6.8. Inventory Optimization via Intersite Transfers

Streamline is able to optimize your inventory by releasing frozen capital internally, and replenish your locations using your own overstocks instead of making any more replenishment orders from your suppliers or distribution centers.

If your business is spread out over several separate regions so that each of them contains a set of locations where inventory transfers are allowed, Streamline can account for these constraints and generate transfers within the given areas.

In this article you will learn:

- How to enable intersite optimization feature.
- How Streamline generates intersite transfers and the delivery date for a transfer in particular.
- How to apply transfer region constraint.
- How to export prepared transfers into Excel or your database.

To demonstrate all of these, we use a little project based on a database source. We have only two products here, **t-shirt** and **dress** that are sold in three stores, **east**, **north** and **west** (see figure below).

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7	New filter	All items									
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	~ 	Landar	0	T	Lead time,		Current	order	Next order	Charlest	Question
	Item code	Location	On hand	lo receive	days	Qty Value Delivery date			date	Stockout	Overstock
1	dress	east	800	626	30	0	0	Oct 24, 2019		0	258
2	dress	north	200	123	30	390	78,000	Oct 24, 2019	Sep 11, 2019	190	0
3	dress	west	500	54	30	119	29,750	Oct 24, 2019	Sep 11, 2019	0	0
4	t-shirt	east	500	200	30	0	0 0 Oct 24, 2019			0	100
5	t-shirt	north	500	0	30	0 0 Oct 24, 2		Oct 24, 2019		0	500
6	t-shirt	west	200	156	30	438	43,800	Oct 24, 2019	Sep 11, 2019	83	0

There are overstocks for three planning items, and, at the same time, two items have stockouts. Let's see, if Streamline can restock the required quantities using intersite transfers. By default, the intersite optimization feature is disabled. Let's enable it.

Enabling Intersite Optimization

To enable intersite optimization:

- 1. Go to the menu **File** > **Settings**.
- 2. Navigate to the **Project** tab of the **Settings** dialog.

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3. Check the option **Enable intersite optimization** under the **Inventory planning** group (see figure below).

ttings				×
General Project	ABC analysis	Inventory	Distribution center	Da:
Update data				
Ouick update (no h	istory overlap)			
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Model is seasonal where	n test >			0 30 🚔
Forecast prices set	parately from de	mand		0.00
	•			
	optimization			
C Enable Inter-store				
Default inter-store lead	d time 1 📑	days		
Enable ordering av	ailability	d		
Combine Display qty Maximum	with Safety sto	ck as:		
		-		
Inventory carrying cos	ts		-	
Annual interest rate (r	educes margin)		U	▼ %
Reports	coive to on han	d for KDT colcul	ations	
(Impacts the calcul	ation of stockou	its and days of	supply)	
Supply time in 🔘 Da	ys 🔿 Months	-		
Measure of forecast qu	uality 🔘 MAPE		y = 100% - MAPE	
			01/	

There is also a control for setting the default lead time for a transfer, in case the destination location is not supplied from a DC normally – **Default intersite lead time**. By default, it is **1 day**.

After we click **OK**, a new column **Available for transfer** has been added into the **Inventory planning** tab, and a new tab called **Intersite optimization** has been added into the set of application tabs (see figure below).

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	Start	Demand fore All items	ecasting	📎 Invento	ry planning	2	inter-store	optimization	🖽 Repor	ts 🛄 Da	ashboard
s	earch		Setti	ngs 🚚 In	transition de	sition details 📓 Export table 🔻 🙀 Expo			port parame	eters 🔎 Ir	mport parameter
	v Item code	Location	On hand	To receive	Lead time,		Current order			Overstock	Available for
					days	Qty	Value	Delivery date			transfer
1	dress	east	800	626	30	0	0 Oct 24, 2019 0		0	258	258
2	dress	north	200	123	30	390	78,000	Oct 24, 2019	190	0	0
3	dress	west	500	54	30	119	29,750	Oct 24, 2019	0	0	0
4	t-shirt	east	500	200	30	0	0 Oct 24, 2019 0		0	100	100
5	t-shirt	north	500	0	30	0 0 Oct 24, 2019 0		0	500	500	
6	t-shirt	west	200	156	30	438 43,800 Oct 24, 2019		Oct 24, 2019	83	0	0

The **Available for transfer** column shows an overstock quantity that can be used to replenish other locations through intersite transfers. It indicates the minimal expected overstock amount during the **Lead time** (in our case, **30 days**).

As you see from the figure below, the available quantity is enough to cover both stockouts.

