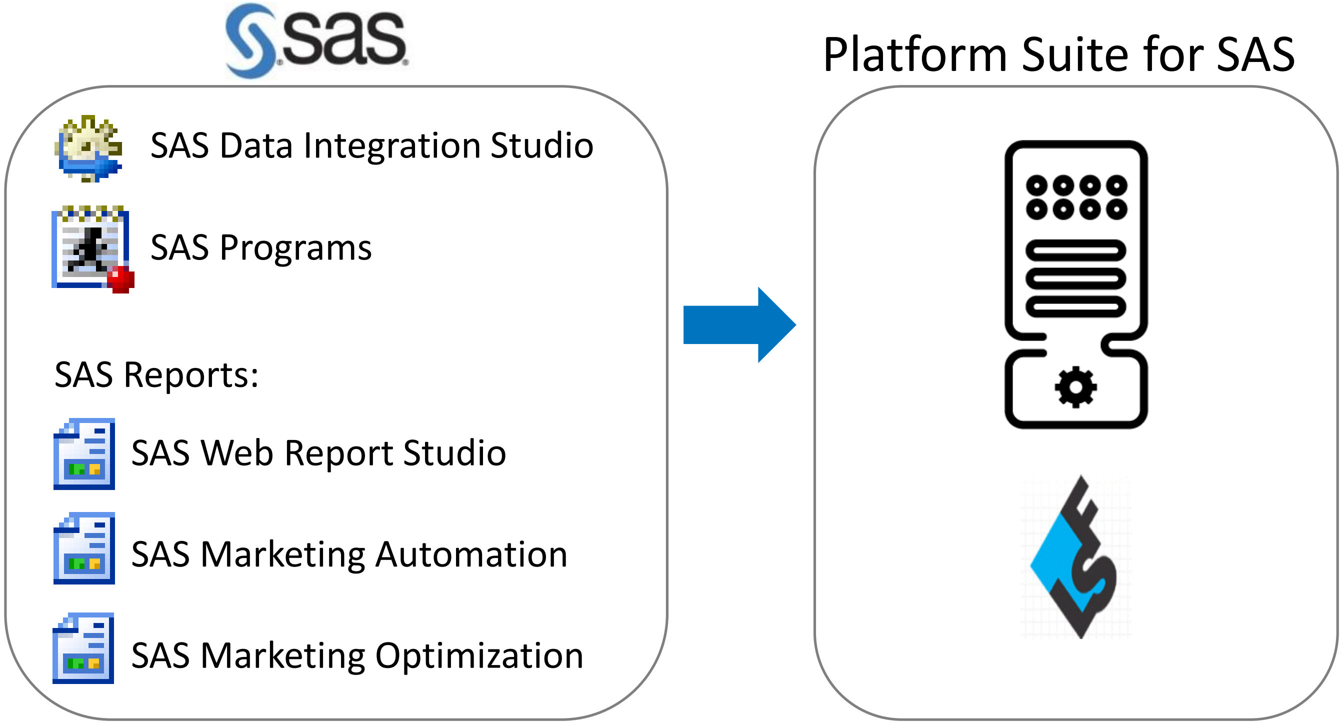
Creating and Scheduling SAS Job Flows with the Schedule Manager Plugin in SAS Management Console

Scheduling Jobs with Platform Suite for SAS



SAS Data Integration Studio

SAS Programs

SAS Reports:

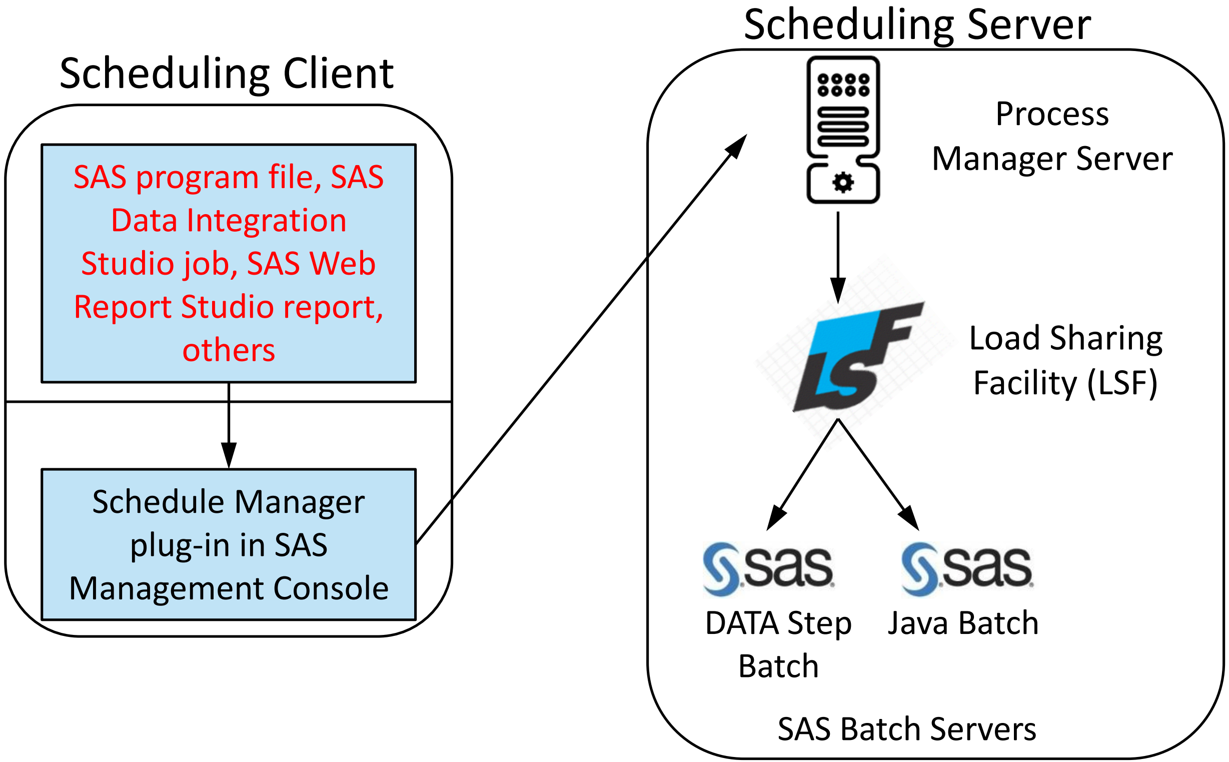
- SAS Web Report Studio
- SAS Marketing Automation
- SAS Marketing Optimization

