Layers

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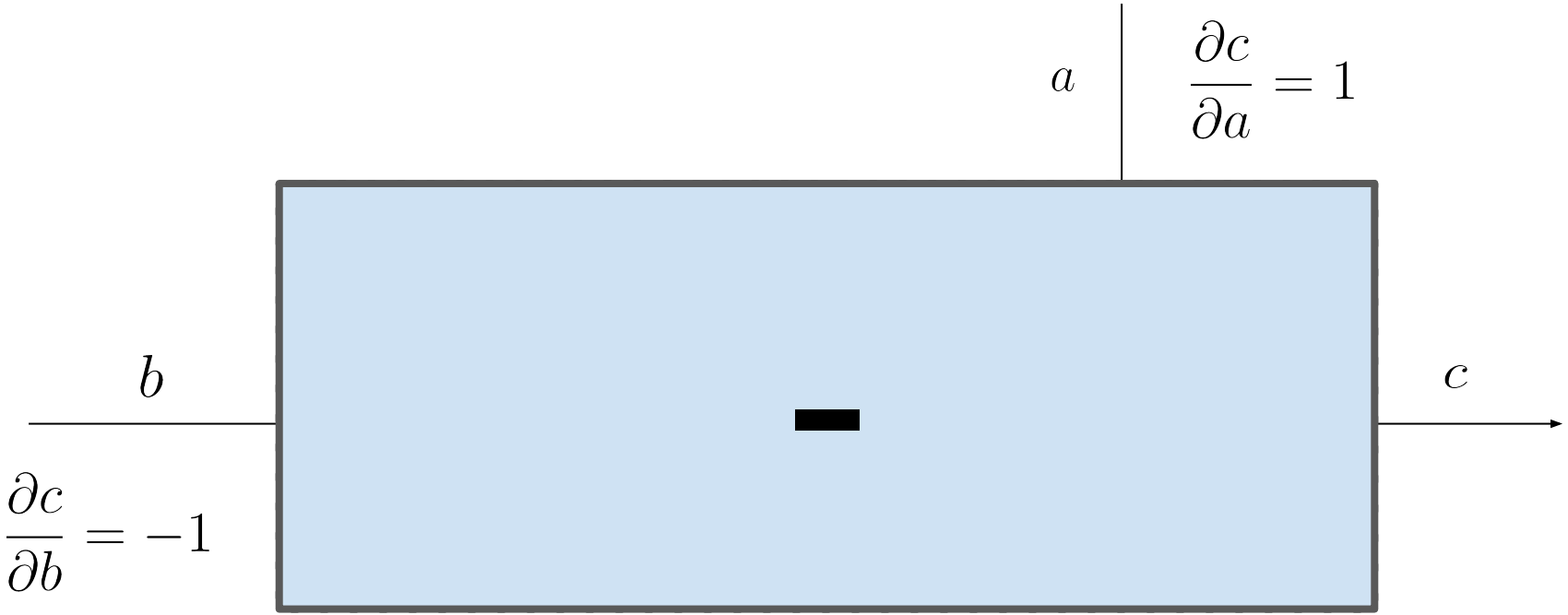
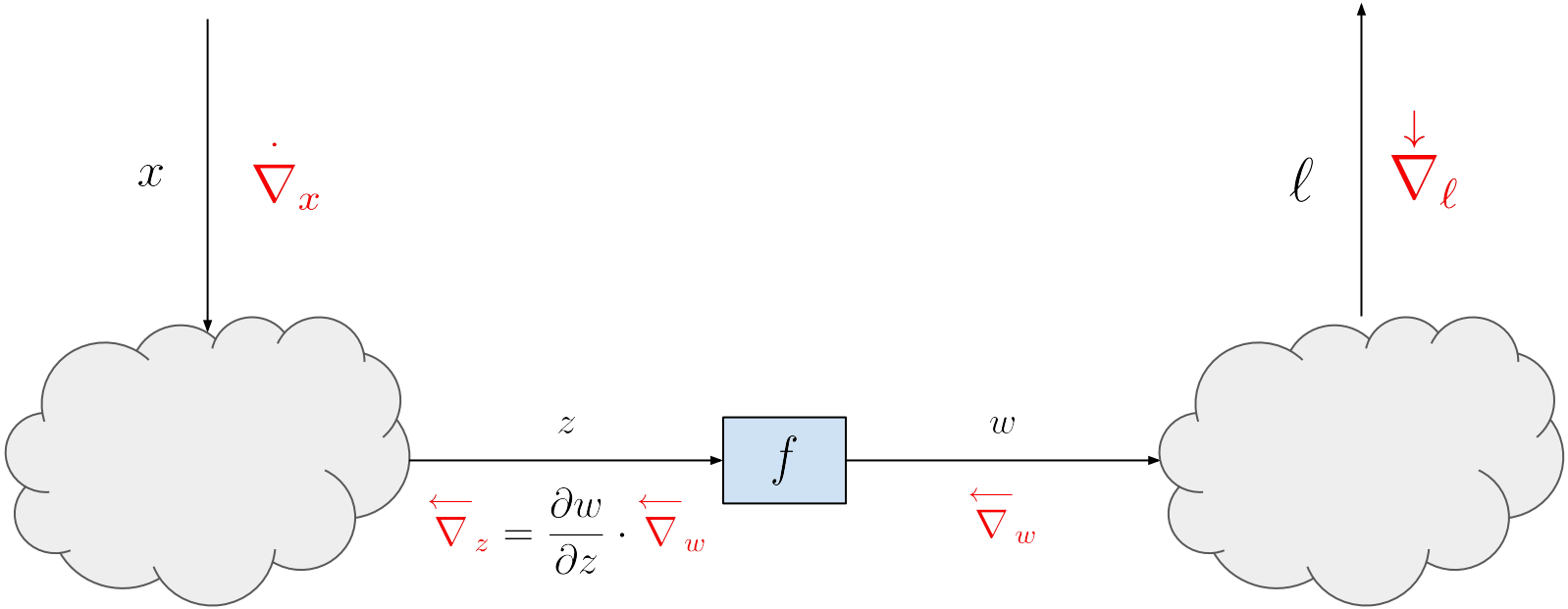
Making Larger Boxes out of Smaller Ones

