

ns3: On-Off Application

On-Off Application

```
uint16_t port = 9;
OnOffHelper onoff(
    "ns3::UdpSocketFactory",
    InetSocketAddress("10.1.2.4", port));
onoff.SetAttribute("OnTime", StringValue("ns3::ConstantRandomVariable[Constant=1]"));
onoff.SetAttribute("OffTime", StringValue("ns3::ConstantRandomVariable[Constant=0]"));
onoff.SetAttribute("DataRate", StringValue("512Kbps"));
onoff.SetAttribute("PacketSize", StringValue("1500"));
```

- **OnTime:** A **RandomVariableStream** used to pick the duration of the 'On' state.
 - Set with class: **ns3::PointerValue**
 - Underlying type: **ns3::Ptr< ns3::RandomVariableStream >**
 - Initial value: **ns3::ConstantRandomVariable[Constant=1.0]**
 - Flags: **construct** **write** **read**
- **OffTime:** A **RandomVariableStream** used to pick the duration of the 'Off' state.
 - Set with class: **ns3::PointerValue**
 - Underlying type: **ns3::Ptr< ns3::RandomVariableStream >**
 - Initial value: **ns3::ConstantRandomVariable[Constant=1.0]**
 - Flags: **construct** **write** **read**

Type of ns3::RandomVariables

- class **UniformRandomVariable**
- class **ConstantRandomVariable**
- class **SequentialRandomVariable**
- class **ExponentialRandomVariable**
- class **ParetoRandomVariable**
- class **WeibullRandomVariable**
- class **NormalRandomVariable**
- class **LogNormalRandomVariable**
- class **GammaRandomVariable**
- class **ErlangRandomVariable**
- class **TriangularRandomVariable**
- class **ZipfRandomVariable**
- class **ZetaRandomVariable**
- class **DeterministicRandomVariable**
- class **EmpiricalRandomVariable**

Exponential Distribution

- Definition: Exponential distribution with parameter

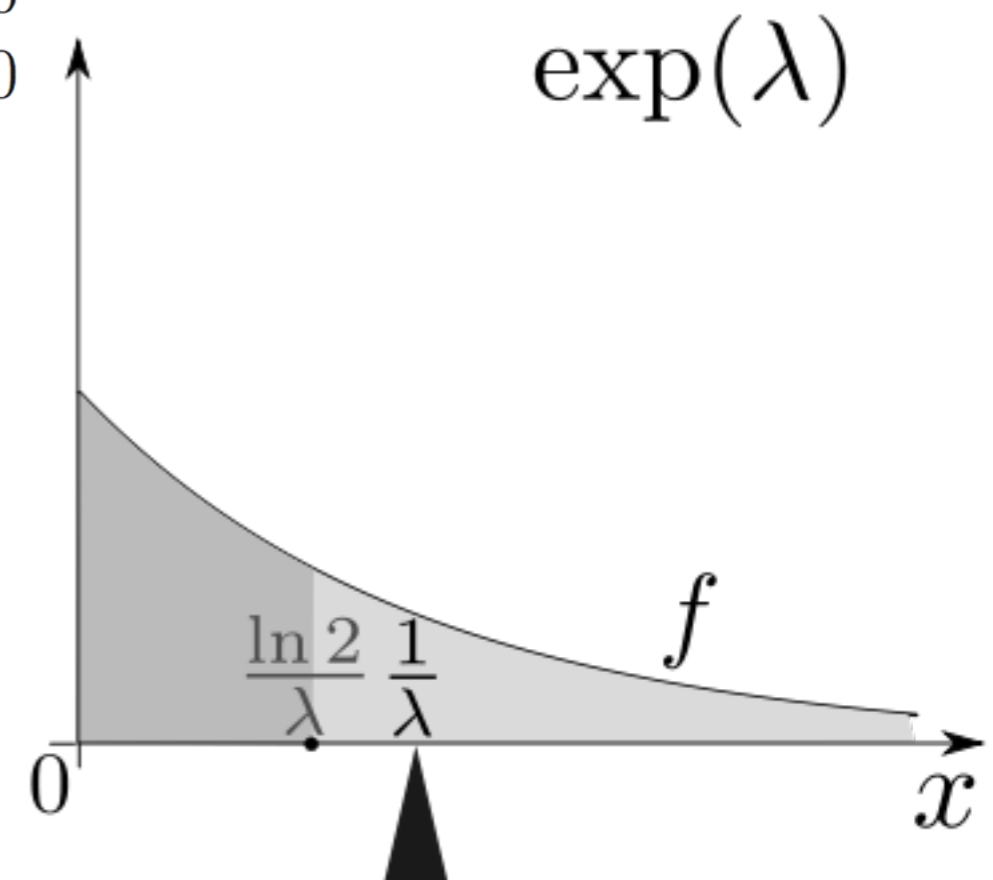
λ :

$$f(x) = \begin{cases} \lambda e^{-\lambda x} & x \geq 0 \\ 0 & x < 0 \end{cases}$$

- The cdf:

$$F(x) = \int_{-\infty}^x f(x) dx = \begin{cases} 1 - e^{-\lambda x} & x \geq 0 \\ 0 & x < 0 \end{cases}$$

- Mean $E(X) = 1/\lambda$.



from: http://en.wikipedia.org/wiki/Exponential_distribution

On-Off Application

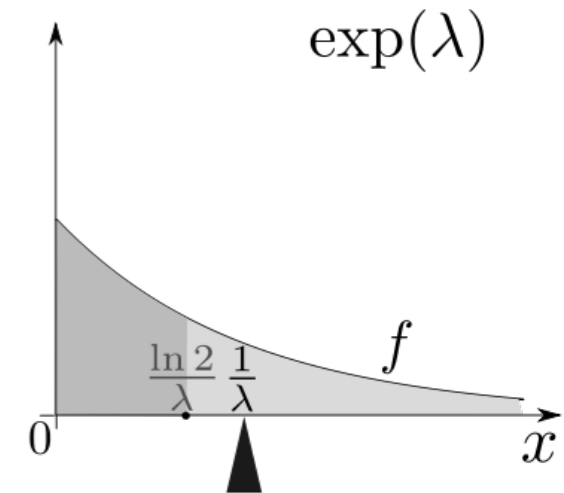
- To use **ExponentialRandomVariable**

Modifying “OnTime” from

“ns3::ConstantRandomVariable[Constant=1]”

To

“ns3::ExponentialRandomVariable[Mean=1]”



```
//onoff.SetAttribute("OnTime",StringValue("ns3::ConstantRandomVariable[Constant=1]"));  
onoff.SetAttribute("OnTime",StringValue("ns3::ExponentialRandomVariable[Mean=1]"));
```

Finding the usage example

- finding “**OnTime**” usage example from current directory (.) from file *.cc

```
find . -name "*.cc" -print | xargs grep -i "OnTime"
```