	🕽 Start 🛛	🖾 Demand fo	precasting	📎 Inven	tory planning	. 🤹	Inter-sto	re optimization	🖽 Rep	orts	Dashboard
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		1	Onland	T	Lead time,		Current	order	Charling	O una de	Available for
	item code	Location	On hand	to receive	days	Qty	Value Delivery date		Stockout	Overstock	transfer
1	dress	east	800	626	30	0	0	Oct 24, 2019	0	258	258
2	dress	north	200	123	30	390	78,000	Oct 24, 2019	190	0	0
3	dress	west	500	54	30	119	29,750	Oct 24, 2019	0	0	0
4	t-shirt	east	500	200	30	0	0 Oct 24, 2019		0	100	100
5	t-shirt	north	500	0	30	0	0	Oct 24, 2019	0	500	500
6	t-shirt	west	200	156	30	438	43,800	Oct 24, 2019	83	0	0

Let's proceed to the Intersite optimization tab and see the suggested transfers (see figure below).

	🕽 Start 🛛 📓	Demand for	ecasting	📎 Invent	ory planning		store optim	ization	😐 Reports	🛄 Dashboard	
7	New filter	All items									
S	earch	9	💊 🎇 Set	tings 🛄 Ir	n transition de	etails 📓 Exp	oort table	▼ 🎥Ex	port parameters	s 🏴 Import para	ameters 🔻 🚰
	~ 	1	On hand	T	Lead time,	Order cycle,			Current	order	
	item code	Location	On nand	to receive	days	months	Qty	Value	Order type	Source from	Delivery date
1	dress	north	200	123	1	1	190	38,000	Transfer	east	Sep 25, 2019
2	t-shirt	west	200	156	1	1	83	8,300	Transfer	north	Sep 25, 2019

We have two transfers here, each covers the required stockout at a particular location *completely*. Streamline uses a special method to generate intersite transfers. The quantity to transfer not always equals to the **Stockout** amount. It is found as a minimum between replenishment quantity recalculated for the **Default intersite lead time** (or lead time from DC) and **Stockout**. In our example, the minimum drop to the **Stockout** for both transfers. Let's check this out.

To do this, we go to the **Inventory planning** tab and set **Lead time** to **1 day** for items with stockouts (see figure below).

	Start	🗹 Demand f	forecasting	📎 Inve	ntory plannin	g 🔹 Inte	r-store o	ptimizatio	n 🖪 Repor
7	New filter	All items							
S	earch		🔍 👹 Se	ettings 🛄	In transition	details 📓 E	xport ta	ble 🔻 1	Export parame
	^ team and a	Landian	Onland	T	Lead time,	Order cycle,		Curren	t order
	item code	Location	Un hand	to receive	days	months	Qty	Value	Delivery date
1	dress	east	800	626	30	1	0	0	Oct 24, 2019
2	dress	north	200	123	1	1	203	40,600	Sep 25, 2019
3	dress	west	500	54	30	1	119	29,750	Oct 24, 2019
4	t-shirt	east	500	200	30	1	0	0	Oct 24, 2019
5	t-shirt	north	500	0	30	1	0	0	Oct 24, 2019
6	t-shirt	west	200	156	1	1	248	24,800	Sep 25, 2019

As you see, suggested quantities **203** and **248** are bigger than the corresponding stockouts **190** and **83**.

Now, let's explain how Streamline calculates the delivery date for transfer orders.

Transfer Order Delivery Date Calculation

Streamline determines the delivery date for a transfer following the logic:

- If the destination location is not tied to a DC, Streamline considers the transfer to arrive after the **Default intersite lead time**. For example, if the current date is **Sep 2, 2018**, and the **Default intersite lead time** is **1 day** (which is the default value), then Streamline determines the delivery date as **Sep 3, 2018**.
- If the destination location is normally supplied from a DC, it is calculated as:

Delivery date = Today date + Lead time,

where:

- Lead time the interval of time required to deliver the item from the distribution center to the destination location.
- Today date the current local date set in your operating system.

Let's demonstrate both situations.

Our example doesn't have a distribution center configured, it contains stores only. The today date is **Sep 25, 2019**, thus, Streamline determines the delivery date as **Sep 26, 2019** and shows it in the **Delivery date** column (see figure below).

	🕽 Start 🛛 🚦	🖾 Demand f	forecasting	📎 Inve	ntory plannin	ng 🖣	當 Inter-st	ore optimization	😐 Report	s 🔲 Dashbo
7	New filter	All items								
S	earch		🔍 🌼s	ettings 🛄	In transition	details	Expo	ort table 📼 🏠	Export parame	ters 🦉 Import
	~ 	1	Onboad	T	Lead time,			Current	order	
	item code	Location	On hand	to receive	days	Qty	Value	Order type	Source from	Delivery date
1	dress	north	200	123	1	190	38,000	Transfer	east	Sep 26, 2019
2	t-shirt	west	200	156	1	83	8,300	Transfer	north	Sep 26, 2019

To illustrate the second case, we have enabled distribution center and set it to the **east** location. The **Lead time** is **30 days**. Now, the delivery date is **Oct 25, 2019** (see figure below).

