

Illumina DRAGEN Server

Site Prep Guide

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Introduction

This guide provides specifications and guidelines for preparing your site for the installation and operation of the Illumina® DRAGEN™ Server, including the following:

- ▶ Space requirements
- ▶ Electrical requirements
- ▶ Environmental considerations
- ▶ Computing requirements
- ▶ Network considerations

Additional Resources

The Illumina DRAGEN Bio-IT Platform support page on the Illumina Support Site provides links to the User Guide, Installation Guide, and other resources for the DRAGEN workflow. The User Guide provides instructions for the DRAGEN software, including configuration and use of the DRAGEN Server.

Delivery and Installation

The DRAGEN Server is unpacked by the customer and is customer installable. The space must be ready before delivery.

The DRAGEN Server and accessories are shipped in one box. Use the following dimensions to determine transport, setup, and storage plans.

Measurement	Dimension
Height	41.0 cm (16.0 in)
Width	85.1 cm (33.5 in)
Depth	62.2 cm (24.5 in)
Weight	33.1 kg (73 lbs)

The box contains the DRAGEN Server and the following components:

- ▶ Power cords, country-specific (2)
- ▶ Bezel
- ▶ Keys for bezel
- ▶ SFP+ SR transceivers (2)
- ▶ DRAGEN License USB Key
- ▶ Rack mount rails
- ▶ Certificate of Conformity (signed and dated)

Facility Requirements

Use the following specifications to set up space for the DRAGEN Server.

Table 1 Equipment Dimensions and Weight

Measurement	Dimension
Height	8.73 cm (3.44 in)
Width	44.40 cm (17.49 in)
Depth	68.40 cm (26.92 in)
Weight	30.40 kg (67.02 lbs) 2.5 in hard drive system

Space and Placement Requirements

The DRAGEN Server requires a unit size of 2U in a rack. Position the DRAGEN Server to allow for the following:

- ▶ Power cord connection to two power outlets and quick disconnection.
- ▶ Proper ventilation. See *Environmental Considerations on page 4*.
- ▶ Service access.
- ▶ Two standard power sockets within 10 ft (3 m) of the DRAGEN Server.

Electrical Requirements

Table 2 Power Specifications

Power	Specification
Power Supply Rating	1100 Watts @100%
Input Voltage	100–240 V AC, 50/60 Hz, autoranging

Receptacles

Your facility must be wired with the following receptacles:

- ▶ For 100–110 Volts AC—Two 10 amp grounded, dedicated lines with proper voltage and electrical ground.
- ▶ For 220–240 Volts AC—Two 6 amp grounded lines with proper voltage and electrical ground.
- ▶ North America and Japan—Receptacle: NEMA 5-15
- ▶ If the voltage fluctuates more than 10%, power line regulators are required.

Protective Earth



The instrument has a connection to protective earth through the enclosure. The safety ground on the power cord returns protective earth to a safe reference. The protective earth connection on the power cord must be in good working condition when using this device.

Power Cords

The DRAGEN Server has international standard IEC 60320 C13 receptacles and is shipped with two region/country-specific power cords.

Hazardous voltages are removed from the DRAGEN Server only when the power cords are disconnected from the AC power source.

To obtain equivalent receptacles or power cords that comply with local standards, consult a third-party supplier such as Interpower Corporation (www.interpower.com).



CAUTION

Never use an extension cord to connect the DRAGEN Server to a power supply.

Fuses

The DRAGEN Server contains no user-replaceable fuses.

Uninterruptible Power Supply

Illumina recommends using a user-supplied uninterruptible power supply (UPS).

Illumina is not responsible for data loss caused by interrupted power, regardless of whether the DRAGEN Server is connected to a UPS. Standard generator-backed power is often not uninterruptible, so a brief power outage occurs before power resumes. This power outage interrupts analysis and data transfer.

The following table shows the UPS Recommendations for the DRAGEN Server.

Table 3 UPS Recommendations

Specification	APC Model # SMX1500RMJ2U (Japan)	APC Model # SMX1500RM2UNC (North America)	APC Model # SMX1500RMI2UNC (International)
Maximum Output Capacity	1200 W 1500 VA	1200 W 1440 VA	1200 W 1500 VA
Input Voltage (nominal)	100 VAC	120 VAC	230 VAC
Input Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Input Connection	NEMA 5-15P	NEMA 5-15P	IEC-320 C14 Schuko CEE7/EU1-16P British BS1363A
Built-In UPS Output Receptacles	Six NEMA 5 - 15 R (Battery backup)	Eight NEMA 5-15R (Battery Backup)	Eight IEC 320 C13 (Battery Backup)
Dimensions	8.9 cm × 43.2 cm × 46.8 cm	8.9 cm × 43.1 cm × 49.0 cm (3.5 in × 17.0 in × 19.3 in)	8.9 cm × 43.2 cm × 49.0 cm
Rack Height	2U	2U	2U
Weight	27.8 kg	24.8 kg (54.6 lbs)	24.8 kg
Typical Run Time (@ 500 W Average Draw)	19.5 minutes	22.9 minutes	22.9 minutes

