# Why controlling interdomain traffic is difficult ?

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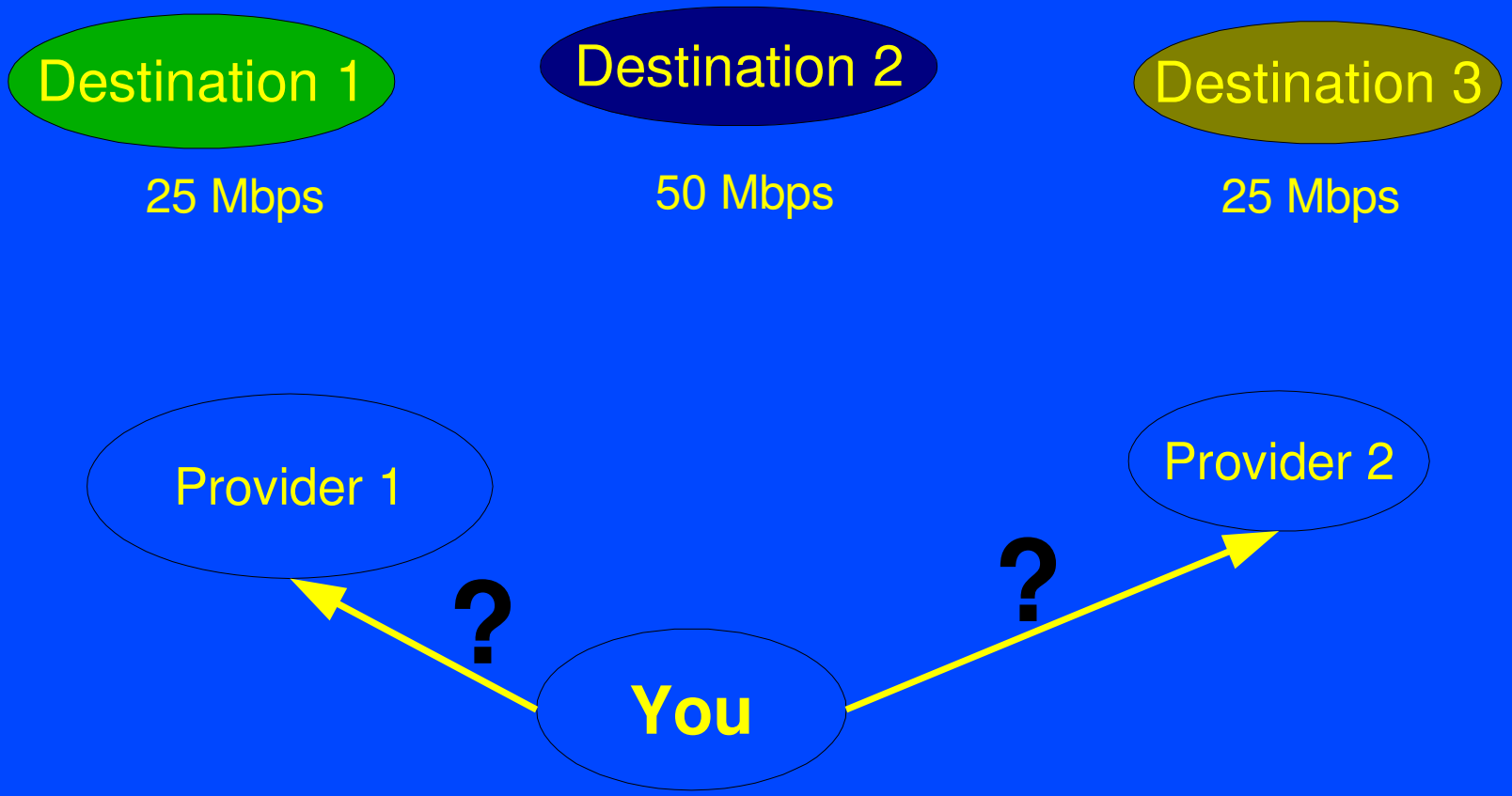
# Background

- Interdomain Internet $\sim$ 15,000 ASes
- More than 60 % of multi-connected ASes
- Any AS exchanges traffic with 1000's ASes each day
- Interdomain traffic $\equiv$ traffic exchanged between ASes
- Interdomain routing $\equiv$ routes exchanged between ASes with BGP

