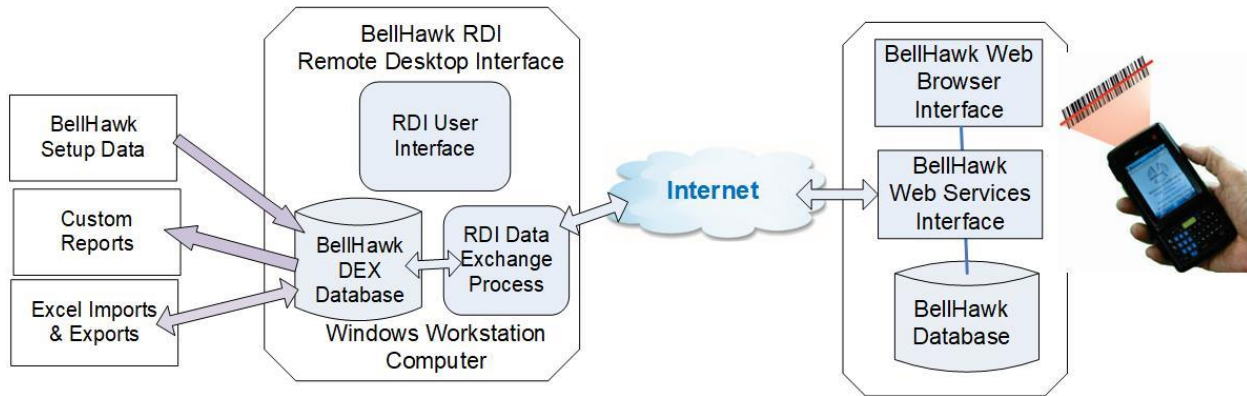## Data Sheet for the Remote Desktop Interface (RDI) to BellHawk

1. Introduction

The BellHawk Remote Desktop Interface (RDI) is a Windows desktop program that is intended to provide remote desktop access to the data in the BellHawk database in such a way as not to interfere with the speed of barcode scanning in the BellHawk data collection and tracking system.

The RDI interface provides a simple to use interface for exchanging data with BellHawk. RDI consists of a SQL Server Express data exchange (DEX) database and an RDI data exchange process as well as an RDI user interface which is used to control and monitor transfers between the two databases.

When running, data written into tables in the DEX database are automatically transferred to the corresponding tables in the BellHawk database by RDI data exchange process. Similarly, data entered into BellHawk is automatically transferred to corresponding tables in the DEX database.

The tables in the DEX database are structured in a well-documented tabular format (think Excel spreadsheet), with a set of self-contained records and no indirect references. This makes it easy for users to develop their own custom reports, using the contents of the DEX database.

This is in contrast to the BellHawk database itself, which is designed for rapid transactional processing of barcode scanning data from a large number of mobile computers. This requires a complex database organization with many indirect references, which makes using the BellHawk database itself for reporting or data exchange interfaces much more complex than using the DEX interface.

RDI is designed to exchange data periodically (every few minutes) with BellHawk, in the background, without interfering with the rapid response needed for efficient barcode scanning and operational user interaction.

Data transfers are done one record at a time, with error detection and correction. These record transfers are throttled to one every few seconds, so as not to interfere with operational use of BellHawk. As a result, large volumes of data can take a significant time to transfer.

The benefit of this throttling is that users of the RDI interface do not have to worry about interfering with their barcode data collection and operational use of BellHawk when transferring large volumes of data.

Because the RDI transfers one data record at a time, this solves the problem of Internet connections timing out when attempting to transfer large volumes of data at the same time to or from BellHawk. Also, because of built-in record and character level error detection and correction, many of the problems of transferring data over inherently unreliable Internet connections are solved.

RDI is ideal for users who wish to export large volumes of Excel setup data to BellHawk. It is also very useful for exporting Excel data from BellHawk for further analysis. The data in the DEX database can also be used for generating custom reports in third party reporting software as well as using Python to create and run custom reports.

The DEX database is essentially the same as is used by the MDEX interface, which is based on the use of MilramX and is designed to run 24x7 for long periods of time.

Users can start out using the RDI to develop custom reports and/or interfaces to other systems and then transition to using MDEX for operational use. This is especially valuable when implementing shared reports using business intelligence software that require the DEX database to be continuously updated without human intervention. It is also essential when implementing automated data exchange interfaces with ERP, accounting, CAD and other systems.

RDI only requires a standard external outbound Internet connection to communicate with the BellHawk website, such as you would use with any web-browser. It does not require any special "holes" in the organization's Internet firewall for inbound communications, as all inbound data is fetched from BellHawk in response to requests from RDI.

There can be multiple RDI and MDEX interfaces communicating with a single copy of BellHawk at the same time. This enables custom interfaces and custom reporting to be implemented in multiple manufacturing plants and warehouses in different geographic locations. Each copy of the RDI requires its own BellHawk Device Access License (DAL) login.

These RDI and MDEX data exchanges can present a significant processing load to the BellHawk database. As such, mechanisms are in place to throttle the speed of data exchanges, to ensure that small amounts of data can be exchanged quickly but larger amounts of data are exchanged slowly but reliably.

When BellHawk is being used as part of the BellHawk Online Service these throttling mechanisms are used to ensure that the use of DEX by any one user does not "hog" the processor to the detriment of other clients using a shared BellHawk Online server. As a result, users should not expect rapid transfers of large amounts of data, such as inventory snapshots, and should plan to do these overnight.

For IT departments installing BellHawk on their own servers, these throttling mechanisms can be used to tune the system so that web-service transfers do not overwhelm the use of the system for barcode data collection.

2. Data Exchange Overview

The data that can be exchanged consists of the following groups:

- Current status data. This includes the status of work orders and the contents of the containers table. These DEX tables are updated as changes occur in the BellHawk database.

- Data for transfer to ERP and accounting systems. These include aggregated shipments and receipts, as well as nightly inventory snapshots. These are periodically transferred from BellHawk at intervals set by the DEX user.

- Transaction history data. This DEX data includes containers of material received and picked, material moved, material consumed and produced on work orders, containers of material shipped, labor and machine time consumed against work orders, and the change in quality control status of containers of material. New records are added whenever a transaction is recorded in BellHawk.

- Setup data for BellHawk - this is the same data as that which can be imported in HLDO (High Level Data Object) format through the Excel Setup data interface into BellHawk. The primary function of these transfers is to enable setup data to be transferred from ERP and accounting systems into BellHawk but this can also be a convenient way of manually transferring setup data into BellHawk.

- Setup Data from BellHawk. This includes the same set of data objects as can be transferred to BellHawk but they are transferred from BellHawk into a separate set of DEX tables, which are updated automatically as changes are made in BellHawk. These are useful for including in reports, especially when the setup data is imported directly into BellHawk or is automatically updated in BellHawk from another system.

- Orders for BellHawk. These are the same Purchase Orders, Pick Orders, Work Orders, and Ship Orders, which can be directly entered into BellHawk. They enable orders to be automatically sent to BellHawk directly from ERP and other systems.

- Orders from BellHawk. These are copies of the Purchase Orders, Pick Orders, Work Orders, and Ship Orders directly entered into BellHawk or imported into BellHawk from another system. These are written into a separate set of tables from the DEX tables used for sending orders to BellHawk and are automatically updated whenever changes are made in the BellHawk database. These are intended for reporting but are also useful for transferring order data to other systems, such as operational parameters for process control systems.

For More Information

Please contact sales@KnarrTek.com or see www.KnarrTek.com for more details.