

# Entropy Service

Random numbers are incredibly valuable in a number of different use cases, including cryptography, optimization, gaming, simulation, statistical sampling, and more. Many of the random numbers in use for these applications today aren't random at all — they just appear to be. They are typically either generated using a computational algorithm based on a short seed or are based on a physical measurement, such as the thermal noise of a resistor in a computer. The implication of not really being random in a use case such as cryptography, means that encryption isn't as secure as it seems. If somebody is able to guess a seed, then they'll be able to predict future random numbers. There are also attacks that have demonstrated that you can characterize physical sources and begin to guess random numbers.

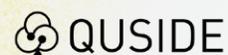
The Qrypt Entropy service offers an alternative — based on quantum measurements, as only a quantum effect can offer a truly random event. The quantum sources used by Qrypt are based on technology developed by partners and respected worldwide laboratories, and engineered to extract only the highest quantum to classical noise ratios. It's not possible to add entropy to a system after the fact — so Qrypt ensures that all of our source types meet and exceed our own high standards. In case of any future issue unknown to us today, we also take entropy from multiple source types and merge the datastreams through an XOR operation. This, along with a future roadmap of advanced sources, ensures that attackers aren't able to characterize and capitalize on an unknown flaw.

## Key benefits

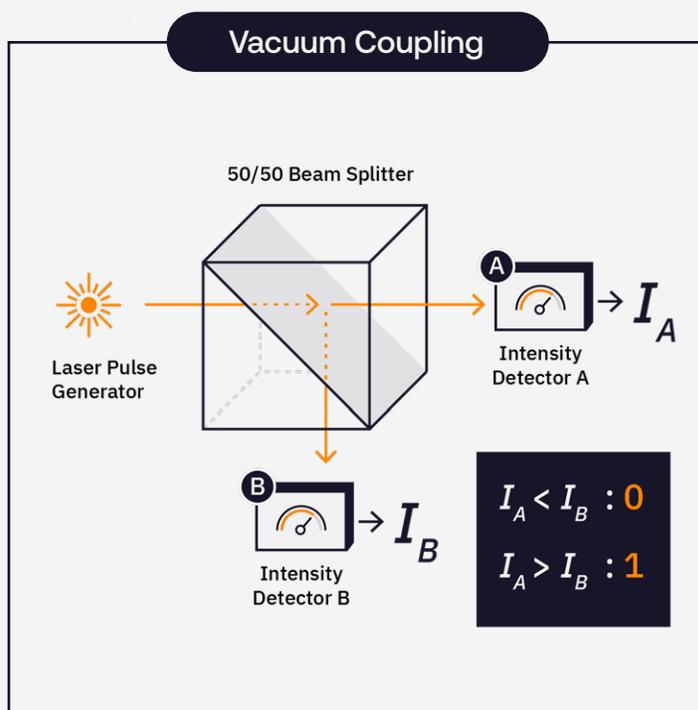
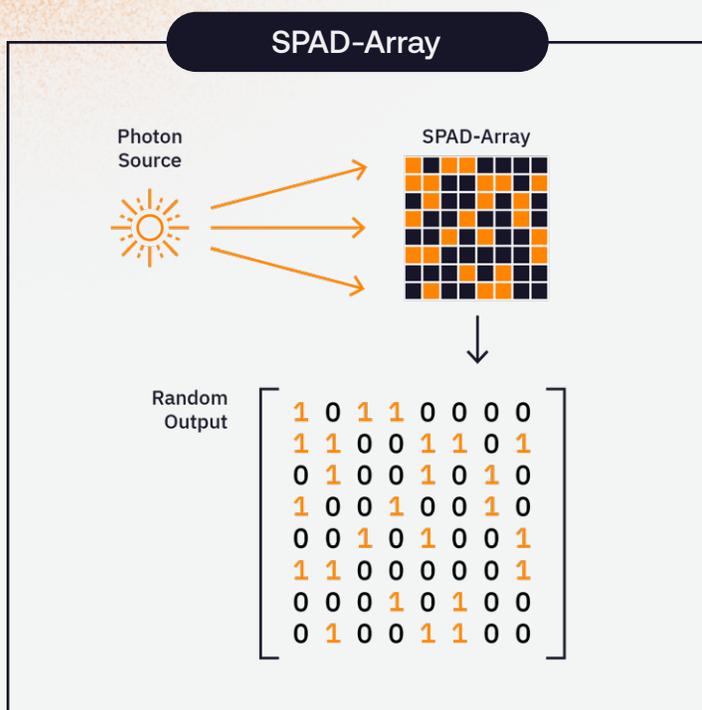
- Highest quantum to classical noise ratios
- Based on published techniques subject to peer review
- Datastream health monitoring to ensure quality

The Qrypt Entropy service is based on current and future advanced pipeline of quantum technologies, developed with our research partners:

- Photon bunching
- SPAD-array
- Phase diffusion
- Vacuum coupling



### Examples:



### Getting started

Go to [portal.qrypt.com/register](https://portal.qrypt.com/register) to create your account, generate your token, and begin downloading high quality entropy in minutes.