Platform Suite for SAS

Components of Platform Suite for SAS

Process Manager	Controls the submission of scheduled jobs to LSF and manages job dependencies.
Flow Manager	Provides visual representation of flow and flow status.
Calendar Editor	Enables users to create or modify calendars that define time triggers and dependencies.
Load Sharing Facility (LSF)	Dispatches all flows submitted to it, either by Process Manager or directly by SAS, and returns the status of each job.
Grid Management Services	Provides the run-time information about jobs, hosts, and queues for display in the SAS Grid Manager plug-in for SAS Management Console.

SAS Integration with the Platform Suite for SAS



Scheduling Client

SAS program file, SAS Data Integration Studio job, SAS Web Report Studio report, others

Schedule Manager plug-in in SAS Management Console

Scheduling Server

Process Manager Server

Load Sharing Facility (LSF)

DATA Step Batch

Java Batch

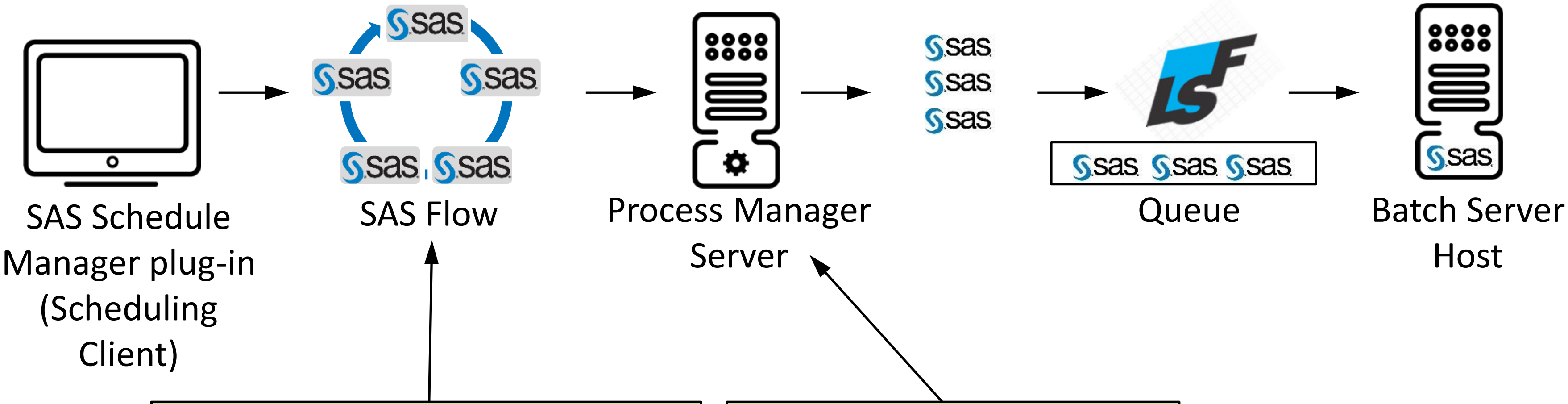
SAS Batch Servers

Key Benefits

With Platform Suite for SAS, organizations can do the following:

- define and maintain simple as well as complex job flows. With flows you can specify:
  - dependencies for individual jobs in the flow
  - triggers (when the flow starts)
- automate the timely execution of SAS jobs.
- maximize computing resource use through effective job prioritization and automated monitoring of resource availability.
- leverage a SAS grid environment to optimize use of available hardware and ensure reliable and timely execution of all jobs.

Flows and Jobs



SAS Schedule Manager plug-in (Scheduling Client)