# Subject of this talk

| | |
|---|---|
| What ? | Controlling interdomain traffic |
| Why ? | 1) Growing proportion of multi-connected ASes<br>2) multi-connected ASes care about interdomain traffic<br>3) BGP = reachability ≠ traffic |
| How ? | By tweaking BGP |

# Interdomain traffic distribution



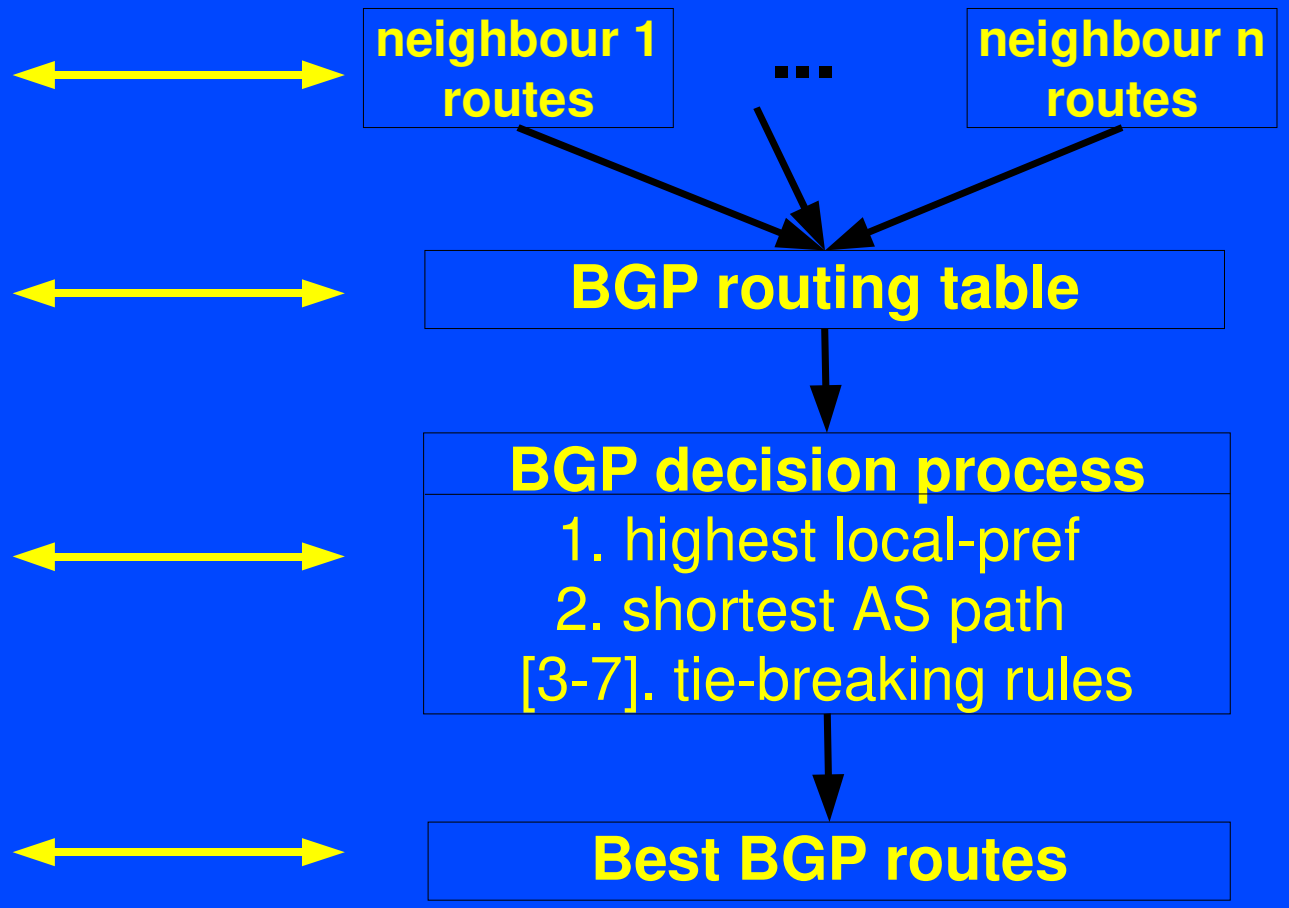
# How does BGP work ?

