

Standard Costing 1

Understanding the XA Costing System

Agenda



- System Tailoring
- Cost Fields
 - Item Balance/Warehouse
 - Item Master/Revision
 - Production Facility
 - Routing (Outside Operations)
- Updating cost fields
- Cost Roll up
 - Calculations
 - Cost Status Codes
 - Re-cost Flags
- Other Costing Activities and Inquiries



- General Ledger Interfaces Set Up and Monthly Procedures
- GLI – COM Transactions/Rules
- GLI – IM Transactions/Rules
- GLI – PCC Transactions/Rules
 - Include MO Variances

- Inventory Management Tailoring Questions
 - I006 – Inventory Accounting Costing Method
 - 1 = Standard Cost
 - 2 = Average Cost
 - 3 = Last Cost
 - I032 – RP Transaction Amount
 - Uses PO Price when RP transaction is entered to update Average & Last costs for purchased items
 - Careful – can impact rules for GL Interface PPV and RNI entries
 - I033 – Update Average & Last Cost
 - Uses MO/Schedule cost when RM transaction with Completion Code = C is entered to update Average & Last Cost fields for make items

Inventory Costing



The first place that XA looks for a cost is the tailored field in the Item Balance/Warehouse (ITEMBL) file.

Average & Last Cost fields are updated per system tailoring or entering the following transactions:

- CA – Cost Adjustment (re-averages Average cost and replaces Last cost)
- CR – Average Cost Replace (replaces Average cost)

Standard cost can be updated by entering a **CS** – Standard Cost Replace transaction

Item Balance Cost Fields:

- Standard Cost
- Average Cost
- Last Cost



Item Balance-Standard Cost



(R7) Change Item Warehouse - 1, 1001

File Display Maintain Customize Navigation Help

Default

1001 Pc, 200 Mhz, Desktop 1 Hi-tech Company - Main Whse

Standard unit cost (IW)	1,015.12824994
Average unit cost (IW)	818.31528477
Last unit cost (IW)	185.00000000
Unit cost default (IM)	973.10624517
Standard unit cost (IM)	973.10624517
Current unit cost (IM)	972.38624513

Item Characteristics

Stock Status

Stock Movement

Stock Financial

Unit Cost(s)

Order Sizing

Requirements Mgmt

Mfg Lead Times

Pur Lead Times

Purchasing

Master Scheduling

Cycle Count

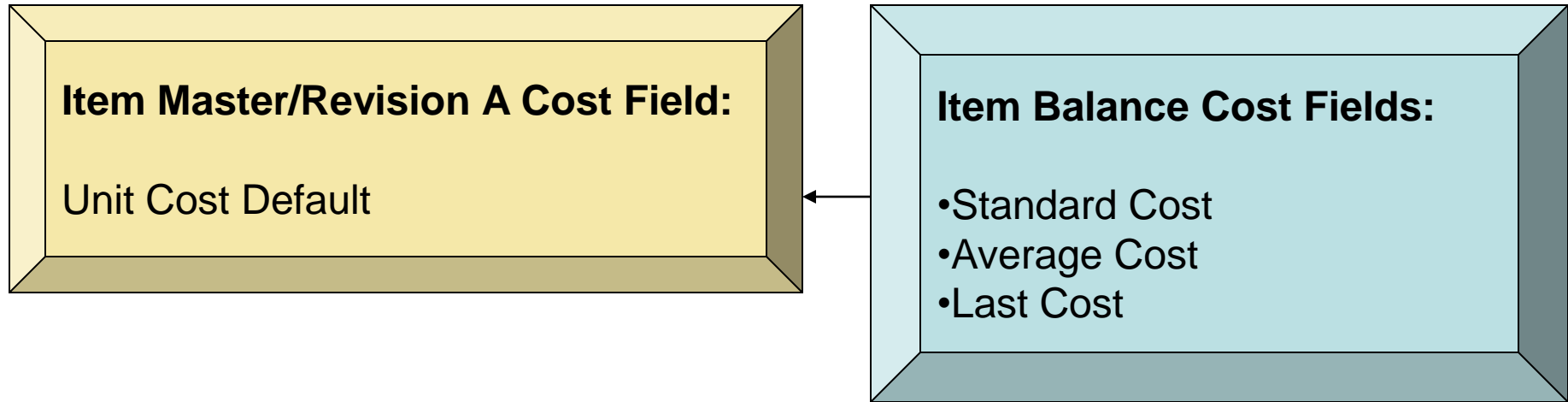
Repetitive

Update Cancel Help



Costing Basics

Inventory Costing



If the tailored field in the Item Balance record is zero, then XA **uses the Unit Cost Default from the Item Master/Revision A (ITEMASA or ITMRVA) record to value the transaction and/or inventory**

