



AVEVA™ Unified Engineering on AVEVA™ Connect

Service Description

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AVEVA Unified Engineering on AVEVA Connect

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Document Purpose and Audience

Document Purpose

This document describes the functional digital services of AVEVA Unified Engineering on AVEVA Connect, including its key features and limitations, as well as the operational parameters.

This document must be read in conjunction with the AVEVA Connect service description which describes the common services available for all functional digital services on AVEVA Connect. Any additions or exceptions to the common services are described in this document.

This document is neither an agreement, nor is a supporting document to the Product Schedules that outline the service commitment available on *the AVEVA site* <https://www.aveva.com/en/legal/>.

Audience

The audience of this document are IT departments and business decision makers who are investigating whether to leverage AVEVA cloud offers in their own IT landscape.

About AVEVA Unified Engineering

AVEVA Unified Engineering helps you control and accelerate the iterative design and engineering process within one integrated set of products.

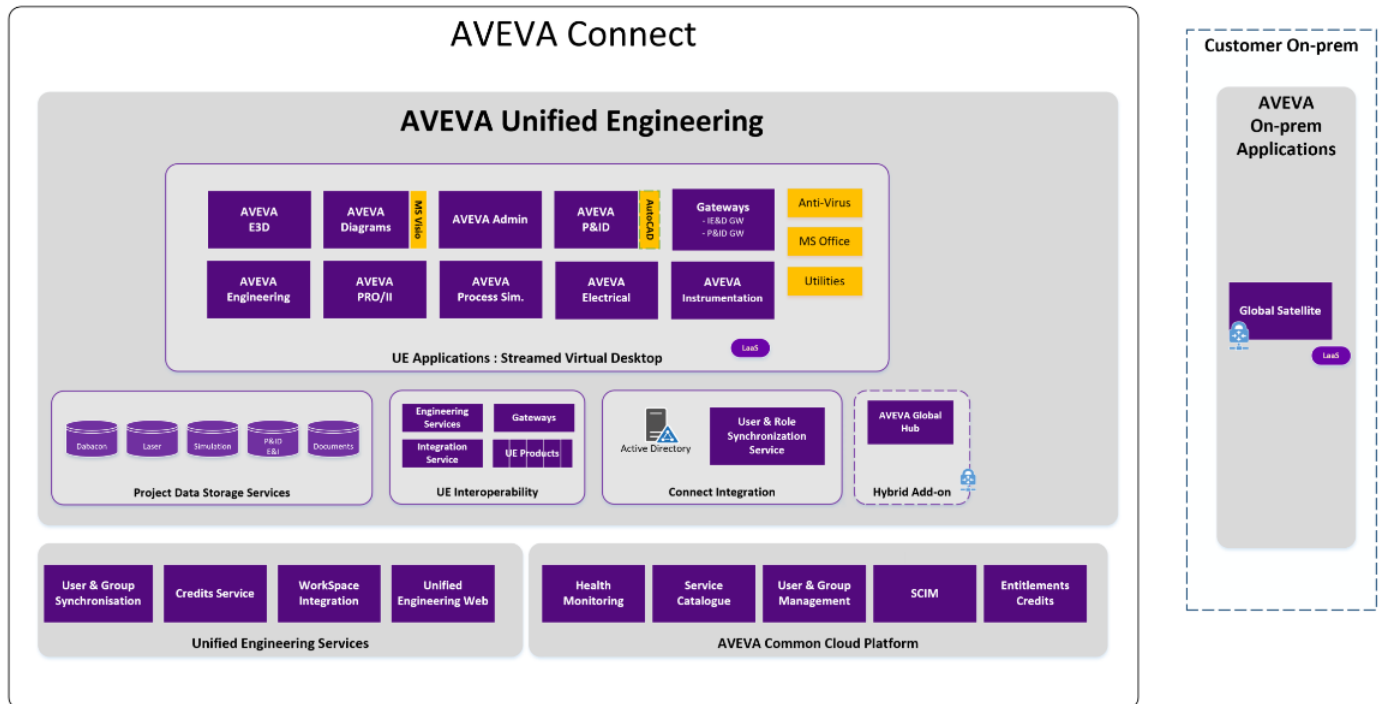
AVEVA Unified Engineering has been created for customers who are investing in capital assets and wish to maintain control and visibility of their digital asset, ensure visibility to on-going engineering and design progress and deliverable.