SAS Flow

Process Manager Server

Queue

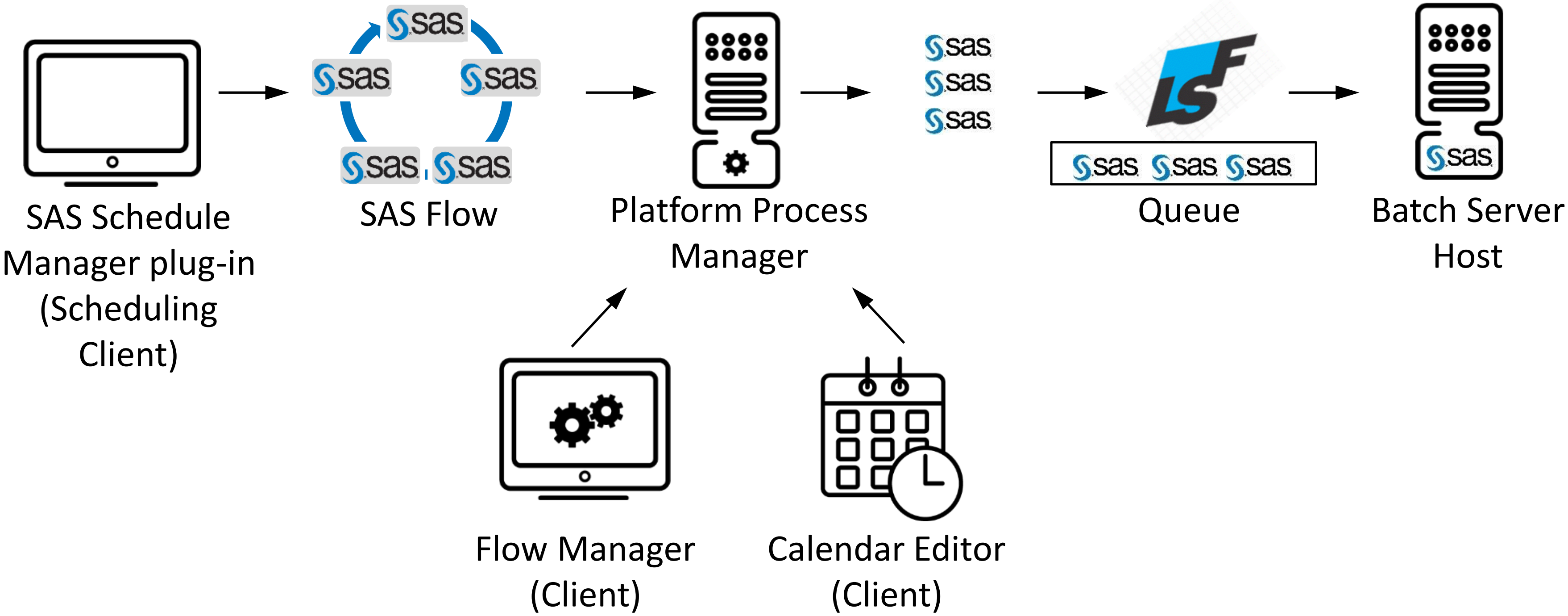
Batch Server Host

A scheduled flow definition contains

- one or more **jobs**
- **triggers** (when the flow executes)
- **dependencies** (job order and other rules).

Platform Process Manager monitors the flow and directs each job to LSF to execute when all the dependencies are met.

Flows and Jobs



SAS Schedule Manager plug-in (Scheduling Client)