Unit Cost Default can be updated by XA during Inv. Mngt. Period Close. XA will move the Standard Cost (calculated during cost roll-up) from the Item Master/Revision B record to the UCD. This will create a 'CU' Transaction.

UCD can also be entered manually which will create a 'CU' transaction.



Inventory Costing



Item Master/Revision A Cost Field:

Unit Cost Default

Item Balance Cost Fields:

- Standard Cost
- Average Cost
- Last Cost

Item Master/Rev B Current & Standard Cost Fields:

Material
Outside Operations
Overhead – Purchase & Mfg.
Labor – Set up and Run
Machine – Set up and Run
4 User Definable Fields

- XA **never** uses the 'B' record cost values for inventory valuation.
- Purchase item's costs are manually maintained
- Cost Roll Up will recalculate costs for make items.



- Neither Standard nor Current cost elements are “automatically” updated by XA programs
- Current is a second set of cost fields (standard not actual)
- Current Cost elements can be “rolled over” to Standard Cost fields
- An example of the use of the Current Cost fields:
 - Establish next year’s standard in the current cost fields
 - Run Current Cost Roll-up to calculate next year’s cost (re-run as needed)
 - At year end, run the “Roll Current to Standard Costs” job then run an IM Year End and move Standard to UCD

Item Revision Cost Fields – Item “B” Data



(R7) Change Item Revision - 100, 1001, C

File Display Maintain Customize Navigation Help

C-A Default

1001 PC, 200 MHZ, DESKTOP Site: 100 PC Production Rev:

Unit cost default 973.10624517

Standard setup cost / lot 0.00000000

Current setup cost / lot 0.00000000

Cost technique code Calculate TL labor/overhead w/ Routing

Standard lot size 1,000

Labor hours 0.0000

Recost flag Does not need costing

The final set Standard

Costing Parameters

Update Cancel Help

Click on each card to review Standards or Current Costs. Keep in mind that the Unit Cost Default at the top of this screen is the FINAL ESTABLISHED STANDARD USED TO VALUE INVENTORY AND COST TRANSACTIONS IF ITEM BALANCE COST is ZERO



Cost Parameters



Change Item Revision - 310,ARM66762,

File Display Maintain Customize Navigation Help

Default

ARM66762 Motor Armature Site: 310 Controlling/Measuring Devices Rev:

Unit cost default	0.00000000
Standard setup cost / lot	0.00000000
Current setup cost / lot	0.00000000
Cost technique code	= Don't calculate TL labor/overhead
Standard lot size	0.000
Labor hours	0.0000
Recost flag	N = New item, needs current and standard costing

Item Characteristics
Warehouses
Engineering
Item Processes
Physical Characteristics
Location Control
Costing Parameters
Current Costs
Current Cost Dates
Standard Costs
Standard Cost Dates
Purchasing
Vendor Performance
Sales
Shipping

Update Cancel



Costing Basics

Fields that impact a Manufactured Item's costs:

- Cost Technique Code (CTC) determines how XA Cost Roll-up calculates labor, machine and overhead cost elements
 - R – Use the Routing for hours and Production Facility for costs
 - T – Set the total labor hours in the Item Master/Rev B record and use a table to extend labor and overhead costs
 - Blank – Set labor and overhead costs manually...
use for Purchased items

Make Item CTC = Blank



- If the CTC is left blank, then XA assumes that you want to manually enter or leave blank the labor and overhead costs for this item
- If you have defined the item as a make item (Item Type = 1 or 2) and either labor or overhead is zero, then XA will flag the item as missing cost elements.