	🗊 Start 🛛	🚾 Demand	forecasting) 🛛 📎 Inv	entory plann	ing		store optimizat	ion 📋 Distril	bution center
5	🕇 New filter	All items								
Ş	Gearch		S 🖗	Settings 🌷	In transitio	n details	s 📓 Exp	oort table 🔻	Export param	eters 🏴 Impo
	ltom codo	Location	On hand		Lead time,			Curre	nt order	
	item code	Location	On nanu	IO TECEIVE	days	Qty	Value	Order type	Source from	Delivery date
1	t-shirt	west	200	156	30	83	8,300	Transfer	north	Oct 25, 2019

Delivery date is a Streamline's promised date the item to be received on. Of course, you can modify or reset it in your system after the transfer orders have been exported in there.

Now, let us show how to introduce region constraint in the optimization.

Applying Transfer Region Constraint

To enable Streamline to put a region constraint on the generated transfers, the Transfer region data type should be configured and imported along with other information about your inventory. To do this, we will reconfigure our connection setting to the database by completing the following steps:

- 1. Go to the menu File > Change connection > Database connection.
- Navigate to the **Item info** tab, click the **Preview** button to execute our query. This query
 returns a table containing descriptive information for each planning item. The last column of the
 table contains the transfer region (see figure below).

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D	Database connec	tio	n										×
C	DBC 🗸 Data s	our	ce name ver};Serve	er=server-pc;Databa	ase=sl-test;		Build	Tables				<u>R</u> ea	d
Us	ser name		Pa	assword		Pr	otection	InTrar	nsition				
	Transactions	Ite	m info Orders to	receive Orders	to ship Subst	tituti	ions 🜗	POHe	nto ader				
	select * f	roi	n itemInfo					POLir trace_ trace_ transa	ne xe_action_n xe_event_m actions	nap Jap			
G	roup timestamps l	by I	Month 🗸 starting f	rom 1 主 🗌 Con	nbine locations			Use dra	ag-and-drop t	to copy ta	able and	column na	ames.
	Preview	Exp	port to CSV			Jpda	ite data only		OK	Sav	'e	Cance	el
	last_on_hand	ł	price	supplier	location		item_c	ode	model_	from	transf	er_regio	^
	Last on hand	Ŧ	Purchase price/	Supplier code 👻	Location	Ŧ	Item code	×		•		•	•
1	500		50	2-311	east		t-shirt		dress		virginia	3	
2	200		100	2-311	west		t-shirt		dress		virginia	э	
3	500		250	4-555	west		dress		dress		virginia	3	
4	800		200	4-555	east		dress		dress		virginia	3	~

3. Now we match this column to the **Transfer region** meaning selected from the dropdown (see figure below).

	Atabasa samastia	-								Location description
	atabase connection	n								Transfer region
					B (1)					Location category
C	DBC 🗸 Data sour	ce name ver};Serve	er=server-pc;Databa	ise=si-test; ~	Build	lat	bles			Last on hand
110	er name	P	assword		Protection	In	Trans	ition		Qty to ship
0.				[riotection	ite	emInf	fo		Qty to receive
	Transactions Ite	m info Orders to	receive Orders	to ship Substit	tutions 🔄	P) P(OHea	der		Delivery date
l r										Use model from
	select * from	m itemInfo					OLINE			Lead time
						tra	ace_x	e_action_map		Lead time variance
						tra	ace_x	e_event_map		Order cycle
						tra	ansac	tions		Rounding
										Min lot
										Max lot
										Supplier code
										Supplier's item code
										Supplier's currency
										Supplier's min. weight
										Supplier's min. volum
										Supplier's min. qty
										Supplier's min. cost
										Shelf life, periods
										Shelf life, days
										Weight/unit
						Use	e drag	-and-drop to copy	ta	Volume/unit
										Sales price/unit
G	roup timestamps by	Month 🗸 starting f	rom 1 🖨 🗌 Com	bine locations						Purchase price/unit
-										Inventory value/unit
							_			# of periods for safety
	Preview Exp	port to CSV		🗌 Up	odate data	only		OK Si	av	DC name
										Display qty
	last on hand	price	supplier	location	ite	m code	e	model from		Service level
	Last on hand	Purchase price/	Supplier code V	Location	 Item c 	ode	- -	•	-	
1	500	50	2-311	east	t-shirt			dress		virginia
2	200	100	2-311	west	t-shirt			dress		virginia
2	500	250	2-511 A 666	west	daar			deese		virginia
3	000	200	4-000	west	dress			aress	'	virginia
4	800	200	4-555	east	dress			dress	١	virginia 🗸 🗸

4. To import the column, we click **OK**.

After application the transfer region constraint, the transfer of **190** units for **dress** has disappeared (see figure below).

