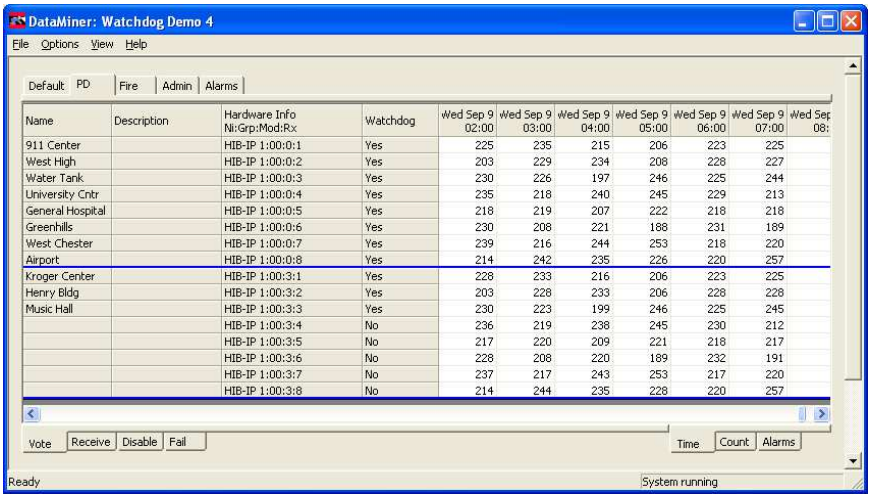
# *MCN™ System Performance Toolkit*




Dataminer Channel Activity Window

## Introduction

Most voting systems are designed with overlapping coverage areas on receivers, and adjacent receivers can provide partial coverage for a poorly performing receiver. It may be weeks or months before you notice the **system degradation** associated with a problem such as this. And it may only be noticed when the adjacent receiver fails or a field unit gets into a particular critical location.

The System Performance Toolkit (SPT) works in tandem with our MCN Remote Comparator Display (RCD) Server software to help keep your radio system running at its peak. Now you can know that your system is running as well as it did when first installed. Running as a client to RCD Server, it enhances the diagnostic capability of the RCD software and the Monitoring and Control Network (MCN) by analyzing **System Activity**. The SPT constantly analyzes radio channel activity for receiver performance and channel loading, and issues alerts when performance parameters are not met. The SPT consists of several software modules; System Watchdog Service and Data Miner.

### System Watchdog

***System Watchdog*** is a software module within the SPT. It runs as a service in the background and monitors the system activity for problems other than the obvious. It issues alerts based on user specified parameters. It also builds Activity Summary files that can be viewed with the Data Miner module.

Standard voting systems include failure indications for receivers. These **Fail** outputs indicate gross problems such as broken telephone lines or receivers that are completely dead. However, other serious problems can occur that simply cannot be detected by those **Fail** indications. To help identify these types of problems, System Watchdog generates an alert in response to conditions such as:

- Receivers that have not received
- Receivers that have not been voted.

The System Watchdog will alert the Data Miner to log these errors to the PC screen, a printer, and a disk file. The Error Log includes a time and date stamp, error type, receiver name and description.

Those conditions can be caused by:

- Defective or missing input modules on a comparator
- Noisy telephone lines
- Faulty RF, IF, or Audio sections of a receiver
- Damaged or noisy antennas
- Poorly performing receivers

While the System Watchdog cannot identify the exact cause of the problem (such as bad antenna, unplugged comparator input board, etc.), its power is the ability to give a notification about possible system problems before they escalate into larger ones.

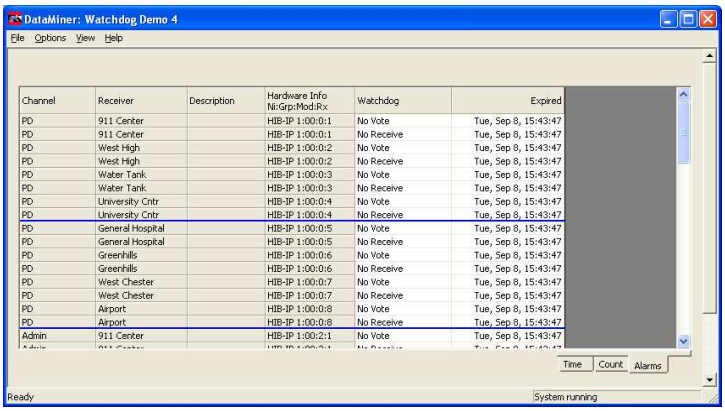
Some features of the System Watchdog module include:

- User-programmable Look-Back Time for activity
- User-defined channels & receivers to watch
- Alerts logged on screen, disk, & printer

**CTI Products, Inc.**
1211 West Sharon Road
Cincinnati, Ohio 45240
USA

phone
+1.513.595.5900

fax




**Alarm Window**

## Data Miner

The ***Data Miner*** module is a display and export program that allows the user to view the Activity Summary Files generated by the System Watchdog service. System activity data can be viewed for each of the MCN channel being monitored. Activity times and counts can be viewed for each of the following events:

- Vote
- Receive
- Disable
- Fail
- Transmit Select
  (for Transmitter Steering systems with TIB Modules)

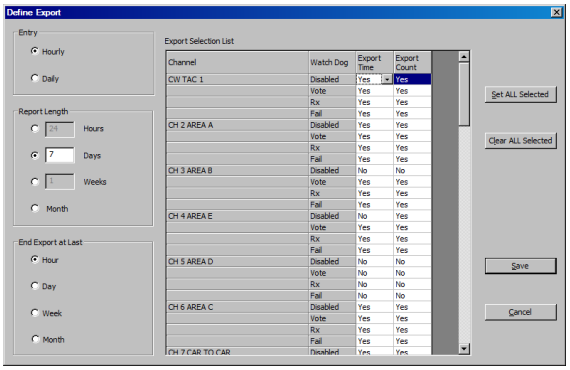
Using this information, the Data Miner viewer module can be used to help diagnose system problems. Data Miner makes it easy to see at a glance the activity level on receivers and channels, and can be used to indicate:

- Channel loading statistics
- Receiver performance
- Needed radio maintenance

It can also be used for site-selection planning and administrative reports.