Make Item CTC = R



- If the CTC = R then other fields in the Item Master/Revision that are used for cost roll-up are:
 - The Standard Lot Size (Item Master/Revision) is used to divide the Set up costs by the lot size
 - Standard Lot Size should represent the average MO quantity



Make Item CTC = T



- If the CTC = T:
 - The Labor Hours (Item Master/Revision) will need to be set. This is the total time to make this item.
 - In addition, you will have to enter the Labor Code and Overhead Codes (matching to the codes in the Labor/Overhead Cost Table) in the Item Master/Revision record
 - Labor/Overhead Cost Table (from Costing Menu) values will need to be set



Labor/Overhead Table



ERP for iSeries eWorkPlace Session A

File Edit Functions View Options Help

DATE 6/16/06 LABOR/OVERHEAD TABLE CHANGE AMVX71 R7

COSTING TABLE	CODE	LABOR RATE	CODE	OVERHEAD * RATE/PERCENT
	B	12.000	K	35.000
	B	15.000	L	300.000-
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000
		.000		.000

LAST MAINTAINED: 6/16/06
LAST COSTED: CUR 7/07/00
STD 7/07/00

* POSITIVE VALUE INDICATES RATE
NEGATIVE VALUE INDICATES PERCENT

OK REFRESH SCREEN END OF JOB



Costing Basics

MATERIAL COSTS

- Costs for purchased items (item type = 3, 4 or 9) are manually entered in the:
 - Current This Level
 - Standard This Level fields
- There is no automated method in Mapics to have the system update these fields
- Cost roll up will use the manually entered costs to calculate the material cost of a manufactured item

- If your company burdens purchased material, you need to create a Purchase Overhead Table from the PDM/EPDM Costing Menu
- The table can hold up to 20 different percentages
- Enter the code (a 1 character, A/N field) and the percentage

Purchase Overhead



ERP for iSeries eWorkPlace Session A

File Edit Functions View Options Help

DATE 6/16/06 PURCHASE OVERHEAD TABLE CHANGE AMVX72 R7

COSTING TABLE	CODE	OVERHEAD PERCENT	CODE	OVERHEAD PERCENT
	X	10.00		.00
	Y	30.00		.00
		.00		.00
		.00		.00
		.00		.00
		.00		.00
		.00		.00
		.00		.00
		.00		.00
		.00		.00
		.00		.00
		.00		.00

LAST MAINTAINED: 9/04/05
LAST COSTED: CUR 7/07/00
STD 7/07/00

OK REFRESH SCREEN END OF JOB

MW ?



Costing Basics

Purchase Overhead Calculation



(R7) Change Item Revision - 100, 1104, A

File Display Maintain Customize Navigation Help

C-A Default

1104 SPEAKERS Site: 100 PC Production Rev. A

Unit cost default: 82.17300000
Standard setup cost / lot: 0.00000000
Current setup cost / lot: 0.00000000
Cost technique code: Don't calculate TL labor/overhead
Standard lot size: 0.000
Labor hours: 0.0000
Recost flag: Does not need costing

Roll Cost; for Pur O/H code 'Y':
63.21 * 30% = 18.936

Current cost status code: Costs are complete
Current unit cost: 69.52000000
Current material this-level: 63.20000000
Current material lower-levels: 0.00000000
Current outside operations this-level: 0.00000000
Current outside operations lower-levels: 0.00000000
Current purchase overhead table code: X
Current purchase overhead this-level: 6.32000000
Current purchase overhead lower-levels: 0.00000000
Current run labor table code:
Current setup labor this-level: 0.00000000
Current setup labor lower-levels: 0.00000000
Current run labor this-level: 0.00000000
Current run labor lower-levels: 0.00000000
Current manufacturing overhead table code:
Current manufacturing overhead this-level: 0.00000000
Current manufacturing overhead lower-levels: 0.00000000
Current setup machine this-level: 0.00000000
Current setup machine lower-levels: 0.00000000

Standard Costs

Standard cost status code: Costs are complete
Standard unit cost: 82.17300000
Standard material this-level: 63.21000000
Standard material lower-levels: 0.00000000
Standard outside operations this-level: 0.00000000
Standard outside operations lower-levels: 0.00000000
Standard purchase overhead table code: Y
Standard purchase overhead this-level: 18.96300000
Standard purchase overhead lower-levels: 0.00000000
Standard run labor table code:
Standard setup labor this-level: 0.00000000
Standard setup labor lower-levels: 0.00000000
Standard run labor this-level: 0.00000000
Standard run labor lower-levels: 0.00000000
Standard manufacturing overhead table code:
Standard manufacturing overhead this-level: 0.00000000
Standard manufacturing overhead lower-levels: 0.00000000
Standard setup machine this-level: 0.00000000