- **Delivered on AVEVA Connect:** AVEVA Unified Engineering applications are securely accessible over the Internet via AVEVA Connect, integrated with the AWS WorkSpaces client for Windows, to deliver a streamed virtual desktop environment to end users.
- **Integrated AVEVA Unified Engineering virtual desktop:** AVEVA Unified Engineering includes a suite of the Windows desktop engineering and design authoring tools and simulation applications available from AVEVA along with any necessary Microsoft Office applications as an integrated virtual desktop solution. This enables users to collaborate on a centralized cloud-based digital asset.
- **Complete control over networking environment:** AVEVA Unified Engineering is provided to customers on a private instance basis, where each customer's environment is provisioned using dedicated cloud infrastructure that isolates their resources and data, and restricts administrative access to AVEVA named team members.

- **Collaboration:** To support collaboration on a shared digital asset, highly resilient dedicated cloud infrastructure is used for the storage of application data on either AVEVA proprietary fileserver based Dabacon storage or relational data in Microsoft SQL Server databases. AVEVA Unified Engineering server applications running on virtualized server infrastructure enable the interoperability and data sharing between the Unified Engineering desktop applications.

Architecture

The illustration below shows the AVEVA Unified Engineering shared services, dedicated infrastructure, and supporting back-end services making up a single AVEVA Unified Engineering environment, including optional add-ons extending the architecture for an on-premises hybrid model.



The service architecture adheres to a separation of concerns principle where each AVEVA server component is deployed on dedicated virtual infrastructure instance(s). The associated client software needs to be located on accessible virtual desktops delivered using the WorkSpaces service.

WorkSpaces for AVEVA Unified Engineering Application Desktops

AVEVA Unified Engineering on AVEVA Connect delivers the end-user applications using an advanced streaming technology from Amazon Web Services (AWS) called WorkSpaces.

WorkSpaces provides a robust, secure, and managed cloud-based virtual desktop experience to meet the demanding needs of end-users accessing the AVEVA Unified Engineering applications, while ensuring optimal performance due to the high-bandwidth, low-latency product requirements.

For AVEVA Unified Engineering applications such as E3D that have specific requirements for a GPU processor to provide the best user experience, AWS provides a specific high-end Workspace graphics types that will be allocated to E3D users.

All AVEVA Unified Engineering WorkSpaces are created and managed using a custom golden image which represents the blueprint for the managed and maintained software installation and configurations of the AVEVA Unified Engineering version the customer has subscribed to.

This golden image is used as part of the automated provisioning and allocation of a standard WorkSpace instance for all new AVEVA Unified Engineering users. The provisioning process creates a dedicated desktop that is optimized to deliver the approved AVEVA Unified Engineering applications within the virtualized customer infrastructure on the AVEVA cloud.

Two WorkSpaces specifications are used:

- Graphics WorkSpaces with Plus bundle (8 CPU, 15GB RAM, 1 vGPU) for 3D user type
- Power WorkSpaces with Plus bundle (4 CPU, 16GB RAM) for all other AVEVA Unified Engineering user type

WorkSpaces Plus bundles include Microsoft Windows licensing, Microsoft Office Professional, Trend Micro Security and Utilities (IE11, Firefox)

Applications Included in AVEVA Unified Engineering

In addition to improvements to the underlying cloud platform, each AVEVA Unified Engineering on AVEVA Connect release provides updates and additions to the AVEVA Unified Engineering applications that are included with each release, and consequently the additional functionality from each application.

All other features and functionality are the same.

