



TrainPlayer 8.1 – Using Advanced Ops with Linked Layouts

A question we recently received from a customer.

Is it possible in Train Player 8 to transport a loaded boxcar from one layout, deliver it to another layout, leave it there and return to the first layout to do other things, before returning to the second layout to pick up the empty and bring it back to the original layout?

With the introduction of TrainPlayer 8.1 this shouldn't be a problem for any standard pair of layouts, or even for multiple linked layouts which are being operated under Script control. Unfortunately this becomes a little more difficult to achieve with layouts which were designed for Advanced Operations.

Potential Problems

The Advanced Ops system was specifically designed for use on a single layout. AO can't just request a load or an empty car to be added to a switchlist without first checking that the car type is available on the layout, that the industry requiring the car has space to accept it, that the active train is authorized to pull cars from the car's location and that the train will also visit the car's next destination to set down the car after it has visited the car's pick up location. This essential program data is all layout specific.

Each individual AO layout already owns its own sequence of trains. Modifying AO to sequence complete trains across multiple layouts would therefore require two separate switchlists to be active on the receiving layout simultaneously. Engines could easily end their journey on another layout and, if not returned to their owning layout, they would no longer be available when needed for a scheduled train. There is also a danger that changing AO for multi-layout operations could render the legacy set of 288 Advanced Ops layouts unworkable. This was a risk that we were not prepared to take when Bruno had dedicated the last two years of his life to producing these excellent layouts for our mutual enjoyment.

Resolving the Dilemma

Unless you have a very good reason for needing Ops over two or more linked layouts, we recommend that you stick to applying Advanced Ops data to single individual layouts. TrainPlayer is now capable of handling some very large layouts without any loss of graphical detail or operational stability.

Despite this recommendation we recognize that some users may still want to set up switchlists which permit them to move some of their cars across from one Advanced Ops layout to another. Setting up synchronized AO layouts won't be for everyone but the theory is simple. If an industry on one layout ships a commodity to a common linked interchange then the Industry grid data on the linked layout needs an industry to receive that commodity. This is controlled by using a unique AAR override code for the "jumping" cars which will keep them independent of similar cars operating on the separate layouts.

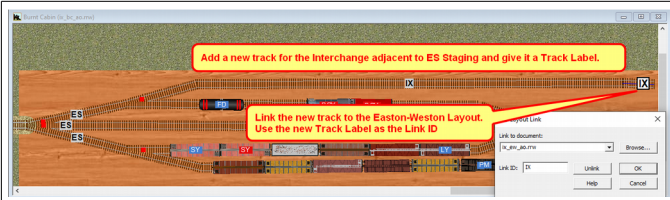
Test Project to set up a common Interchange to link up two AO Layouts

We started with copies of two layouts from the Advanced Ops Shelf Layouts collection. **Burnt Cabin**, which uses a single Daily Freight for all its Ops and **Easton-Weston**, which uses alternate Eastbound and Westbound trains. We have retained both of the original layout names with a "**_Linked**" suffix but the filenames have been changed to **ix_bc_ao** and **ix_ew_ao** to avoid any confusion with the originals.

To keep things simple most of the traffic pattern is left unchanged on both of the linked layouts. However, the Fuel Dealer at Burnt Cabin will now only receive his loads from the Fuel Distributor at Middleton on the linked Easton_Weston layout; previously these loads came from the EY Staging Yard. This requires the addition of a common "linked interchange" which can be referenced by both layouts, plus updates to the Ops Central Industries and Sequence grids on the two layouts.

Track and Scenery Adjustments

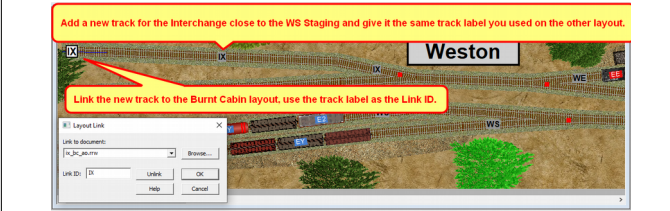
Return all Trains to their Start Positions before making these adjustments



Burnt Cabin

Add a new Interchange Track alongside the ES Staging Yard and give it a track label (IX used here).

Set up a Layout Link to connect to Easton-Weston using the IX track label as the LinkID

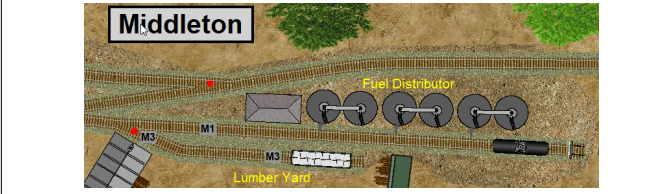


Easton-Weston

Add an Interchange Track adjacent to the WS Staging Yard and apply the same IX track label you used at Burnt Cabin.