Update Cancel Help

C-A Characteristics
Stocking this item
Engineering
Item Processes
Location Control
Costing Parameters
C-Cost
C-Summary Cost
C-Cur and Std Cost
Item Costs (Graph)
Current Costs
Current Cost Dates
Standard Costs
Standard Cost Dates
Purchasing
Vendor Performance
Sales
Shipping
User Fields
Inspection



COST ROLL-UP

Cost Roll-up



- There is a field in the Item Master/Revision that XA maintains called the Low Level Code (LLC)
- LLC is the lowest level in a Bill of Material that this item appears
- Cost roll-up begins with the largest number LLC and works its way up through the bill
- If you think that the LLC in your database is incorrect, a reorganization of the Product Structure will correct the LLC



Low Level Code



(R7) Change Item Revision - 100, 1305, A

File Display Maintain Customize Navigation Help

C-A Default

1305 MOTHERBOARD CHIP, 166 MHZ Site: 100 PC Production Rev: A

Effective from date	01/01/1940
Effective to date	/ /
Implementation status	
Item type	Purchased
Drawing number	
S-number flag	Not allowed
APC item	<input type="radio"/> Yes <input checked="" type="radio"/> No
Low level code	3
Number of assemblies where-used	2
Create user	JOE
Create date	06/02/1997
Change user	VERMILLIOD
Change date	01/30/2002

Update Cancel Help

- C-A Characteristics
- Stocking this item
- Engineering**
- Item Processes
- Location Control
- Costing Parameters
- C-Cost
- C-Summary Cost
- C-Cur and Std Cost
- Item Costs (Graph)
- Current Costs
- Current Cost Dates
- Standard Costs
- Standard Cost Dates
- Purchasing
- Vendor Performance
- Sales
- Shipping
- User Fields
- Inspection



Costing Basics

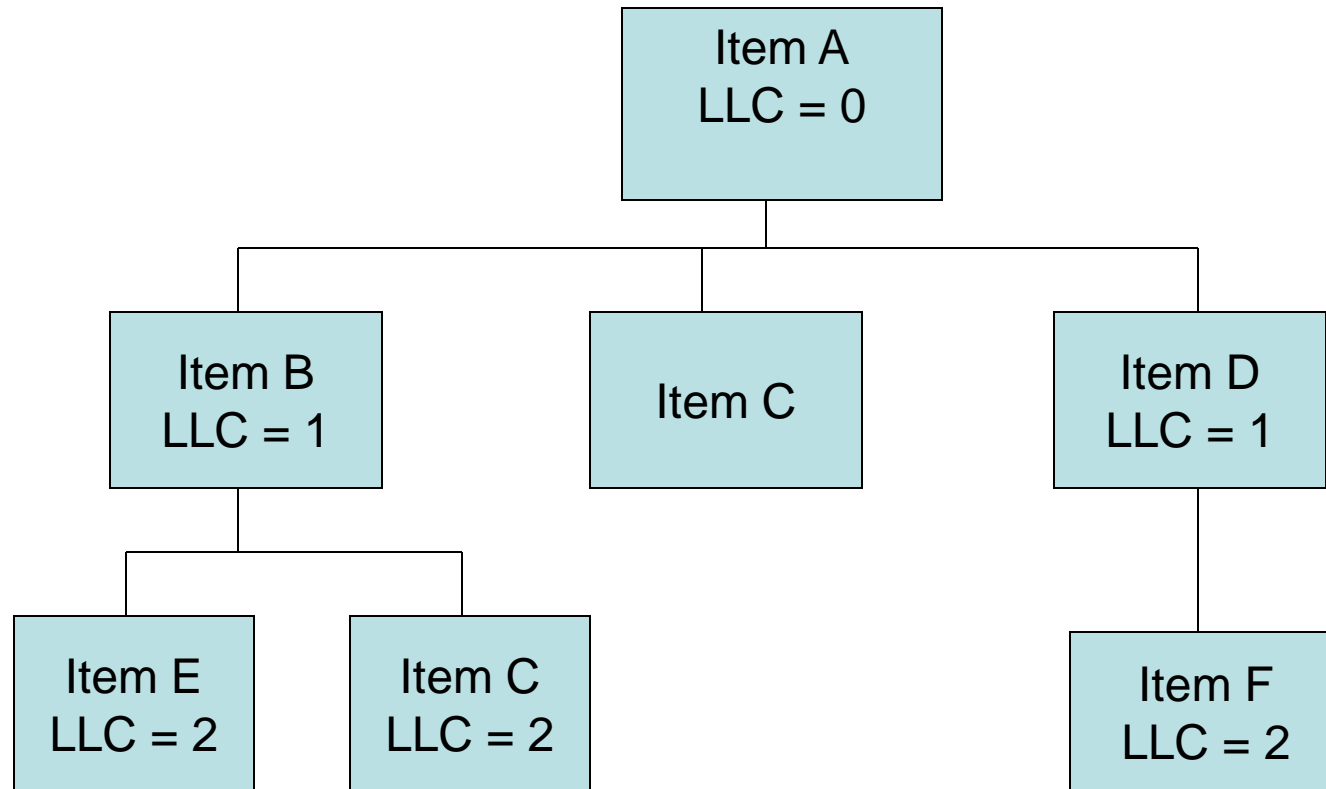
The Concept of Standard Batch Quantity (SBQ) & Costing



