

Syslog use case: The use of Syslog would be best within an environment that has legacy devices or needs a low overhead of memory usage. Since Syslog was the first protocol to ever come into play it is universally the most compatible with many devices.

RSyslog use case: Use cases of RSyslog would be in need of a step up from Syslog. RSyslog allows for a linux based system to collect, filter, and securely forward logs. Its format output capabilities of JSON allows it to work seamlessly with tools such as splunk.

Fluentd use case: Fluentd would be used in a scenario that requires logs to be sent from applications, containers and cloud services. It allows the collection of logs from using things called plug-ins that help it get data that is needed to produce the logs.

Syslog Protocol type / transport: UDP

RSyslog Protocol type / transport: TCP/UDP, TLS

Fluentd Protocol type / transport: TCP/UDP, HTTP/HTTPS

Syslog Features: Syslog features that are prominent are severity levels which gives a rating of 0-7 on how critical the log is. A standardized log message format which contains things such as sequence, time stamp, facility, severity, MNEMONIC, and description. It is also super lightweight which makes it perfect for saving resources that could go towards other stuff. Centralized management is key for efficiency and Syslog provides that. Not only is it efficient but works best with a network infrastructure with legacy devices.

RSyslog Features: If your company runs a linux/Unix based system for logging then Rsyslog is the perfect solution for the company. RSyslog is a major upgrade from Syslog as it provides advanced filtering on things such as facility, severity level and regex patterns to name a few. Unlike Syslog which only allows for one centralized location to send logs, RSyslog allows for multiple centralized locations for logs to be sent over. The transport features such as TCP and TLS allows for logs to be delivered to the desired location without being dropped or intercepted and read. RSyslog also allows for seamless integration with popular tools such as splunk to get deep analysis of problems that occur.

Fluentd Features: Fluentd shines the best in a cloud-native or large scale distributed systems environment due to the fact that it can collect log data from everything. How it does this is that it uses things such as input plugins to get information from things such as applications, servers, cloud services, and containers, then it uses output plugins to deliver the information to a centralized location. Unlike RSyslog or Syslog that only works for a certain group of systems Fluentd is cross-platform compatible. Also in a cloud-native environment which consists of kubernetes, dockers, and AWS this is more than compatible.

Syslog Resource usage: 1-10% CPU Usage (Varys)

RSyslog Resource usage: 10-35% CPU Usage (Varys)

Fluentd Resource usage: 10-50% CPU Usage (Varys)

Syslog Complexity: The complexity of Syslog is pretty low due to the fact that it does not have advanced features like filtering or any extensible features like allowing multiple centralized locations for logs to be delivered. All you need is one location for logs to be delivered and simple configurations on your networking device to get started.

RSyslog Complexity: Just like Syslog, RSyslog is simple to build out and get started right away but adding the extensible features it offers like multiple centralized locations or log filtering takes a bit more time. The complexity for RSyslog is moderate just because it does take some extensive configurations to really use the services to its full potential.

Fluentd Complexity: Fluentd is the most complex from all the 3 options that are presented. This complexity is not such a bad thing though because Fluentd offers the most wide range compatibility of systems out there. With the complexity being so high it does take a bit of a minute to get it setup but also to configure everything to use it at its full potential.

Syslog Environment: Syslog works best in an environment where it requires low resource consumption but also with legacy devices that are part of the network infrastructure. Since Syslog is the oldest protocol it's universally accepted so it's easy to implement anywhere.

RSyslog Environment: RSyslog shines best in an environment where you require more of a complex but yet simple approach to logging. Especially if your system infrastructure is built on linux/Unix this is where it works the best. Perfect for a medium sized team that is in charge of the networking infrastructure aspect since you can distribute logs among everybody and advance filter things as well. Improves workflow.

Fluentd Environment: Fluentd works perfectly in an environment where there are multiple applications, servers, and systems. Perfect for large enterprises with a distributed system in place since it is easily compatible with cross-platform. Hybrid environments thrive using Fluentd since it allows for a mixture of on-site and off-site work.

The service I would choose would be RSyslog. The reason why I chose this service is because Raspberry Pi runs a linux distribution firmware which is the native compatibility for RSyslog. Also Raspberry Pi's are more than capable than running RSyslog to its full potential. Not only does it allow for multiple centralized locations but you can also expand the growth of Raspberry Pi's within your network to allow them to work together. It is the cheapest and fastest solution to get the full potential of logging.