

Hidden Savings: Excess Service Order Shipments

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A high percentage of plug-ins shipped for service order connects are in excess of what is actually required to fulfill the connect requests.

This situation does not represent a system fault; rather, it is a reflection of the systems and business processes that have evolved for completing service order connects.

Background

In the typical LEC environment, several organizations are involved in providing new service to a customer. Each organization has systems and processes that have been developed to efficiently execute their individual part of the process.

The sales organization receives the customer request for service and establishes the requestor as a new customer, or updates the existing customer record. The service request is then entered into the provisioning system, TIRKS, by the network organization. The service request is translated into equipment needs and passed to the asset management system, PICS/DCPR, for sourcing. PICS typically sources the equipment by sending a shipment request to the warehouse management system. The supply chain organization (at the warehouse) packs and ships the required equipment to the central office. Ultimately, the network organization connects the equipment at the central office providing service to the customer.

Current Process

By examining the network and supply chain operations of providing new service, we can identify how excess shipments occur for service order requests.

When a customer requests new service, the service order request is entered into the provisioning system, TIRKS. TIRKS creates a Circuit Layout Order (CLO) as a result of the request. When the CLO is completed, a Connect Request is sent to the asset management system, PICS/DCPR for sourcing. The connect request includes an "equipment due date" and a "service due date." "Equipment due date" is the date the equipment is required to be in the central office. "Service due date" is the date the service is due to be turned up for the customer. The time between these two dates is the period the central office technician has to complete the work for this request.

The sourcing request is processed by PICS and a Ship Order Request is sent to the warehouse management system. The warehouse, running an efficient operation, fulfills the ship request the same day and sends a shipment

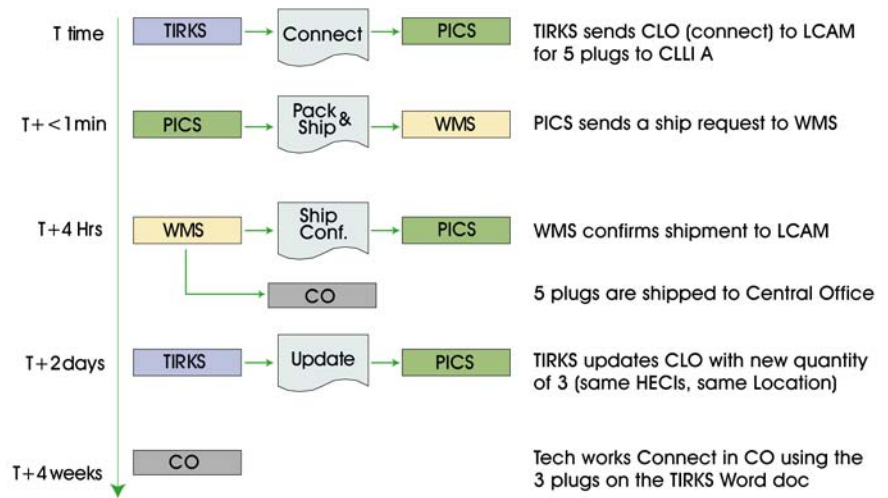
confirmation back to PICS. The equipment (plug-ins) required for this connect request is on the way to the central office to arrive prior to the “equipment due date.” On a future day, the central office technician works the job, completing the service order prior to the “service due date.”

However, changes may be made to the Connect Request at all points during this process. A Connect Request may be completely cancelled or modified, causing the quantity or type of equipment required to change.

“Cancellations, quantity decreases, and equipment changes result in excess stranded equipment in the field.”

If a request modification requires additional equipment or different equipment than originally requested, the warehouse will ship the new equipment to the central office so the service order can be fulfilled. However, cancellations, quantity decreases and equipment changes to the Connect Request result in excess stranded equipment in the field. That is, the originally requested equipment has already been shipped by the time the request modification is received. Once these excess plug-ins arrive in the field, there is no process to identify and manage their return for re-use.

The following chart provides an example of how this occurs.



