# Atera:
# Network Connectivity Guidelines

## Introduction

Atera is the in situ solution for subcellular profiling of the whole transcriptome. Atera, combined with customizable panels, visualization software, and easy-to-follow workflow is a powerful in situ profiling platform. This Technical Note provides network connectivity guidelines for the Atera and describes:

- remote performance monitoring
- data collected by 10x Genomics
- live remote support
- security considerations
- additional connectivity details

The Atera instrument has a highly interactive user interface paired with network connectivity, intended to provide a seamless user experience along with efficient remote performance monitoring to minimize instrument downtime.

If any unexpected instrument errors occur, the user-controlled remote support access to the instrument allows 10x Genomics Support team to quickly troubleshoot the errors. See the following sections for detailed information.

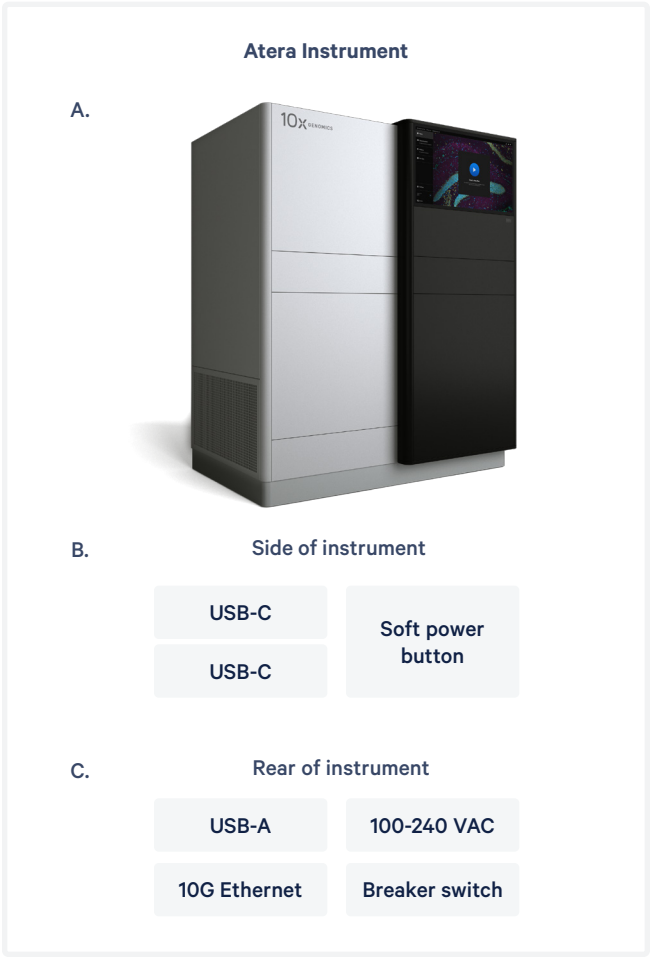



**Figure 1.** Atera instrument contains a user-friendly interface **(A)** with ports at the side **(B)** and rear **(C)** of the instrument to aid in network connectivity and instrument operation.

## Remote Performance Monitoring

Monitoring the performance of the Atera helps ensure that the instrument is performing optimally and maximizes instrument uptime. This also gives 10x Genomics the ability to respond quickly and troubleshoot any issues that may occur. While you focus on processing samples and data collection, the instrument will proactively collect performance data to allow the 10x Support Team to address any potential instrument downtime.

### Data Collected by 10x Genomics

No experimental output data — such as cell segmentation images or transcript matrices — are collected by 10x Genomics unless authorized by the user. Remote data collection is limited to the following items:

- Calibration data
- Instrument operation and performance logs
- Optical, mechanical, and fluidic system logs
- Computer system logs

Users may upload additional diagnostic bundles for additional troubleshooting and this feature can be disabled by a local administrator account.

## Live Support

Should an unexpected error occur with the Atera, 10x Genomics is committed to quickly troubleshooting the problem. An optional, customer-controlled live support feature allows you to invite a 10x Genomics representative to remotely access the instrument and observe the problem in real-time. The live support option is completely customer controlled and can be locally enabled or disabled by the customer at any time by using the instrument settings menu.

## Atera Security Considerations

| Topic | Atera Feature |
|---|---|
| Data NOT collected | Experimental output data, personal health information<br>All primary analysis and sample data processing is done locally on instrument |
| Required inbound ports | No open inbound ports required |
| Data center encryption at rest | Encrypted at rest with AES-256 |
| Instrument data encryption at rest | Encrypted at rest with AES-XTS-PLAIN64 and 512-bit key |
| Data encryption in transit | Encrypted with TLS 1.3 |
| Secret storage | Uses TPM-backed encryption for local storage of AWS/Azure/SMB and user account credentials |
| Access Limitations | Live support is opt-in and auto shuts off after 2 or 7 days |
| Instrument firewall | Blocks all inbound connections over ethernet |
| On instrument restrictions | The instrument functions as an appliance with a kiosk interface |
| Operating System | Linux-based OS |
| Updates & Security Patches | Provided quarterly directly to the instrument by 10x Genomics |

**Table 1.** Security considerations for the Atera instrument.

## Detailed whitelisting of hosts and ports

The table below lists the complete set of hosts, ports and protocols in use by the Atera instrument. We highly recommend using the DNS entries in your firewall rules instead of the IP addresses as the IP addresses may be updated from time to time.

| Application | Protocol | Source IP:Port | Destination IP:Port |
|---|---|---|---|
| **Required** | | | |
| 10x Telemetry & Updates | TCP | <Atera IP>:* | envoy.10xgenomics.com:443 |
| Tailscale Login, Log & Control | TCP | <Atera IP>:* | login.tailscale.com:443<br>controlplane.tailscale.com :443<br>log.tailscale.com:443<br>log.tailscale.io:443 |
| Tailscale DERP | TCP | <Atera IP>:* | derp1f.tailscale.com:443<br>derp1g.tailscale.com:443<br>derp1h.tailscale.com:443 |
| NTP | UDP | <Atera IP>:123 | pool.ntp.org:123 |
| **Customer controlled storage location** | | | |
| Azure blob storage | TCP | <Atera IP>:* | <storageaccount>.blob.core.windows.net:443 |
| AWS S3 | TCP | <Atera IP>:* | <bucket>.s3.<region>.amazonaws.com:443 |

**Table 2:** Complete set of hosts, ports and protocols in use by the Atera instrument.

### Local Connectivity

The Atera instrument is designed to integrate into the customer's local network without the need to join a specific local domain. It is also shipped as a complete software system, without the option to install additional software or security solutions.

