



CVS Run Number Management

Version 7

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Developed by Transportation Laboratories

Version History

Version	Date	Revision Description
1	1/25/2016	Initial publication
2	8/23/2018	Format with SGS brand
3	4/9/2020	Retrofit to new template Incorporated graphic for <i>Figure 1 Run Number Management Data Flow</i> on page 3
4	7/16/2020	Clarified run number incrementation in <i>Section 1.1 CVS Emission Test ID Requirements</i> on page 1
5	12/15/2021	Revised <i>Section 2.1 Installing CVS Run Number Management</i> on page 4 and <i>Section 2.2 Installing Generic Run Number Management</i> on page 5 to remove inline usage content for <code>run_num_mgr.10c</code> and <code>blk_num_mgr.10c</code> , and added hypertext linked cross-references to their cyflex.com usage help.
6	6/20/2022	Updated all hypertext linked cross-references to cyflex.com usage help descriptions
7	3/11/2024	Rebrand to TRP Laboratories

Document Conventions

This document uses the following typographic and syntax conventions.

- Commands, command options, file names or any user-entered input appear in Courier type. Variables appear in Courier italic type.
Example: Select the `cmdapp-relVersion-buildVersion.zip` file....
- User interface elements, such as field names, button names, menus, menu commands, and items in clickable dropdown lists, appear in Arial bold type.
Example: **Type**: Click **Select Type** to display drop-down menu options.
- Cross-references are designated in Arial italics.
Example: Refer to *Figure 1*...
- Click intra-document cross-references and page references to display the stated destination.
Example: Refer to *Section 1 Overview* on page 1.
The clickable cross-references in the preceding example are *1*, *Overview*, and on page 1.

CyFlex Documentation

CyFlex documentation is available at <https://cyflex.com/>. View **Help & Docs** topics or use the **Search** facility to find topics of interest.

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1 Overview

1.1 CVS Emission Test ID Requirements

The following requirements apply to the CVS emission test ID assigned to the transient emission:

- Each test site must have a unique alphabetic letter assigned to it.
- Each transient emission test at a test site, CVS East, CVS West, and so on, must have a unique number assigned to it.
- The CVS emission test ID consists of the site letter and the unique run number, e.g. G1246.
- If the transient emission test that is being run is a cold cycle, the last digit of the run number must be 0.
- Run numbers are normally incremented by one. There are two exceptions:
 - Cold cycle run numbers always end in zero. A cold cycle will cause a new block of ten to be started, skipping any remaining run numbers in between.
 - A change in the engine serial number will also cause a new block of ten run numbers to be started. If the first cycle to be run with the new serial number is a cold cycle, it will end in zero. Otherwise, it will end in one.

1.2 Unique Number Generation

Perform unique run number generation via two processes:

1. `RunManager` to manage the numbers for a test cell.
2. `BlockManager` to manage the numbers for the test site.

The following is the process data flow:

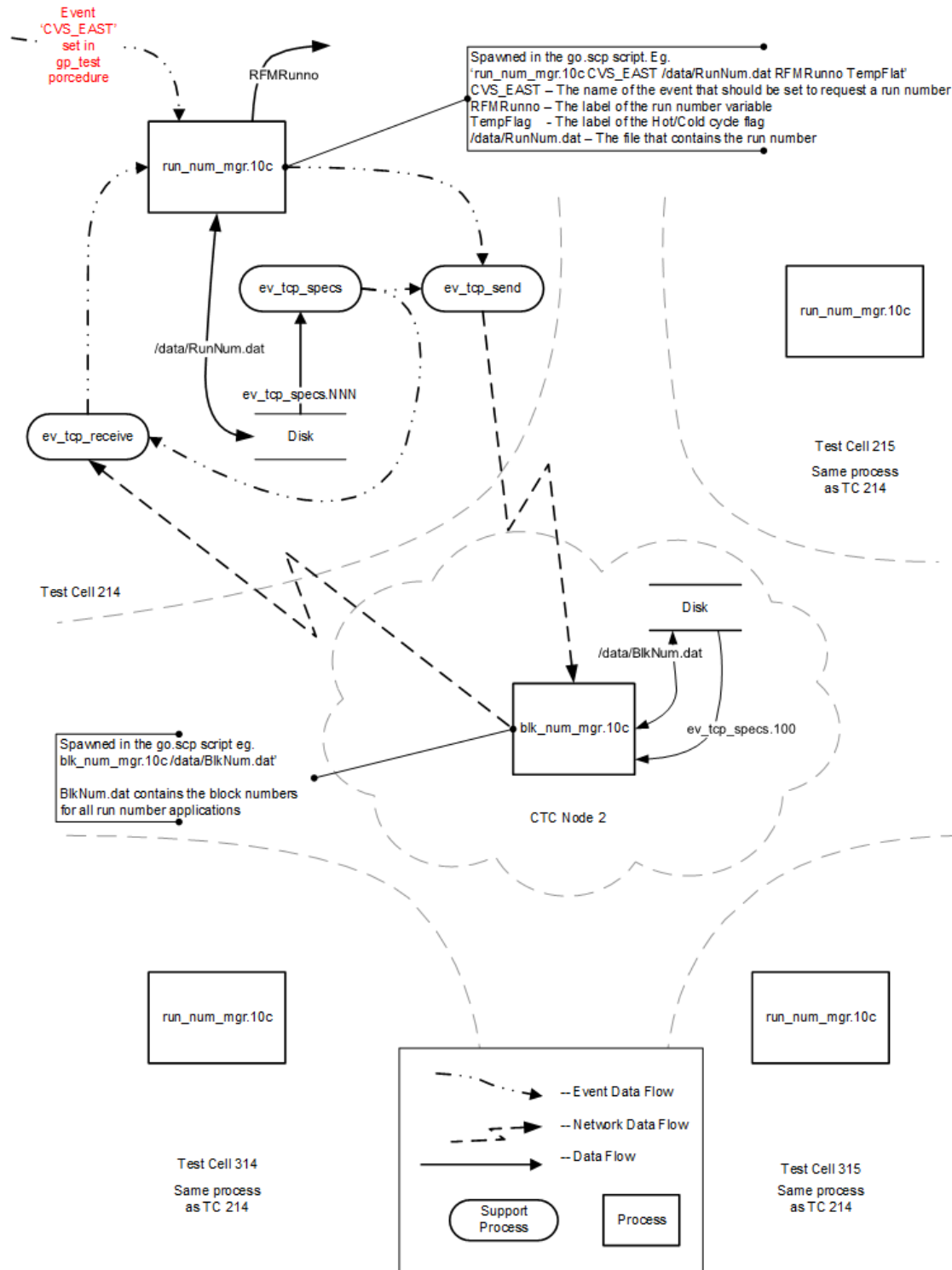
1. When an application at the test cell needs a run number, it sends an event to `RunManager` that signifies a new number needs to be generated. Initially `RunManager` will request the `BlockManager` to allocate a block of numbers to the test cell. Currently, the numbers are allocated in blocks of 100.
2. Once a block of 100 is allocated to the test cell, `RunManager` generates a run number and sets an CyFlex variable such as `RFMRunno` with the value of the number following the requirement in Section 1.1.
3. `RunManager` will then provide a new run number, when requested, from this block of 100. Once the block of 100 numbers has been consumed, `RunManager` will request the `BlockManager` for another block of 100 numbers.
4. When a `RunManager` makes a request for a block of numbers, the request contains the test cell number and the type of application making the request. The `BlockManager` stores the name of the application and the block number that was last allocated to that application.

An application is unique at each test site and spans all the test cells at the site. As a result, BlockManager can provide unique numbers for multiple 'applications' that are running at a test site. One constraint is that only one RunManager for a given application, can run at a test cell. In addition, only the RunManagers identified as CVS run managers are subjected to the rules outlined above.

2 Installing Run Number Management

Figure 1 below illustrates the process data flow to install CVS Run Number and Generic Run Number management.

Figure 1: Run Number Management Flow



2.1 Installing CVS Run Number Management

Include the run number manager command `run_num_mgr.10c` in the `go.scp` script at the test cell.

Refer to cyflex.com usage help for [run_num_mgr.10c](#) for command syntax and invocation examples.

Per requirement in *Section 1.1* on page 1, evaluate the engine serial by accessing the `serial` CyFlex variable. The `serial` CyFlex variable must contain the engine serial number of the engine currently being tested. This variable is normally defined in the specification file `engine_specs.NNN`. Its value is set with the serial number that is specified in the `cvs_specs.dat` file associated with the engine that is being tested.

Also include the block number manager command `blk_num_mgr.10c` in the `go.scp` script at a centralized node.

Refer to cyflex.com usage help for [blk_num_mgr.10c](#) for command syntax and invocation example.

Since the block number manager is running on a centralized node the `ev_send` and `ev_receive` support tasks must be configured so that the two number managers can communicate with each other. These tasks must be running on each test cell node and on the centralized node. The spec file for these tasks must have the following added to the spec file: `inode_specs.NNN`.

On each test cell node add:

#	remote node	local event	remote event
SET	4	<code>bnm_request_event</code>	<code>bnm_request_event</code>

On the centralized node (node 4) add:

#	remote node	local event	remote event
SET	170	<code>bnm_reply_event</code>	<code>bnm_reply_event</code>
SET	175	<code>bnm_reply_event</code>	<code>bnm_reply_event</code>
SET	185	<code>bnm_reply_event</code>	<code>bnm_reply_event</code>
SET	180	<code>bnm_reply_event</code>	<code>bnm_reply_event</code>

2.2 Installing Generic Run Number Management

Include the run number manager in the `go.scp` script at the test cell.

Refer to cyflex.com usage help for [run_num_mgr.10c](#) for command syntax and invocation examples.

Also include the block number manager in the `go.scp` script at a centralized node.

Refer to cyflex.com usage help for [blk_num_mgr.10c](#) for command syntax and invocation example.

3 Example Data Files

3.1 Example Run Number Manager Data File

```
# Saved values
# Run number          ESN

1010                  1253439
```

3.2 Example Block Number Manager Data File

```
# Saved values
# Application          Block number

CVS_EAST              200
Incidents              400
```