

# User Guide (UG)

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## Telemetry Agent

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Volansys Technologies Pvt. Ltd.  
Block A 7th Floor, Safal Profitaire, Corporate Road,  
Pralhadnagar, Ahmedabad 380015, India

[www.volansys.com](http://www.volansys.com)

Phone: 91-79-4004-1994

Email: [info@volansys.com](mailto:info@volansys.com)

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**Revision History**

Revision	Date	Details of change	Author	Reviewer	Approver
1.0	19-06-2018	Added first version of all sections	Prabhunath Gupt	Aalok Shah	

## 1. INTRODUCTION

This document guides an end user in getting started with the Telemetry Agent.

### 1.1. Purpose

This document addresses the following sections:

1. Release notes and Package contents
2. Getting Started with telemetry agent demonstration
3. System Overview
4. Firmware Overview

### 1.2. Prerequisites

In this guide, it is assumed that hardware board, links for software release and necessary steps to set up the cloud application are available.

Please refer document mentioned in section [1.5.1](#) to build and flash the agent to the hardware.

### 1.3. Supported Software and Hardware Platforms

The telemetry agent functionality was tested with following combination of operating system and hardware platforms. The telemetry agent design is portable to work with any other operating system and hardware, however support will not be guaranteed by Volansys on combinations other than the one mentioned below:

- Operating System – GNU Linux (Kernel Version - 3.11.10-301.fc20.x86\_64)
- Network Processor ASIC – Cavium XP70, Cavium XP80

### 1.4. Acronyms & Abbreviations

Terms	Definition
SDK	Software Development Kit
NOS	Networking Operating System
NIC	Network Interface Card
SAL	Software Abstraction Layer
SSL	Secure Sockets Layer