Apply a Layout Link to connect to Burnt Cabin using IX as the LinkID.

Adjust the track layout and scenery at Middleton to provide a separate M3 Lumber Yard track and increase the car capacity at the M1 Fuel Distributor to cater for inbound cars from staging and outbound cars to the IX.



Ops Central Grid Adjustments

Burnt Cabin

Update the Locations tab in Ops Central to provide a Locale name for the new IX track and classify this track as an Interchange (or Staging).

Edit the Cars grid to provide an AAR Override code of JT (Jumping Tankcar) to distinguish these cars from any other Tankcars operating on the two layouts.

Locals	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced
Locale	Track	Class	VacantSpots			
8	Machine Shop	MS	industry	1		
9	Planing Mill	PM	industry	1		
10	Stock Yard	SY	industry	1		
11	Team Track	TT	industry	1		
12	Wholesale Grocer	WG	industry	1		
13	Interchange with Easton-Weston	IX	interchange	1		

Ops/Builder - Burnt Cabin [ix_bc_ao.rnw]

Car	Image	Type	AAR	AarOverride	Location	Load	Dest	Excl.
JT27		tankcar	JT	JT	IX	fuel	FD	
JT13		tankcar	JT	JT	FD	Empty	IX	
S22		stock car	S		ES	Empty	SY	

These cars will be loaded at Middleton, track M1, and unloaded at Burnt Cabin track FD. This new AAR code will be automatically applied to the Car Label when the first Switchlist is generated.

On the Industries tab, modify the entry for the Fuel Dealer to use JT cars for receiving fuel and change the source Staging from ES to the IX Interchange.

Ops/Builder - Burnt Cabin [ix_bc_ao.rnw]

Locals	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced			
Locale	Indu.	AAR	S/R	Load	Staging	Vialn	Vi...	BridgeT...	Comment
26	LCL	X	R	goods	ES	~	~		
27	Fuel Dealer	FD	JT	R	fuel	IX	~		
28	Planing Mill	PM	X	S	goods	ES	~		

On the Sequence tab, change the ES StartAt and EndAt entries to IX, ES to ensure that the Active Train can handle cars from and to Easton-Weston.

Ops/Builder - Burnt Cabin [ix_bc_ao.rnw]

Row	Engine	TrainName	StartAt	EndAt	Visits
1	ES1	Daily Freight	IX,ES	IX,ES	FD,FP,GE,LCL,LY,MS,PM,SY,TT,WG,BCY,FD,LY,PM,SY,BCY

Easton-Weston

Provide a Locale name in the Ops Central Locations tab and classify this as an Interchange (or Staging).

Increase the Vacant Spots value for M1 to 4 cars on the Locations tab.

Locals	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced
Locale	Track	Class	VacantSpots			
7	Middleton Lumber Yard	M3	industry	1		
8	Weston Caboose Track	WC	XO reserved			
9	Weston Engine Track	WE	XO reserved			
10	Weston Staging	WS	staging			
11	Easton Engine Track	EE	XO reserved			
13	Interchange to Burnt Cabin	IX	interchange			

Locals	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced		
ID	Locale	Indu.	AAR	S/R	Load	Staging	Vialn	ViaOut
1	Easton LCL Freight	E1	industry				0	
2	Easton Team Track	E2	industry				1	
3	Easton Wholesale Grocer	E3	industry				1	
4	Easton Yard	EY	class yard					
5	Middleton Fuel Distributor	M1	industry				4	
6	Middleton Fuel Elevator	M2	industry				1	

Edit the Cars grid to apply the JT Override code to the tankcar located at M1 leaving three tankcars at WS unchanged for fuel deliveries from WS to M1.

Car	Image	Type	AAR	AarOverride	Location	Load	Dest	Excl.
JT26		tankcar	JT	JT	M1	Empty	M1	
TQ25		tankcar	TG		WS	fuel	EY	

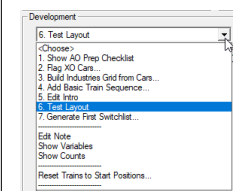
Locals	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced		
ID	Locale	Indu.	AAR	S/R	Load	Staging	Vialn	ViaOut
1	Middleton Grain Elevator	M2	XM	R	grain	WS	~	EY
12	Middleton Fuel Distributor	M1	JT	S	fuel	IX	EY	~
6	Middleton Fuel Distributor	M1	TG	R	fuel	WS	EY	~

Insert an Industries tab row for M1 to Ship fuel to IX. Route the empty cars ViaIn the EY Class Yard.

