An MPI concept with efficient control of network functionality based on SDN

Shimojo Lab., Osaka University
Khureltulga Dashdavaa, Munkhdorj Baatarsuren,
Keichi Takahashi, Yoshiyuki Kido, and Shinji Shimojo

Message Passing Interface

- Message Passing Interface (MPI) is important programming model since widely spread of cluster system in HPC.

Cluster is parallel and distributed HPC architecture that uses a lot of low performance computers.

- top500 HPC's 86.8% is cluster.

- However, MPI collective communication's overhead becomes problem as scale of cluster grows.

Previous works

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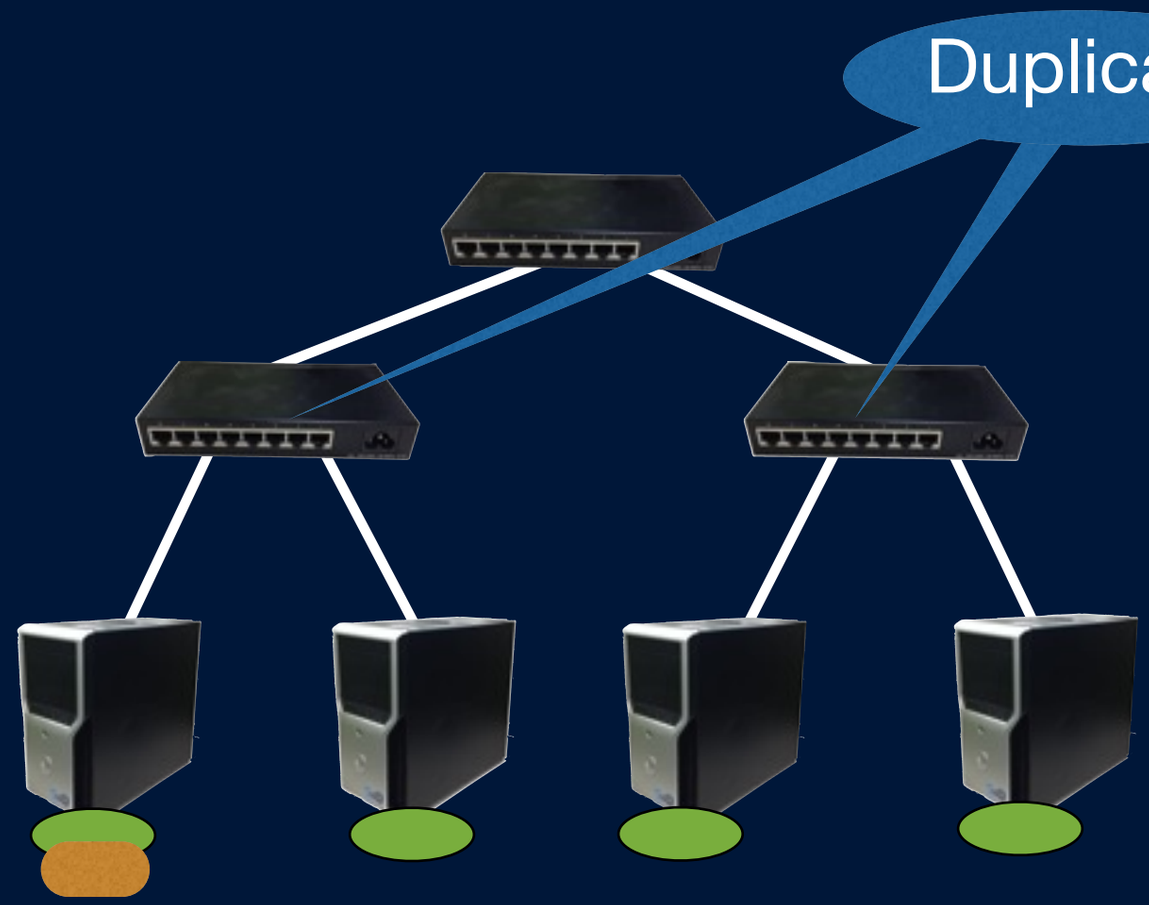