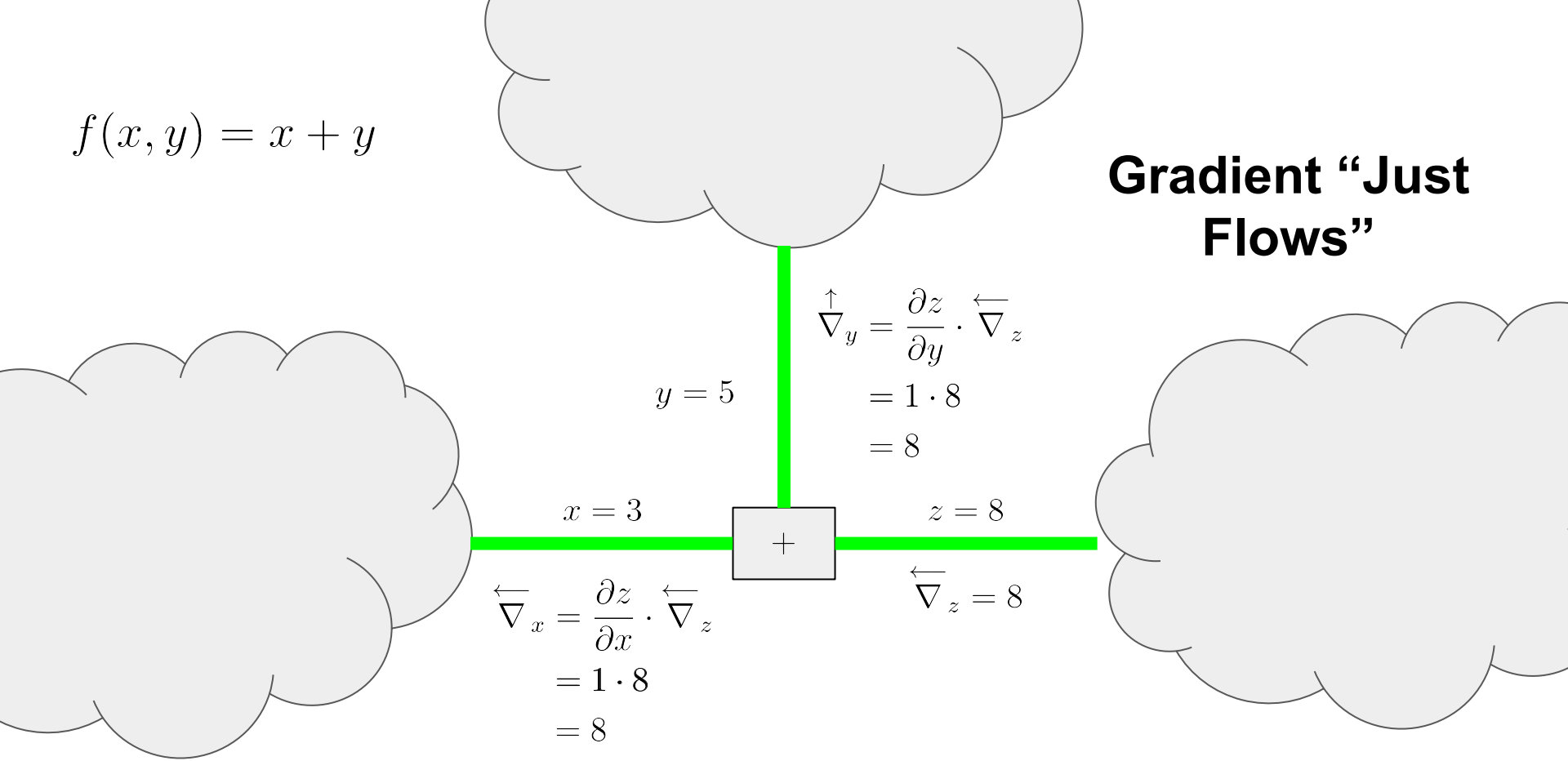


The Big Picture