- Used to define the 'quantity per' relationship between the component item and its parent.
- Always expressed at the parent item, regardless of where in the bill it occurs
- **Quantity per on Bill of Material components becomes the required quantity for one SBQ**
- Costing will divide the rolled up cost totals by the SBQ to arrive at per unit costs in all fields (L&O too).
- Expands the decimal precision needed beyond the 3 decimals available



Product Structure Example



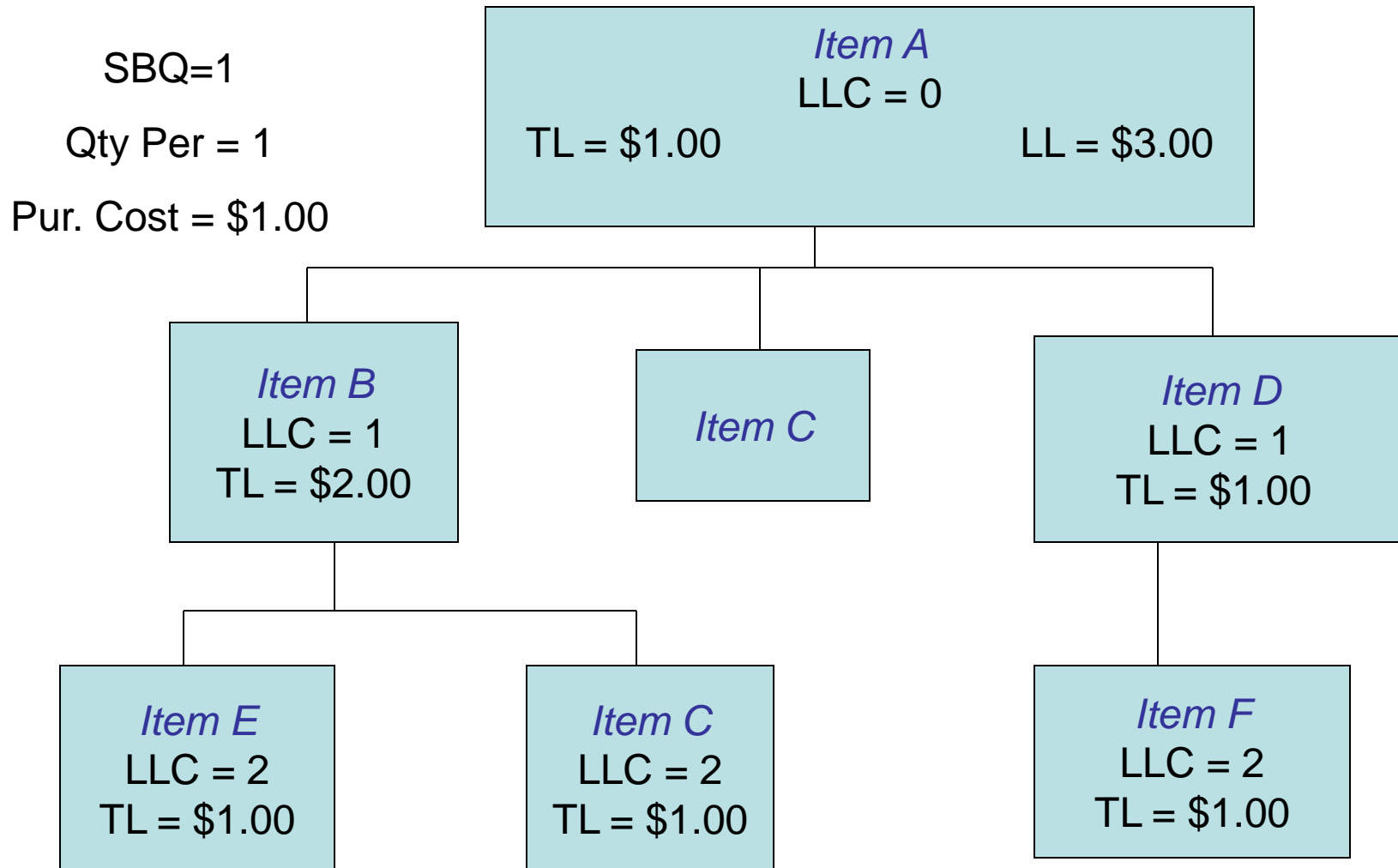
Cost Roll-Up Example



- XA divides costs for an item between “This Level” and “Lower Level”
- As you move up through the bill, “This Level” costs will become “Lower Level” costs
- The sum of the “This Level” and “Lower Level” cost elements will become the calculated cost for the item
- For this example, assume that all purchased items have a cost of \$1.00

Product Structure Example

Material Only



Labor Cost Calculations

- Use Item Master/Revision file maintenance to manually set the this level:
 - Labor costs
 - Machine Costs
 - Outside Operation costs
 - Overhead Costs

- Formula for calculating *Labor costs*:
 - Labor Hours (Master/Rev record) times Labor Rate (table value) = Labor Cost
- Formula for calculating *Overhead* (O/H in table as a percentage of Labor)
 - Labor Cost times Percent = Overhead Cost
- Formula for calculating *Overhead* (O/H in table as a cost)
 - Labor Hours times Overhead Rate = Overhead Cost

$$CTC = R$$

- Each operation in the routing has the costs calculated
- Times in the Routing are used for labor hours
- If Time Basis Code is not blank, XA will convert the time to “hours per piece” before extending by rates