(Start	🛛 Demand f	orecasting 🛛 📎 I	Inventory p	lanning	붙 Inter-stor	re optimi	ization	😐 Reports	🛄 Dashboa
7	New filter	All items								
S	earch		🔍 👹 Settings	🜉 In trar	nsition details	Export	t table	 1 	xport paramete	rs 🤎 Import 🕫
	V Itom code	Location	Transfer region	On hand		Lead time,			Current order	
	item code	Location	fransfer region	On nanu	to receive	days	Qty	Value	Source from	Delivery date
1	t-shirt	west	virginia	200	156	1	83	8,300	east	Sep 25, 2019

That has happened because the location with the overstock is located in a different region (see figure below).

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(Start	🗹 Demand fo	recasting 🛛 📎 I	ing 📀 Inventory planning			e optimizati	ion	Reports	Dashboa	rd	
7	New filter	All items										
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	^	Location	Transfer region	On hand		Lead time,		Current	order	Stockout	Quarstack	Available for
	item code	Location	transfer region	On nanu	10 receive	days	Qty	Value	Value Delivery date		OVEISLOCK	transfer
1	dress	east	virginia	800	626	30	0	0	Oct 24, 2019	0	258	258
2	dress	north	california	200	123	30	390	78,000	Oct 24, 2019	190	0	0
3	dress	west	virginia	500	54	30	119	29,750	Oct 24, 2019	0	0	0
4	t-shirt	east	virginia	500	200	30	0	0 Oct 24, 2019		0	100	100
5	t-shirt	north	california	500	0	30	0	0 Oct 24, 2019		0	500	500
6	t-shirt	west	virginia	200	156	30	438	43,800	Oct 24, 2019	83	0	0

Exporting Intersite Transfer Orders

To export intersite transfer orders:

- 1. Go to the Intersite optimization tab.
- 2. Click the **Planned orders** button found on the toolbar. The **Planned orders preview** dialog appears (see figure below).

Planned orders preview												×	
	Ď	Supplier	ltem code	Description	Location	Qty	Order type	Source from	Value	Order #	Delivery date	Next or date	der
1		2-311	t-shirt		west	83	Transfer	north	8,300	1	Sep 26, 2019	Sep 11, 2	2019
2	\checkmark	4-555	dress		north	190	Transfer	east	38,000	2	Sep 26, 2019	Sep 11, 2	2019
Remove future orders from the list Order items with stockout ignoring "Next order date"													
Include manufacturing orders													
Export to XLSX Export to CSV Total cost 46,300.										Create	Cance	al	

There are several exporting options:

- Export to XLSX button exports the orders to an Excel file.
- **Export to CSV** button exports them to a CSV file that can also be opened in Excel. Typically, this option is used to export huge orders.
- **Create** button exports orders to the database.
- 3. We click the **Create** button to export our orders right to the database.



As soon as orders have been exported, Streamline:

- clears the exported lines from the Intersite optimization tab; and
- adds the corresponding transactions into the **To receive** list of the **In transition details** dialog.

Let's check this. We click the **In transition details** button found on the toolbar to open the **In transition details** dialog (see figure below).

In transition details – 🗆 X												
									Sea	rch		9
To receive To ship												
	Delivery date	ltem code	Description	Location	Qty	Order type	Source from	Sendout date	Supplier	Cost	Order num	nber
1	≈Sep 26, 2019	dress		north	190	Transfer	east	Sep 25, 2019	4-555		Export	
2	≈Sep 26, 2019	t-shirt		west	83	Transfer	north	Sep 25, 2019	2-311		Export	
3	Jul 21, 2019	dress		east	110		DC		4-555			
4	Jul 23, 2019	dress		east	50		DC		4-555			
5	Jul 24, 2019	dress		east	133		DC		4-555			
6	Jul 26, 2019	dress		east	333	Manufacture	DC		4-555			
7	Jul 22, 2019	dress		north	123		DC		4-555			
8	Jul 29, 2019	dress		west	54	Transfer	DC		4-555			
9	Jul 30, 2019	t-shirt		east	200	Manufacture	DC		2-311			
10	Jul 28, 2019	t-shirt		west	156		DC		2-311			
Exp	ort to XLSX										Clos	æ

Now, along with other orders which are to be received, Streamline shows the just now exported orders. These orders got an **Export** mark in the **Order number** column.

Lines with the **Export** mark have no common with the real orders-to-receive that are in your ERP's database. It's just internal Streamline's transactions that are created in order to keep the inventory planning workflow correct.

If Streamline is integrated with your system so that clicking the **Create** button automatically creates the corresponding open orders, the mark **Export** will disappear for the exported lines in the **To receive** tab after you click the **Update data** button. Otherwise, the **Update data** command will completely remove the exported lines from the **To receive** tab.

Next: Material Requirements Planning

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