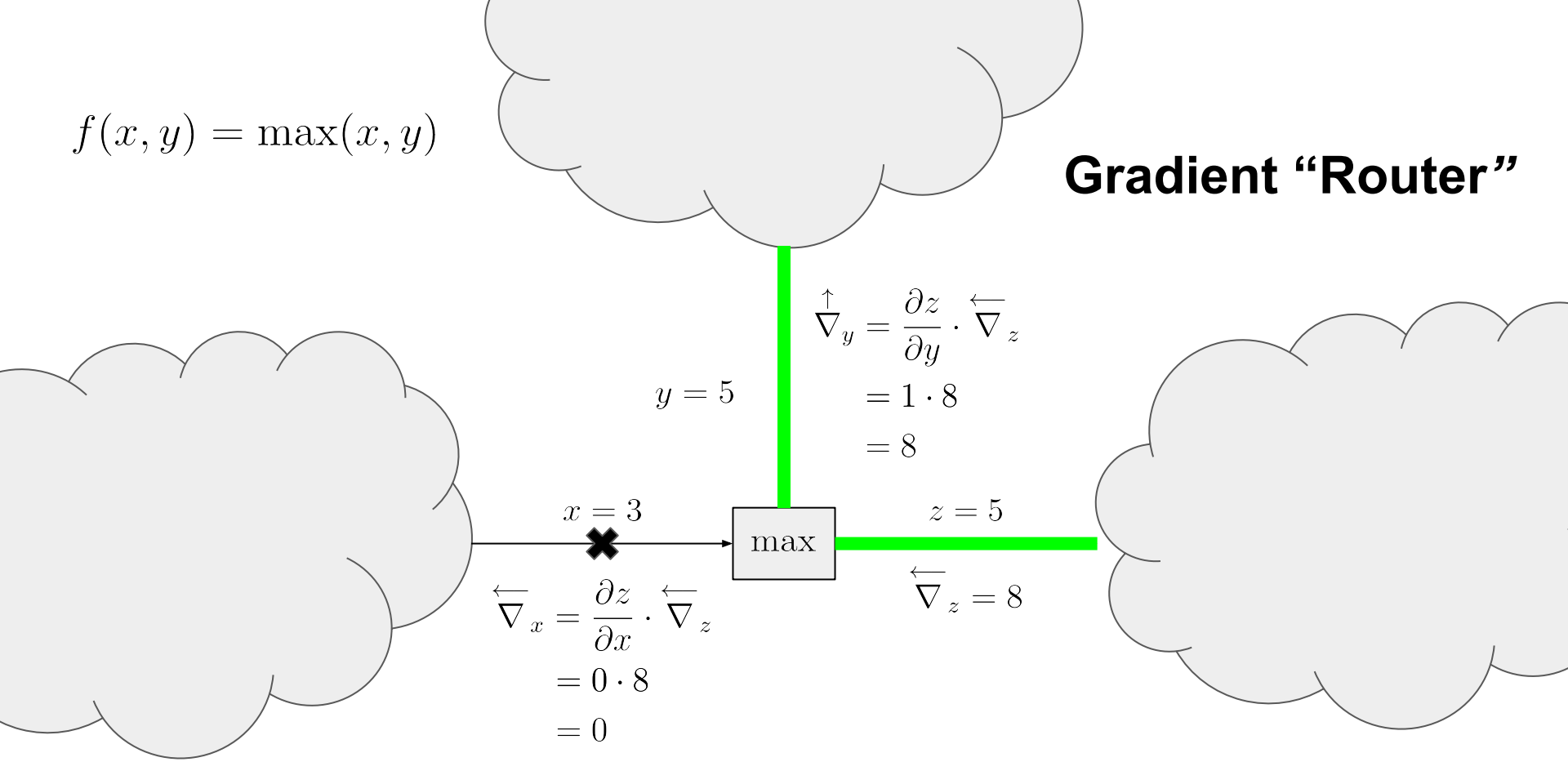
$$f(x, y) = x + y$$

Gradient “Just Flows”

