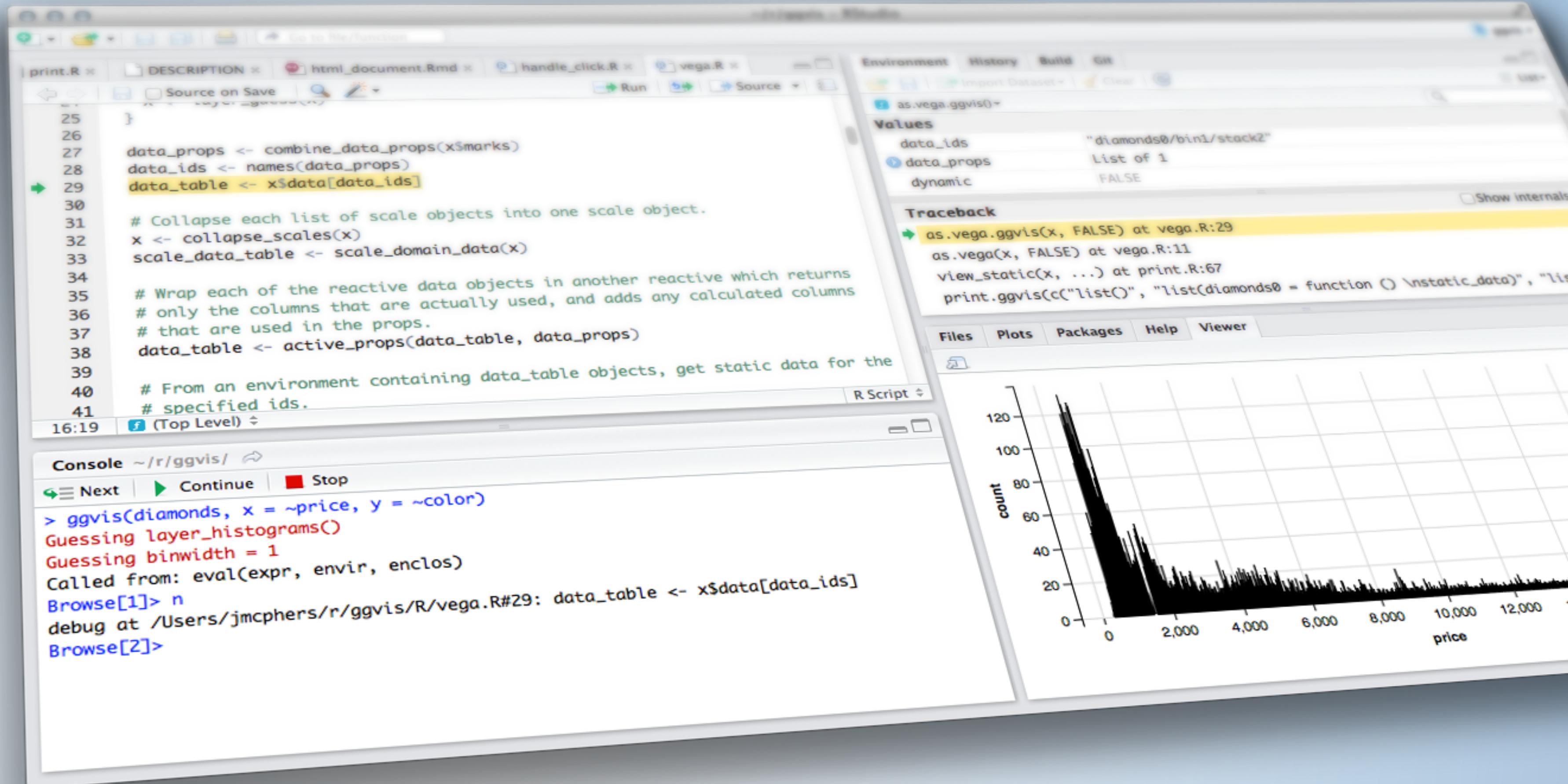


# SHINY DAY



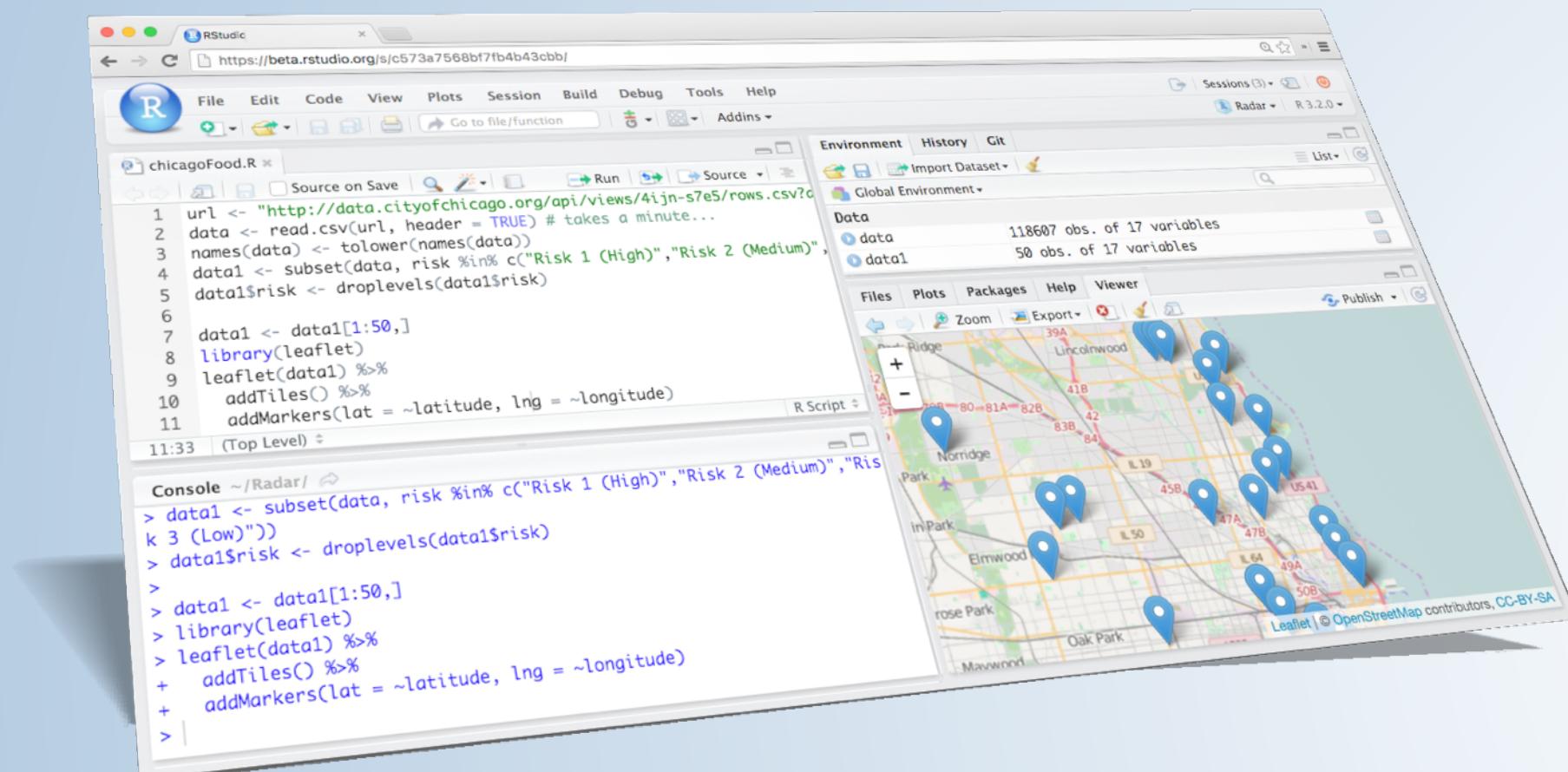
The screenshot shows the RStudio interface with several panes:

- Code Editor:** Shows an R script with code related to ggvis and diamonds data.
- Console:** Shows the command `ggvis(diamonds, x = ~price, y = ~color)` being run, followed by output indicating layer histograms and binwidth calculations.
- Environment:** Shows the environment for the `as.vega.ggvis` function, including values for `data_ids`, `data_props`, and `dynamic`.
- Plots:** Displays a histogram of diamond prices with the x-axis labeled "price" ranging from 0 to 12,000 and the y-axis labeled "count" ranging from 0 to 120.