- Each operation specifies the Production Facility where the labor will occur. Production Facility record holds cost

Sample Routing



(R7) Routing Operations - 1003 PC, 300 MHZ, DESKTOP Site: 100 PC Production Rev: A

File Display Maintain Customize Navigation Help

C-General (all records)

1003 PC, 300 MHZ, DESKTOP Site: 100 PC Production Rev: A

Oper	Description	Facility	Desc's	Setup hours	Crew	TBC	Machine run	Labor run	Status	Process	Tool
1000	Inspect Components	9000	Yes	1.00	1	M = Minutes / piece	20.00	10.00	10		
1400	Assembly	1000	No	0.00	1	M = Minutes / piece	35.00	20.00	10		
1800	Final Inpsection	9000	No	0.00	1	M = Minutes / piece	25.00	10.00	10		
1900	Package	8000	No	0.00	1	M = Minutes / piece	50.00	30.00	10		
2000	RE-INSPECT	9000	No	0.00	1	= Hours / unit	0.00	2.00	10		

↑ ↑ ↑

Join



Costing Basics

Time Basis Codes



- Time Basis Codes apply to Run Machine and Run Labor time elements
- Blank – Hours per piece
- 1 – Hours per 10 pieces; divide by 10
- 2 – Hours per 100; divide by 100
- 3 – Hours per 1,000; divide by 1,000
- 4 – Hours per 10,000; divide by 10,000
- P – Pieces per hour; divide pcs/hr into 1
- H – Hours per lot; divide time by Std. Lot Size
- M – Minutes per piece; (additionally applies to setup time); 1 divide by 60
- C – Cost per piece; outside operation cost



Production Facility



(R7) Change Facility - 100, 8000

File Display Maintain Customize Navigation Help

C- Default

8000 MANUFACTURING Site: 100 PC Production

General Other Fields Shifts and Capacity Current Rates Standard Rates Cur and Std Rates **C- Cost Calc Params**

