

## System Hardware Specification

**URCVT v.1.2.0, System Hardware Specification v.1.0.0.** document is solely for use in the State of New York. This document can be expanded or updated as is necessary or required. Any recommendations listed in this document should not supersede user jurisdiction procedures or other controlling governance entities.

### **URCVT v.1.2.0 System Hardware Specification v.1.0.0**

Hardware requirements vary depending on the size (number of CVRs) of the contest you wish to tabulate. In general, the more RAM a system has the larger the elections it can run. The more powerful a computer's CPU is, the faster it will be able to process election results. Please note when tabulating large contests (more than 1 million CVRs) the Tabulator must be launched from the command line using the launch steps detailed below. In all cases, after running a tabulation, you must exit the tabulator to clear the memory. Launch the Tabulator again to tabulate another contest. No other applications should be running at the same time, as they may compete with the tabulator for resources (RAM and CPU) and cause it to run more slowly.

The City of New York has a large number of registered voters and will need to configure a desktop computer that meets or exceeds the following specifications:

Windows 10 operating system  
3.0 GHz processor  
32GB RAM  
10GB disk space

The PC/Laptop is required to be set up according to the hardening procedures detailed in **URCVT 1.2.0 16-NY System Hardening Procedures v. 1.0.0.**

**Please note when tabulating large contests (more than 1 million CVRs) the Tabulator must be launched from the command line using the launch steps detailed below.**

Large Configuration: up to 6,000,000 CVRs containing up to 40 columns of rankings data each:

3.0 GHz processor  
32GB RAM  
10GB disk space + room for whatever log files your tabulations generate  
Produces ~6GB of audit log output per contest  
Runtime: less than 40 minutes

Launch steps for a large election:

Contest with more than 1,000,000 votes

1. Open a Command Prompt by navigating to the start menu and typing in Command Prompt.
2. Press enter to launch Command Prompt.
3. Change the current directory to the rcv folder created when you unzipped the Tabulator.
4. First, type in cd (note there should be a space after cd).
5. Using File Explorer navigate to the folder where URCVT is installed.
6. Double click on the universal\_rcv\_tabulator\_v1.2.0\_windows folder

7. Click and drag the rcv folder over to the command prompt window
8. Your command prompt will now read something like:
  - a. cd  
C:\Users\user\Universal\_RCV\_Tabulator\universal\_rcv\_tabulator\_v1.2.0\_window  
s\rcv
9. Press enter
10. Launch the tabulator by entering the following command:
  - a. .\bin\java -mx30G -p .\app -m  
network.brightspots.rcv/network.brightspots.rcv.Main .

This configuration will run a 6,000,000 record contest in about 30 minutes.

Additional smaller configurations are possible for smaller contests:

Small configuration: up to 100,000 CVRs, up to 40 columns of rankings data each:

1 GHz processor

4GB of RAM

1GB of disk space + room for whatever log files your tabulations generate

Produces ~100MB of audit log output per contest

Runtime: less than 2 minutes

To Launch: Double-click the rcv.bat file

Contests will be run in as long as one minute with this configuration. Smaller contests will run faster.

Medium Configuration: up to 1,000,000 CVRs, up to 40 columns of rankings data each:

3.0 GHz processor

16GB RAM

2GB disk space + room for whatever log files your tabulations generate

Produces ~1GB of audit log output per contest

Runtime: less than 5 minutes

To Launch: Double-click the rcv.bat file

Contests will run in as long as 5 minutes with this configuration. Smaller contests will run faster.

Both medium and small contests can be run by using the same launch steps on the recommended computer. Contests of small and medium size can be run on the hardware defined in this document and in **URCVT 1.2.0 03-NY System Hardware Specification v. 1.0.0** using the launch steps under the small and medium configurations.

## **Hardware Physical, Reliability, Maintainability, and Environmental Characteristics**

Any machine used to run the URCVT does not have any particular required physical characteristics beyond those expected of commercial off the shelf (COTS) computing equipment.

The URCVT software itself can be maintained by following **URCVT 1.2.0 09-NY System**

***Maintenance Procedures v.1.0.0*** and following ***URCVT 1.2.0 430-NY Universal RCV Tabulator Operator Log Messages v.1.0.0***. These documents are written in a manner to be understood by non-technical election workers with sufficient training in the URCVT software. Any COTS hardware or software used to run the URCVT should be maintained with reference to the Maintenance Procedures and to any relevant user guides and maintenance manuals included with that COTS equipment.

Any machine used to run the URCVT should follow basic environmental conditions required of any COTS computing equipment.

### Document Revision History

<b>Date</b>	<b>Version</b>	<b>Description</b>	<b>Author</b>
04/21/2021	1.0.0	System Hardware Specification	Chris Hughes