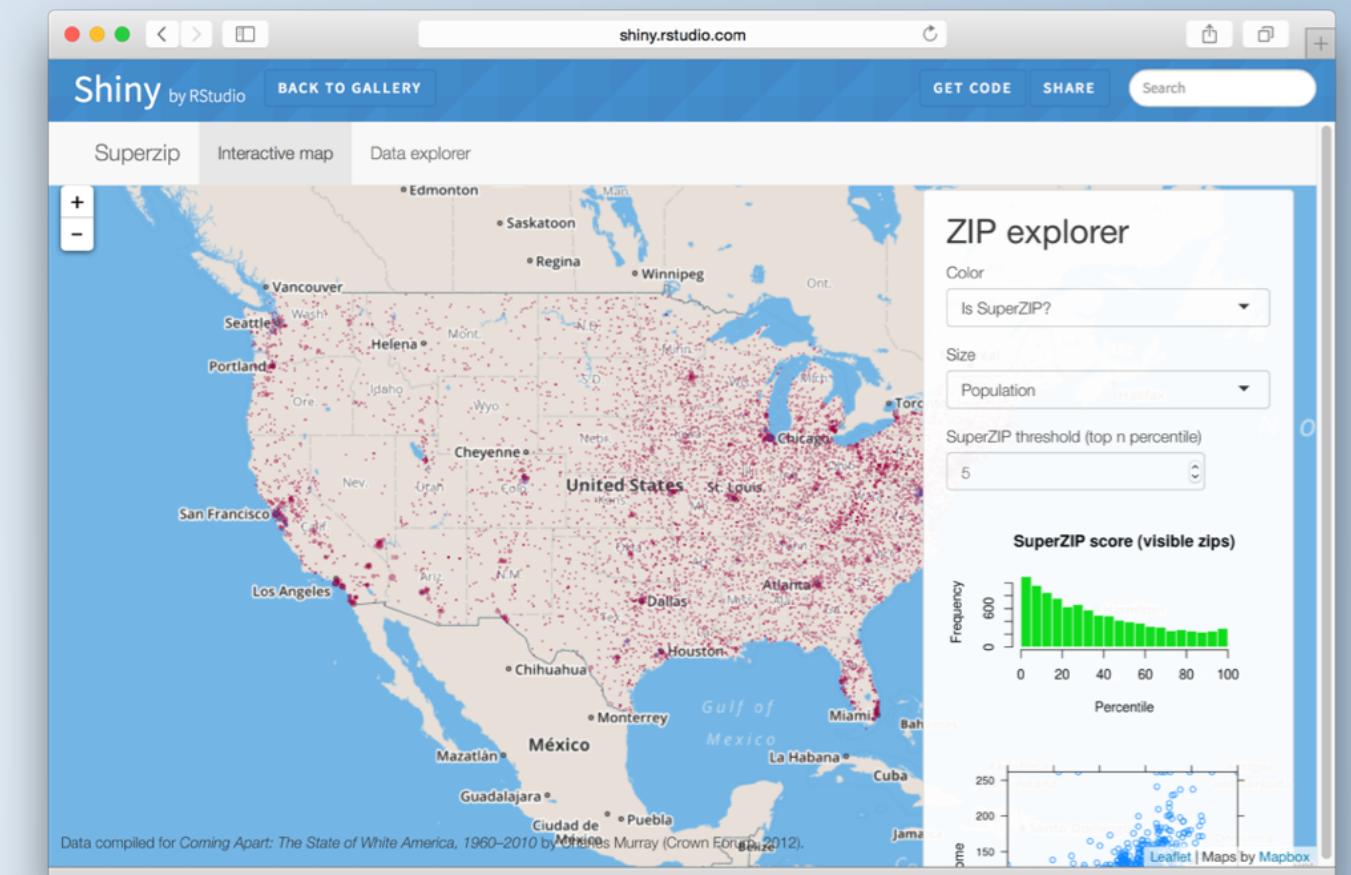


# RStudio Products

## RStudio IDE



## Packages



## Shiny

# *What's new in Shiny*

Shiny developers conference videos

Bookmarkable states

Pool - improves performance of opening/closing database connections

Modal feature for showing custom UI

Security features

Handling for unintentional disconnects

Cleaner appearance for tableOutput

Enhance reactive log visualizer

# *What's new in the RStudio IDE*

## **Spark**

- sparklyr : An R interface into Spark
- IDE integration
- dplyr backend

## **RMarkdown Notebooks**

- Reproducible production output
- Interactive execution model
- Share Code and output in a single file
- Integrated into the IDE

## **Enhanced import tools**

**Profvis - helps you understand how R spends its time**

**Authoring tools for R Markdown websites and bookdown**

# *What else is new at RStudio?*

## **Flex Dashboards**

- Use R Markdown to publish a dashboard.
- Supports HTMLWidgets and Shiny
- Easy to build, deploy, and update

## **RStudio Connect**

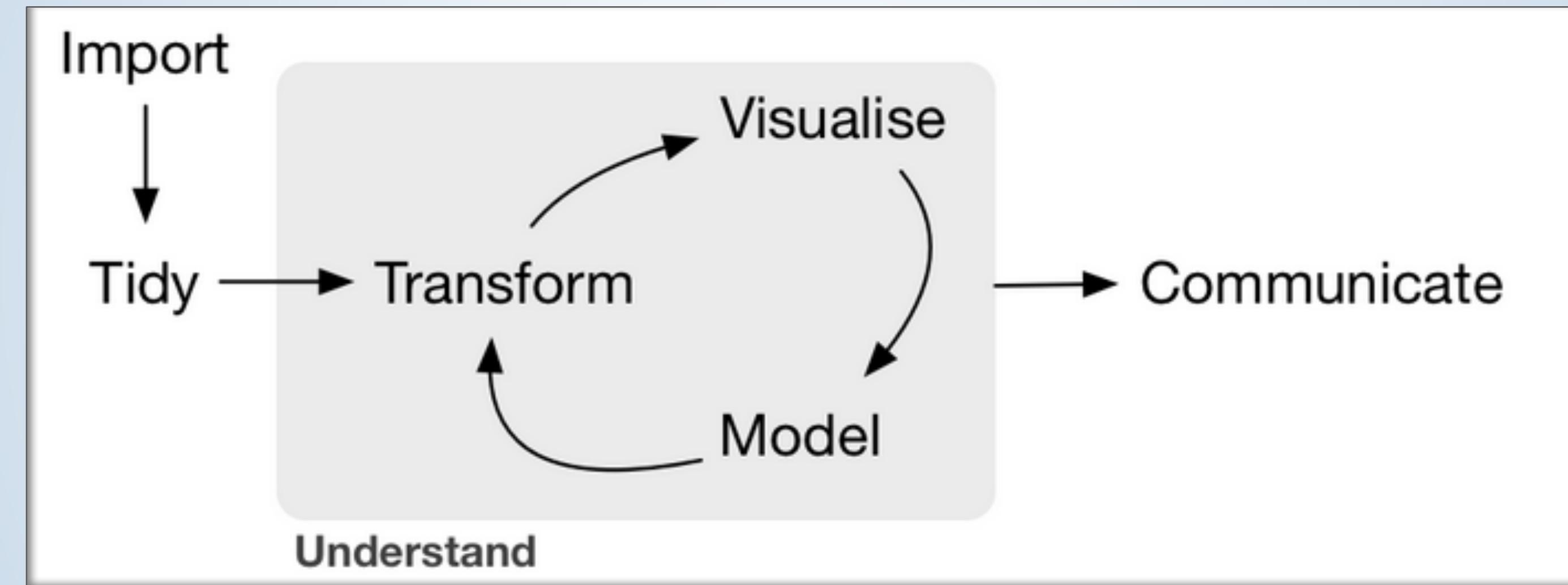
- An enterprise publishing and management platform
- Manage apps, docs, and plots
- Push button deployment of apps
- UI for managing content and sharing content
- Automate documents
- Support for parameterized documents