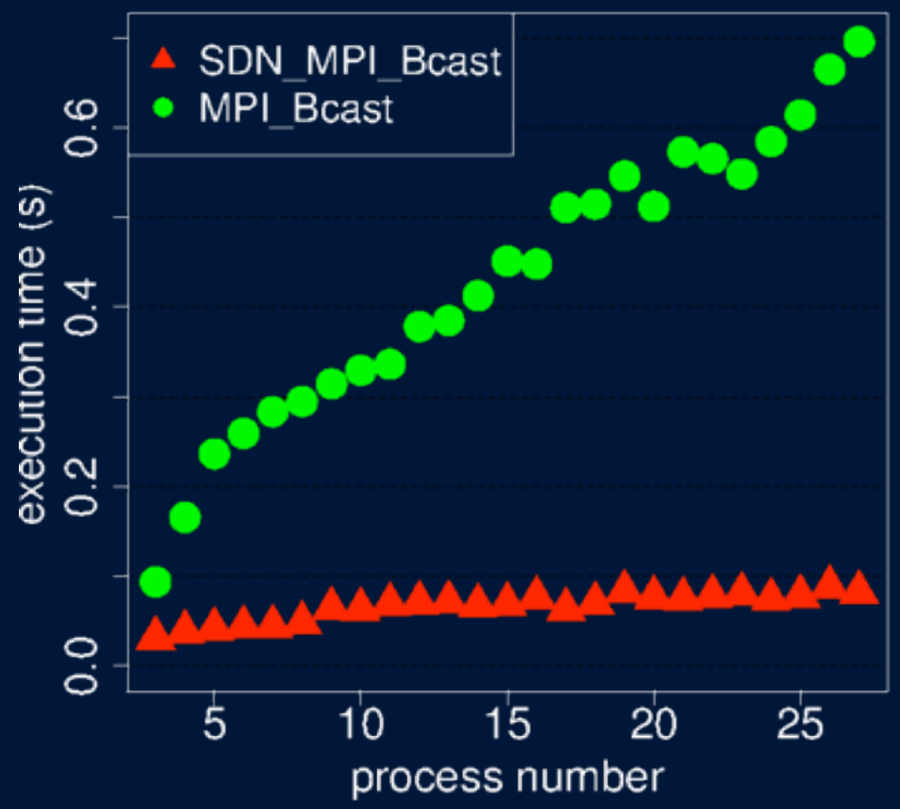

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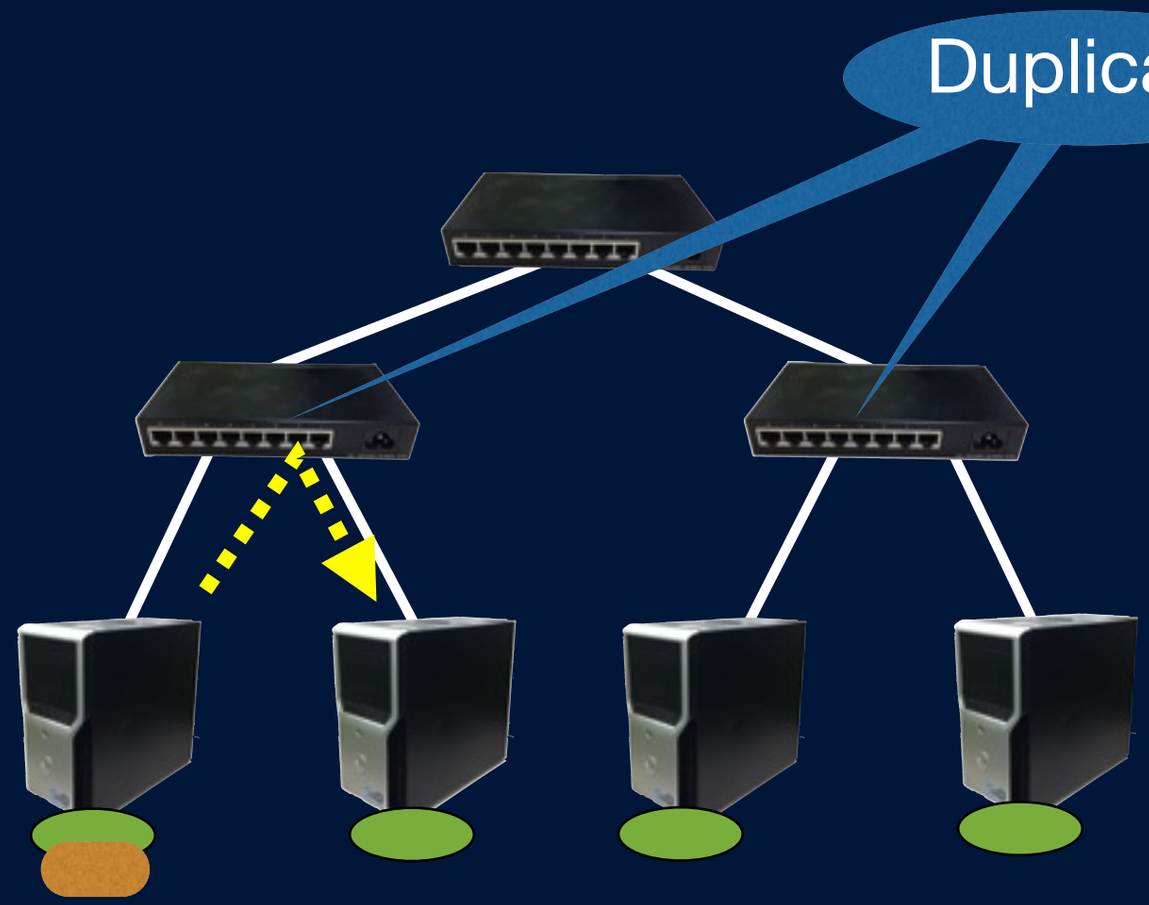