## Exporting Data to Excel

The Dataminer program uses Export Definitions to transfer data to Microsoft Excel. A typical Export Definition is shown in the screen below. The exported data includes receiver names and descriptions, along with the selected activity type (Vote Time, Vote Count, Receive Time, Receive Count, etc.).




Separate files are generated for each radio channel. Activity times and counts can be summarized by hour or by day.

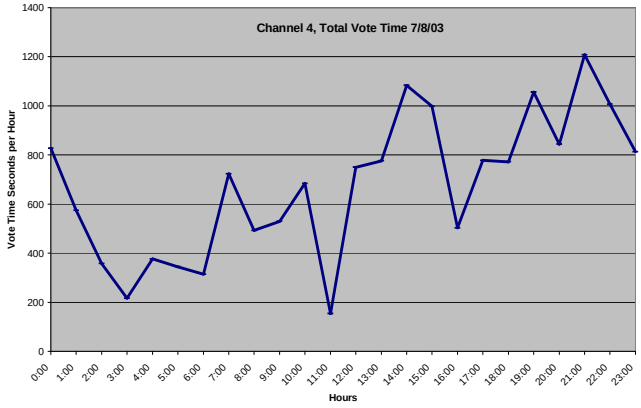
## External Analysis with Excel

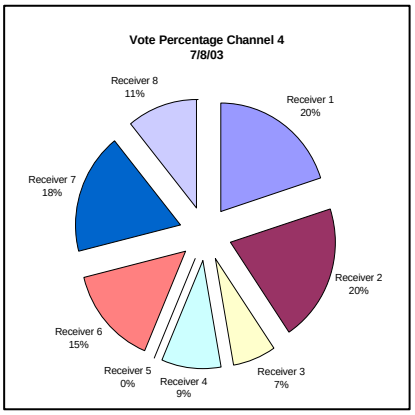
Possible uses of Microsoft Excel include:

- Total Channel Vote Time
- Percentage of Vote Time per Channel by Receiver
- Average Vote Length by Receiver
- Graphs of Receiver or Channel Activity
- Percentage of Vote Time vs. Receive Time by Receiver

Two examples are shown below.

***Typical Graphs from Excel***




## Odering Information for System Performance Toolkit

| Product | CTI Order Number | Maximum Receivers or I/O Points Monitored | Licensed Installations |
|---|---|---|---|
| **SPT Level 1** | S1-61434 | 128 | 1 |
| **SPT Level 2** | S1-61435 | 512 | 1 |
| **SPT Level 3** | S1-61436 | Unlimited (Limited only by MCN Server Capability) | 1 |

# MCN System Performance Toolkit

MCNSPT 2013-09

## Receiver and Point Quantities

Receivers and I/O point quantities are calculated based on the maximum number of receivers or I/O points in the MCN module or IP comparator configured in the customer's system.

| | | |
|---|---|---|
| Examples: | CIB Module | 8 Receivers or<br>32 I/O Points |
| | AIB Module: | 8 to 64 Receivers<br>(Banks of 8) |
| | MLC 8000 | 64 Receivers |
| | GCM 8000 | 64 Receivers |
| | GPIO-1208C | 20 Points |

For example, SPT Level 1 software would support up to (2) MLC 8000 or GCM 8000 comparators.

## Specifications

| | |
|---|---|
| Application Type | Native 32 Bit Windows Application |
| Operating System | Windows XP, 7 |
| PC Requirements (min.) | Pentium multi-core, 2 GHz, 2 GB Memory |
| Requires | MCN Comparator Display System<br><br>MCN Advanced Server Software<br>MCN Server 8000 Software<br><br>Microsoft Excel 2007 or up for exports |
| Runs on | Separate PC connected over LAN. |
| Alerts Based on | No Vote or No Receive activity (selectable) |
| Activity Look-Back Time | Global, 1 to 100 Hours,<br>user configured |
| Receiver Configuration | - Receiver configuration retrieved from MCNRCD Server database<br><br>- Receiver Watch / Ignore state specified by user |
| Alert Audio Outputs | Selectable .WAV File |
| Logging | Errors logged to Screen, Printer, Disk |
| Activity Summary File | 1000 hours<br>Time (seconds) and Counts for:<br>-Vote<br>-Receive<br>- Disable<br>- Fail<br>- Transmit Select (with TIBs) |
| Export File Format | XLS 1 file per Radio Channel<br>Microsoft Excel required. |

## Feature Comparison

| Feature | MCN RCD Server | System Performance Toolkit |
|---|---|---|
| **Alerts:** | | |
| Vote | ✓ | |
| Receive | ✓ | |
| Disable | ✓ | |
| Fail | ✓ | |
| Transmit Select | ✓ | |
| Receiver Timed Inactivity | | ✓ |
| Vote Timed Inactivity | | ✓ |
| Programmable Look-Back Time | | ✓ |
| RCD Server Not Running | | ✓ |
| **Logging:** | | |
| Screen | ✓ | ✓ |
| Disk | ✓ | ✓ |
| Printer | ✓ | ✓ |
| Audible | ✓ | ✓ |
| Email | ✓ | |
| **Data Export (Requires Microsoft Excel):** | | |
| Export Data | | ✓ |
| Scheduled Exports | | ✓ |

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