## **RStudio Conference 2017**

- January 11-14, 2017 - Orlando, FL
- [www.rstudio.com/conference](http://www.rstudio.com/conference)

*Shiny*

# *Model of the tools needed in a typical data science workflow*



<http://r4ds.had.co.nz/intro.html>

# Motivation

- R is a powerful platform for data analysis
- State of the art statistical power
- A massive set of packages for statistical modelling, machine learning, visualization, and importing and manipulating data
- Large and enthusiastic community



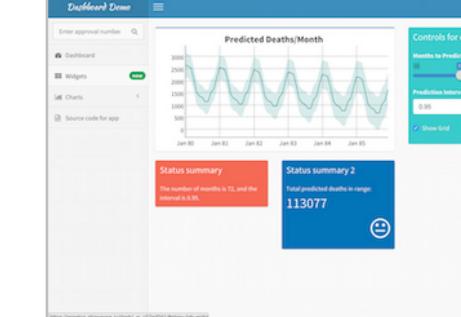
# Shiny Showcase

[www.rstudio.com/products/shiny/shiny-user-showcase/](http://www.rstudio.com/products/shiny/shiny-user-showcase/)

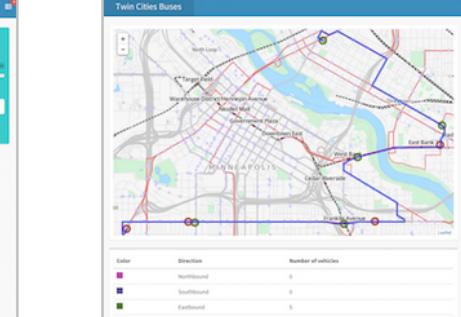
The RStudio website features many examples, and some have shared them with the community. Here are some examples that we particularly like.

R Studio Products Resources Pricing About Us Blog

## Shiny Apps for the Enterprise



**Shiny Dashboard Demo**  
A dashboard built with Shiny.



**Location tracker**  
Track locations over time with streaming data.

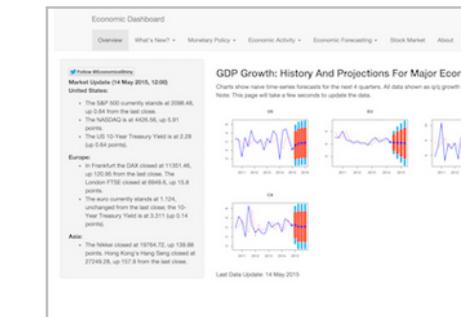


**Download monitor**  
Streaming download rates visualized as a bubble chart.

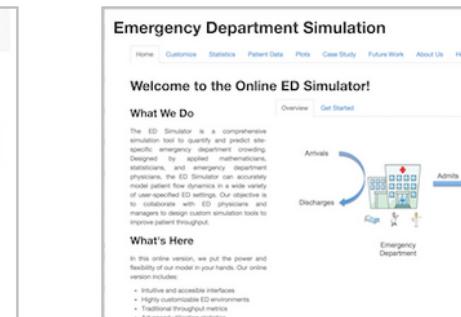


**Supply and Demand**  
Forecast demand to plan resource allocation.

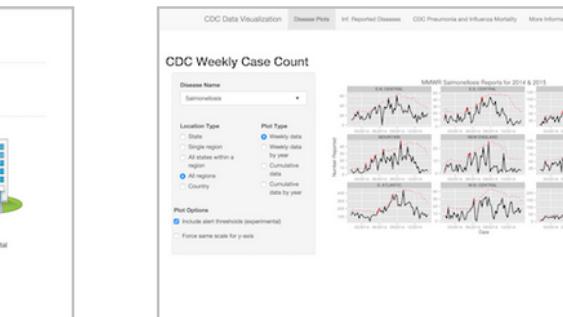
## Industry Specific Shiny Apps



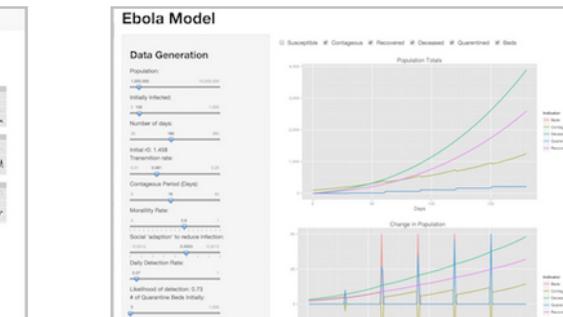
**Economic Dashboard**  
Economic forecasting with macroeconomic indicators.