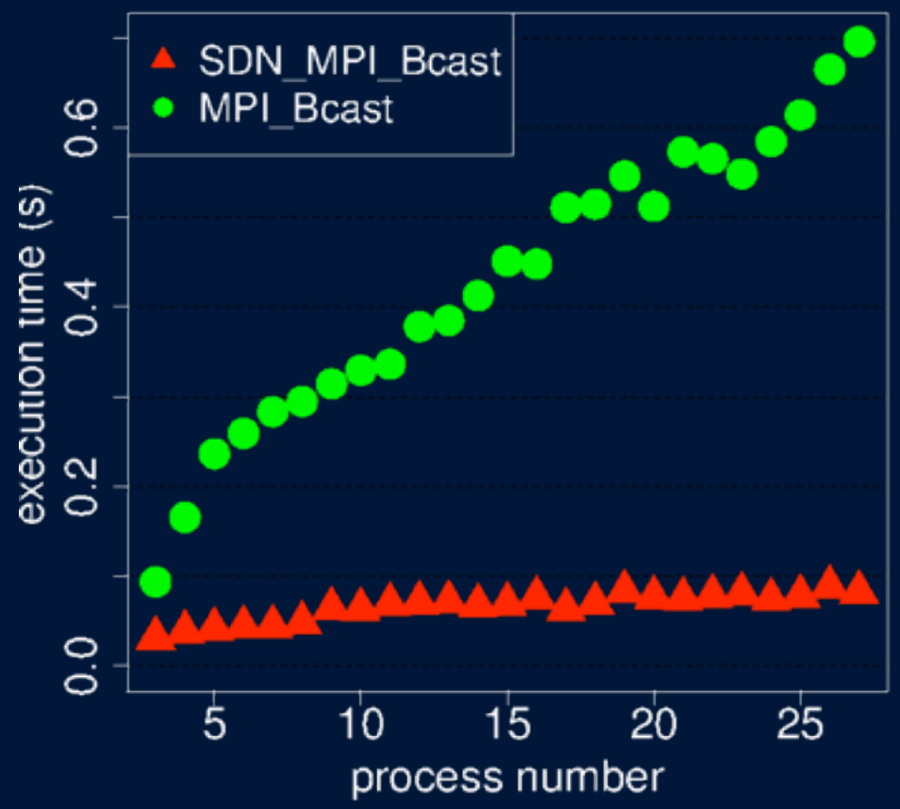

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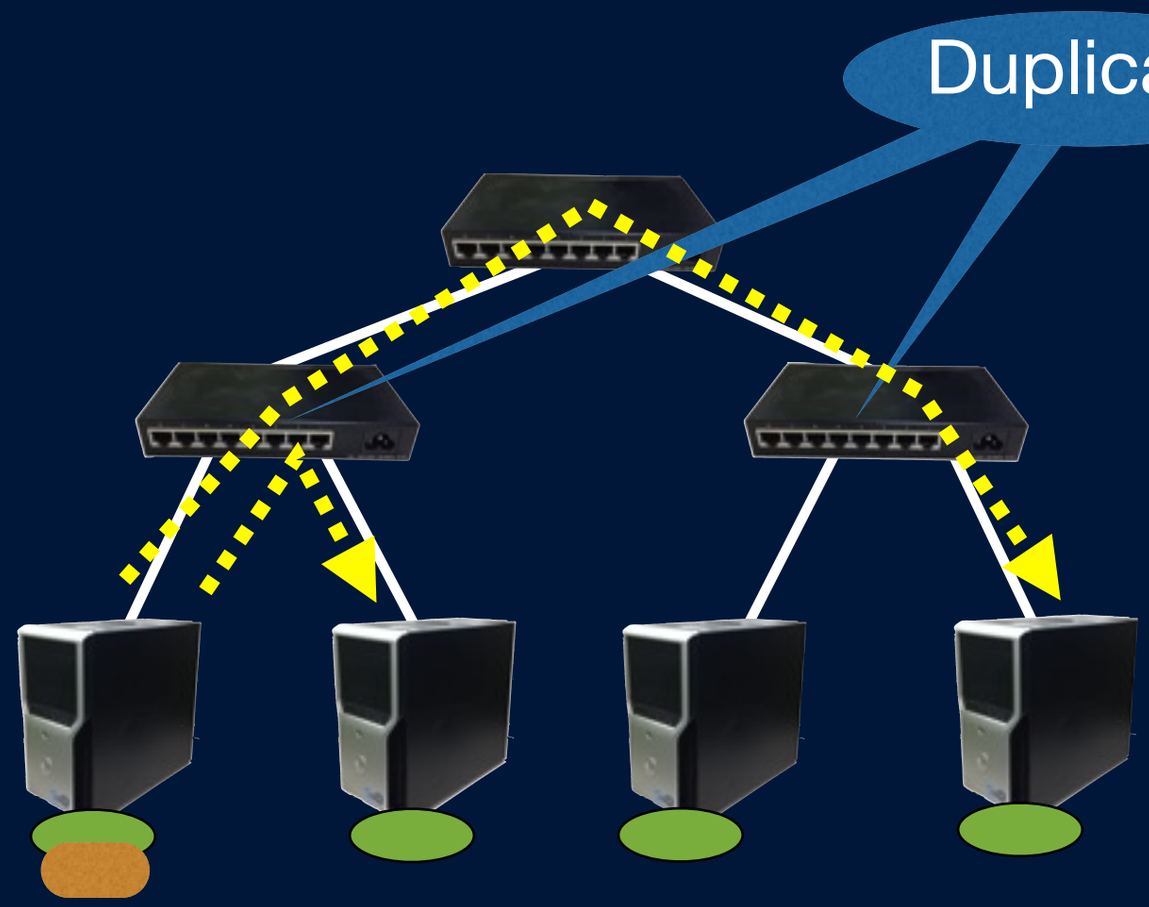