SAS Flow

Platform Process Manager

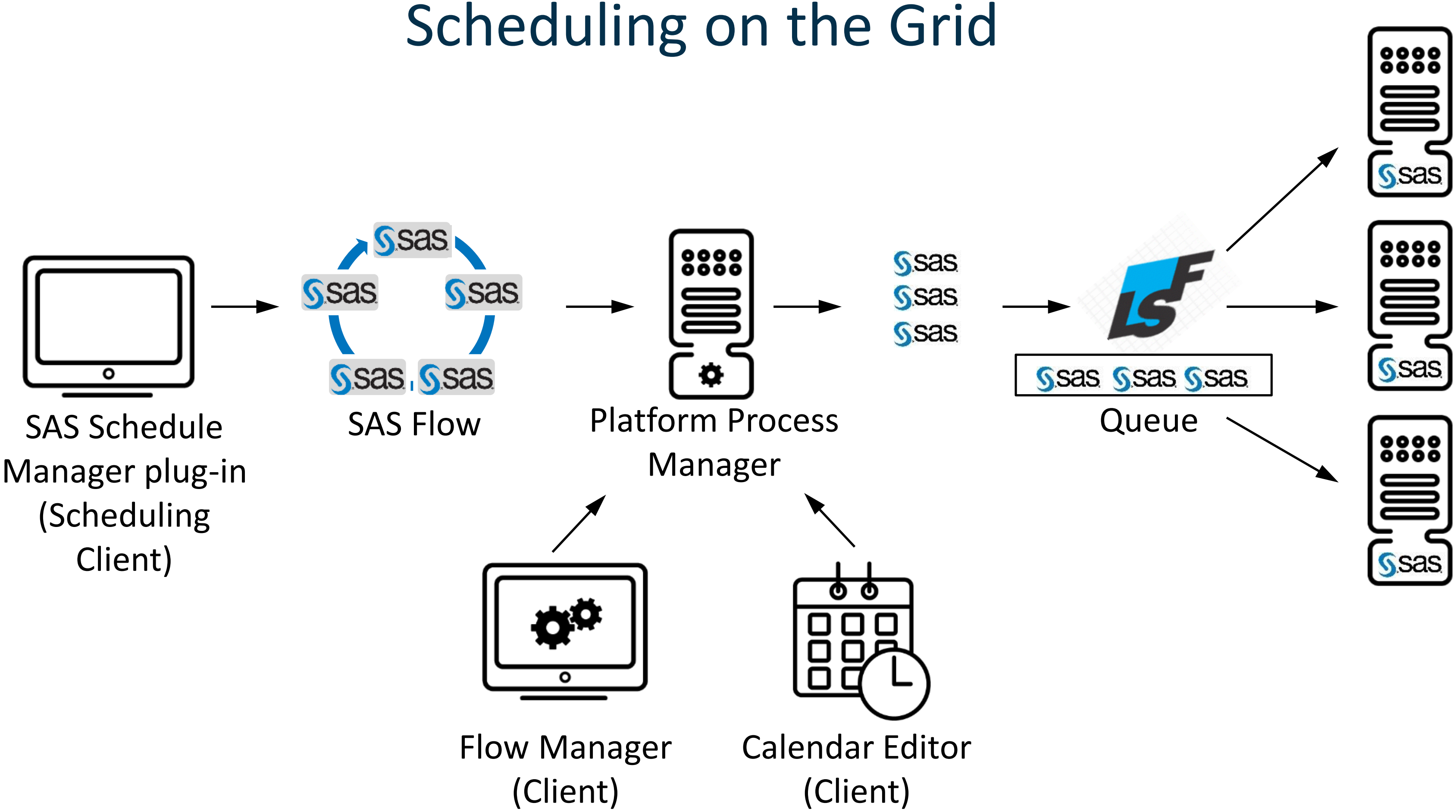
Queue

Batch Server Host

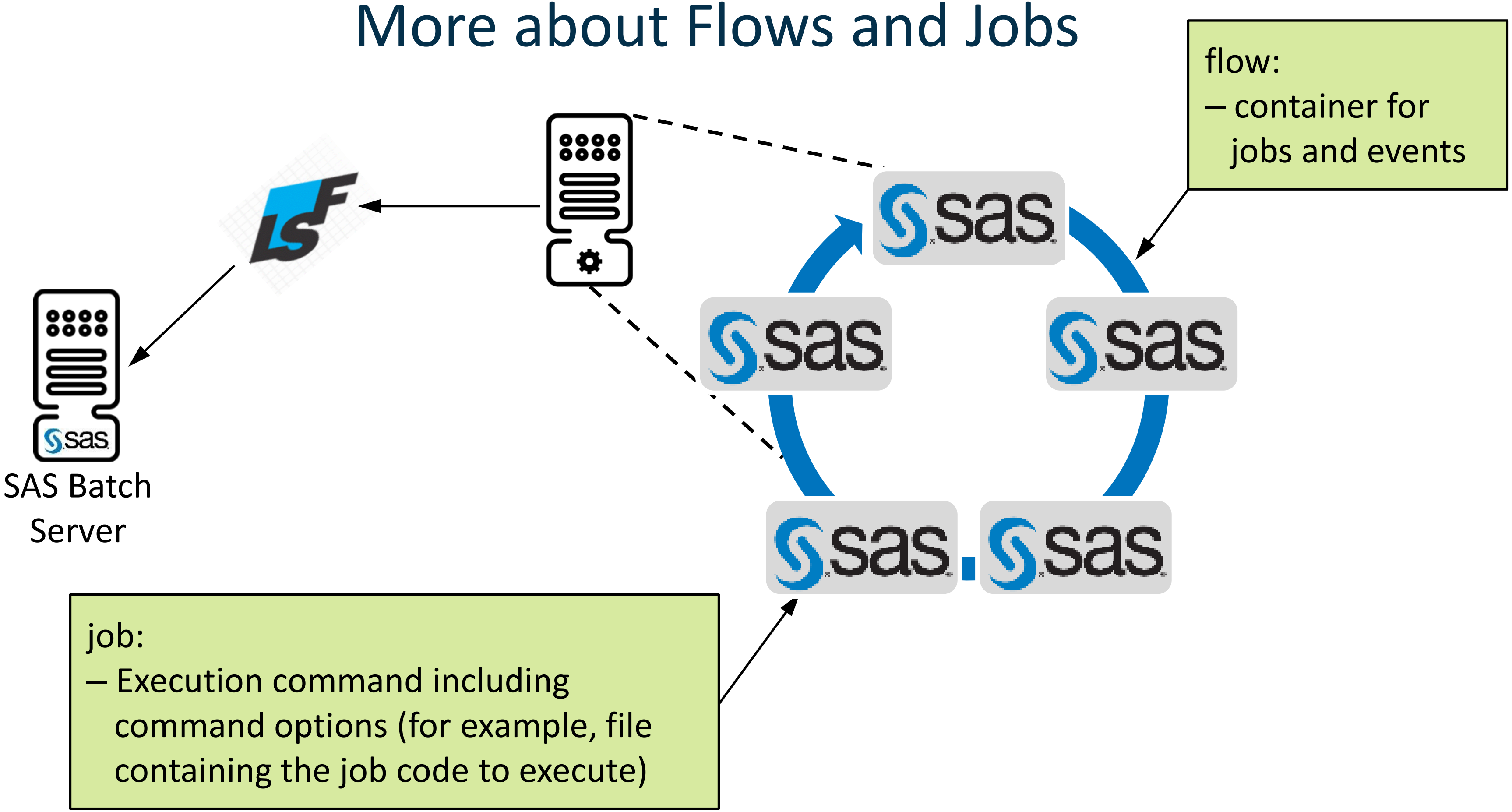
Flow Manager (Client)

Calendar Editor (Client)

Scheduling on the Grid



More about Flows and Jobs



SAS Batch Server

flow:
– container for jobs and events

job:
– Execution command including command options (for example, file containing the job code to execute)

Triggers and Dependencies

Triggers start the execution of a flow.

- time triggers
- file event triggers

Dependencies control job execution within a flow.

- time dependencies
- job dependencies
- file dependencies

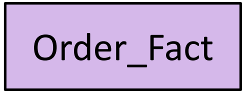
Note: Both triggers and dependencies are *events*.