**ER Optimization**  
An app that models patient flow.



**CDC Disease Monitor**  
Alert thresholds and automatic weekly updates.



**Ebola Model**  
An epidemiological simulation.



**Pharmacokinetics: some Shiny applications**



demo

## Iris k-means clustering

X Variable

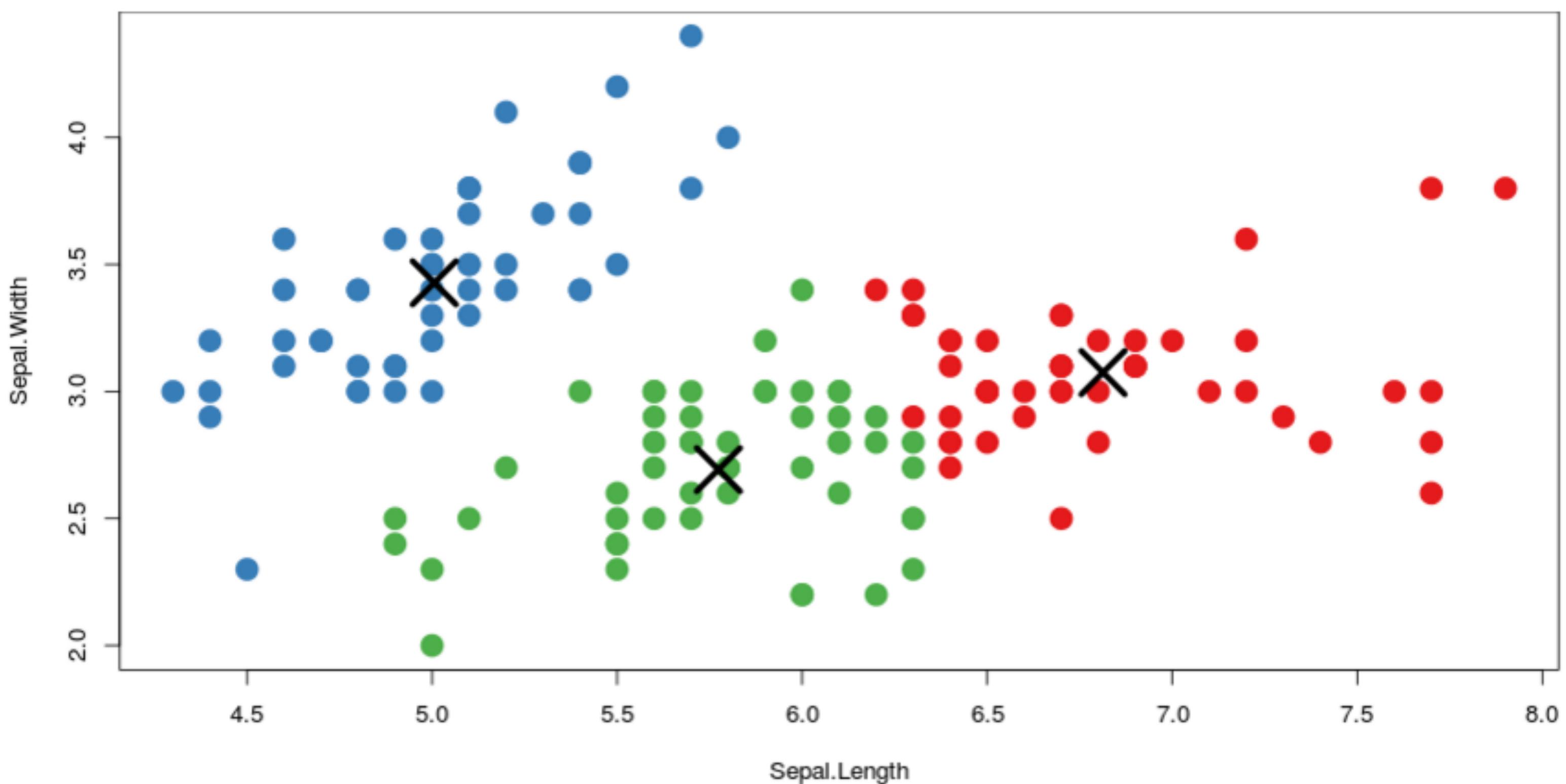
Sepal.Length

Y Variable

Sepal.Width

Cluster count

3



# *Pharma Examples*

<http://shiny.webpopix.org/dashboard/pkmodel/>

<http://qsp.enr.uga.edu:3838/Glulns/GlulnsI.d/>

<http://www.ncbi.nlm.nih.gov/pubmed/25733352>

## Modeling

<https://jallaire.shinyapps.io/shiny-biclust/>

## Dashboards

<http://www.gersonides.com/openfda/>

## Statistical Analysis

<https://michaelrosenblum.shinyapps.io/interAdapt/>

## Interactivity

<https://gchung.shinyapps.io/CAhospitals/>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4383594/>

<http://shiny.mf.uni-lj.si/medplot/>

<https://github.com/jonathanglevine/openfdashinyapps>

*New Shiny Topics*

# *New Shiny Topics*

- HTML Templates
- Reactive file reader
- Interactive plots
- Interactive documents
- Flex Dashboard
- Gadgets

# *App Development and Administration*

# Shiny Server Pro

*Shiny for the enterprise*

Choose Shiny Server Pro to **secure** user access, tune application **performance**, **monitor** resource utilization and get the direct support you need to create the best interactive data experiences for your customers and colleagues.



# What is the difference between Shiny and Shiny Server?

## Shiny



Free and open source R Package

Makes it incredibly easy to  
**build interactive web applications with R**

Automatic reactive binding between inputs and outputs  
and extensive pre-built widgets make it possible to build  
**beautiful, responsive, and powerful applications.**

## Shiny Server

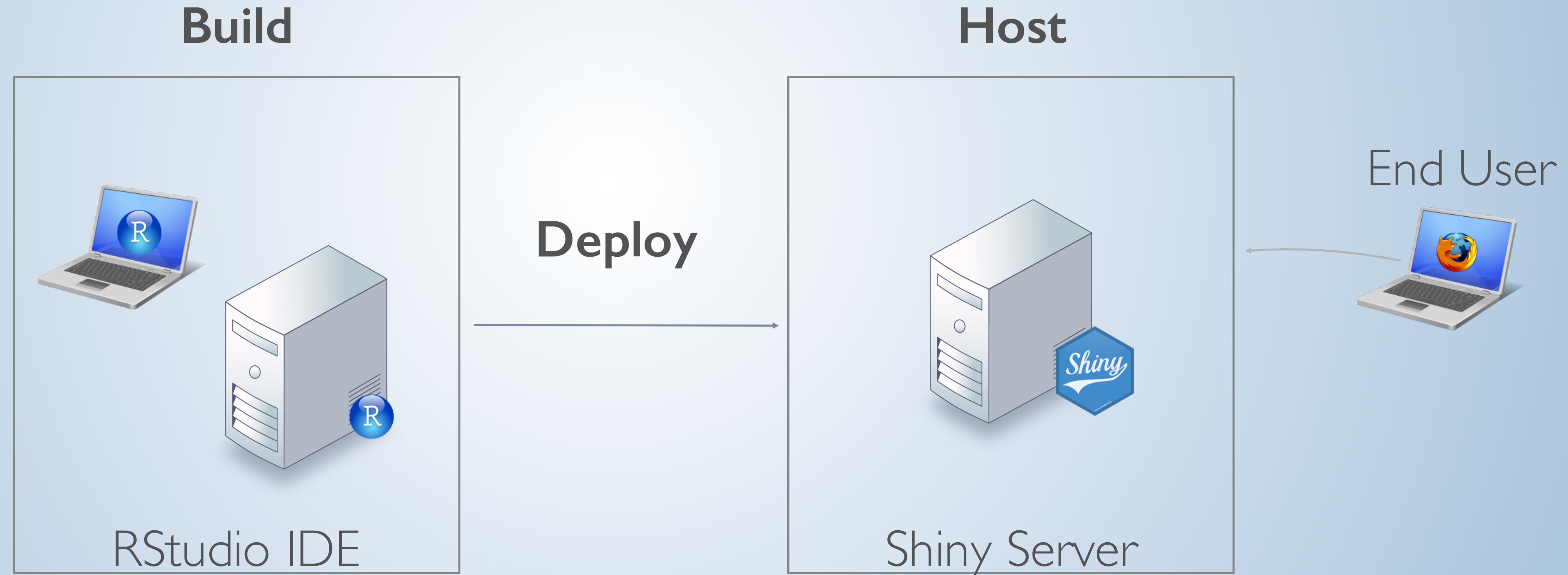


Software you install on your server

Enable users to  
**host and managing Shiny applications**

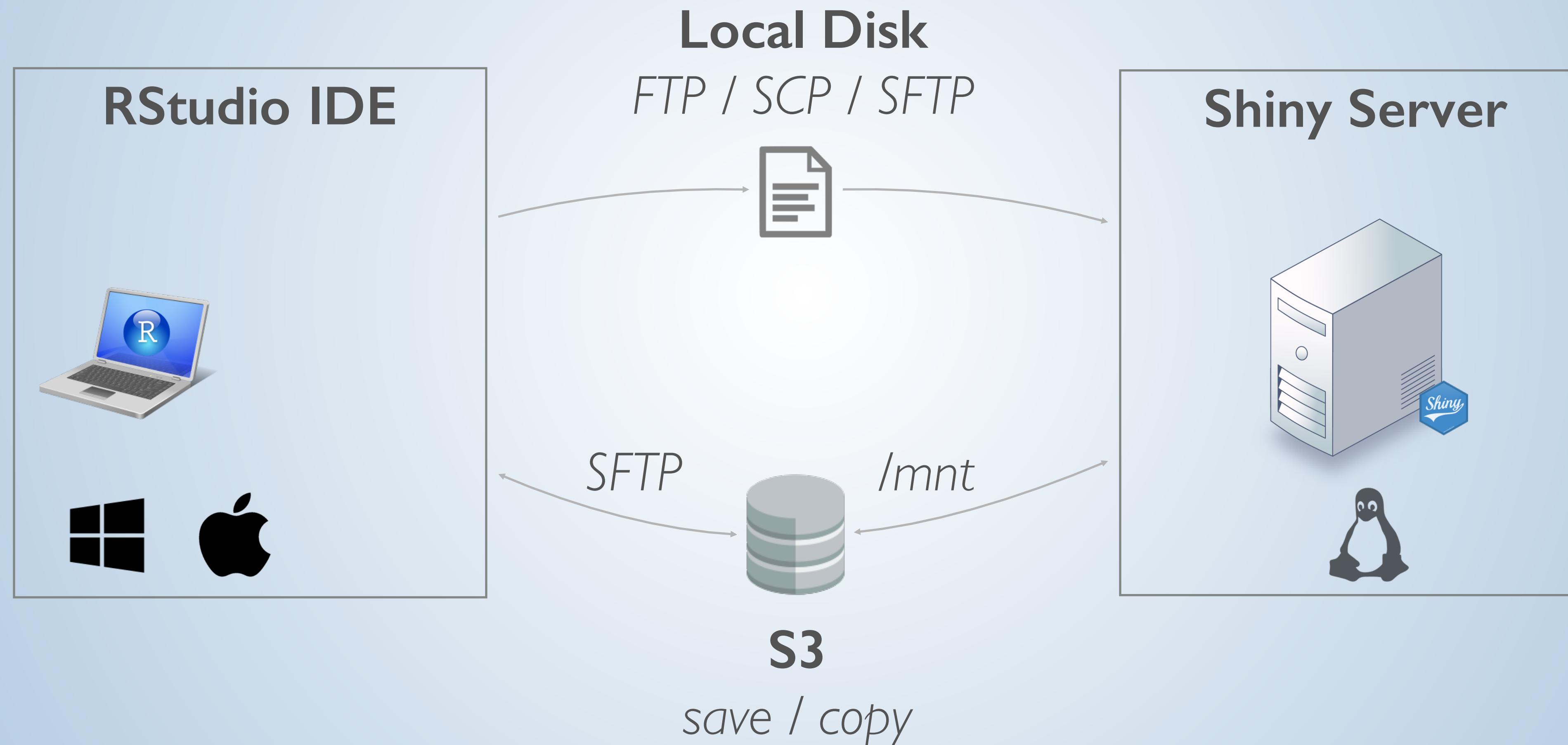
**Scale** a Shiny application to support many users  
**Protect and secure** your applications  
**Manage** the user experience

