee provisioning and deprovisioning standards • Logical access controls, such as user IDs and passwords to access systems • Protection of data in transit • Risk assessment and risk mitigation standards • Threat prevention • Infrastructure security
Availability	<ul style="list-style-type: none"> • Esri will use commercially reasonable efforts to make the covered services available. 	<ul style="list-style-type: none"> • System backups • System monitoring
Confidentiality	<ul style="list-style-type: none"> • Esri will treat customer data as confidential in accordance with terms of customer orders for products and services. • Esri will not access, use, or disclose customer data without written permission except as necessary to provide the services to the customer. 	<ul style="list-style-type: none"> • Data classification • Data handling standards • Internal confidentiality standards • Information sharing standards