Change the WS StartAt and EndAt entries on the Sequence tab to IX, WS to capture inbound cars.

Locals	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced
Row	Engine	TrainName	StartAt	EndAt	Visits	
1	ES1	Eastbound Peddler	IX,WS	EY	E1,E2,E3,M2,WE,WC,EE	
2	ES1	Westbound Peddler	EY	IX,WS	E1,E2,E3,M1,M3,WC,WE,EE	

Generate Your First Switchlists



The process described above can be used to modify traffic between other pairs of industries, each using unique AAR/override codes for the designated car types. Once all the modifications to the grids are complete you can use Test Layout from the Advanced Tab to check your Ops settings on both layouts. If you get two clean sheets you can then Generate your First Switchlists and save the layouts.

Only the cars with the unique AAR/override codes will be routed across the Interchange Link, all other cars will continue to operate between the staging and industries on their home layout.

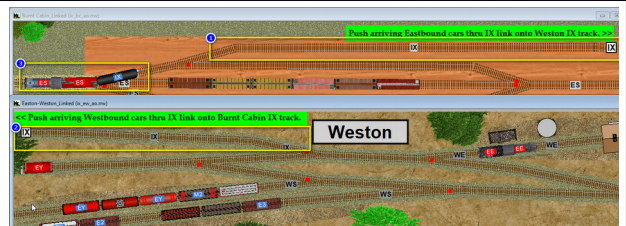
Note:

We would advise against using the FixOps subroutine for checking Linked AO layouts as the subroutine was not written for this purpose – hopefully to be reviewed at a later date.

Operating across AO Linked Layouts

When a car destined for the new IX Interchange is first set down on the Interchange of its home layout, its label clears automatically exactly as it does for a self contained layout.

The engine should then propel the car through the link onto the adjoining layout. Here it should be set down on the linked track which bears the IX Track Label matching the LinkID. The Engine should be returned to its original layout so that it is available when needed for a later train.



The next time the Switchlist Generator is run on the receiving layout it will identify each newly arrived car and route it to its destination. Unfortunately this process can't start until the current switchlist has been completed. In many cases this is not a problem but often the currently active train will already be authorized to visit both the Interchange and the next destination of the arriving car(s).

We therefore need an additional Junction Action process to check the Active Train and add the newly arrived car(s) to that train if the train is scheduled to visit the Interchange and each car's next destination.

Note: Switchlists on Linked Layouts must be completed manually. You cannot use the ASL subroutine nor can you use the \$AO_DEV(CCS) Switchlist Robot as these are designed only for use on self contained layouts.

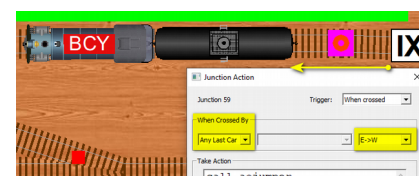
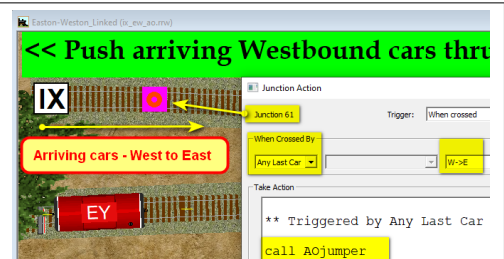
The Junction Action Scripts

Easton-Weston

Set up a Junction Action script close to the IX link on the IX Interchange. Set the Trigger to "Any Last Car" and the direction to "W>E". Set the text for the Action to read "call AOjumper – That's it."

Eastbound trains crossing the IX link onto this track will call the AOjumper Subroutine which will check the incoming car data against the current Switchlist for the Active Train at Easton-Weston.

If this train is authorized to visit the IX Interchange and any car's next destination is on the Visits list, the car will be labeled with its next destination so that it can be added to the train. If you delivered your car(s) with an engine from the Burnt Cabin layout, you should return the engine to that layout before running the Switchlist at Easton-Weston. On completion of each jump all open layouts will be automatically saved by the Subroutine to ensure that the each of the saved layouts contains the correct cars if it is reloaded.



Burnt Cabin

A JA is also needed at Burnt Cabin IX – this one is set for an E>W direction. **Remember to Save your layouts after adding the Junction Actions.**

The AOjumper.txt subroutine can be found in the main Subroutines Folder should you wish to examine it.

