To: Operations & Scheduling Committee   **Date:** 10/25/2023

From: Melody Reebs, Director of Planning, Marketing, & Innovation   **Reviewed by**: *Rtf*

SUBJECT: Swiftly Software License Renewal

Background:

Over the past year, the Service Planning and Scheduling department has focused its efforts on improving service reliability, particularly as frequencies were reduced due to the pandemic and the ongoing operator shortage has limited the ability to restore service. In addition, traffic patterns have continued to evolve, and congestion has increased significantly as the economy recovers from the pandemic. In order to respond quickly to these changing conditions, it has been critical for planning staff to closely track on-time performance and run times in order to make timely schedule adjustments.

Historically, on-time performance and run time data has been collected and reported using the Clever Devices Computer-Aided Dispatch/Automatic Vehicle Location (CAD/AVL) system installed on the buses. However, obtaining useful and timely data from this system has been an ongoing challenge. Data is only uploaded at the end of the day after the vehicle returns to the yard, and it takes an additional 3-4 days before the data is processed and available for staff to analyze. In addition, data can get lost due to vehicles not being signed in correctly, which can be a result of not just operator error but also hardware or software issues, detours, or service disruptions. On top of that, an additional 15-20% of the data collected from the vehicles gets discarded based on validation rules. Finally, on-time performance and run time data is limited to timepoint stops and lacks the detail needed to pinpoint exact locations where delays may be occurring.

Swiftly:

In fall of 2022, staff began exploring alternative options that would improve data collection for on-time performance tracking without requiring an entire overhaul of the existing CAD/AVL system. Swiftly is a cloud-based transit data platform that integrates with existing hardware on the buses to provide data analytics and visualizations. Staff purchased an initial one-year license in December 2022 to test out the On-Time Performance and Run Time modules.

Swiftly uses a combination of three data sources to track the real-time location of buses and calculate on-time performance and run times at every stop along each route. In addition to the General Transit Feed Specification (GTFS) Realtime feed and BusTime Application Programming Interface (API) coming from the existing Clever Devices system, the platform collects vehicle location data from the CradlePoint routers already installed on the buses to help fill in gaps from the other two data sources. If an operator is not logged in correctly, the platform uses the GPS data from the routers to determine which route the vehicle is on. Swiftly's algorithm can also recognize if a bus has gone off-route and resumes tracking when the bus comes back on route, thereby getting more accurate and complete data.

The chart and table below show a sample of reporting rates from October 12th for each of the three data sources being used by Swiftly and illustrates the high granularity of data provided by the CradlePoint routers compared to the other two sources that Clever Devices' reporting system relies on.
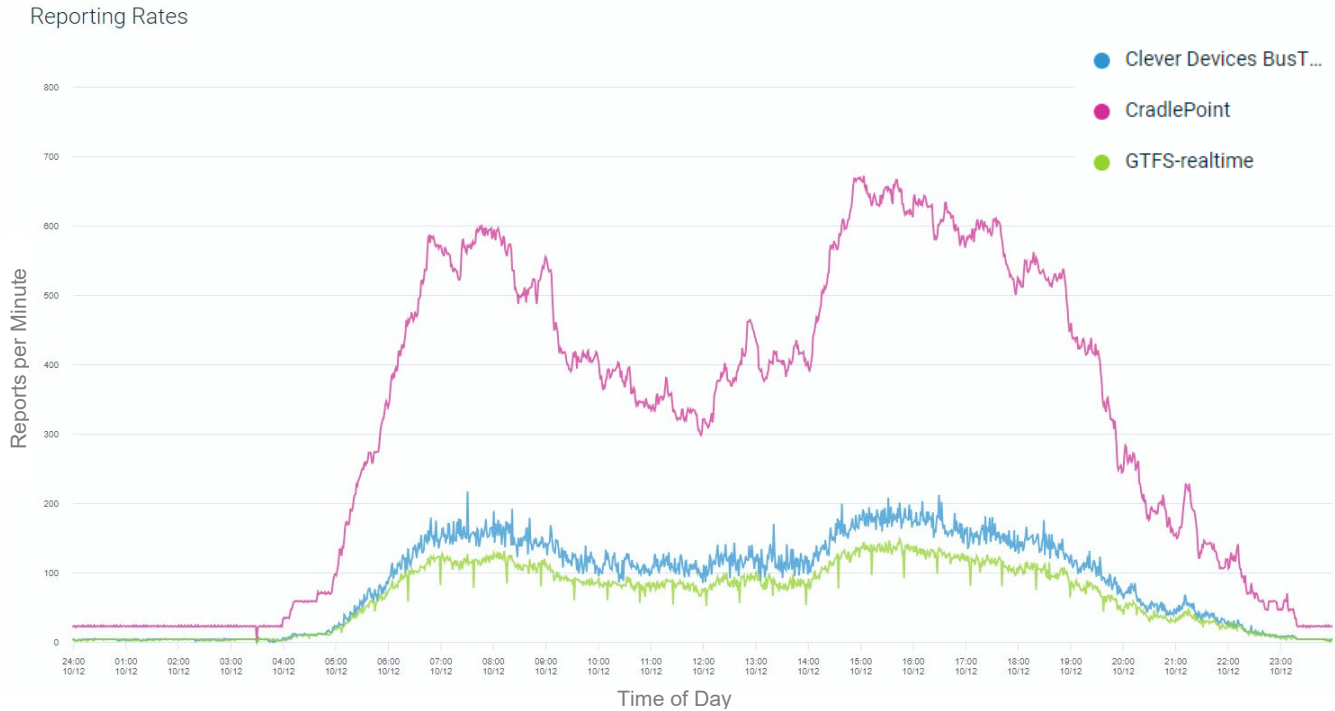
Data Source	Average Latency	Average Frequency
BusTime API	5.1 sec	25.8 sec
CradlePoint Routers	1.3 sec	5.1 sec
GTFS-Realtime	6.5 sec	34.2 sec

