



# “Retail Enabled” Warehouse Management Systems

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Retailers are demanding more and more from their suppliers each day, with E-Commerce, Scan Packing, Just in Time delivery, and Guaranteed Supply contracts with penalty clauses for late or incorrect deliveries. This forces suppliers to work smarter and more efficiently with their supply chain solutions in general, and particularly in their distribution to retailers. This article details one of the crucial aspects in a smart distribution solution, the Warehouse Management System (WMS).

Most readers who already warehouse as part of their distribution solution are likely to be saying to themselves “we already know about the WMS and we already have one, so why do we need to know about retail demands?”

The answer lies in the efficiencies that can be gained with a “Retail Enabled” WMS. This means a WMS that has the necessary features to ensure that your company can satisfy the demands of retailers, both within the distribution centre and beyond.

To effectively supply to retailers you require a solution that supports Electronic Commerce (E-Commerce). E-Commerce was once known as Electronic Data Interchange (EDI) and is sometimes referred to as Business to Business (B2B). E-Commerce is most commonly used to describe the ability for customers to place orders from the Internet, but for businesses that supply to retailers, it is far more involved.

Suppliers need to have the ability to view predictive or expected orders, customer stock levels, receive electronic orders, send order confirmations, internally initiate manufacture or assembly, place orders on raw materials suppliers, send delivery estimates, send Advance Shipping Notices (ASNs) and finally invoice the customer all via E-Commerce. While some companies may view these E-Commerce transactions as administration functions performed by office staff, other companies realise the benefits that a “Retail Enabled” WMS can provide in reducing office labour via the recording and processing of information produced by the warehouse operators performing their jobs.

One clear benefit that a “Retail Enabled” WMS provides is real time information to a company’s main computer system. With real time information, all staff involved in the supply of goods from the distribution centre can quickly and easily see the progress and status of orders being processed by the warehouse. If the main computer system has some Material Requirements Planning (MRP) or Enterprise Resource Planning (ERP) features with some artificial intelligence, it is able to advance schedule a delivery and accurately predict a delivery or dispatch time. The transportation company can also use this information to prepare the correct vehicles for transport, ensuring even more efficient and timely deliveries to the customer.



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A spin off benefit from real time information is order accuracy. When information is collected in real time, the WMS solution has the ability to correct any anomalies before the customer receives the goods. The most common example is stock shortages. Warehouses often short supply orders simply because they cannot locate products in their correct location, or because the picking face is empty. With real time information, fail safe mechanisms and some intelligence in the WMS solution, replenishments can be requested, subsequent picking lists can be generated, or shipment of the entire order can be delayed for a short time while any stock problems are corrected. The customer then has the greatest possible chance of having their order supplied accurately and on time. Remember that retailers are increasingly adding penalty clauses to their supply contracts for incorrectly supplied orders.

With food and health being some of the largest retail sectors, traceability and management of batches can be a burden to suppliers. Product recalls and tampering scares are not as rare as they once were, and everyone in the supply chain can be seriously affected by such a recall, not only the manufacturer. Anyone handling batch managed goods must be able to distinguish between batches and know exactly which batches were delivered when. Knowing this information can reduce the extent of a recall and absolutely reduce the cost involved in the processing of such a recall. With a “Retail Enabled” WMS, a bar code identifying the batch of a product is all that is typically required to enable warehouse operators to record everything they move. This information is stored and included on every external transaction. Hence the efficient distribution centre with a “Retail Enabled” WMS maintains the traceability requirements for their customers without a noticeable increase in labour.

Many years ago, the Myer Grace Brothers group documented a practice that they named the “MGB Way” and mandated their suppliers comply with documented requirements. A major component of the “MGB Way” was “Scan Packing”. Scan Packing is the process of packing boxes using an extremely accurate recording technique that involves only bar code scanning. The operator does not write down quantities or process paperwork, instead they must scan each item as it goes into a box so the WMS can record the exact contents of each and every box. An exact description of the contents of a box is sent to the customer via an Advanced Shipping Notice (ASN) transaction.

The “MGB Way” is now referred to as “EAN Way” and an increasing number of retailers are demanding this type of packing, combined with the ASN E-Commerce transaction. Some retail customers are even specifying the exact contents of boxes when they place their order, forcing distribution centres to pack in accordance with customer instructions. Additionally, a Serial Shipping Container Code (SSCC) is used to uniquely identify each packed box. This is a world unique number that is generated in accordance with EAN Australia’s guidelines, used as part of ASNs in communicating package contents between two parties and printed on a label, using the EAN-128 bar code standard. The “Retail Enabled” WMS solution needs to support Scan Packing, pre-specified packing by the customer, SSCC label printing and the EAN-128 Bar Code standard.

There is a small but crucial aspect of supplying to retail that can bring down many a WMS. This is the ability to use the many distinct retail bar codes for identifying product to the WMS. With the EAN-13 retail bar code standard, the same product may be manufactured in two different countries and have different product bar codes. This can cause grief to a WMS that supports only one main bar code and perhaps one alternate bar code for a single product. A smart WMS will support many different bar codes for the one product when used in supplying retailers.

So this leads us to the big question, “why do retailers need all these features?” The answer to this is simple. Retailers want to reduce their own costs and streamline their work load. So why should a supplier take up the slack? Because if you don’t one of your competitors will! Hence we have a competitive cycle that benefits the customer and burdens the supplier, forcing suppliers to get smarter, more efficient and work to greatly reduce overheads.