Product Certifications and Compliance

DRAGEN Server is certified to the following standards:

- ▶ Argentina
 - ▶ IRAM

- ▶ Australia
 - ▶ RCM
- ▶ China
 - ▶ CCC—GB4943.1-2011, GB9254-2008, GB17625.1-2003
- ▶ European Union
 - ▶ CE
 - ▶ RoHS
- ▶ India
 - ▶ BIS
- ▶ Korea
 - ▶ KCC—Clause 3, Article 58-2 of Radio Waves Act
- ▶ Mexico
 - ▶ NOM
- ▶ Russia
 - ▶ EAC
- ▶ South Africa
 - ▶ SABS
- ▶ Taiwan
 - ▶ BSMI—CNS14336-1, CNS13438
- ▶ United States
 - ▶ FCC Class A
 - ▶ UL 60950

Environmental Considerations

Element	Specification
Temperature	Maintain a server room temperature of 19°C to 25°C (22°C ±3°C). This temperature is the operating temperature of the DRAGEN Server. Do not allow the ambient temperature to vary by more than ±2°C.
Humidity	Maintain a noncondensing relative humidity between 20–80%.
Altitude	Locate the DRAGEN Server at an altitude below 2,000 meters (6,500 ft.).
Air Quality	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit. NOTE: The ISO Class 8 condition applies to data center environments only. This air filtration requirement does not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor.
Ventilation	Consult your facilities department for ventilation requirements sufficient for the level of heat output expected from the DRAGEN Server.

Heat Output

Measured Power	Thermal Output
1100 Watts	4100 BTU/hr

Noise Output

Acoustical Performance	Noise Output (dB)	Distance from Server
Idle @ 25°C Ambient	36	1 meter (3.3 feet)
Max. Loading @ 35°C Ambient	<75	1 meter (3.3 feet)

A measurement of ≤ 70 dB is within the level of a normal conversation at a distance of approximately 1 meter (3.3 feet).

Network Considerations

DRAGEN Server setup requires the following network components:

- ▶ The default gateway address
- ▶ The DNS Server IP address
- ▶ Two IP addresses
- ▶ A subnet mask for the IP addresses

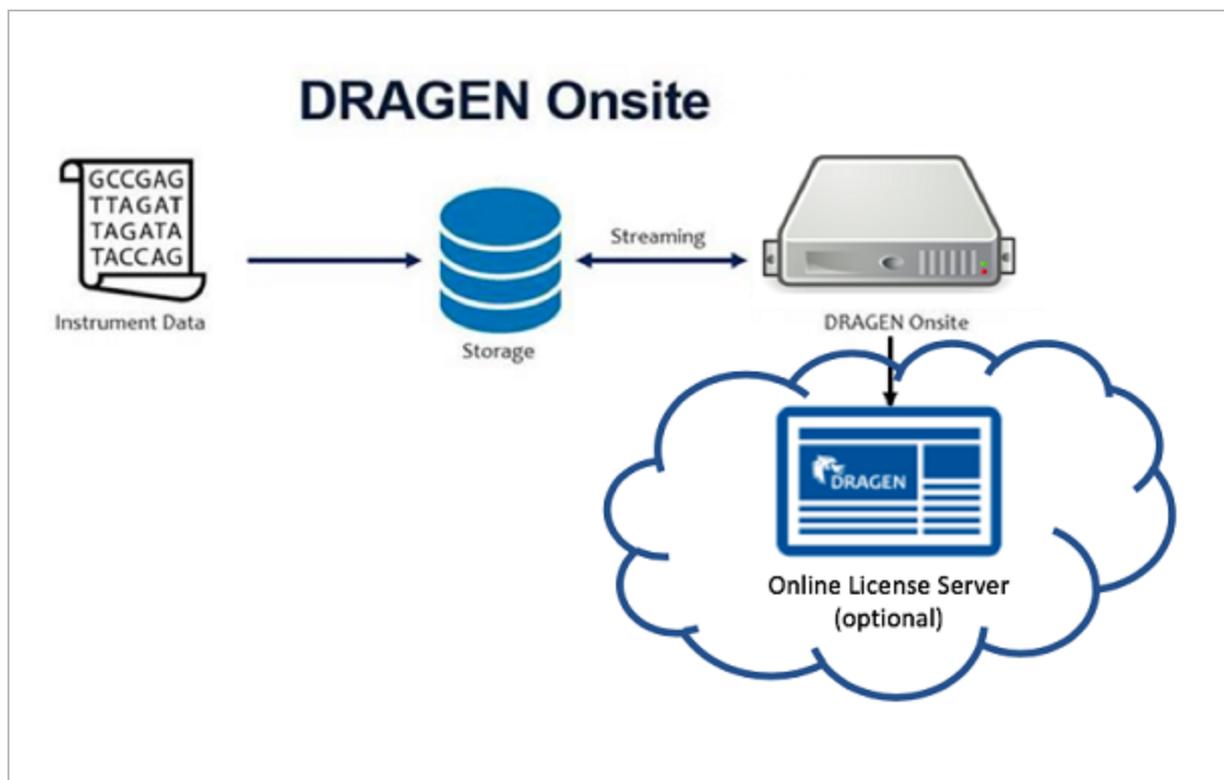
The following operations require an external internet connection using TCP on ports 80 and 443:

- ▶ Updating the software.
- ▶ Remote assistance from Illumina Technical Support.
- ▶ Access to license server

General networking support includes the following requirements and recommendations:

- ▶ Recommended bandwidth for a connection is as follows.
 - ▶ 10 Gb per second connection to storage
 - ▶ >100 MB connection to the iDRAC
- ▶ Network equipment such as switches should have a minimum of 10 gigabits per second.
- ▶ Calculate the total capacity of the workload on each network switch. The number of connected instruments and ancillary equipment, such as a printer, can impact capacity.
- ▶ For 10 Gb connections, cables must be SFP+ twinax or Short Range multimode fiber LC 50/125 OM3
- ▶ For iDRAC access, RJ45 connectivity is needed.
- ▶ Ask your IT professional to review network maintenance activities for potential compatibility risks with the system.

Figure 1 Dragen Topology



Security and Safety

The DRAGEN Server is designed to resist attacks. Supplement this design with:

- ▶ A secure internal LAN to prevent the distribution of data to all web browsers.
- ▶ Limited access to the DRAGEN Server to prevent the removal of the RAID controller, disk drives, and access to data. Booting in single-user mode allows access to the whole system.

Third-Party Software

Illumina does not support software beyond what is provided at installation. Do not install any software that was not provided with the system. Third-party software is untested and can interfere with performance and security.

User Behavior

The DRAGEN Server is designed to analyze sequencing data. Do not consider it a general-purpose computer. For quality and security reasons, do not use the computer for web browsing, checking email, reviewing documents, or other unnecessary activity. These activities can result in degraded performance or loss of data.

Antivirus Software

Illumina does not recommend running any virus scanners on the DRAGEN Server. Virus scanners often impact the performance of on High-Performance Computing (HPC) systems.

Restricted Ports and Authentication

Outbound Connections	lus.edicogenome.com port 443
Inbound Connections	SSH: TCP port 22

Stack Overflow Protection

Modern processors disable coded execution in data sections of the program to address stack overflow attacks. By default, this feature is enabled.

Revision History

Document	Date	Description of Change
Document # 1000000073627 v01	March 2019	Updated the following: <ul style="list-style-type: none">• Power Specifications.• UPS information.• Heat Output information. Added the following: <ul style="list-style-type: none">• Noise Output information.• South Korea Customer Support telephone number.
Document # 1000000073627 v00	December 2018	Initial release.

Technical Assistance

For technical assistance, contact Illumina Technical Support.

Website: www.illumina.com
 Email: techsupport@illumina.com

Illumina Customer Support Telephone Numbers

Region	Toll Free	Regional
North America	+1.800.809.4566	
Australia	+1.800.775.688	
Austria	+43 800006249	+43 19286540
Belgium	+32 80077160	+32 34002973
China	400.066.5835	
Denmark	+45 80820183	+45 89871156
Finland	+358 800918363	+358 974790110
France	+33 805102193	+33 170770446
Germany	+49 8001014940	+49 8938035677
Hong Kong	800960230	
Ireland	+353 1800936608	+353 016950506
Italy	+39 800985513	+39 236003759
Japan	0800.111.5011	
Netherlands	+31 8000222493	+31 207132960
New Zealand	0800.451.650	
Norway	+47 800 16836	+47 21939693
Singapore	+1.800.579.2745	
South Korea	+82 80 234 5300	
Spain	+34 911899417	+34 800300143
Sweden	+46 850619671	+46 200883979
Switzerland	+41 565800000	+41 800200442
Taiwan	00806651752	
United Kingdom	+44 8000126019	+44 2073057197
Other countries	+44.1799.534000	

Safety data sheets (SDSs)—Available on the Illumina website at support.illumina.com/sds.html.

Product documentation—Available for download in PDF from the Illumina website. Go to support.illumina.com, select a product, then select **Documentation & Literature**.



Illumina

5200 Illumina Way

San Diego, California 92122 U.S.A.

+1.800.809.ILMN (4566)

+1.858.202.4566 (outside North America)

techsupport@illumina.com

www.illumina.com

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