Data from October 12, 2023

In addition to higher frequency, the data from the routers has much lower latency (i.e., the delay between the data being generated and received), which means it more closely reflects real-time conditions. Based on data from July, Swiftly's platform was able to provide 40% more stop-level data and recover 7% of data that would have otherwise been discarded due to missing operator login information.

Applications:

In addition to having more accurate and complete data, Swiftly's On-Time Performance and Run Times modules have provided staff with a powerful set of analytical tools to help improve the reliability of County Connection's services. These tools have reduced the staff time required to analyze and develop schedule changes so staff can respond more quickly to performance issues and/or operator concerns. At the July O&S Committee meeting, staff presented an update on the initial six months of using the platform and the resulting schedule adjustments that were made for the Fall bid based on this newly available data.

Staff is also planning to use data from Swiftly for several current and upcoming projects. The Transit Signal Priority (TSP) project in partnership with the Contra Costa Transportation Authority (CCTA) and

the cities of Concord and Walnut Creek will be using the data in its evaluation to measure the effectiveness of TSP technology in reducing delays and improving bus speed and reliability. In addition, County Connection was recently awarded a Transit Performance Initiative (TPI) grant for a Transit Corridor Study to identify bus priority improvements along four major corridors, and the analysis to determine the locations and causes for delays along those corridors will likely rely heavily on data from Swiftly. Finally, bus transit priority is one of the key strategies in the Bay Area Transit Transformation Action Plan, and robust data on speed and reliability will be necessary to identify potential projects and pursue funding opportunities.

Given the value demonstrated by the platform to date, as well as the anticipated needs for future projects, staff is proposing a one-year renewal of the two Swiftly modules and potential addition of a third module, Speed Maps. The Speed Maps module provides more granular data on bus speeds along roadway segments and visualizations to quickly identify hotspots such as intersections that are causing significant delays. The TSP and Transit Corridor Study projects in particular will provide important insight into how this type of data can be leveraged to improve operations, service reliability, and ultimately the customer experience. As those projects develop over the next few months, staff will be able to determine how much value the addition of the Speed Maps module would provide. Over the next year, staff also plans to conduct a broader assessment of the current Clever Devices system to determine an upgrade strategy moving forward.

Financial Implications:

The initial one-year contract, which began on December 1, 2022, had a total cost of $98,875, which included implementation fees. The cost for a one-year renewal of the On-Time Performance and Run Times modules and potential addition of the Speed Maps module will not exceed $130,000. CCTA will be contributing $20,000 as part of the TSP project. Staff plans to use TPI grant funds and TDA for local match to cover the remaining cost, which has been included in the FY 2024 budget.

Recommendation:

Staff recommends renewing the license for Swiftly for one year at a cost not to exceed $130,000.

Action Requested:

Staff requests that the O&S Committee forward the proposed one-year contract renewal with Swiftly to the Board for approval.

Attachments:

None