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In practical terms, the EAN Way packing, combined with ASN allows the customer to receive the goods into their store without having to check the contents. The E-Commerce transactions avoid the use of the telephone, facsimile or E-mail communications as well as the reducing the labour involved to verify the status of orders and estimated delivery times. The traceability aspects allow all parties to minimise the recall and batch management effort, while the real time updates allow them to know what is going on without additional human involvement.

There are benefits to suppliers as well, especially when perishable goods are involved. Just in time delivery combined with predictive orders assists manufacturers to adjust their production runs to match their sales and minimise waste. All parties involved in this competitive regime are forced into being a higher quality business, which is a good thing for everyone in the longer term.

So how do you get from where you currently operate to a fully featured “Retail Enabled” WMS? To start you will need a main computer system for your company that includes a suite of E-Commerce features combined with a WMS solution that supports the standard warehousing features and some of the special retail features.

Selecting such a system can be a daunting task. Your current systems may be able to be enhanced or you may already have some of these features and you are simply not using them. In this situation, it is a good idea to get in contact with the various system vendors and ask them about the future path of their products. Alternatively, you may need to select new systems and implement them. This can be a costly exercise, but armed with a little knowledge and knowing some of the right questions to ask, you can find a solution that meets your needs and budget.

There are four basic approaches to WMS systems that may accommodate your requirements. These are “Best of Breed” standalone WMS, Presentation Layers and RF Drivers, Middleware, and Built-In solutions. Each of these has distinct advantages and disadvantages. Only the WMS options are presented here as options regarding your main computer systems are beyond the scope of this document.

A “Best of Breed” stand alone WMS is the traditional WMS used by warehouses. They typically offer very advanced warehousing and machine control, supporting all types of factory automation and human driven devices. Typically speaking, if the warehouse requires pallets with mixed goods, many movements, lots of assembly into finished goods, complicated batch rotation, and complicated bulk storage, you will probably require the features of a “Best of Breed” stand alone WMS. The advantage of a stand alone WMS lies in its sophisticated warehouse control. The biggest disadvantage of this approach is that they often have weak interfaces to the main computer system and you will have to maintain two complete databases, one for your main system and one for the WMS.

There are solutions available that are often referred to as “bolt ons” to a main computer system. These solutions are not clearly defined but often provide an excellent fit when the main computer system that does not have sufficient WMS capabilities yet a standalone WMS is not required. These can be referred to as “Presentation Layers” or “RF Drivers”. They are a feature rich application that manipulates data sent from the main computer system so that warehouse operators can use bar code reading terminals and some factory automation to process the work. The main computer system is typically updated in near real time and this approach gives the main computer system the “Retail Enabled” WMS capabilities it requires. The advantage of this approach is that it forms a “tightly coupled” system that does not require two separate databases to be maintained. The biggest disadvantages of these systems is that they do not provide all the sophisticated features you can get in a stand alone WMS.



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Middleware solutions for data collection and WMS “bolt ons” to main computer systems were very popular in the Y2K boom and until about mid 2001. These solutions offer a “transparent” approach to getting your warehouse transactions onto a small screen terminal with a bar code reader. They ranged in their technologies from simple screen scraping through to quite sophisticated online messaging systems. These solutions were sold on their potential, not their actual abilities. The biggest disadvantage with these systems is that the actual transactions need to be developed by the purchaser of the software or an integration partner. This meant that the real cost of the solution could run many times the actual purchase price of the software. Unless you can also purchase pre-written transactions that you have seen operate with the solution, be wary of what middleware solutions promise. The advantage of such a solution lies in the ability to develop whatever transactions you wish, provided that it is within the capabilities of the middleware. Be sure you can achieve Scan Packing with these products before using one as part of a “Retail Enabled” WMS solution, and factory automation is rarely available.

A couple of the main computer systems offer WMS support with mobile terminals as part of their core package. This obviously seems like a very good solution at face value, and for customers that need to update their main computer system or need to change to a more sophisticated system, this can often be the most cost effective solution. The advantages of these offerings are that they are fully integrated and often do not cost more than additional user licences. The disadvantage of this approach is that the people who write the main system also write the WMS part of the software and it is not their main focus to provide the sophisticated transactions required to support a “Retail Enabled” WMS, and factory automation is rarely available.

Everyone understands that the suppliers to retail customers must be efficient, accurate, and comply with many requirements that these customers place on the suppliers. With the correct choice of a main computer system combined with a suitable warehouse system, it is possible to achieve a “Retail Enabled” WMS that provides the flexibility, efficiency, accuracy, and information required to satisfy retail customer requirements while reducing administrative labour, and without overburdening the warehouse work force.

### **ABOUT THE AUTHOR**

*Stuart Ferguson has been consulting and developing software for the warehousing and logistics sector for ten years. He has been involved in more than forty different implementations of various systems. For the last six years he has worked with TIG International Pty Ltd, a company that he helped establish to specifically address a particular niche in the mating of warehouse systems with ERP systems by developing a product called MMT, a presentation layer for ERP systems that need sophisticated WMS transactions and factory automation, without the need to implement a “Best of Breed” standalone WMS.*

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