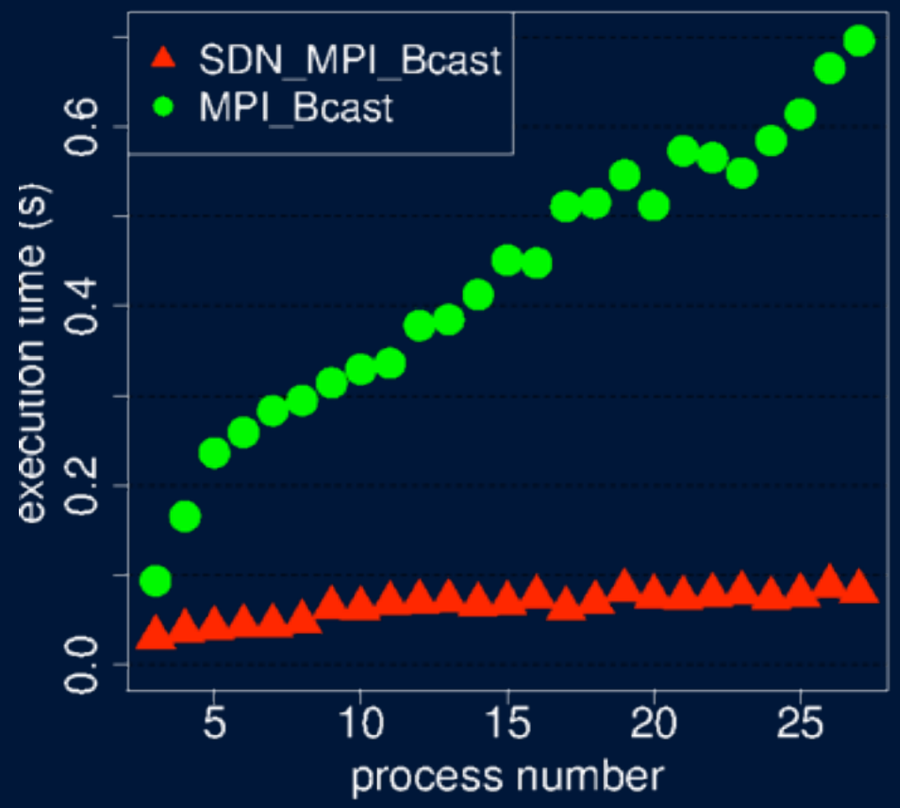