### User Accounts and Access Management

The Atera instrument utilizes a dedicated user management system to control instrument permissions and access. At least one account must be created on instrument to allow access. Permissions are managed through 2 predefined roles:

- Administrator: Holds full access to UI settings, user management, and system configurations.
- Operator: Restricted to executing and managing their own experiments.

The system allows for a number of configurable security policies, including password complexity settings, password expiry and history settings, and auto-logout options. The system also maintains a user-accessible audit log of experiments, settings modifications and user events.

For questions about LDAP/AD-based access, please contact customer-security@10xgenomics.com.

### Storage Requirements

For estimates on how much storage to prepare for an Atera installation, please consult the site preparation guide. Network storage or cloud endpoint storage is recommended for Atera. The instrument supports SMB shares, as well as AWS and Azure endpoints and supports Ethernet connections up to 10G.

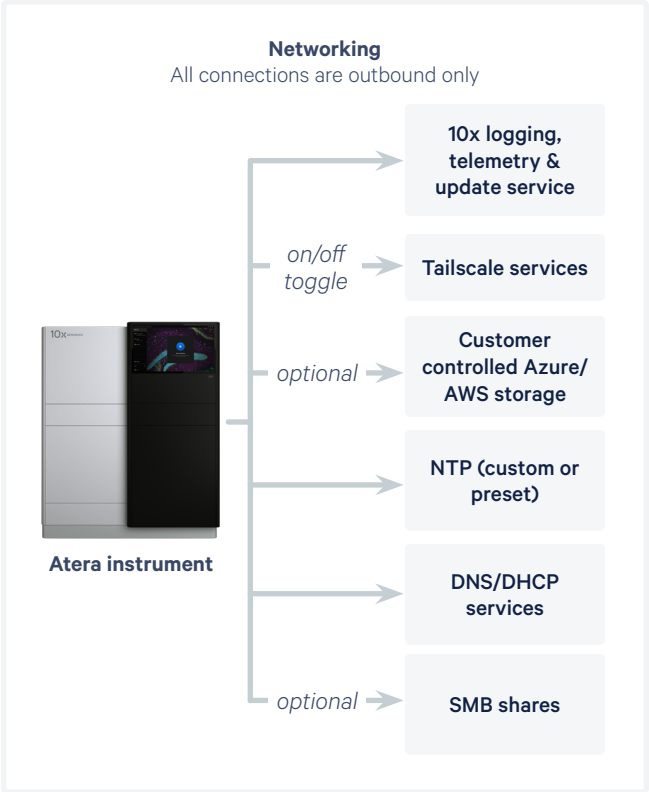
### NTP Configuration

The Atera instrument is configured to synchronize with the pool.ntp.org timeservers in order to maintain accurate time. If this endpoint is blocked, a custom NTP server must be configured in the user interface on the instrument.

### Proxy Support

The Atera instrument supports connections through HTTP proxies using a URL and specified port number. Connections to 10x Cloud are mTLS encrypted, therefore proxies with TLS interception are not supported.

## Network Diagram




## Additional Technical Details

### Outbound Connectivity

To provide remote monitoring and remote support, Atera solely requires outbound connectivity to 10x Genomics systems. No inbound ports need to be opened on your institution's firewall.

For remote support, 10x uses Tailscale, a modern, secure end-to-end encrypted tunnel built on WireGuard. For more information about Tailscale's security and compatibility with your network, please refer to https://tailscale.com/security/ and https://tailscale.com/kb/1230/tailnet-lock-whitepaper/.

Given the outbound-only requirements, it is possible that Tailscale is already supported on your network. To confirm correct Tailscale operation, please run the following command on your network on a computer separate from the Atera instrument:

```
$ tailscale netcheck
```

A successful Tailscale connection should produce a similar result to the one shown below:

```
$ tailscale netcheck

Report:
        * UDP: true
        * IPv4: yes, 64.125.32.42:61871
        * IPv6: no, but OS has support
        * MappingVariesByDestIP: true
        * HairPinning: false
        * PortMapping:
        * Nearest DERP: New York City
        * DERP latency:
                - nyc: 68.3ms   (New York City)
```

An unsuccessful Tailscale connection should produce a similar result to the one shown below:

```
$ tailscale netcheck

Report:
        * UDP: false
        * IPv4: (no addr found)
        * IPv6: no, unavailable in OS
        * MappingVariesByDestIP:
        * HairPinning:
        * PortMapping:
        * Nearest DERP: unknown (no response
to latency probes)
```

Tailscale provides additional details on how the service operates at https://tailscale.com/kb/1082/firewall-ports/.

If additional help with Tailscale is needed, please contact customer-security@10xgenomics.com.

## Document Revision Summary

| | |
|---|---|
| **Document Number** | CG001695 |
| **Title** | Atera: Network Connectivity Guidelines |
| **Revision** | Rev A |
| **Revision Date** | April 2026 |
| **Description of Changes** | Initial release of document |

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