- Other Fields

Standard efficiency	0.85
Average efficiency	1.00
Average standard output	0.00
Average actual output	0.00
Extract machine breaks	<input type="radio"/> Yes <input checked="" type="radio"/> No
Prime load code	Run labor hours
Standard queue time (days)	0.00
Average queue time	0.00
Queue MAD	0.00
Tracking signal	0.00
Number of operations	10
Accounting class	(blank)
Reporting method	Both On and Off required
Clocking window	0
Post to oldest schedules	Use default
Post to future schedules	Use default
Input buffer hours	0.00
Output buffer hours	0.00
Super resource	<input type="radio"/> Yes <input checked="" type="radio"/> No

- Cur and Std Rates

Current machine rate	50.000
Current run labor rate	25.000
Current setup labor rate	25.000
Current overhead rate/percent	125.000
Current overhead code	Machine + (Labor x L/O %)
Standard machine rate	50.000
Standard run labor rate	25.000
Standard setup labor rate	25.000
Standard overhead rate/percent	125.000
Standard overhead code	Machine + (Labor x L/O %)

Update Cancel Help



Costing Basics

Standard Efficiency



- PDM/EPDM tailoring asks the question “Production Facility Standard Efficiency for Current/Standard?”
- If answered “Yes” then Run Machine, Run Labor and Set Up Labor times in the routing will be factored by the Standard Efficiency in the Production Facility

Calculating Set-up Costs



- Set up Labor
 - *Set up hours times Set up Rate divided by Standard Lot Size*
 - *Divided by Std Efficiency ** if tailored*
- Set up Machine
 - *Set up Hours divided by Crew Size equals Machine Down Time*
 - *Machine Down Time times Machine Rate divided by Standard Lot Size*
 - *Divided by Std Efficiency*

Calculating Machine and Labor Costs



- Run Machine Cost
 - *Run Machine Hours (adj by TBC to per piece)*
times *Machine Rate*
 - Divided by *Yield Adjustment (yield thru
previous operation/yield all operations)*
 - Divided by *Std Efficiency*
- = Operation Run Machine Cost

Calculating Machine and Labor Costs



- Run Machine Cost
 - *Run Labor Hours per piece times Labor Rate*
 - *Divided by Yield Adjustment (yield thru previous operation/yield all operations)*
 - *Divided by Std Efficiency*
- = Operation Run Labor Cost

Overhead

- Production Facility has 5 overhead codes which determine, for that facility, how overhead is to be calculated:

Blank	No overhead for the facility
A	Overhead is a percent of Machine (Set Up Machine plus Run Machine) Cost
B	Overhead is a percent of Labor (Set Up Labor plus Run Labor) Cost
C	Overhead is entered as a dollar rate and extended by Machine Hours (Setup and Run Machine Hours with yield adjustment)
D	Overhead is entered as a dollar rate and extended by Labor Hours (Setup and Run Labor Hours with yield adjustment)

1 hour of labor @ \$1.00 per item

Item A

TLM = \$1.00	LLM = \$3.00
TLL = \$1.00	LLL = \$2.00
TLO = <u>\$3.00</u>	LLO = <u>\$6.00</u>
\$5.00	\$11.00
Total Standard Cost: \$16.00	

OH Code=B
Overhead
300% of
Labor Cost

Item B

TLM = \$2.00
TLL = \$1.00
TLO = <u>\$3.00</u>
\$6.00

Item C

Item D

TLM = \$1.00
TLL = \$1.00
TLO = <u>\$3.00</u>
\$5.00

Item E

TLM = \$1.00

Item C

TLM = \$1.00

Item F

TLM = \$1.00

- Outside Vendor should be added to the Production Facility file as a work center with zero rates and blank overhead code.
- Operation in Routing:
 - Uses Vendor as the Facility
 - Time Basis Code = C
 - Vendor Charges entered in the Outside Operation Cost Field

Outside Operation Cost



(AM) Create Routing Operation - 310,ARM66762,A,0500

File Display Maintain Customize Navigation Help

Default [Icons]

ARM66762 Site: 310 Version: A 0500 test

Description: test

Operation status: 10 = Active

Facility: 5030

Setup labor hours: 0.00

Setup crew size: 1

Time basis code: C = Cost / piece

Run machine time (use TBC): 0.00

Run labor time (use TBC): 0.00

Outside operation cost: .50

Additional descriptions: No

Create user: (blank)