# *What is the difference between RStudio IDE and Shiny Server Pro?*



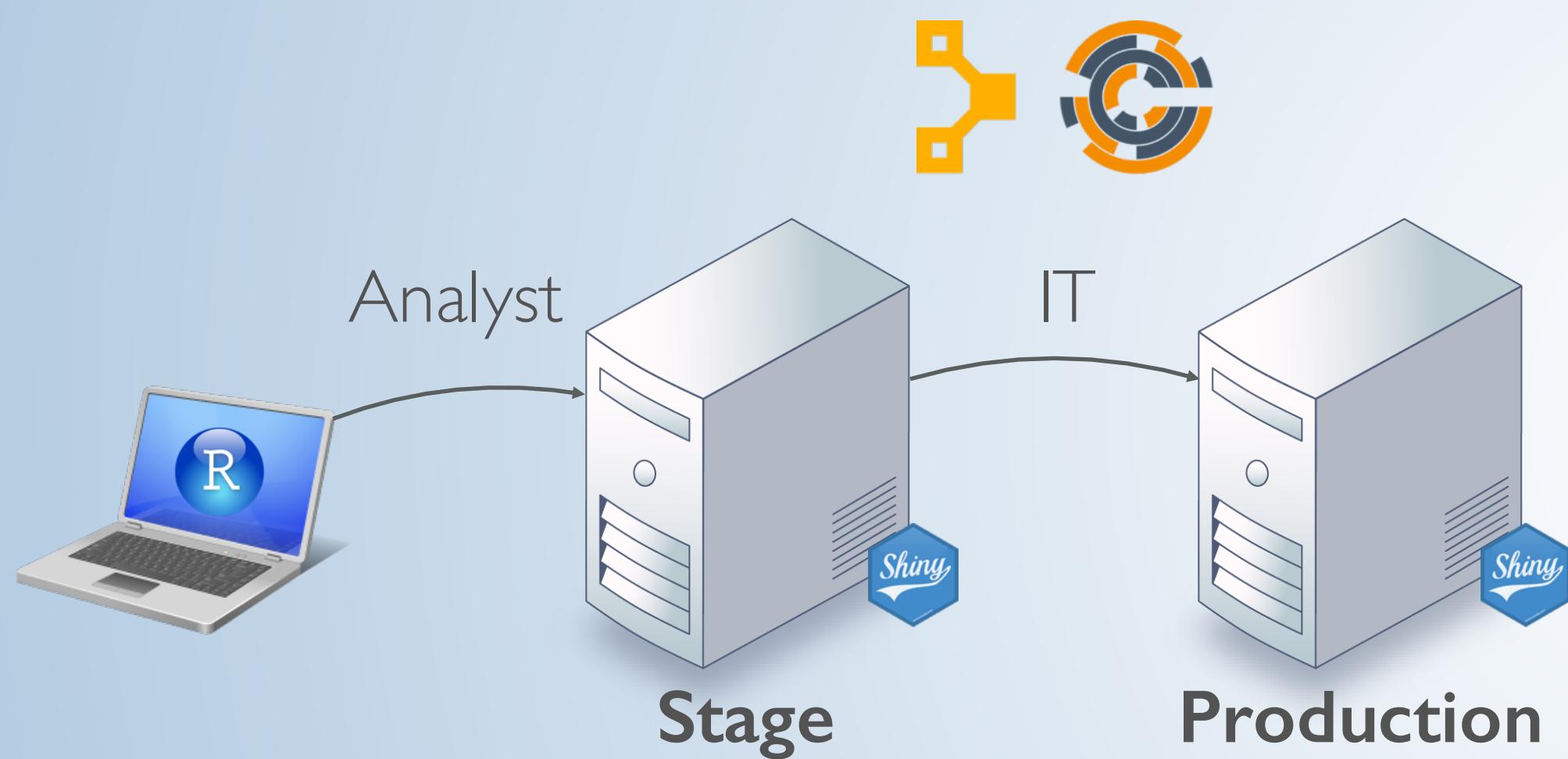
*Deploy Apps*

# How do I deploy apps?



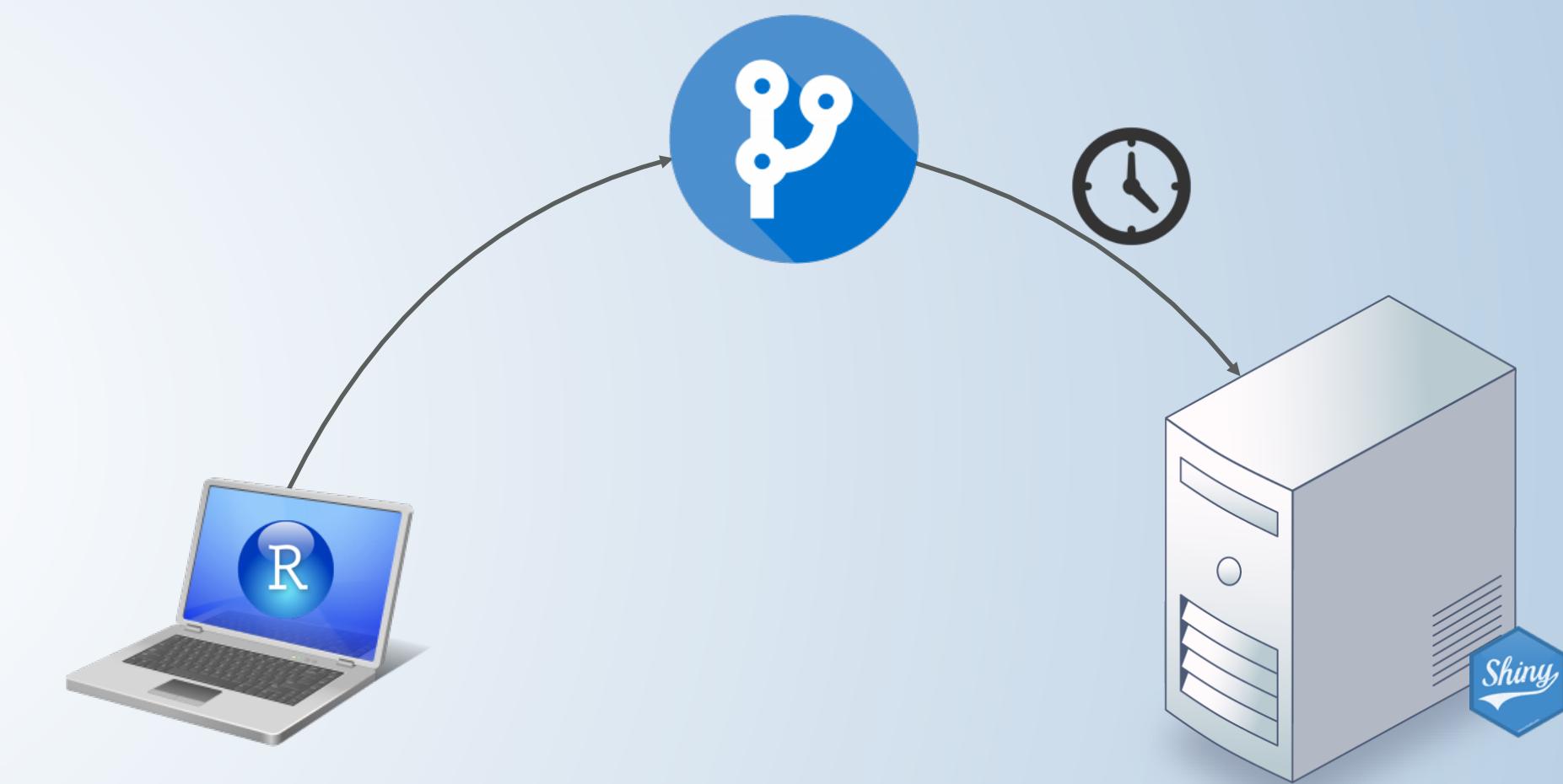
# How do I deploy apps in production?