Steps to Creating a Flow

1. Create jobs.
2. Deploy jobs.
3. Create a new flow and add deployed jobs.
4. Define triggers and dependencies.

Business Scenario for Initial Example

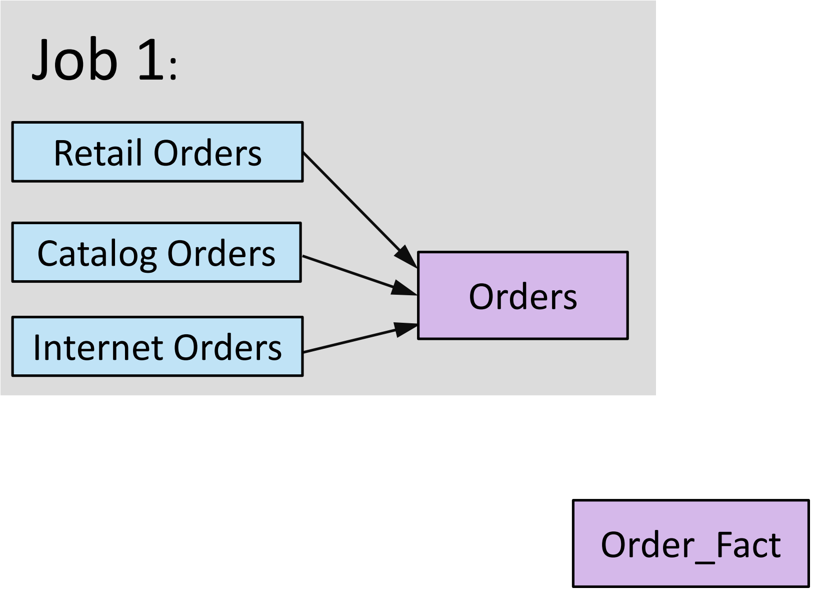
You create a flow that combines the three separate jobs that are required to load a table called **Order_Fact**.



Order_Fact

Business Scenario for Initial Example (1)

The first job concatenates three tables to create an **Orders** table.



Job 1:

Retail Orders

Catalog Orders

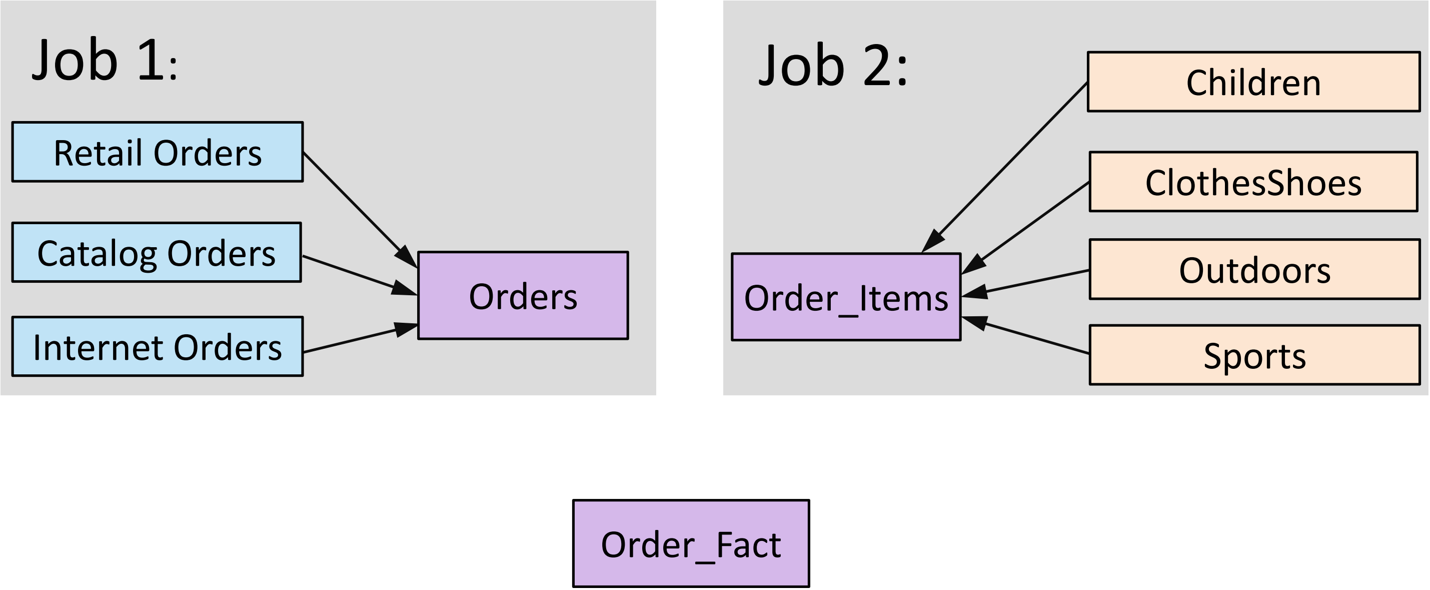
Internet Orders

Orders

Order_Fact

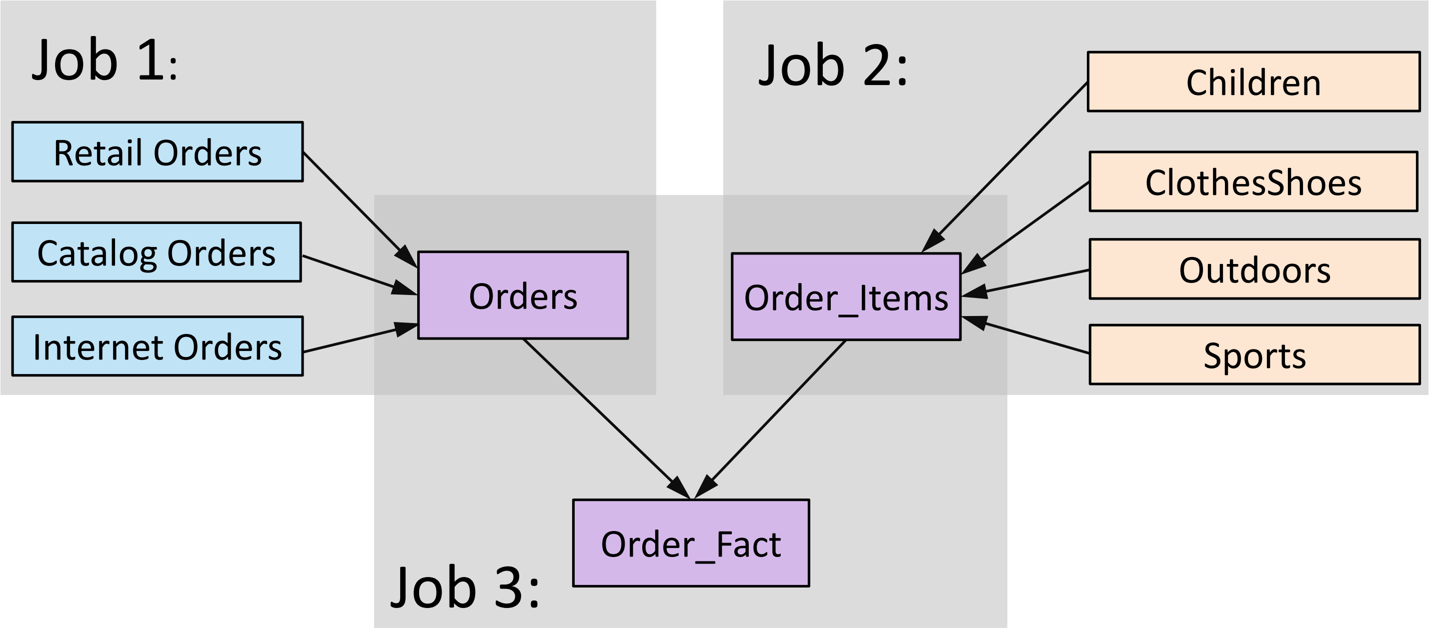
Business Scenario for Initial Example (2)

The second job concatenates four tables to create a table for all products. This table is called **Order_Items**.



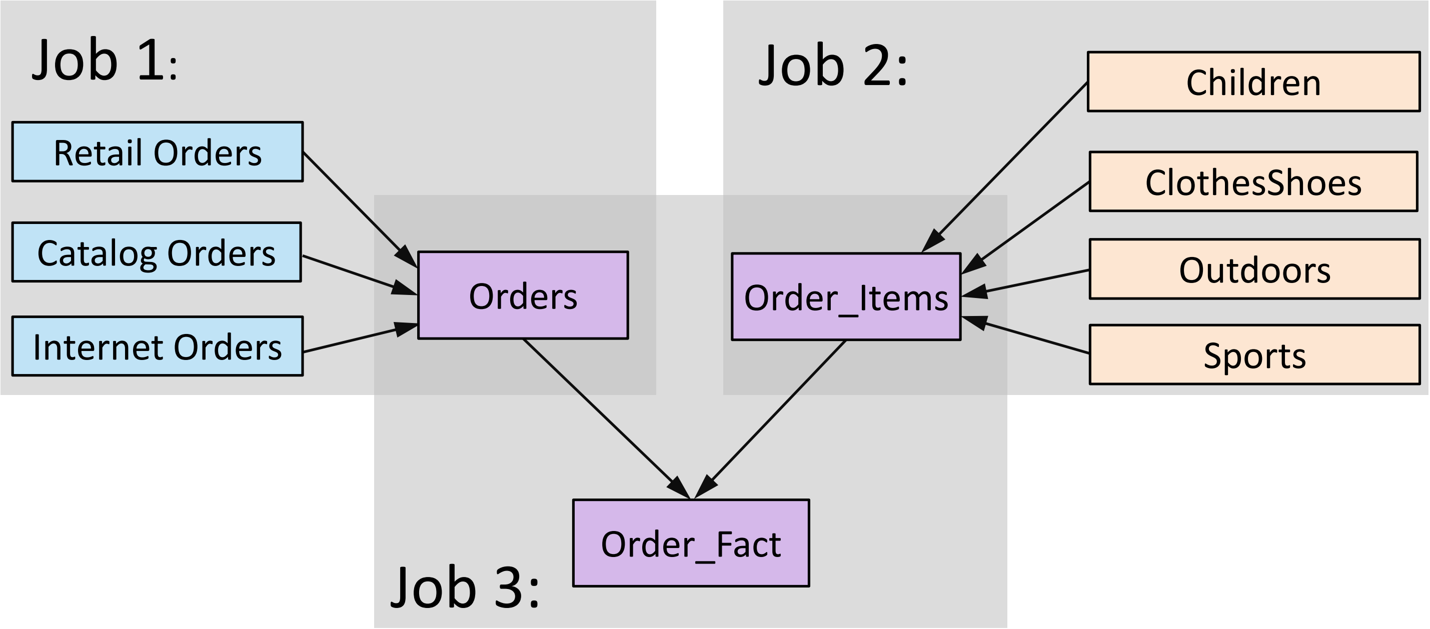
Business Scenario for Initial Example (3)

The third job joins the **Orders** table and the **Order_Items** table to create the final **Order_Fact** table.