- **AVEVA Unified Engineering**
 - AVEVA E3D (AVEVA E3D 2.1 or AVEVA E3D 3.1)

NOTE: Since AVEVA Unified Engineering provides customers with the option to choose either AVEVA E3D 2 or 3 series (but not both in the same environment), a request must be made for the specific version choice before deployment to allow the selected version to be configured.

If not specified, the default deployment is E3D 3 series.

If you wish to use both E3D versions, you can request a separate environment deployment to support the different E3D series version, which will be separated using AVEVA Connect folders.

- AVEVA Engineering 15.4
- AVEVA Electrical and Instrumentation (SQL) 12.2
- AVEVA PRO/II Simulation 2020.1
- AVEVA Process Simulation 5.1
- AVEVA Diagrams 14.1
- AVEVA P&ID 12.2

Service Overview

The AVEVA Unified Engineering on AVEVA Connect managed service provides access to geographically dispersed users, often including multiple collaborating EPCs, with an on-demand desktop which is optimized for design and engineering tasks using AVEVA Unified Engineering applications all operating on a shared digital asset.

AVEVA Unified Engineering is made up of three components:

1. Standard Platform Services

When AVEVA Unified Engineering service is enabled in the AVEVA Connect account, by default one standard environment is deployed. This environment is set to a chosen region data center (see section Regional Cloud Availability). In addition, this default service includes integration of the AVEVA Unified Engineering application and management of project data flow for user collaboration with a 500 GB storage space. This project storage can be extended to 2 TB without any further cost via a customer support request. (Refer to the *Add-On Services* topic below for incremental addition to the environment, project data, and laser data storage.)

2. User Services

AVEVA Unified Engineering users are added to groups in AVEVA Connect to enable access to AVEVA Unified Engineering solution. The AVEVA Connect roles assigned to these groups provide the user with access to one of the four services via their allocated AVEVA Unified Engineering virtual desktop and appropriate type.

NOTE: You can choose either AVEVA E3D 2 or 3 series (but not both in the same environment). Make a request for the specific version choice before deployment to allow the selected version to be configured.

If not specified, the default deployment is E3D 3 series.

If you wish to use both E3D versions, you can request a separate environment deployment to support the different E3D series version, which will be separated using AVEVA Connect folders.

Services ->	1D	2D	Simulation	3D
Access To ->	AVEVA Engineering	1D application + AVEVA Electrical, AVEVA Instrumentation, AVEVA P&ID, AVEVA Diagrams	1D, 2D applications + AVEVA PRO/II, AVEVA Process Simulation	All + AVEVA E3D

3. Add-On Services

Add-on services can be optionally added on top of the standard platform if needed, and include:

- Incremental AVEVA Unified Engineering environment
 - Additional AVEVA Unified Engineering environment for users in a new region. For example, if your default base is in Europe, but your projects and teams are in APAC, then a second environment can be provisioned in APAC to ensure good performance for the local users.
 - Projects using different E3D versions. E3D 2.1 and E3D 3.1 require a separate AVEVA Unified Engineering environment for each version.
- Global Services: Enabling synchronization of project data between on-premises and cloud using the AVEVA Global technology for hybrid use-case scenarios. (For more information, see the documentation *AVEVA Unified Engineering Global Add-on Service Guide*.)
- Additional project data storage of 2TB
- Optional laser data storage of 1 TB or 5 TB
- Use of AVEVA Engage on-premises to enable interactive visualization of their 3D project models.

To ensure correct AVEVA Unified Engineering configuration for a customer, the initial setup and ongoing management of the project configuration can be coordinated through the AVEVA service delivery teams. See topic *Additional Services* on page 13 for more information.