## Handoff



Analyst stage app  
IT deploys to production

## Version Control



Push to version control and  
automate clones via a scheduler

*Develop and deploy on the same machine*

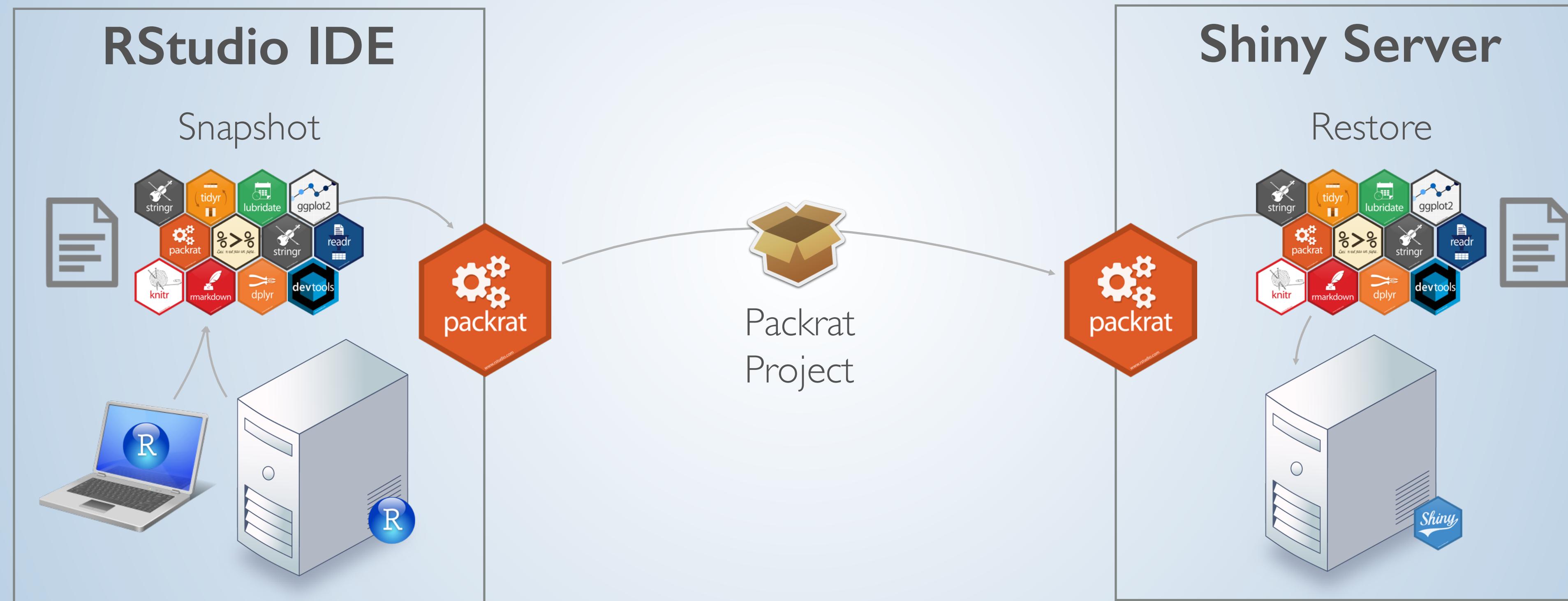
## RStudio Server Pro Shiny Server Pro



# Deploy Apps, R Markdown, and HTML



# Manage R Dependencies with Packrat



*Scale Apps*

# *Scaling and Tuning Shiny Server Pro*



Applications

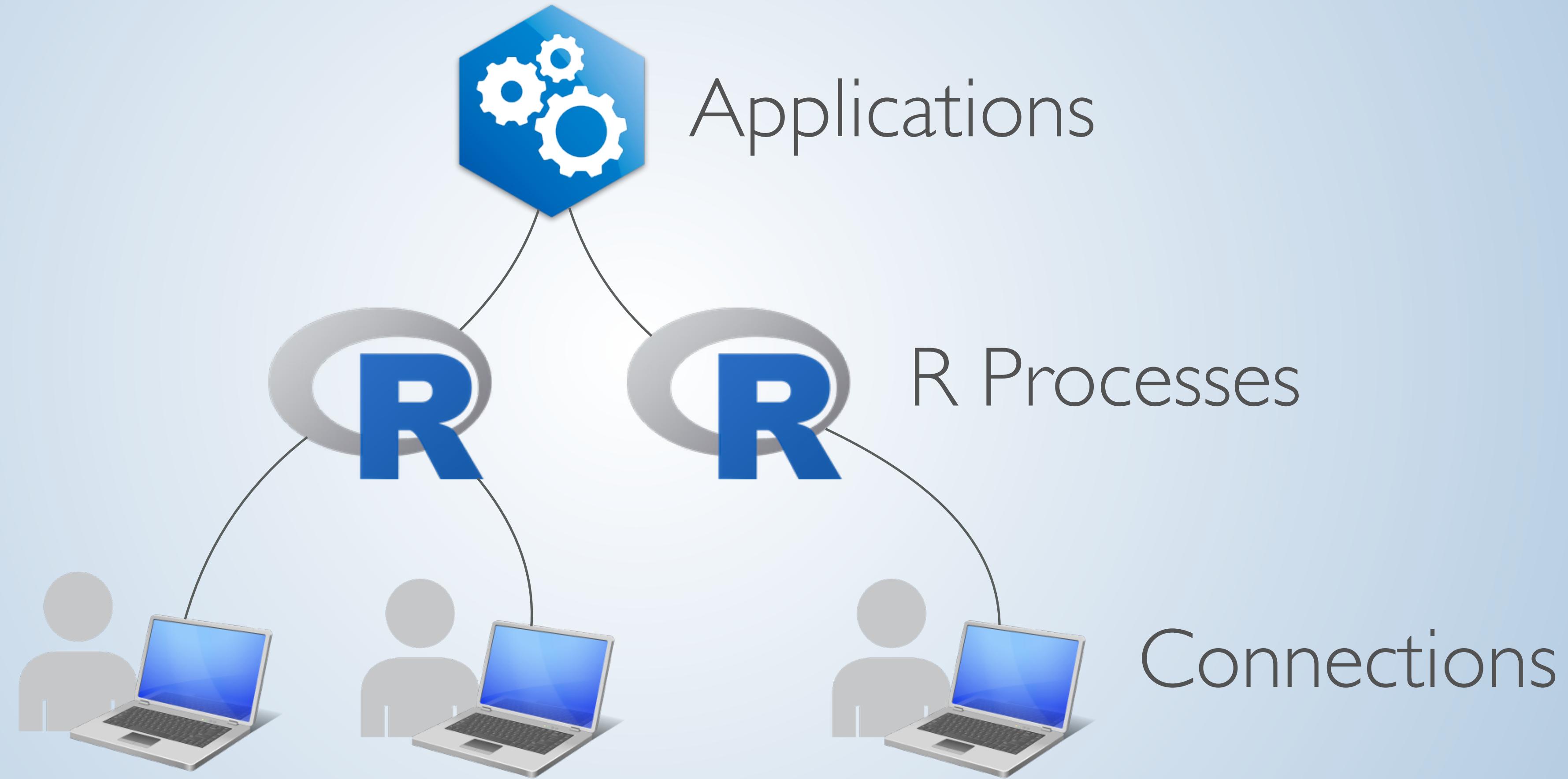


R Processes



Connections

# *Scaling and Tuning Shiny Server Pro*



# Concurrent User vs Connection



## Concurrent User

One Human

One Active Browser

One Shiny Server Pro

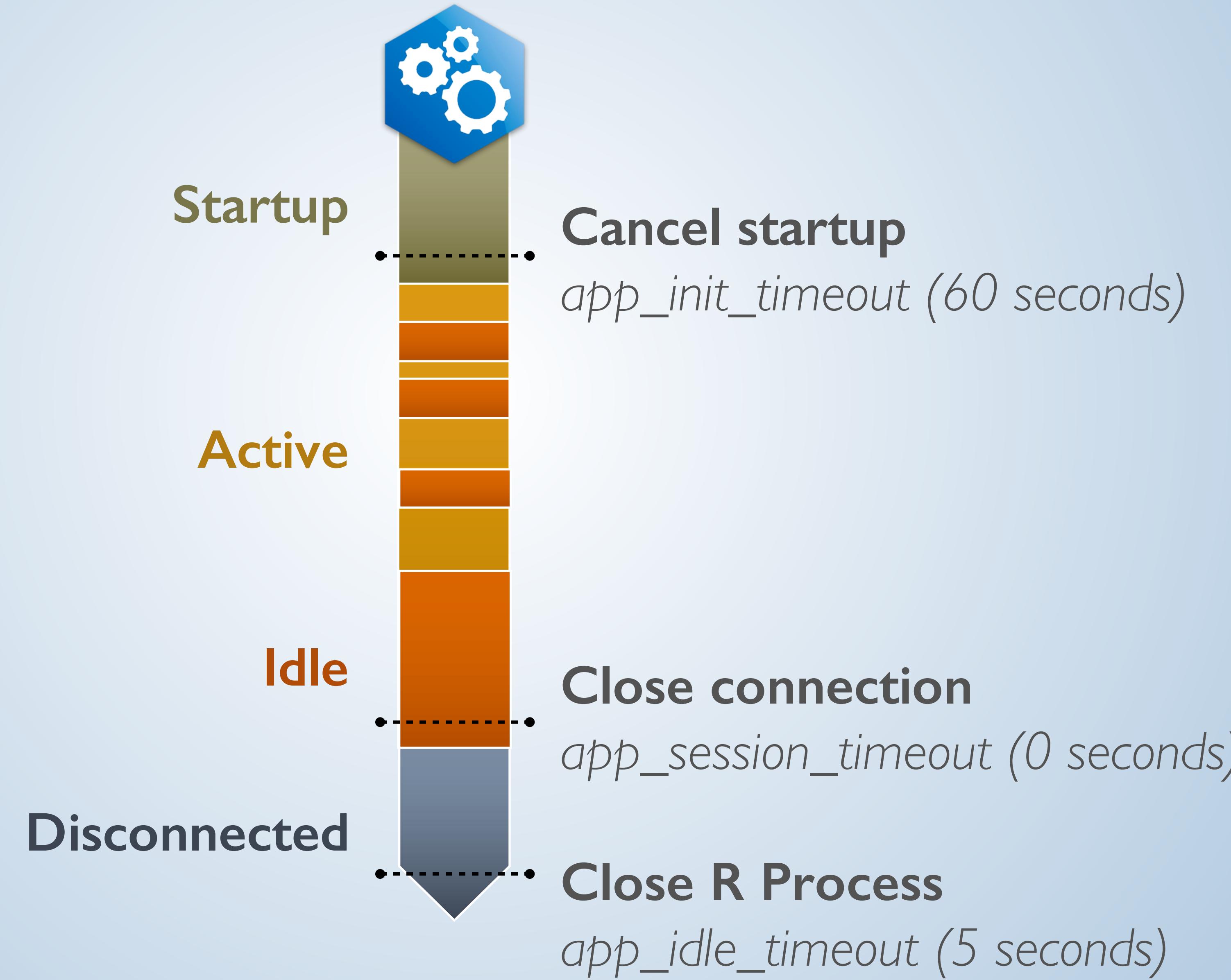


## Connection

One concurrent user

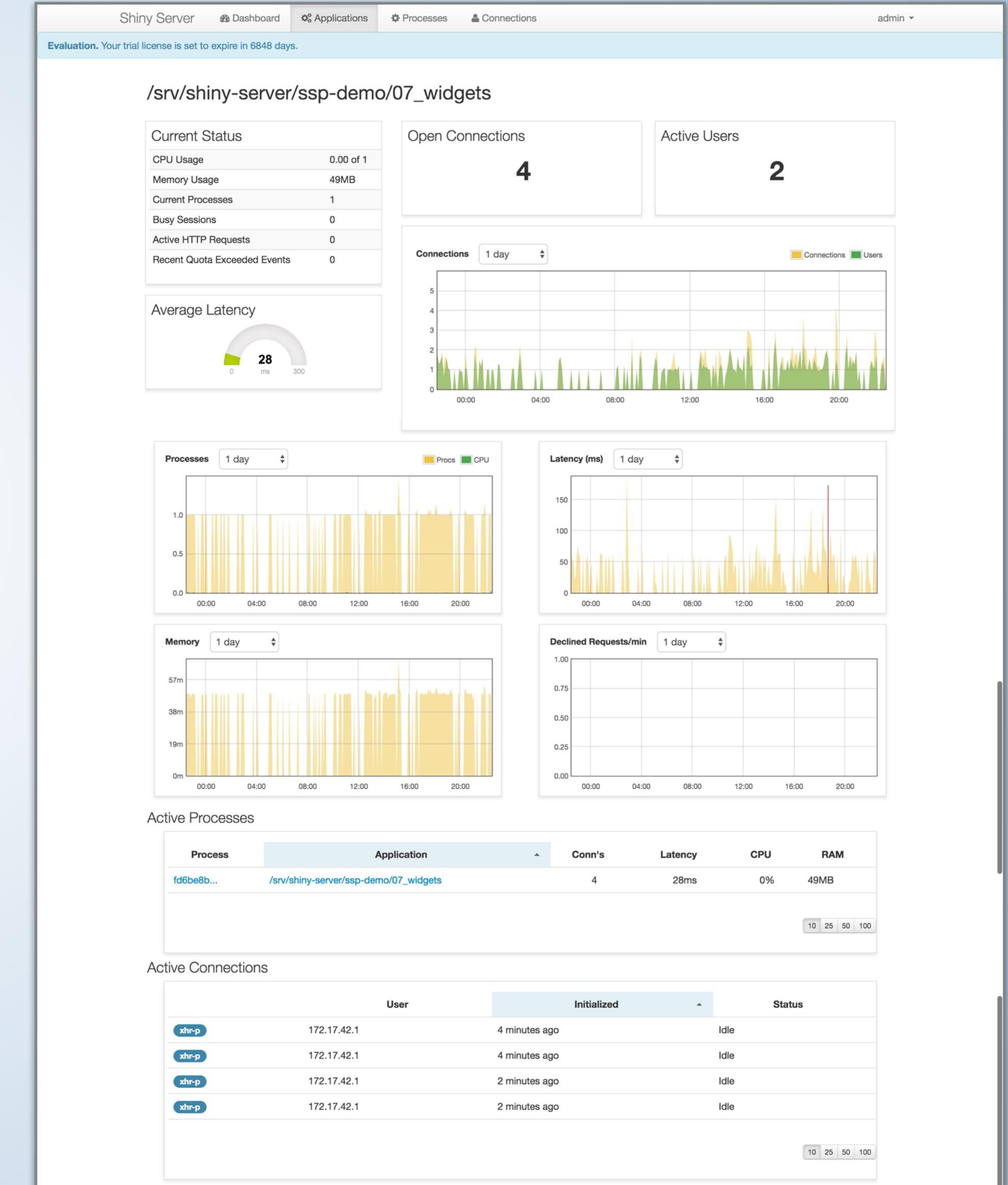
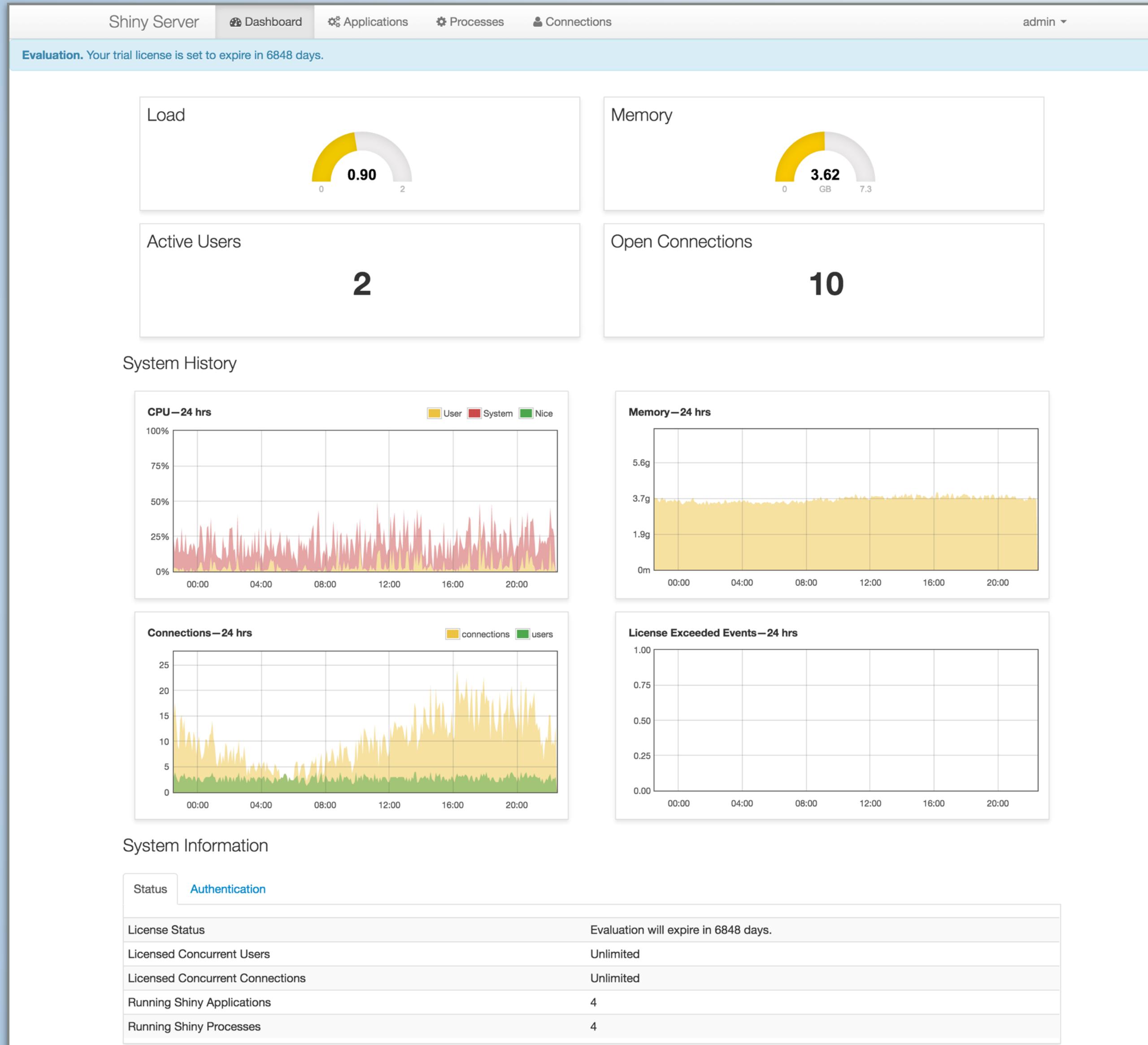
Four connections

# Set timeouts



# *Administrative Dashboards*

# Administrative Dashboards



# Admin Dashboard

<http://shiny-docker-gallery.us-east-1.rstudiосervices.com:4151/#/dashboard#%23%23>

Applications



Shiny Server    Dashboard    Applications    Processes    Connections    nathan ▾

/home/nathan/ShinyApps/shiny-examples/001-hello

Current Status

CPU Usage	0.00 of 2
Memory Usage	117MB
Current Processes	2
Busy Sessions	0

Open Connections    4

Active Users    1

R Processes



Shiny Server    Dashboard    Applications    Processes    Connections    nathan ▾

Process Details

Statistics

Memory Usage	60MB