Create date: (blank)

Change user: (blank)

Change date: (blank)

General

Additional Description

Other Fields

Facility

Create Cancel

Start | 2 Windows Ex... | Inbox - Microso... | Microsoft Power... | 2 Internet Ex... | ESERVER | 5 Mxacs | 11:11 AM



- When the Cost Roll-up is performed, if there is something that looks out of place to XA, it will assign a Cost Status Code:
 - Blank – all cost elements match Item Type
 - “T” – This Level costs are missing or incorrect. For example, a purchased item with no Purchased Cost or a make item with no labor or overhead
 - “L” – An Item at a lower level of the bill has a cost status = “T”
 - “D” – Files don’t match item type. For example, a purchased item with a bill or routing. A make item without a bill or routing (if CTC = R)

Re-cost Flag



- System assigned flag with the following values:
 - Blank: Item does not need re-costing
 - C: Current should be re-run because of bill and/or routing changes
 - S: Standard should be re-run because of bill and/or routing changes
 - B: Both Std. and Curr. should be re-run
 - N: New Item, Needs both std. & current
 - O: New Item, Needs current
 - P: New Item, Needs standard

- XA has 4 Summary Cost fields in the Item Master/Rev “B” record.
- Any of the detail cost fields can be mapped into one of the Summary fields
- This is defined by the user, through PDM or EPDM File Maintenance

Cost Summary Fields



(R7) Change Item Revision - 100, 1003, A

File Display Maintain Customize Navigation Help

C-A Default

1003 PC, 300 MHZ, DESKTOP Site: 100 PC Production Rev: A

C-Summary Cost	
Current Cost	Standard Cost
Current unit cost 1,604.83755259	Standard unit cost 1,627.50355
Material 1,261.22000	Material 1,261.20000
Pur O/H 12.64000	Pur O/H 37.92600
Labor 96.91372	Labor 96.91372
O/H 234.06382	O/H 231.46382

Summary Fields 1, 2, 3, 4

Current Costs	
Current cost status code	Lower-level costs inconsistent with item type
Current unit cost 1,604.83755259	
Current material this-level 508.87000000	
Current material lower-levels 752.35000000	
Current outside operations this-level 0.00000000	
Current outside operations lower-levels 0.00000000	
Current purchase overhead table code	
Current purchase overhead this-level 12.64000000	
Current purchase overhead lower-levels 0.00000000	

Standard Costs	
Standard cost status code	Lower-level costs inconsistent with item type
Standard unit cost 1,627.50355258	
Standard material this-level 508.89000000	
Standard material lower-levels 752.31000000	
Standard outside operations this-level 0.00000000	
Standard outside operations lower-levels 0.00000000	
Standard purchase overhead table code	
Standard purchase overhead this-level 37.92600000	
Standard purchase overhead lower-levels 0.00000000	

Graph using Summary fields 1, 3, 4

Update Cancel Help



Summary



Item Master/Revision A Cost Field:

Unit Cost Default

Item Balance Cost Fields:

- Standard Cost
- Average Cost
- Last Cost

Item Master/Rev B Current & Standard Cost Fields:

Material
Outside Operations
Overhead – Purchase & Mfg.
Labor – Set up and Run
Machine – Set up and Run
4 User Definable Fields

- 'B' record costs are updated during the cost roll up and never used for inventory valuation
- Item Balance Costs are manually entered through IM Transaction Processing or, depending on tailoring, Average & Last are updated with RP and RM transactions
- If Balance record cost is zero, Unit Cost Default will be used to value inventory
- Standard (from the "B" record) can be copied to UCD during IM Period Close



Establishing Standards

Sequence of Events



- For Purchased Items (Item Type 3, 4 or 9):
 - Enter the Material Cost manually
 - If your company burdens purchased material, enter a Purchase Overhead Code
- Run the Full Cost Roll-up
 - Calculates Purchase Overhead
 - Totals Purchased item's cost
 - Starts at bottom of BOM and calculates the Manufactured Item's (Item Type 0, 1 or 2) cost elements (material, labor, overhead, etc.)
- Run IM Month End to move Cost Roll-up Standard into UCD or manually maintain new item UCD cost
- If the UCD changes, XA will create a CU transaction to use to book the change in inventory value

