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Clipper Executive Board Issues Review

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Agenda

- Account Migration

- Capacity Configuration

- Ticket Vending Machine

- Fare Inspection Device

- Customer Service Terminals

- Migration of Autoloads

- Monitoring

- Financial Settlement

- Upcoming Migration Improvements

- Path Forward

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Account Migration

Problem
- Incorrect migration of auto-reload status and other account migration failures.
- After migrating reduced fare Clipper Access, START, Youth and Senior cards changing fare categories to Adult fares.

Customer Impact Examples
- Customers had to repurchase passes or pay per ride because their old value didn't show up.
- Some customers waited weeks without seeing their cards or balances migrate and had to repeatedly contact support or wait in long customer service queues.

Solution/Timeline
- Migration version 10 software application deployment fixed autoloads – Completed 2/9
- Issue with Clipper Access, START, Youth and Senior cards changing fare categories to Adult fares largely resolved, except approximately 12 riders per day – Full resolution expected with V11 3/13
- NEW: All 10,300 duplicate C1 cards to C2 cards fixed – Completed 2/11

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Account Migration: Mobile Wallet

Problem	• Mobile wallets reported 12,900 cards were in an unusable state
Customer Impact Examples	• Sync delays, balance mismatches, and errors removing/adding virtual cards caused confusion and inconvenience for customers. • Funds loaded through the Clipper app or website didn't immediately show up in mobile wallets.
Solution/Timeline	• As of Jan CEB, 373,000 mobile cards migrated, now 490,000 • Scripts were run to make 9,600 of 12,900 cards – Completed 2/9 • Full resolution of remaining mobile cards – Expected completion 2/25

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Platform Capacity & Infrastructure

Problem	• System slowness and timeouts
Customer Impact Examples	• Riders found it stressful when they couldn't confirm their balance or trust that loaded funds would work at the fare gate • Call center reps often couldn't look up accounts which led to slower resolutions once connected • Station agents had longer interactions, workflow interruptions, and increased stress when trying to help riders.
Solution/Timeline	• No Major Incidents since 1/19 • Sizing of Cubic Payment Application and Network Information Service not sufficient – Completed 2/3 • Customer Relationship Application not leveraging all availability – Completed 2/3 • Virtual Token Management reconfiguration – Completed 2/15 • Structured Query Language servers need to increase clustered for more than one – Completed 2/19 • **NEW:** Upcoming capacity update to Virtual Token Management expected after software upgrade – Expected completion 3/16

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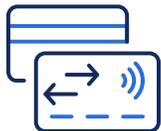
Ticket Vending Machine

Problem
- Customer experience issues (timeouts, retained cash); aging hardware.

Customer Impact Examples
- Customers experienced TVMs taking money without crediting value, inability to purchase certain products, which translated into inconvenience and eroded trust for customers.

Solution/Timeline
- Timeout increases deployed systemwide to prevent walkaway scenario – Completed 2/4
  - Few TVM crashes since deployment of latest software
- Software build deployed for Pilot additional data point logging regarding TVMs going out of service – Deployed 2/20
  - Rollout to all TVMs will be deployed week of 2/23

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Fare Inspection Devices (FIMPS)

Problem	• Campaign to manually update Keys on each inspection device to allow for contactless credit card inspection. • New software needed to prevent devices from crashing
Customer Impact Examples	• Fail to accurately identify valid ridership • Unnecessary friction between fare inspection workers and frustrated customers who believe they have valid ridership

Solution/Timeline	• 467 of the 629 FIMPS devices have had their EMV keys updated
	   o Awaiting request from operators to collect devices to upgrade the final set
	
	• Successful software pilot on Caltrain to prevent crashes – Completed 2/19
	   o Full roll-out underway – Expected completion 3/6
	
	• NEW: Further database work on going to improve transaction speed – Expected completion April 2026

CST Software Releases

Problem

- Issues with adding value verification failures
- Credit card acceptance issues
- Clipper card replacement issues

Customer Impact Examples

- Clipper customers unable to complete transactions at the Customer Service Terminals
- Agents were left unable to complete requests, resulting in a poor customer experience that leaves customers helpless

Solution/Timeline

- Software release to fix issues with adding value verifications – Completed 2/9
- Credit and Debit fix rollout underway – Expected completion 2/23
- Software for Clipper card replacement issues in test lab, delivery to Pilot location Bay Crossings – Completed 2/20
  - Rollout to all locations underway – Expected completion week of 2/23

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Autoload Migration Fix

Problem	• Triaging other autoloads setup from all channels in C2
Customer Impact Examples	• Clipper customers must manually purchase their passes and manually top up their account balance • Patrons who depend on regular automatic reloads for commuting unexpectedly had to ride without a valid product leading to higher out-of-pocket costs, as they paid per ride instead of passes.
Solution/Timeline	• Migration V10 deployed to fix incorrect migration of auto-reload – Completed 2/9 • **NEW:** Migration V11 to fix final remaining product migration issues – Expected completion 3/13 • **NEW:** New software to fix autoload setups not working – Expected completion 3/13

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Monitoring & Automation Enhancements

Problem	• Tooling gaps (AppDynamics, SolarWinds capacity) identified and improved tuning and threshold management
Customer Impact Examples	• System thresholds not sending notifications when reaching capacity • Delay in communicating system instability to transit workers
Solution/Timeline	• Added missing servers/nodes – Completed 1/30 • Tuned thresholds & alert rules – Completed 1/30 • Latest patches applied – Completed 2/17 • **NEW:** Continued long term monitoring improvements in-progress – Expected completion 3/28

Financial Reconciliation

Problem
- 10-day lag on financial payment matching reconciliation data
- Automated payment matching reporting is delayed
- End to end reconciliation documentation and demoes not yet provided to C2 team

Customer Impact Examples
- Operators did not know exactly how much revenue they've collected due to a data lag
- It took longer to resolve disputes about charges or missing value eroding customer trust

Solution/Timeline
- Documentation delivered incorporating MTC finance comments – Completed 2/9
- Software build improving lag to 2 days – Completed 2/15
- PAYG payment matching reporting 99.1% Accuracy MTD Feb – Completed 2/18
- Demo end to end reconciliations and associated SOC 1 audit controls they support – Expected week of 3/2
- Reconciliation of remaining report variances – Expected week of 3/9
- NEW: Reduce 2-day lag to 1 day – Expected completion 3/6

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Upcoming Migration Improvements

Outstanding Items

- Close out of critical items identified
- Finalize for migration errors of approx. 100 cards
- Final clean up of Apple cards
- Migration V11 – final migration patches of smaller migration issue outliers

Solution/Timeline

- Final software releases to close out critical items – Expected completion 3/14
- Finalize fixes for 1,600 migration errors – Expected completion 2/27
- Final migration issue fixes to come with software build – Expected completion 3/14
- Virtual Token Management application update included in the 3/14 software releases

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Path Forward

- Final close out of items identified in last month's Clipper Executive Board meeting

- Close out of all issues necessary to be ready to start Bulk Migration
  - o All critical items needed to allow for a positive user experience in the new Clipper system
  - o Fix of all mobile cards that are not functional
  - o Fix and clean up for all autoload issues.

- Working with MTC to identify priority around defect resolution and deferred features while bulk migration is processing daily

- Develop roadmap to get us to system completion after these immediate items are fixed.

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