HTTP Requests	0
Latency	98ms
PID	26449

User

Time Initialized

Average Latency

Processes    1

3.0

Active Connections

ws
ws
ws

Connections



Shiny Server    Dashboard    Applications    Processes    Connections    nathan ▾

Active Connections

App Directory	User	Initialized	Status
/home/nathan/ShinyApps/shiny-examples/001-hello	nathan (68.134.36.58)	2 minutes ago	Idle
/home/nathan/ShinyApps/shiny-examples/001-hello	nathan (68.134.36.58)	2 minutes ago	Idle
/home/nathan/ShinyApps/shiny-examples/001-hello	nathan (68.134.36.58)	2 minutes ago	Idle
/home/nathan/ShinyApps/shiny-examples/001-hello	nathan (68.134.36.58)	2 minutes ago	Idle

Filter by App

10 25 50 100

# Killing Process and Connections

From the admin dashboards

### Active Processes

Process	Application	Conn's	Latency	CPU	RAM
a577164...	/home/nathan/ShinyApps/shiny-examples/001-hello	3	102ms	0%	61MB <span>Kill</span>
0a43ec2...	/home/nathan/ShinyApps/shiny-examples/001-hello	1	166ms	0%	58MB <span>Kill</span>

10 25 50 100

### Active Connections

User	Initialized	Status
nathan (68.134.36.58)	less than a minute ago	Idle <span>Kill</span>
nathan (68.134.36.58)	less than a minute ago	Idle <span>Kill</span>
nathan (68.134.36.58)	less than a minute ago	Idle <span>Kill</span>
nathan (68.134.36.58)	less than a minute ago	Idle <span>Kill</span>

10 25 50 100

# *Hardware sizing*

# How big should my server be?

<https://gallery.shinyapps.io/instanceCalc/>