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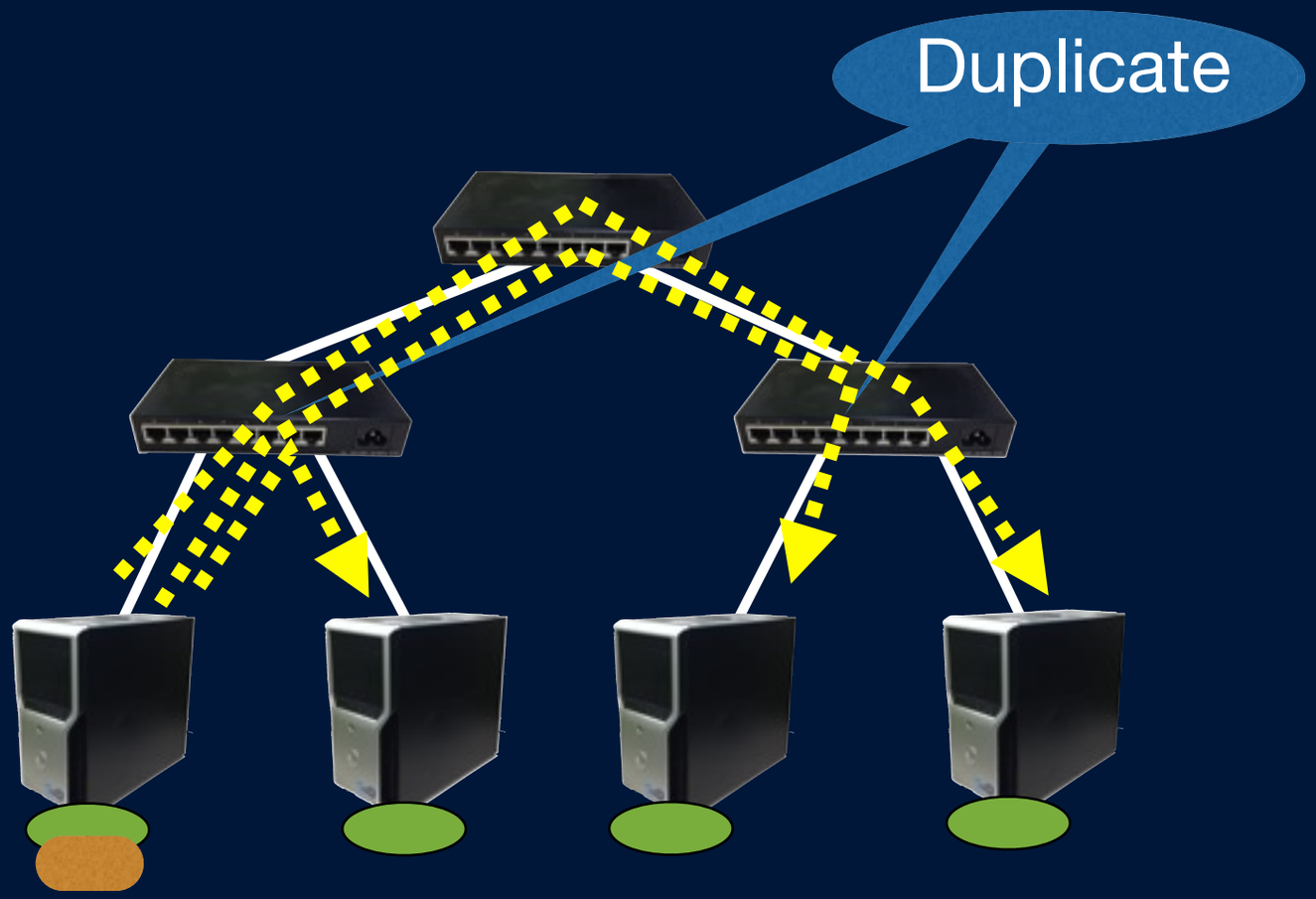