Service Limitations

Limitations

- Users do not have Windows administrative access to the WorkSpaces desktop environment.
- The AVEVA Unified Engineering service can be accessed on Windows devices only via the WorkSpaces desktop client.
- The Graphics Workspace has a limitation of single monitor display. Dual displays are not supported.
- Global Services Add-On Limitations: Refer to the *AVEVA Unified Engineering Global Add-On Service Guide* for more information on limitations.
- .NET customization of the AVEVA Unified Engineering application user interface is not supported. The use of PML1 and PML2 customization are supported.
- Out-of-the-box integration with on-premises deployments of AVEVA applications and databases, or other vendor products either on-premises or cloud based, is not supported.
- Where available in AVEVA Unified Engineering desktop, 3rd-party products are for specific use with AVEVA products. 3rd-party products will be upgraded only when required by AVEVA products (as part of the standard release cadence). There is no guarantee that 3rd-party product tools not required by AVEVA products will persist from one release of AVEVA Unified Engineering to the next.
- A daily scheduled maintenance windows and downtime of up to two hours is required to carry out fully consistent back-ups and OS maintenance operations during which time users cannot access the service.

Regional Cloud Availability

AVEVA Unified Engineering is accessed by end-users via the public Internet using HTTPS/TLS and PCoIP (secure transport mechanisms).

For each deployment of AVEVA Unified Engineering standard platform, you can choose one of five of the public cloud regions:

1. Americas - Northern Virginia
2. Americas - Oregon
3. EMEA - Ireland
4. APAC - Singapore
5. APAC - Sydney

NOTE: AVEVA Unified Engineering is not available from any China cloud regions as these are autonomous facilities operated in isolation from cloud regions outside of China. Cross-region replication and operations between China regions and outside of China are not supported.

Users inside China can expect high network latency when connection to any web services outside of China. As such, AVEVA Unified Engineering cannot formally support users inside China.

Deployment Details

- **Dedicated cloud infrastructure in a region:** For each AVEVA Unified Engineering environment, the AVEVA Cloud Dev Ops team deploys a dedicated cloud infrastructure in the region of choice. The infrastructure includes the project storage and user directory services where all AVEVA Unified Engineering project data and user access details are stored, including back-ups and any replication within the region.
- **Shared multi-tenant micro-services:** Delivery of AVEVA Unified Engineering on AVEVA Connect is enabled using a series of shared multi-tenant micro- services made available centrally in the **eu-west-1 (Ireland)** region. These services provide a single-sign-on experience for users and enable integration with AVEVA Connect services such as Credits and Licensing. Data held is limited to metadata only.

NOTE: If a customer chooses to use add-on services where the data is synchronized from their AVEVA Unified Engineering on AVEVA Connect environment to an on-premises location, data may cross regional boundaries and is therefore no longer covered by the standard SLA.

Network, Bandwidth, Client and Other Software Requirements

Requirements for Standard Platform Services

- **Minimum Network and Bandwidth Requirements**

WorkSpaces client applications rely on access to resources in the cloud and require a stable internet connection which provides at least **1 Mbps** of download bandwidth for power users and at least **3.0 Mbps** of download bandwidth for graphics users. If your device has an intermittent or unstable connection to the network or internet, the WorkSpaces client application may report an issue and disconnect. To improve network stability, hardwire your computer to the network.

For the best performance, the round trip time (RTT) from the client's network to the region where the WorkSpaces reside should be less than 100ms. When using AVEVA 3D applications it is recommended to have a round trip time of no more than 100 ms.

- If the RTT is between 100ms and 200ms, the user can access the WorkSpace, but performance is affected.
- If the RTT is between 200ms and 375ms, the performance is degraded.
- If the RTT exceeds 375ms, the WorkSpaces client connection is terminated.

To check the RTT to the various regions from your location, use the *Amazon WorkSpaces Connection Health Check* <https://clients.amazonworkspaces.com/Health.html> and refer to the *Regional Cloud Availability* on page 8 of this document.

AVEVA recommends the use of quality of service (QoS) to meet the traffic requirements and reduce packet loss and latency on the network.

- **Supported Clients**

Using WorkSpaces requires a native client application to be installed on the end-user device to enable a user to securely connect to their personal WorkSpaces. Each WorkSpaces user is granted a unique login to a persistent desktop environment as part of the integration with the AVEVA Connect account.