## Primary Drivers

1. Number of concurrent sessions
2. Size of sessions

### RAM (GB)

- Small < 1
- Medium 1 - 10
- Large 10 +

## Instance Sizes Examples

### Cores      RAM (GB)

- Micro 2 16
- Small 8 64
- Medium 16 256
- Large 32 512

R Instance Calculator

1. Sessions  
How many active sessions do you need to support?  
15

2. Memory  
What is the percentage of small/medium/large sessions in terms of memory?  
0 64 99  
Small <1GB Medium 1GB-10GB

3. Compute  
 Do individual sessions use multiple cores?  
 Are you using hyper-threading?

4. High Availability  
What is your standard for high availability?  
0 50 99

5. Custom instance sizes  
 Do you want to use a custom instance size?

Copyright RStudio

Instructions  
Estimate the amount of memory, cores, and instances that will be needed to support your organization. Input the number of active sessions, the memory profile of sessions, and compute and high availability requirements.

**145 GB**  **8 Cores** 

Number of Instances Required

Type	Memory	Cores	HA	StandAlone	Total
Micro	16	2	5	10	15
Small	64	8	2	3	5
Medium	256	16	1	1	2
Large	512	32	1	1	2

Detail of Instances

Disclaimer  
This calculator provides generalized estimates and cannot account for all aspects of your particular environment, use cases, and/or requirements. Estimates are calculated using assumptions that may or may not apply to your situation.

*RStudio Connect*