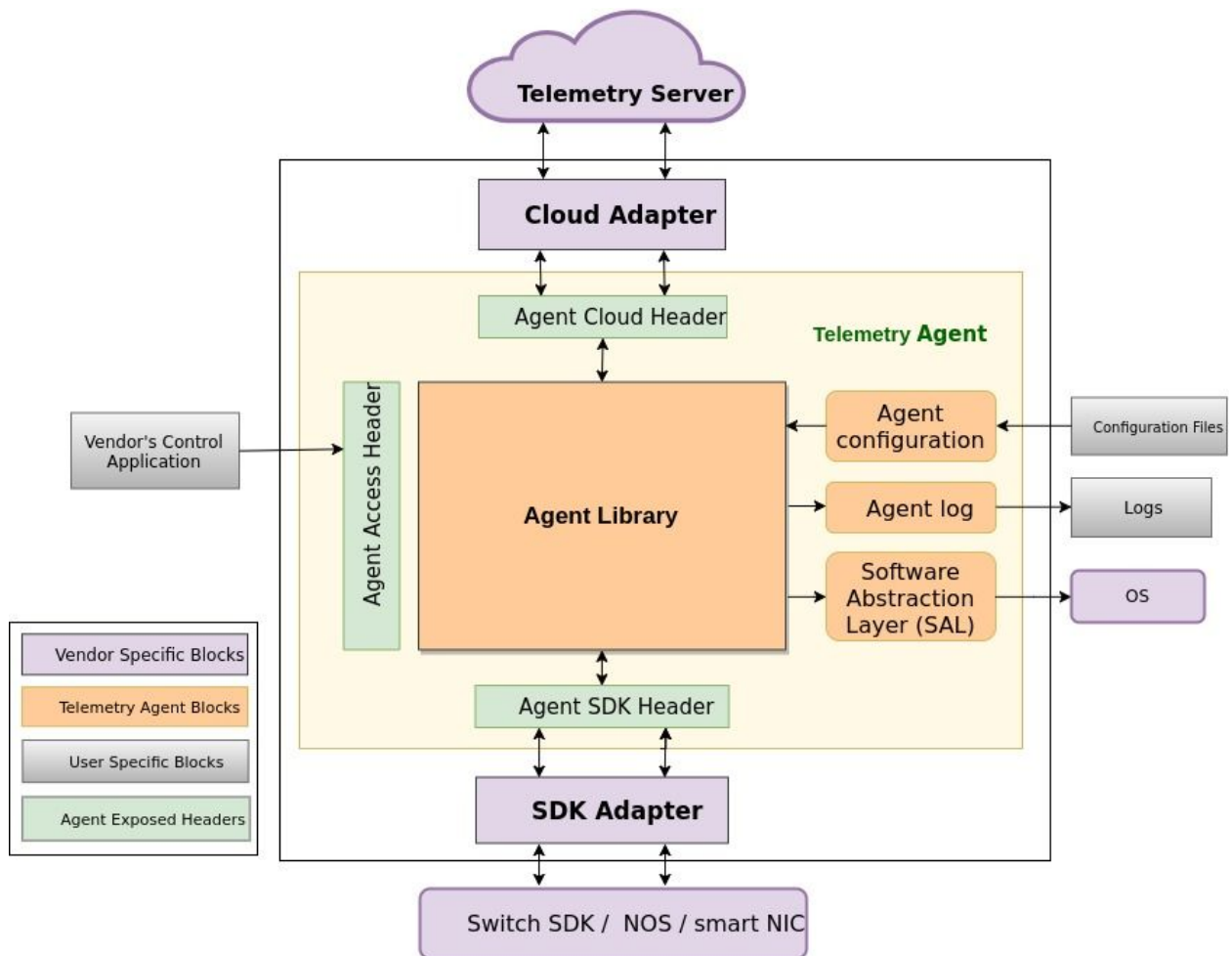
### 1.5. References

Ref. No	Reference Document Title	Provided by	Remarks
1.5.1	Cavium_SDK_Agent_Integration_User_Guide_1.0	Volansys Technology Pvt. Ltd.	Contains integration, build and flash steps with SDK
1.5.2	Telemetry_Agent_SDD_1.0	Volansys Technology Pvt. Ltd.	Contains Agent detailed design

## 2. SYSTEM OVERVIEW

### 2.1. Telemetry Agent Block Diagram

Below diagram represents top-level of telemetry agent architecture. In this diagram, all the portions shown in yellow shade is part of Telemetry agent. The description of all the blocks is mentioned below.



### 2.2. Telemetry Agent Blocks

#### ■ Agent library

Telemetry agent is in library form and it can be controlled by exposed start and stop APIs. Read document mentioned in section [1.5.2](#) for the detailed description.

#### ■ Agent configuration

Telemetry agent supports run time user configurations like server address, log level etc. Read section [4.2](#) for the detailed description.

- **Agent log**

Telemetry agent supports multilevel logger infrastructure and user can configure log level using agent configuration file. Read section [4.2](#) for the detailed description.

- **Software abstraction layer**

Telemetry agent supports SAL layer which contain operating system specific APIs. Read document mentioned in section [1.5.2](#) for the detailed description.

## 2.3. Agent Exposed Headers

- **Agent access header**

Agent access header is exposed header file by the telemetry agent and it contains control APIs of telemetry agent like start and stop APIs.

- **Agent cloud header**

Agent cloud header is exposed header file by the telemetry agent and it contains generic function prototype for registering APIs of Cloud Adapter.

- **Agent SDK header**

Agent SDK header is exposed header file by the telemetry agent and it contains generic function prototype for registering APIs of SDK Adapter.

## 2.4. Vendor Specific Blocks

- **Cloud Adapter**

Cloud adapter module should be implemented by the cloud vendors and it contains APIs for message formatting/parsing and sending. The implementation of this module should use function prototyping from Agent Cloud Header file. Read section [3.2](#) for the detailed descriptions.

- **SDK Adapter**

SDK adapter module should be implemented by the SDK vendors and it contains APIs for fetching telemetry Data from Vendor SDK/ NOS / Smart NIC. The implementation of this module should use function prototyping from Agent SDK Header file. Read section [3.1](#) for the detailed descriptions.

- **Telemetry Server**

Telemetry Agent send all the telemetry data to the telemetry server and also handle server request like (Polling interval configuration, reset drop count etc.)

- **Switch SDK/NOS/smart NIC**

Telemetry Agent is portable enough to communicate with any Vendor specific SDK, NOS or Smart NIC to get telemetry data via various adapter modules.

- **OS**

The operating system on which Telemetry Agent is running. As telemetry agent has SAL layer so it can be easily ported to run on any operating system.

## 2.5. User Specific Blocks

### ■ Vendor's Control Application

Telemetry agent is in library form along with exposed start and stop APIs, so here Vendor's Application is a control application to use these APIs to enable/disable telemetry functionality.

