

## CD++ Model Data Form

Title: Simulations of Malware and Anti-malware in a Network using CD++ (lopez service)

Type: Cell-DEVS Model

Purpose for which Developed: Simulating malware and anti-malware in a network.

Date Developed/Implemented: December 18, 2014

Current Version: N/A

URL: N/A

Description (including characteristics): Nowadays, services of computer network have experienced a dramatic increase. However, the availability of these brand-new services also increases the vulnerability to malwares. In fact, malwares have put a serious threat on networks and computers in it. Malware is a general topic which includes several types of programs such as Worm and Trojan. Besides, hackers have played a more important role in the spread of malwares. In this paper, two models of malwares and their spread will be simulated. To characterize the propagation dynamics of malwares, we propose two modelling schemes using a two-dimensional cellular automata in a new version CD++, which supports multiple ports and multiple state variables in a cell. The first model mainly focuses on a relatively static model of malware, while the second model introduces three characters to make simulations more dynamic and approximate to the real world. The effectiveness and rationality of the proposed models have been validated through a series of simulations.

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Comments: All components of the model were tested, and appear to behave as specified.