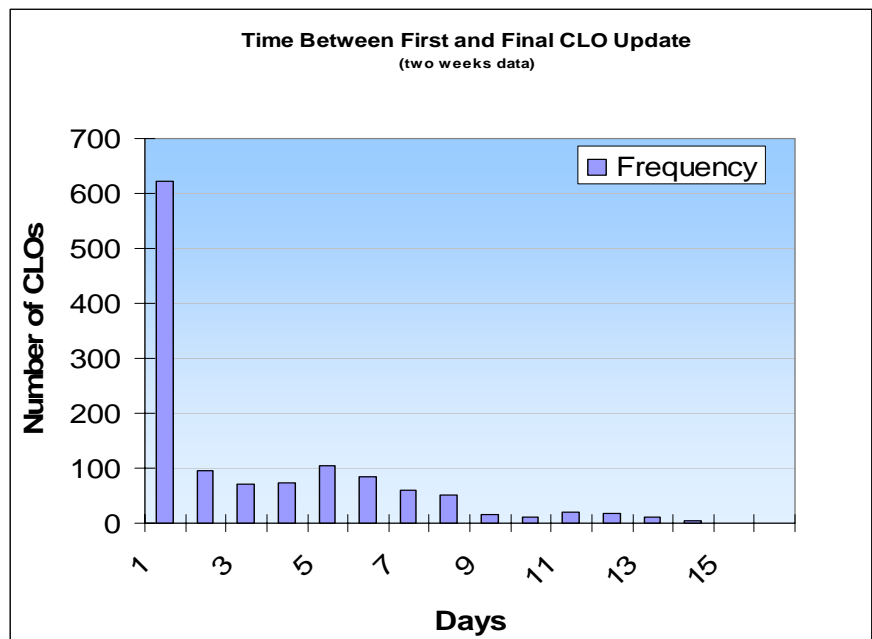
Problems with the Current Process

- Connect Requests can be modified after the request has been submitted — up to the due date.
- Sourcing requests are passed immediately after submission to the warehouse for fulfillment.
- There is no way to cancel or modify a ship request once it has been sent to the warehouse management system.
- Cancellations, quantity decreases and equipment changes result in excess plug-in equipment being shipped to the central office.
- There is no process to identify or manage the return of excess equipment for re-use.

Activity Volume

To help gauge the size of the problem, two weeks of TIRKS Connect Requests data was analyzed. The goal of the analysis was to determine the amount of time between the initial submission of a Connect Request and the final modification made to that request. Cancellations of Connect Requests received within ten minutes of the initial request submission have been removed from this data as they are likely attributable to data entry errors. *However, it should be noted that these cancellations still significantly contribute to excess shipments.*

The chart shows that most final modifications are received within the first 24-48 hours after initial request, but even a week after the initial submission, a significant number of Connect Requests are being modified.



Next, four months of TIRKS order activity and warehouse shipments were analyzed to determine the excess shipments to the field. The number of plug-ins required by the TIRKS Connect Requests (after their final modification) was compared to the actual number of plug-ins shipped from the warehouse that were identified as shipments to fulfill TIRKS orders. The table below shows the results.

Month	Plug-ins required by updated CLOs	Plug-ins shipped for TIRKS orders	Excess Plugins Shipped
Nov 2005	18,646	24,579	5,933
Dec 2005	25,066	33,039	7,973
Jan 2006	23,841	30,309	6,468
Feb 2006	25,706	31,493	5,787
Total	93,259	119,420	26,161

“Annualized, this amounts to \$23.6M in excess shipments.”

Over the four months in the study, 26,161 plug-ins were shipped to the field in excess of what was required to fulfill the service order requests. At an

average cost of \$300 per plug-in these excess shipments total to \$7.85M. *Annualized, this amounts to \$23.6M in excess shipments of equipment to the field.*

Adding Agility to the Supply Chain

The root of the excess shipments is the tight, but unintelligent, linkage between TIRKS, PICS and the Warehouse System. To eliminate the excess shipments for service orders, some intelligence must be built between the provisioning system and the warehouse. The Asset Management System should receive the *sourcing request* from the provisioning system *and hold the equipment shipping request until some reasonable time prior to the equipment due date, (e.g. 10 days)*. This allows ample time (with a significant safety margin) for the equipment to arrive at the work location while still providing a holding period. *The Asset System must also be able to modify these ship requests based on changes made to the CLO during the holding period.* These modifications include quantity changes, equipment changes and complete cancellations. The date the ship request would be release from the Asset System to the Warehouse is calculated as follows:

$$\begin{array}{rclclcl} \text{Ship Request} & = & \text{Equipment} & - & \text{Transit} & - & \text{Safety} \\ \text{Release Date} & & \text{Due Date} & & \text{Time} & & \text{Margin} \end{array}$$

The *holding period* is calculated as the difference between the date the Connect Request (or modification) was received and the *ship request release date*. After the holding period expires, the equipment ship request is released and the warehouse packs and ships the equipment, minimizing the number of excess shipments that occur.

Since the provisioning process still allows for changes to be made to the CLO even after the holding period has expired some excess shipments may still occur. *The Asset System should be capable of identifying CLO changes that have occurred after release of the shipment request and if these changes will result in excess plug-ins in the field.* A monthly report would be generated and distributed to the technicians instructing them to return the excess equipment to the warehouse.

LCAM Implementation

Alden's Life Cycle Asset Manager (LCAM) successfully implements this strategy for reducing excess shipments caused by Connect Request modifications.

LCAM's TIRKS interface captures provisioning data, including the Connect Requests with due dates, while the warehouse system interface captures the outbound shipments including the reason for shipment, e.g., "Fill TIRKS order." Combined with LCAM's system configurable parameters to define the holding period and web-accessible reports, *LCAM significantly reduces excess shipments to the field.*

Conclusion

Data from the provisioning system (TIRKS) and the warehouse management system can be used to implement a “store and forward” approach to handling sourcing and shipment requests; thereby reducing excess shipments caused by modifications to service orders. *Minimization of these excess shipments can amount to as much as \$23.6M annually in potential savings.*

Next Steps

Reducing excess shipments from service order modifications is just one step in adding agility to the supply chain.

Other steps in creating an agile supply chain include:

- Reduce spare plug-in purchases through maximum return and re-use of disconnects.
- Sourcing new connect requests from locally disconnected plug-ins and excess connect shipments prior to their return to the warehouse.

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