1) Getting BGP routes

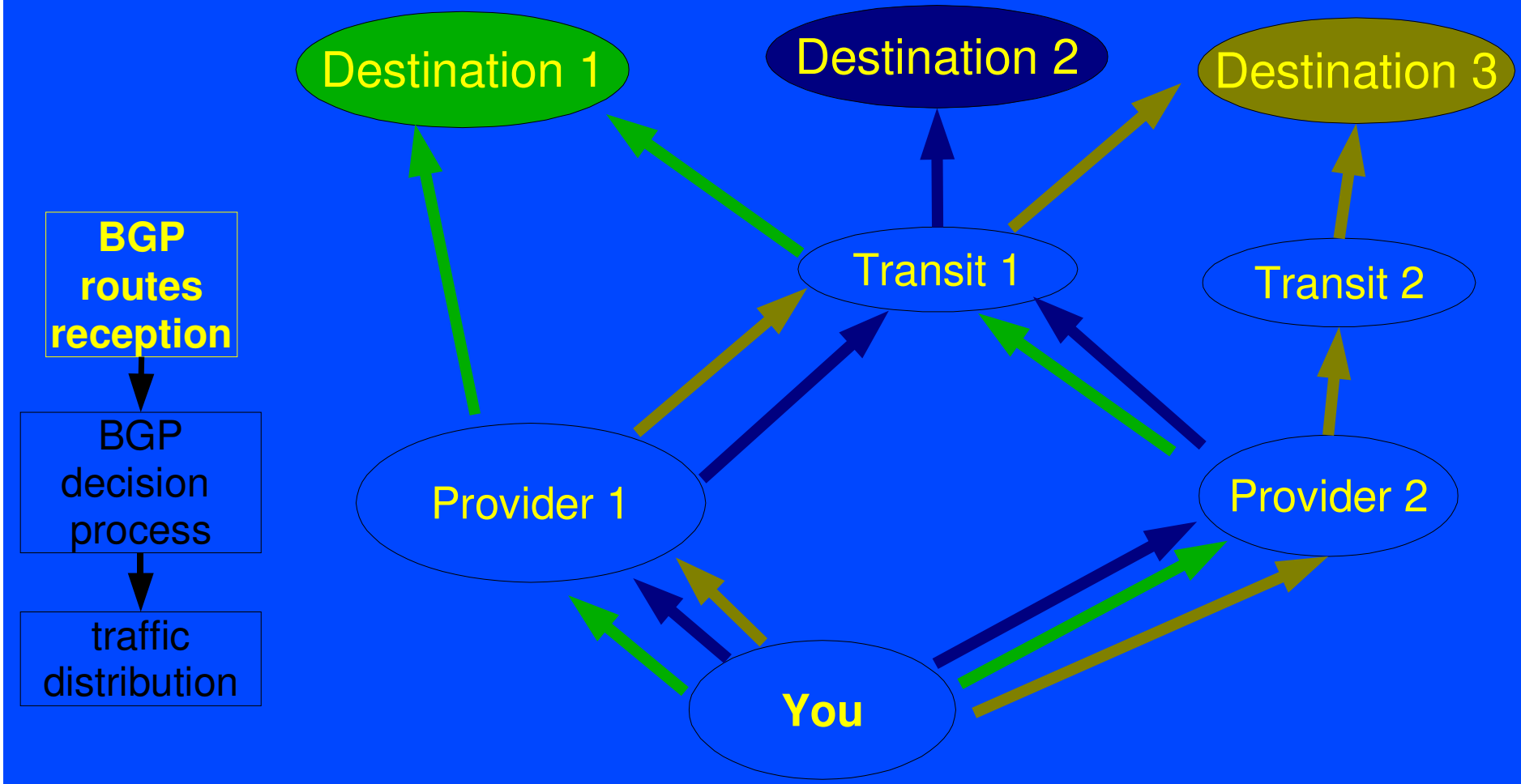
2) Building routes database

3) Choosing the best route

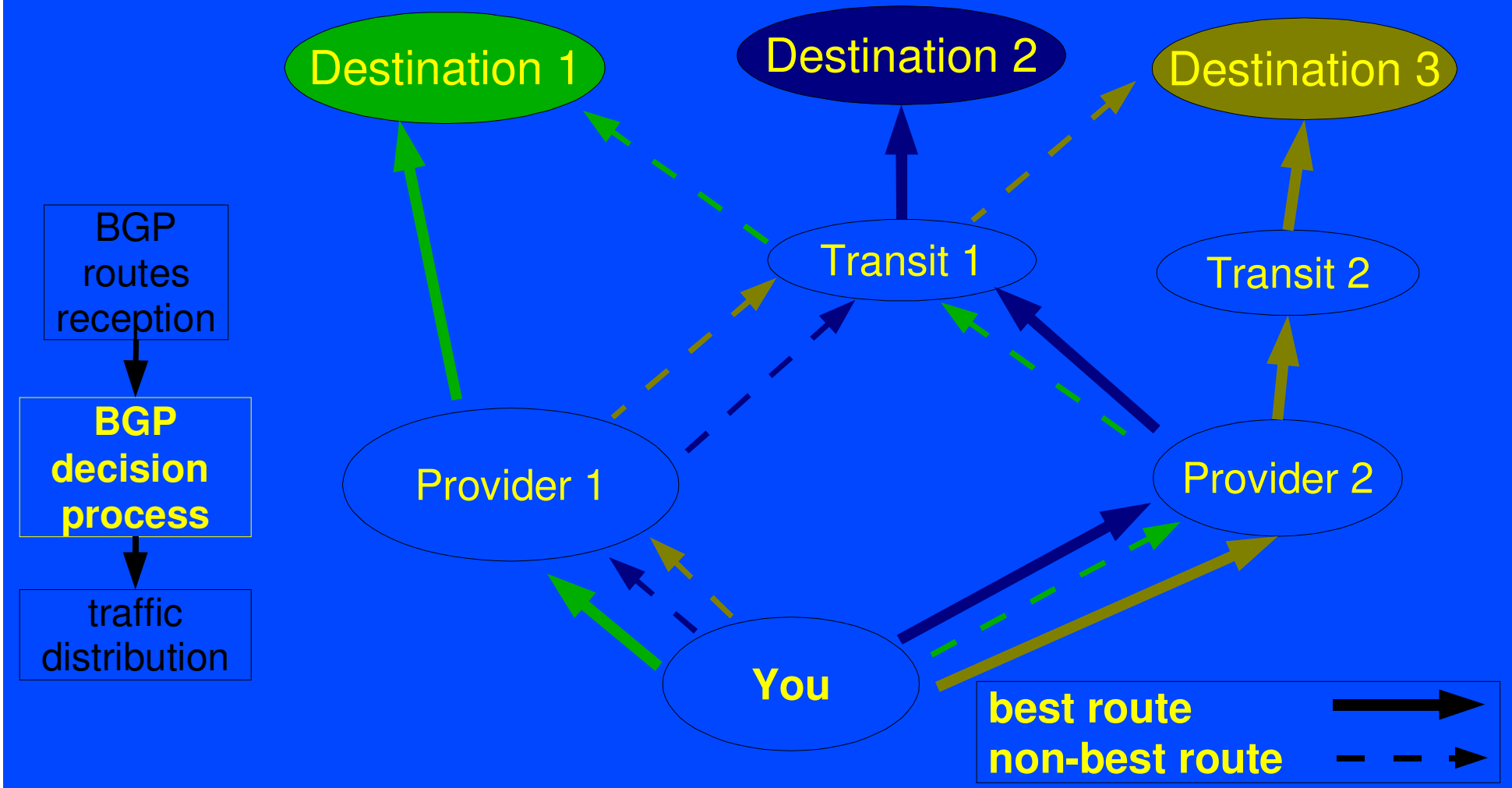
4) Forwarding traffic using best routes



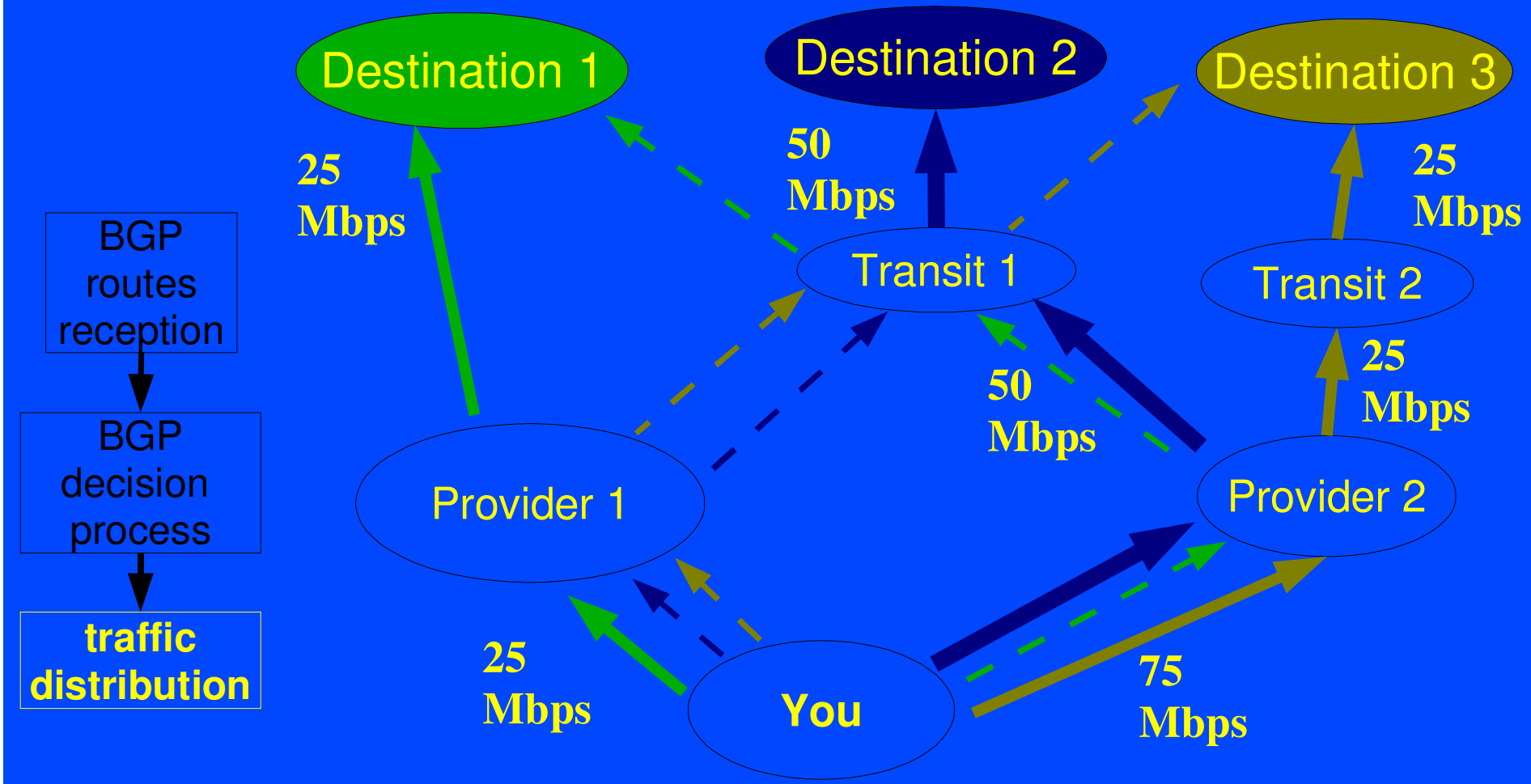
# Interdomain routes diversity



# Best route choice by BGP



# Interdomain traffic distribution



# Sketch of our ITC paper

- **Goal :** optimize objective function on the traffic (minimize cost, trafic balance,...)
- **Method :** move traffic among providers by changing BGP routes
- **Problem :** 100's of destinations' routes to influence
- **Solution :** rely on BGP "filters" that work on traffic aggregates
- **Technique :** population-based search + heuristic to aggregate traffic

# Summary

| | |
|---|---|
| What ? | Controlling interdomain traffic is difficult |
| Why ? | 1) lot of destinations (100's)<br>2) uneven traffic for destinations<br>3) potentially 100's of BGP route changes<br>4) complex BGP decision process (tie-breaking) |
| Solution : | Influence traffic aggregates |