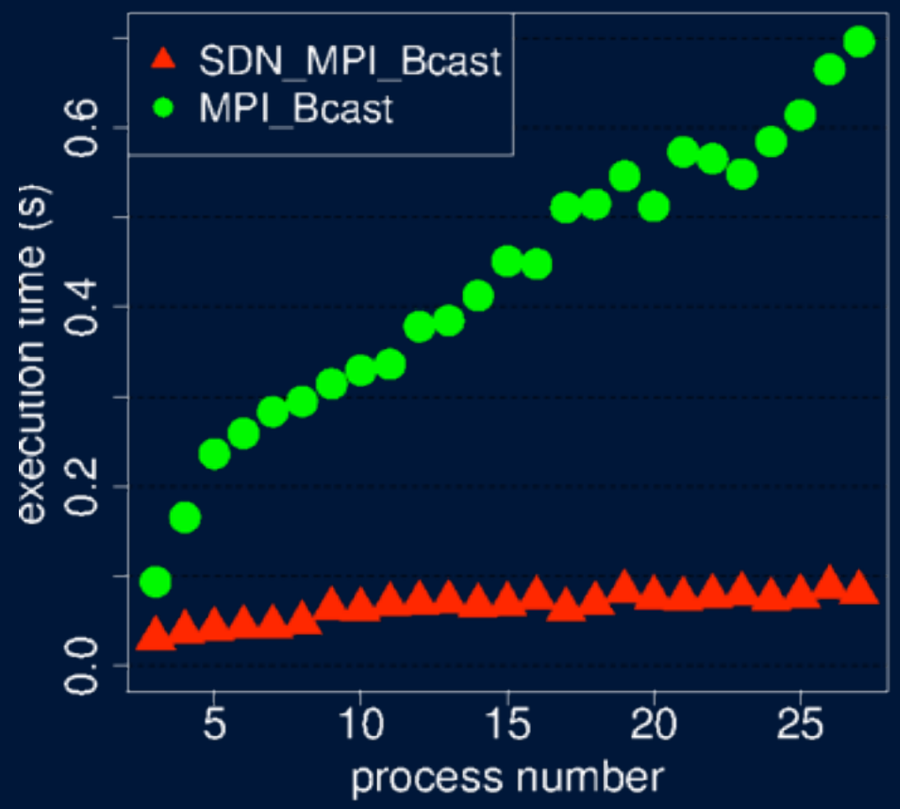

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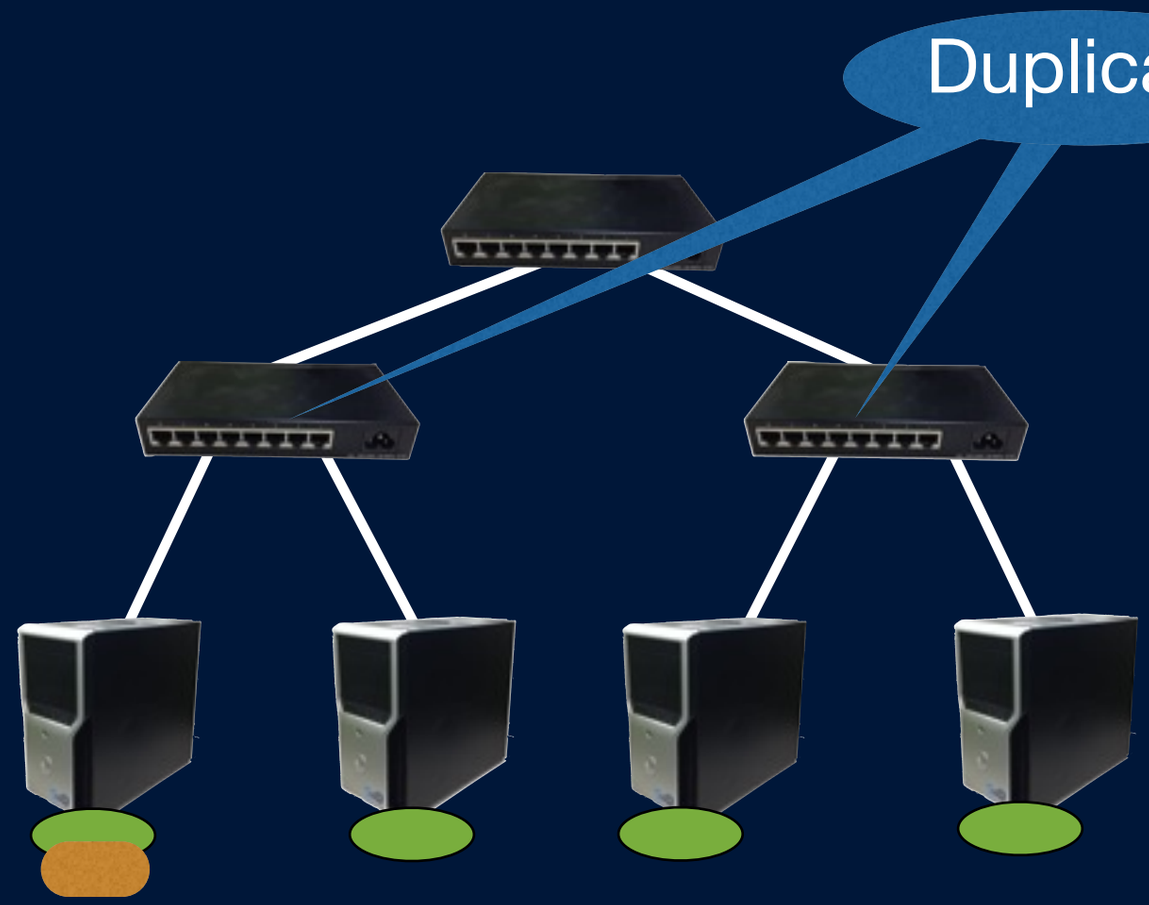