Supported Client: Windows Client Application (Microsoft Windows 7, Windows 8, or Windows 10.)

- **Firewall Port Requirements**

The following firewall ports are required for the WorkSpaces Windows client application:

- TCP Ports 443

This port is used for client application updates, registration, and authentication. This port must be open to a range of Amazon IP address for the region where AVEVA Unified Engineering service is delivered from.

- UDP and TCP Port 4172

This port is used for streaming the WorkSpace desktop and health checks and must be open to the Amazon PCoIP Gateway IP address ranges and health check servers in the region that the WorkSpace is in.

If required, most firewalls can support a configuration to only allow access to these ports from specific IP addresses/ranges on a corporate LAN, and not open these ports to all IP addresses.

- **Proxy Server Configuration Requirements**

If the client network requires use of a proxy server to access the Internet, you can enable the WorkSpaces client application to use a proxy for HTTPS (port 443) traffic. Proxy with authentication is not currently supported.

Requirements For Global Services Add-On

- Secure site-to-site VPN tunnels between customer on-premises network and AVEVA Unified Engineering on AVEVA Connect (tunnels are deployed as part of the managed service provided by AVEVA).
- Installation and configuration of AVEVA Global satellites on-premises in customer network domain:
 - For configuration modifications of on-premises Customer Gateway Device (VPN endpoint), AVEVA will provide configuration changes as part of the managed service
 - For configuration modifications of on-premises firewalls to permit site-to-site communications, AVEVA will provide the IP addresses of the AVEVA Unified Engineering on Connect global server
 - Alignment of AVEVA product versions on-premises with those deployed in AVEVA Unified Engineering on AVEVA Connect in strict accordance with AVEVA Unified Engineering on AVEVA Connect update cadence (approximately 4 times per year).
- Actual network requirements will vary depending on the amount of data updates and frequency of updates.

Third Party Software Licenses

To provide customers with standard ready-to-go desktop services for users, additional software packages are required for some AVEVA Unified Engineering applications.

The following software licenses are included as part of AVEVA Unified Engineering as needed:

- AVEVA software as required for all services
- Microsoft Office Professional is bundled with all WorkSpace instances
- Microsoft Visio Standard 2016 for AVEVA Diagrams – Diagrams Module. Microsoft Visio is only made available on AVEVA Unified Engineering Workspaces upon prior agreement with AVEVA.

Where required, the customer must provide the following software licenses for use:

- Autodesk AutoCAD (The customer should purchase stand-alone/single-user AutoCAD licenses directly from Autodesk.)

Security Standards and Compliance

AVEVA Unified Engineering implements the following to ensure a high level of security.

Administrative Access

To enable the secure management and configuration of AVEVA Unified Engineering applications and services, authorized members of the AVEVA Services and Cloud DevOps teams use Microsoft Remote Desktop Protocol (RDP) to access specific cloud server instances. This access is granted to named users via a bastion server which acts as a jump server allowing authorized AVEVA team members (Cloud DevOps team) to establish a second RDP session to jump onto the relevant private subnet server(s) to carry out administration and configuration tasks.

WorkSpaces Security

Registration Security

As part of the AVEVA Unified Engineering managed service, each new WorkSpaces is provisioned for a user as part of the self-service user and role management functionality of AVEVA Connect, and the integrated Unified Engineering services. User identity is managed by AVEVA Connect and the integrated AVEVA Unified Engineering single sign-on (SSO), eliminating the need for a separate registration process.

Microsoft Active Directory for User Identity

Integration of the AVEVA Connect user identify management services and the dedicated Microsoft Active Directory instance within each customer's AVEVA Unified Engineering environment is used to control user access, privileges and permissions across the AVEVA Unified Engineering service. This aligns with the standard identity repository on Windows-based networks. Microsoft Active Directory is a highly available managed service provided by the cloud service provider.

Access Control

To control user access, for example if the user leaves the company or for some other reason needs to be blocked permanently or temporarily, the user account can be disabled by the process of AVEVA Connect account disabling/removal.