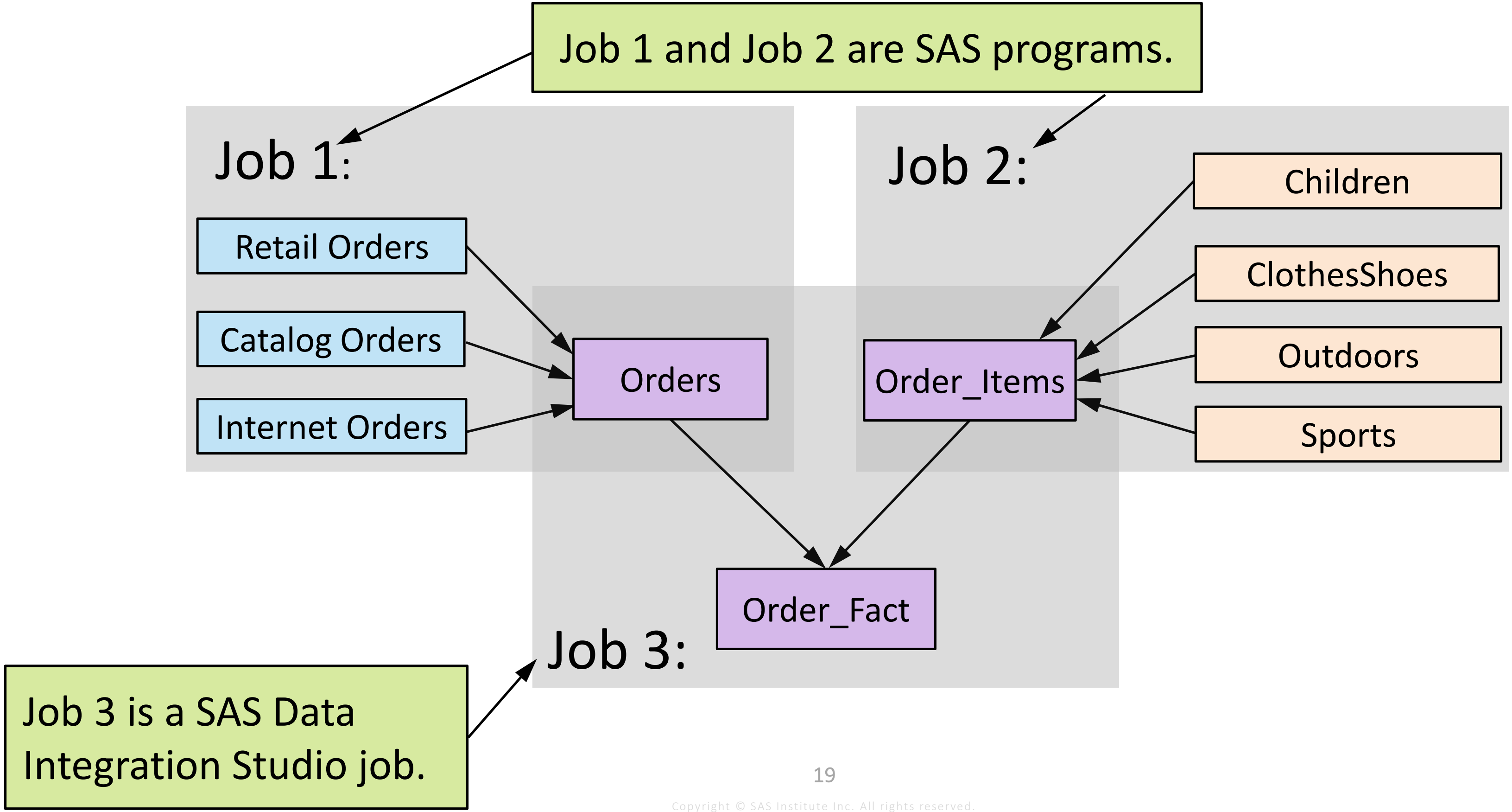


Job Dependencies

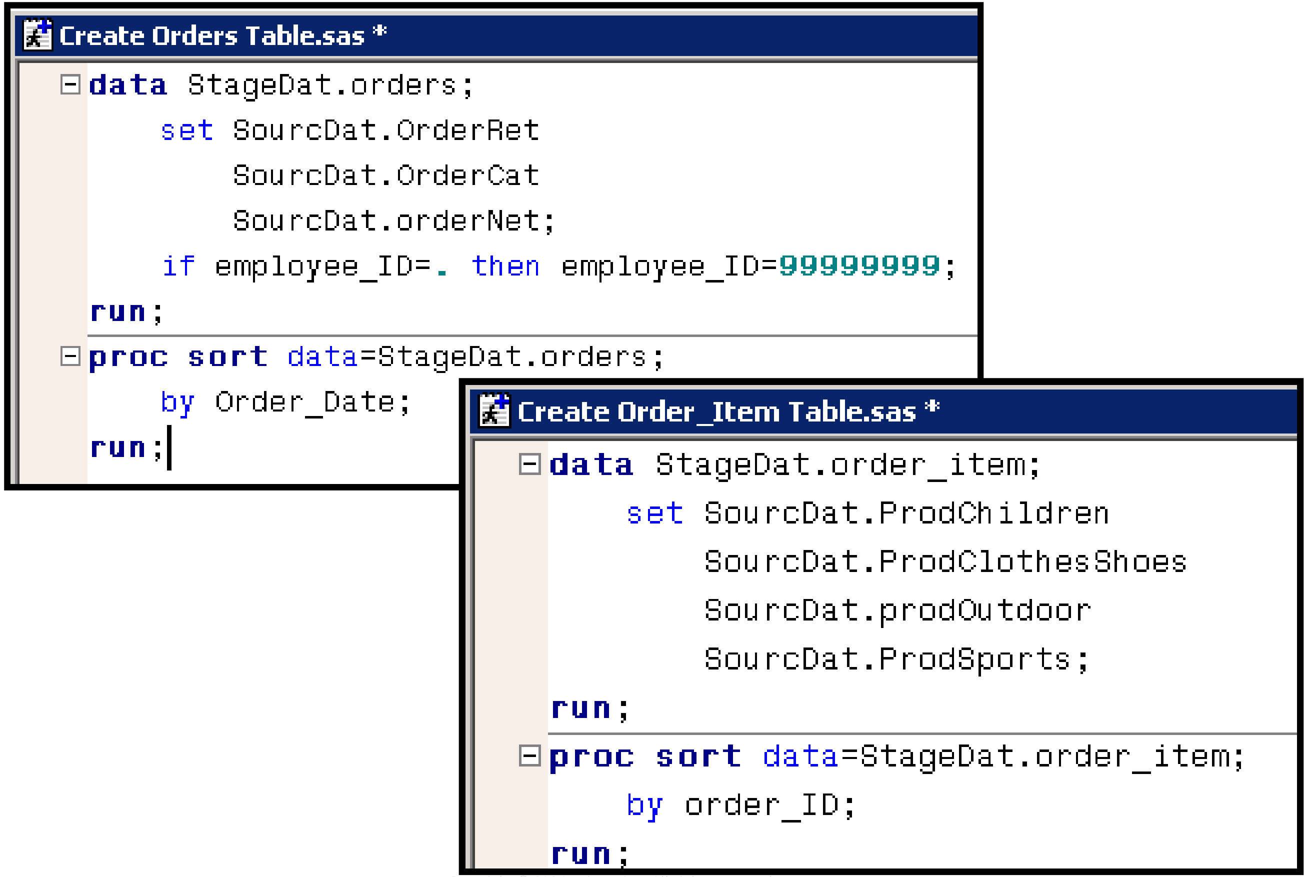
Job 3 *depends* on Job 1 and Job 2. It should not execute until the first 2 jobs are completed



Jobs and Dependencies



Job 1 and Job 2: SAS Programs



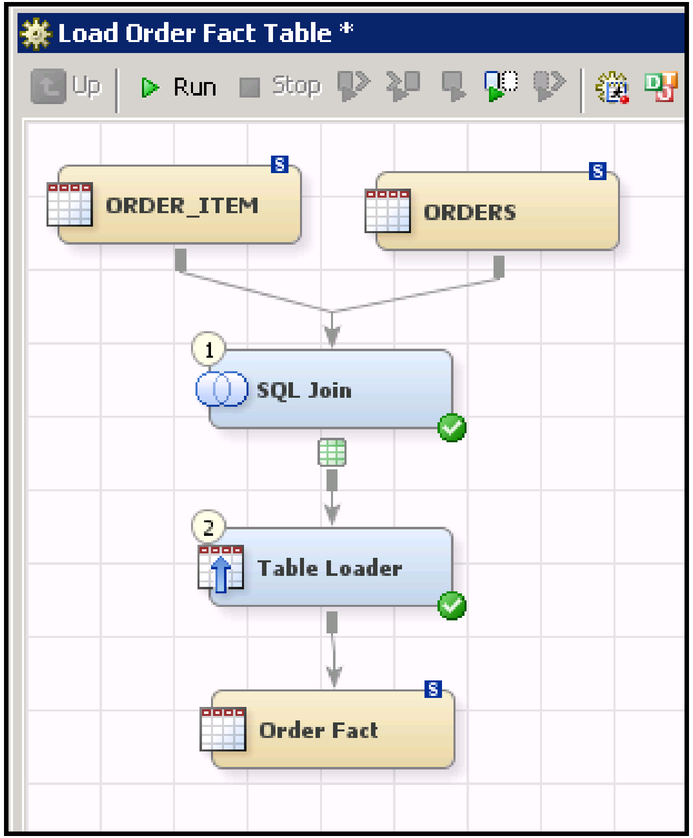
Create Orders Table.sas *

```
data StageDat.orders;
    set SourcDat.OrderRet
        SourcDat.OrderCat
        SourcDat.orderNet;
    if employee_ID=. then employee_ID=99999999;
run;
proc sort data=StageDat.orders;
    by Order_Date;
run;
```

Create Order_Item Table.sas *

```
data StageDat.order_item;
    set SourcDat.ProdChildren
        SourcDat.ProdClothesShoes
        SourcDat.prodOutdoor
        SourcDat.ProdSports;
run;
proc sort data=StageDat.order_item;
    by order_ID;
run;
```

Job 3: Built with SAS Data Integration Studio



Review: Steps to Creating a Flow

1. Create jobs.
2. Deploy jobs.
3. Create a new flow and add deployed jobs.
4. Define triggers and dependencies.