



WHITE PAPER

# MRP Without the Enterprise Price Tag: Production Planning & Material Requirements in ERPNext

How ERPNext's Production Plan nets demand against stock, explodes your BOMs, and tells you exactly what to make and what to buy — without a per-seat licence.

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For production planning & supply-chain leaders · 9 min read

## EXECUTIVE SUMMARY

Material Requirements Planning (MRP) is the discipline that keeps a factory from running out of the parts it needs while not drowning in the parts it doesn't. For decades, real MRP meant an enterprise ERP with a licence to match. ERPNext puts a working MRP engine — its Production Plan document — inside an open-source system with no per-user fee. This paper explains, in accurate detail, what MRP actually does, how ERPNext's Production Plan nets demand against available and incoming stock, explodes multi-level bills of materials, and proposes the Work Orders and Material Requests that translate a sales forecast into shop-floor and purchasing action. It is written for planners and supply-chain leaders who want to understand the mechanism before they trust it.

## The planning problem: stockouts on one side, cash on the other

Every manufacturing business lives between two failures. Run short of a raw material or sub-assembly and the line stops, orders ship late, and customers leave. Over-order to be safe and cash freezes on the shelf as inventory, warehouses fill, and materials expire or go obsolete. The job of production planning is to sit precisely between the two: order and make enough, of the right things, at the right time — no more.

The reason this is hard is that demand and supply don't line up on their own. A single finished product may need dozens of components across several levels of assembly, each with its own stock on hand, open purchase orders, and lead time. Multiply that by a live order book and a forecast, and the arithmetic quickly outgrows a spreadsheet. This is exactly the calculation MRP was invented to automate.

## What MRP actually does

Material Requirements Planning answers one question with discipline: given what we've promised to deliver, and what we already have or have coming, what must we make and what must we buy — and when? It works from three inputs. First, demand: confirmed sales orders and, optionally, a forecast. Second, the bill of materials (BOM) for each product, which lists every component and sub-assembly and its quantity. Third, inventory position: what's physically in stock, what's already reserved, and what's on incoming purchase or work orders.

MRP then does the netting. For each item it takes gross demand, subtracts what's genuinely available, and is left with net requirement — the shortfall it actually needs to cover. It explodes that shortfall down through every level of the BOM, so a shortage of a finished good becomes a demand for its sub-assemblies, and those become demand for raw materials. The output is a time-phased plan of what to produce and what to procure. ERPNext implements this as a single document: the Production Plan.

## How ERPNext's Production Plan works

The Production Plan is ERPNext's MRP engine, and it runs as a guided sequence. You start by telling it where to get demand from — its "Get Items From" setting pulls from Sales Orders or Material Requests, filtered by customer, item, project, or a date window. It gathers the open order lines into a

demand list, optionally combining duplicate items across orders so the same product ordered five times becomes one planned quantity. ERPNext can also take demand from a Sales Forecast, so you can plan against expectation, not just confirmed orders.

From that demand it builds the list of finished goods to manufacture, each carrying a Planned Qty and the BOM that defines it. Crucially, the plan doesn't treat planned quantity as net requirement blindly — as it works through material requirements it considers each item's Projected Qty (stock on hand plus incoming, minus what's reserved and already demanded), so it nets against what you truly have and expect. That is the difference between a picking list and an MRP run.

- Pull demand — collect open Sales Order (or Material Request) lines, or a Sales Forecast, into a single planned list; combine repeated items so quantities aggregate.
- Net against stock — for every required item, weigh gross demand against Projected Qty (actual in-stock plus ordered, less reserved and existing demand) rather than ordering the full amount.
- Explode the BOM — with multi-level BOM enabled, drive the finished-good requirement down through each sub-assembly and raw material, level by level.
- Propose the work — generate Work Orders for what you make and Material Requests for what you buy, sized to the net shortfall.

## How an ERPNext Production Plan run flows

1

### Gather demand

pull open Sales Order lines (or a Material Request, or a Sales Forecast); combine repeated items so quantities aggregate into one planned figure per product.

2

### Set finished goods to make

each product carries a Planned Qty and its BOM; the plan prepares to net this against what you actually have.

3

### Net against projected stock

for every item, weigh demand against Projected Qty (in-stock plus incoming, less reserved and existing demand) so only the true shortfall is planned.

4

### Explode multi-level BOMs

drive the requirement down through sub-assemblies and raw materials, level by level, planning the deepest components first.

5

### Decide make vs buy

each sub-assembly gets a Manufacturing Type (In House, Subcontract, or Material Request); items already in stock can be skipped.

6

### Generate the work

create Work Orders for manufactured items and Material Requests for purchased items, each sized to the net requirement and traceable to its source order.

## Make vs buy, and multi-level sub-assemblies

Real products aren't flat. A finished good is built from sub-assemblies, which are themselves built from components — a bill of materials several levels deep. ERPNext's Production Plan handles this explicitly through its sub-assembly items: it walks the BOM by level (each line carries its BOM Level), so it plans the deepest components first and the top-level assembly last, in the order they must actually be built.