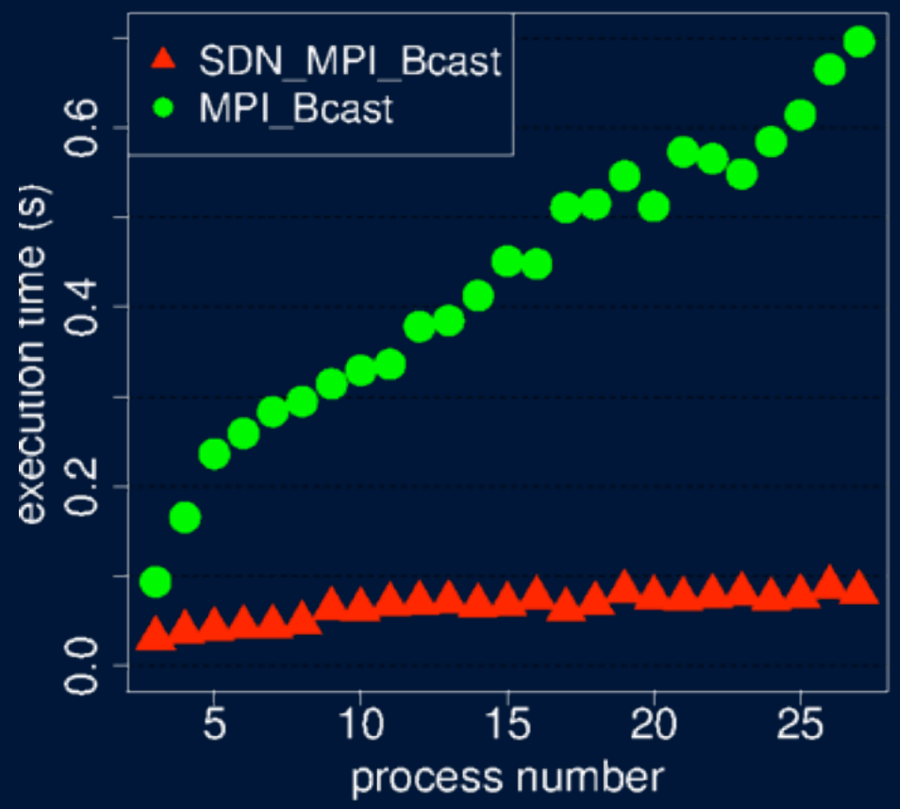