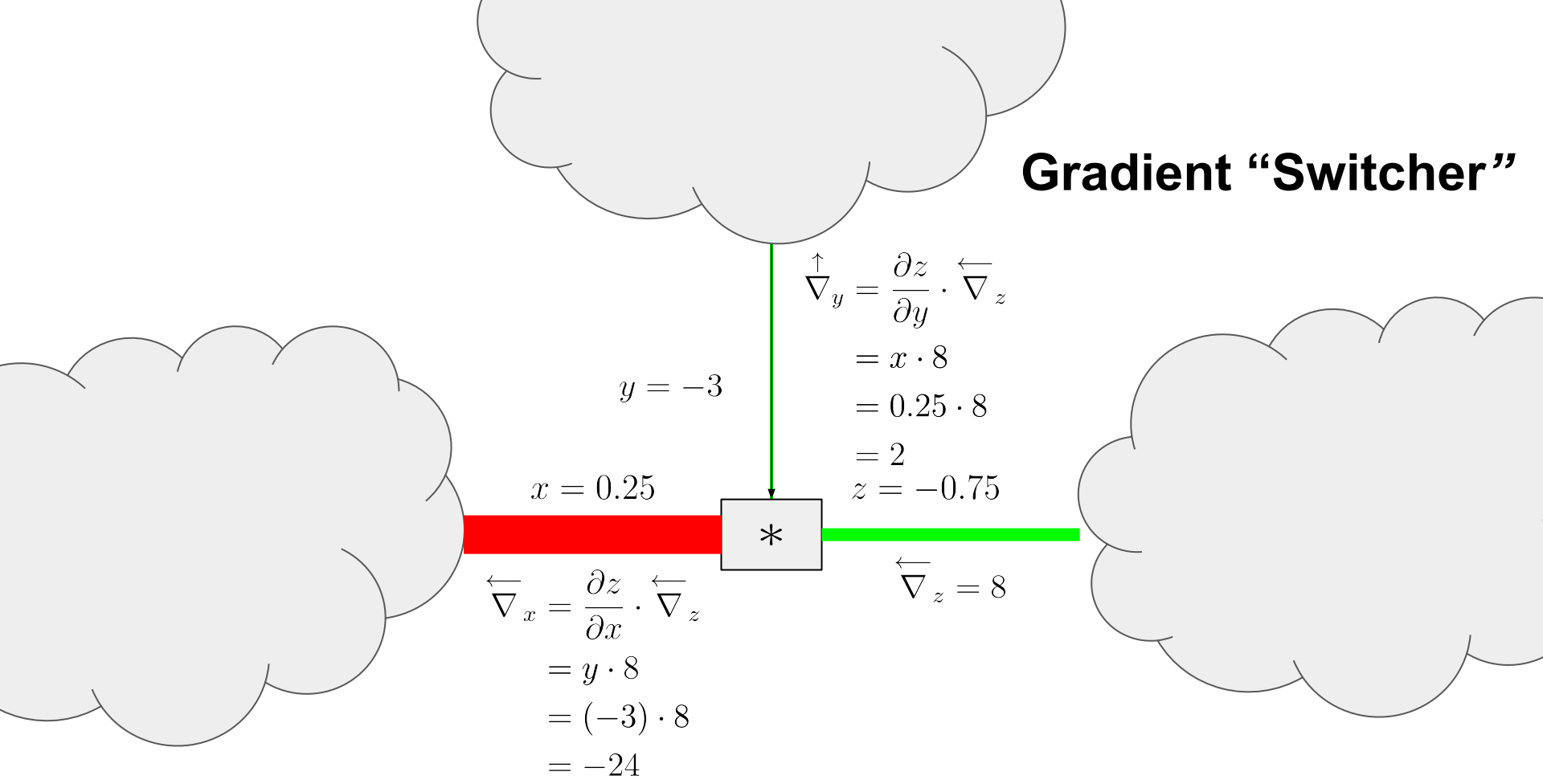


$$f(x, y) = \max(x, y)$$

Gradient “Router”



Gradient “Switcher”



Learning Objectives

- Understand the interface of a neural network layer
- Be able to generalize 1D layers to support
  - Vectors
  - Vectors + Minibatches

Examples

- Dense (f(x) = WX + b)
- Sigmoid (f(x) = 1 / (1 + e^{-x}))
- Squared Loss f(y_hat, y) = (y_hat - y)^2