For every sub-assembly it also decides how that item should be supplied. Each sub-assembly line has a Manufacturing Type — In House, Subcontract, or Material Request — which is the make-versus-buy decision made concrete. "In House" becomes a Work Order on your own floor; "Subcontract" routes it to an external processor; "Material Request" treats it as something to purchase rather than build. The plan can skip sub-assemblies you already have in stock, so it only proposes work for the genuine gap. The result respects the structure of your product instead of flattening it into a shopping list.

## From plan to shop floor and purchasing

A plan is only useful when it turns into action, and this is where the Production Plan earns its place. Once you're satisfied with the netted, exploded plan, it generates two kinds of downstream document. For items you manufacture, it creates Work Orders — each tied back to its BOM, its finished-goods warehouse, and the originating sales order — which the shop floor then executes through Job Cards. For items you purchase, it raises Material Requests, sized to the net requirement, which flow into your buying process and become Purchase Orders.

The material-request side has real controls. You can plan to purchase only, honour each item's Minimum Order Quantity, include safety stock in the requirement, include or exclude non-stock and subcontracted items, and choose whether to ignore quantities already on order. Each proposed Material Request line shows its Required Qty, Projected Qty, current Qty In Stock, and any quantity already ordered — so the planner sees the reasoning, not just the answer, before committing.

## Keeping the plan honest

MRP is only as good as the data underneath it, and this is where most implementations succeed or fail. The Production Plan nets against Projected Qty, which is meaningful only if stock, reservations, and open orders are accurate — so disciplined inventory transactions are a prerequisite, not an afterthought. BOMs must reflect how the product is really built, at every level, or the explosion produces the wrong requirements.

Timing matters as much as quantity. Work Orders carry a lead time and planned dates; purchased items have their own lead times that decide how early a Material Request must be raised to arrive on time. ERPNext also supports item-level reorder levels and safety stock, which the plan can fold into requirements so buffers are deliberate rather than accidental. Kept current, these settings let the plan tell you not just what to order, but when — which is the whole point of MRP. Neglected, they turn a precise engine into a source of confident-looking noise.

## Getting help

ERPNext gives you a genuine MRP engine without an enterprise licence, but an MRP engine rewards a clean setup: accurate multi-level BOMs, trustworthy stock, sensible lead times, reorder levels, and a repeatable planning rhythm. Getting those foundations right — and configuring Production Plan

defaults, warehouses, and make-versus-buy rules to match how your factory actually runs — is where an experienced ERPNext partner shortens the road.

Acube Innovations is an official ERPNext partner based in India, implementing ERPNext manufacturing for businesses that want real production control without per-seat software costs. If you're weighing whether ERPNext's Production Plan can replace spreadsheets or a legacy MRP, talk to a real expert — no obligation.

### KEY TAKEAWAYS

- 1 Production planning lives between two failures — stockouts and dead inventory; MRP is the arithmetic that keeps you between them.
- 2 ERPNext's Production Plan is a real MRP engine: it pulls demand from sales orders or a forecast, nets it against projected stock, and explodes multi-level BOMs.
- 3 It automates make-versus-buy — each sub-assembly gets a Manufacturing Type (In House, Subcontract, or Material Request) and generates Work Orders and Material Requests accordingly.
- 4 The plan shows its working — required qty, projected qty, qty in stock and already-ordered qty per line — so planners can trust the output before committing.
- 5 You get all of this in open-source ERPNext, on accurate BOMs, honest stock and realistic lead times — and with no per-user MRP licence.

## FAQ

### **Does ERPNext have real MRP, or just basic production tracking?**

ERPNext has a genuine MRP engine in its Production Plan document. It pulls demand from sales orders or a sales forecast, nets it against projected stock (on-hand plus incoming, less reserved), explodes multi-level bills of materials, and proposes Work Orders and Material Requests. That is material requirements planning, not just recording what the floor made.

### **Can ERPNext handle multi-level BOMs and sub-assemblies?**

Yes. With multi-level BOM enabled, the Production Plan walks the bill of materials by level, planning the deepest sub-assemblies first and the top-level product last. Each sub-assembly can be set to be made in-house, subcontracted, or purchased, and the plan can skip any sub-assembly you already hold in stock.

### **Is ERPNext manufacturing suitable for Indian SMEs and MSMEs?**

It is a strong fit. ERPNext is open-source with no per-user licence, so cost doesn't scale with headcount — which matters for growing Indian manufacturers. It combines MRP, work orders, job cards, GST-ready purchasing and inventory in one system, so a mid-sized factory can run planning and procurement without stitching together separate tools.

### **Do we need an ERPNext partner to set up production planning?**

You can start ERPNext yourself, but MRP rewards a clean foundation — accurate multi-level BOMs, trustworthy stock, sensible lead times and reorder levels, and Production Plan defaults matched to your factory. An experienced India-based ERPNext partner like Acube gets those right faster and helps you

avoid a plan that looks precise but runs on bad data.

**Talk to a real ERPNext expert.**

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