### ■ Configuration Files

Telemetry agent supports run-time file based user configurations. The user needs to put agent configurations in a file and give it to an agent. Please read section [4](#) for the detailed descriptions.

### ■ Logs

User can configure telemetry agent log directory and log level. Please read section [4](#) for the detailed descriptions

### 3. INTEGRATING THE TELEMETRY AGENT

Telemetry agent design is portable enough to be used by vendor specific cloud and vendor specific SDK. Integration of the agent with vendor specific Cloud or SDK can be achieved via exposed headers mentioned in above sections.

As shown in diagram, telemetry agent would be provided as a library along with three exposed header files.

#### 3.1. Integration with Vendor's SDK

Vendor needs to implement SDK adapter APIs to fetch telemetry data from the Switch SDK / NOS / Smart NIC. The implementation of SDK adapter should follow function prototyping mentioned in agent SDK header. Vendor needs to implement these APIs specific to its Switch SDK / NOS / Smart NIC and register implemented APIs into telemetry agent using exposed function.

#### 3.2. Integration with Vendor's Cloud

Vendor needs to implement Cloud adapter APIs to send telemetry data to the telemetry server. The implementation of cloud adapter should follow function prototyping mentioned in agent cloud header. Vendor needs to implement these APIs as per communication protocol supported by them and register implemented APIs into telemetry agent using exposed function.

#### 3.3. Agent Control Application Integration

Telemetry agent is in library form along with two exposed APIs for start and stop telemetry agent. These APIs definitions are available in agent access header so vendor needs to call these APIs from their main application which can have APIs to fetch telemetry data from the switch.

## 4. USER CONFIGURABILITY IN AGENT

Telemetry Agent supports run-time file based user configurations. So a user can put agent configuration in a file and set this file name to an environment variable named "AGENT\_CONFIG\_FILE". If a user does not provide config file name into an environment variable then Agent would use default configurations.

### 4.1. Agent Config File Sample

There are two types of configuration options one for the Agent initialization and another one for the cloud server configuration having couple of configurable entities. Example is shown below,

```
{
  AGENT_CONFIGURATION:
  {
    INT_COLLECTOR : <true/false>
    FIRMWARE_VERSION : <Version Number>
    LOG_DIRECTORY_PATH : <Log Path>
    AGENT_LOG_LEVEL : <Log Level>
  }
  CLOUD_CONFIGURATION:
  {
    SERVER_IP_ADDRESS : Server_IP_Address:<Port_Number/Communication_Protocol>
    SECURE_SSL : <true/false>
    {
      SSL_TRUST_STORE_PATH : <Path>
      SSL_KEY_STORE_PATH : <Path>
      SSL_PRIVATE_KEY_PATH : <Path>
      SSL_PROTOCOL : TLSv1.2
    }
  }
}
```

### 4.2. Agent Configurations

#### ■ INT\_COLLECTOR

This configuration option indicates Agent is running on the Server as a INT collector application or running on a switch with full functionality.

INT_COLLECTOR	
Input Value	Output
true	Agent running on the server as INT collector application
false	Full fledged agent running on a switch
other	Not acceptable



**■ FIRMWARE\_VERSION**

This configuration option indicates Agent firmware version.

FIRMWARE_VERSION	
Input value	Meaning
x.y.z	'x' represents release version 'y' represents number of new features added in release 'z' represents number of bugs resolved in feature

**■ LOG\_DIRECTORY\_PATH**

This configuration option indicates Agent log directory path. If the path provided by the user is not available then the agent will .

**■ AGENT\_LOG\_LEVEL**

This configuration option indicates Agent log level value.

AGENT_LOG_LEVEL	
Input value	output
CRITICAL	Enable only critical level logs in a log file
ERROR	Enable only error and critical level logs in a log file
DEBUG	Enable debug and above two log level logs in a log file
TRACE	Enable all the logs in a log file
OTHER	Not acceptable

**4.3. Cloud Configuration****■ SERVER\_IP\_ADDRESS**

This configuration option indicates cloud server address/URL on which Agent will connect and send telemetry data.

**■ SECURE\_SSL**

This configuration option indicates communication securities of the agent with cloud server.

SECURE_SSL	
Input value	output
false	Disable SSL securities and Agent can connect cloud server which is not secured by SSL
true	Enable SSL securities and Agent can connect cloud server which is secured by SSL
other	Not acceptable

If the SSL flag is true then the user needs to provide SSL certificates path into agent configuration file.