Mechanism of ozone depletion

Nitrogen monoxide catalyzes the depletion of ozone in the stratosphere by the two-step mechanism shown below

$$NO + O_3 \rightarrow NO_2 + O_2$$
$$NO_2 + O_3 \rightarrow NO + 2O_2$$

slow fast

A. What is the net reaction?

B. What is the empirical rate law?

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A. What is the net reaction?

- B. What is the empirical rate law? Solution: A. The net reaction is $2 O_3 \rightarrow 3 O_2$
- B. Given that the rate determining step is the first one the rate law is:

 $v = k[O_3][NO]$