WorkSpaces Network Encryption

The device running the WorkSpaces client will use the same two ports for connectivity to the WorkSpaces service. Traffic on both ports is encrypted.

The WorkSpaces client uses HTTPS over port 443 for all authentication and session-related information, and leverages TLS 1.2 for encrypting traffic.

The WorkSpaces client uses port 4172 (PcoIP) with both TCP and UDP for encrypted pixel streaming to a given WorkSpaces and for network health checks. Pixel streaming traffic leverages AES-256-bit encryption for communication between the desktop client and the AWS WorkSpaces service, via the streaming gateway.

High Availability, Business Continuity, and Data Protection

To ensure high availability, business continuity, and data protection, AVEVA Unified Engineering follows the time intervals given below.

- **Data Storage:** The AVEVA Unified Engineering applications use either the file-based AVEVA Dabacon platform, proprietary simulation data storage, or relational data managed in Microsoft SQL Server.
- **Data Backup**

- Backups are created on a daily schedule.
- All backup data is stored in the same cloud region as the cloud service. All backups are held on secondary storage which is replicated across multiple data centers within the same region.

NOTE: Production environment data backup retention exceeds the requirement to meet the defined recovery targets and service levels.

- **User Profile and Data**

- When a WorkSpaces client is provisioned, a separate volume (D:) is created for the user and all profile data is committed to these separate volumes (D:\Users\%username%). As the volume is a virtual disk which remains attached to the user's WorkSpaces client, there is no overhead on the logon process. This also makes WorkSpaces persistent to the user; a 1-to-1 relationship. As such, there is no roaming of profiles between WorkSpaces.
- The user volume is protected by snapshotting it every 12 hours. This snapshot is independent of the OS volume (C:) and when a WorkSpaces client is rebuilt, a new user volume is created from the latest snapshot only.

- **Disaster Recovery**

In a disaster situation, infrastructure and services shall be provisioned to an alternate, unaffected location. Data shall be restored from backup or retrieved from replicas where available for the specific solution and service.

Cloud Service	Recovery Point Objective (RPO)
AVEVA Unified Engineering	24 hours

Cloud Service	Recovery Time Objective (RTO)
AVEVA Unified Engineering	48 hours

Service Level Commitment

AVEVA Cloud Services are governed by the Cloud Service Agreement available on the AVEVA Legal site *AVEVA Cloud Services Agreement* <https://www.aveva.com/en/legal/cloud-services/>.

The *Service Level Commitment for AVEVA Cloud Services* <https://www.aveva.com/en/legal/trust/servicelevel/> is a supporting document that describes the service level commitment for all available AVEVA Cloud Services.

Exclusions

- Infrastructure Availability: The Service Level Agreement (SLA) does not include non-availability due to scheduled or emergency maintenance of the application services or AVEVA Connect.
- Service levels are applicable to production environments only.

- For production environments employing the Global Services Add-On for hybrid project-sharing, the service level commitment is not applicable to services dependent either directly or indirectly on on-premises processes or configurations. For example, ensuring the availability of the site-to-site VPN for connectivity or interruptions in service as a result of changes to any on-premises component (infrastructure, networking, compute, firewalls, routing etc.)

Decommission of the Service

Upon request and confirmation from the customer to decommission the service, AVEVA initiates the following:

- Deletion of all customer data held in databases, file storage and back-ups
- Removal of all user WorkSpaces and any data stored on user drives
- Removal of all cloud infrastructure and serverless resources associated with the customer tenant

A backup of the Dabacon databases, last full SQL Server back-up and file-based data may be provided (for an additional fee) upon request from the customer as part of the request for decommissioning.

Additional Services

AVEVA offers an extensive collection of Customer Success Accelerators, well-defined, outcome-based services that are designed to ensure you realize the maximum benefit from your investment in our software through all the lifecycle stages of your software application.

For more details, visit the *Customer Success Accelerators site*
<https://www.aveva.com/en/support/customer-first/success-accelerators/>.