Complications of XO Cars

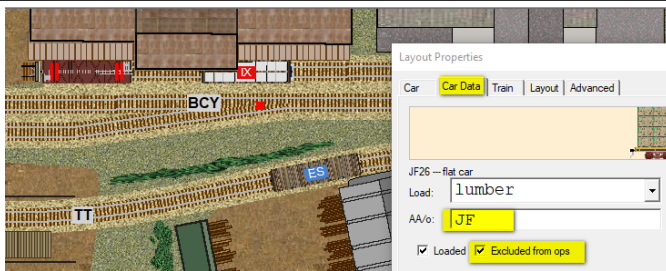
If you have not included any XO cars on your Linked AO layouts you are now good to go and the use of the JA Scripts remains optional. However, you can also set up to use XO cars across your links should you wish to do so but in this case the use of the Junction Action calls to AO jumper are an essential component of the system.

Let us imagine that the Planing Mill at Burnt Cabin now has a contract to supply lumber on a regular basis to the Lumber Yard at Middleton. We could arrange to do this by editing the Industries grids in the same manner as we did for the Fuel Deliveries. However, as we are testing a concept we choose to allocate one Flat Car for this task and set this up as an XO Dedicated Service Car. This car is already located at the Burnt Cabin Planing Mill.

Additionally we are going to test the concept of running a regular Livestock delivery between the Stock Yard at Burnt Cabin and the E2 Team Track at Easton. The following section shows how we can handle each of these cars.

Setting up the XO Cars to route cars across layout links

Setting up an XO Dedicated Service Car



Start with the Flatcar located on the PM track (adjacent to BCY) on the Burnt Cabin Layout. Apply an AAR/override code of JF (Jumping Flatcar) to distinguish this car from all other Flatcars. Mark the car as XO "Excluded from Ops".

Open the XO Cars grid, add a loadname to the Shipment column, set the LoadAt position to PM and set a route for the car. The other columns will be filled by TrainPlayer when you **Generate First Switchlist**.

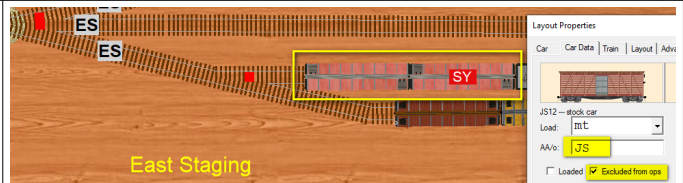
OpsBuilder - Burnt Cabin_Linked [ix_bc_ao.rw]

Intro	Locations	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced
ID	Car	Location	Route	Shipment	LoadAt	Note	Dest
1	ES1	ES	BCY,ES,]]			ES,]]BCY	BCY
12	JS12	ES	SY,IX,E2,]]IX,ES,]]	livestock	SY,IX	IX,E2,]]IX,ES,]]SY	SY
14	NE14	ES	BCY,ES,]]			ES,]]BCY	BCY
26	JF26	PM	IX,EY,M3,IX,PM	lumber	PM	EY,M3,IX,PM,IX	IX

Each step in the route of the XO car uses a different train as the car crosses both linked layouts. PM>IX, IX>EY, EY>M3 to unload, then empty M3>IX and IX>PM. The car will layover between switchlists at each stop.

As this XO route starts and ends at the PM Planing Mill no additional data is needed on the Easton-Weston layout. The routing instructions will be carried over on the car each time it crosses a link.

Setting up an XO Routed Car



Select one of the two Stockcars in the ES yard at Burnt Cabin. Mark it as an XO car and apply an AAR/o code of JS (Jumping Stockcar) to distinguish it from the other Stockcar on the layout.

Open the XO Cars grid, add a loadname to the car, set the LoadAt position to SY and enter a route for the car. Livestock needs to move quickly and this route will advance automatically each time the car arrives at an intermediate destination.

Intro	Locations	Industries	Sequence	XO Cars	Switchlist	Cars	Advanced
ID	Car	Location	Route	Shipment	LoadAt	Note	Dest
1	ES1	ES	BCY,ES,]]			ES,]]BCY	BCY
12	JS12	ES	SY,IX,E2,]]IX,ES,]]	livestock	SY,IX	IX,E2,]]IX,ES,]]SY	SY
14	NE14	ES	BCY,ES,]]			ES,]]BCY	BCY
26	JF26	PM	IX,EY,M3,IX,PM	lumber	PM	EY,M3,IX,PM,IX	IX

Reminder: Routed XO cars require the]] marker inserted into their route data after any stop at which they are intended to be set out to lay over until added to a later train.

You should Generate a new First Switchlist for each of the linked layouts after setting up any XO car routing.

Remember to resave your files when you are done.

Burnt Cabin_Linked and Easton-Weston_Linked

can both be found in the **Advanced Ops Layouts/Tutorials** folder of your Layout Chooser

You only need to open **Burnt Cabin_Linked** and **Easton-Weston Linked** will open automatically.

Richard Fletcher, August 2021