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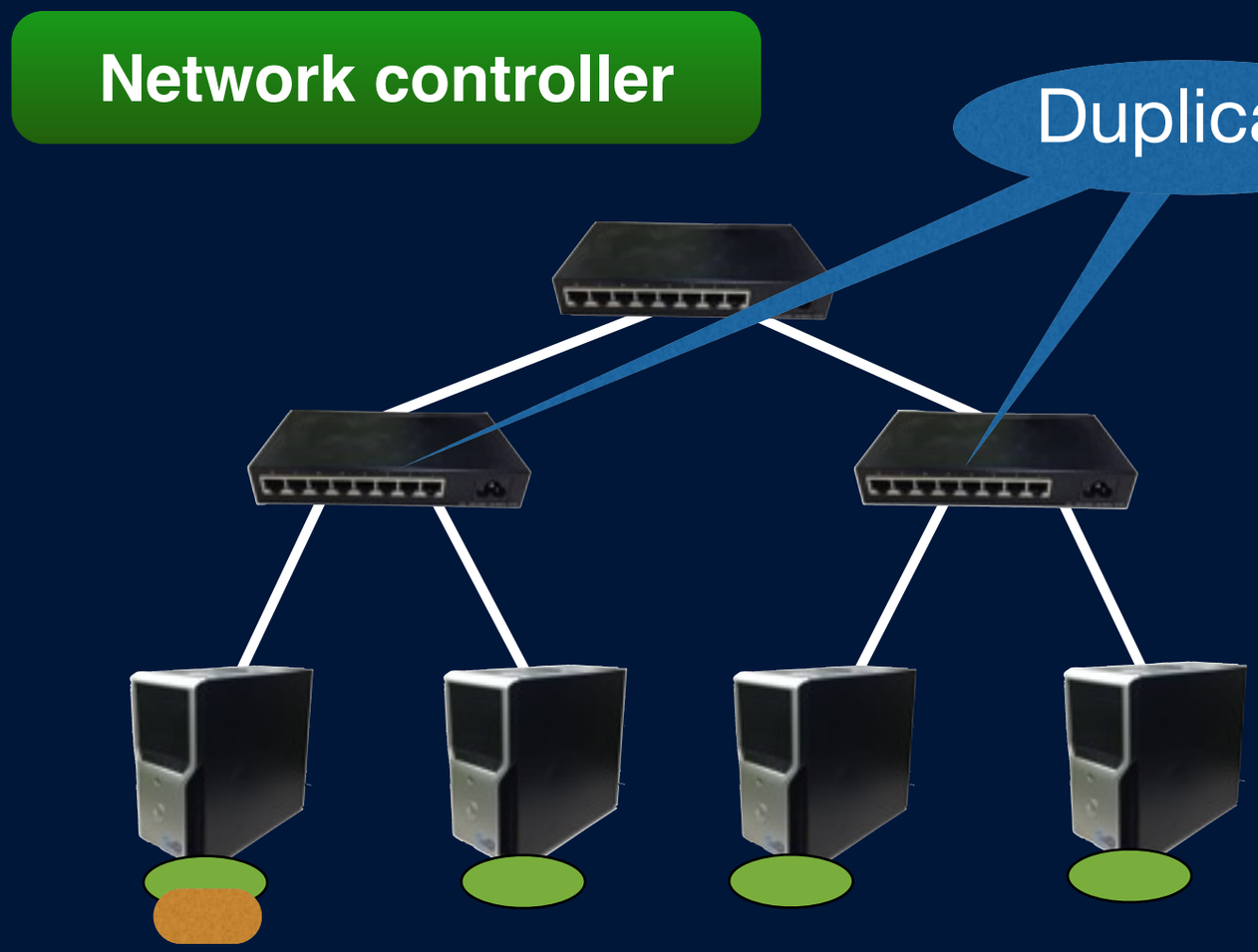

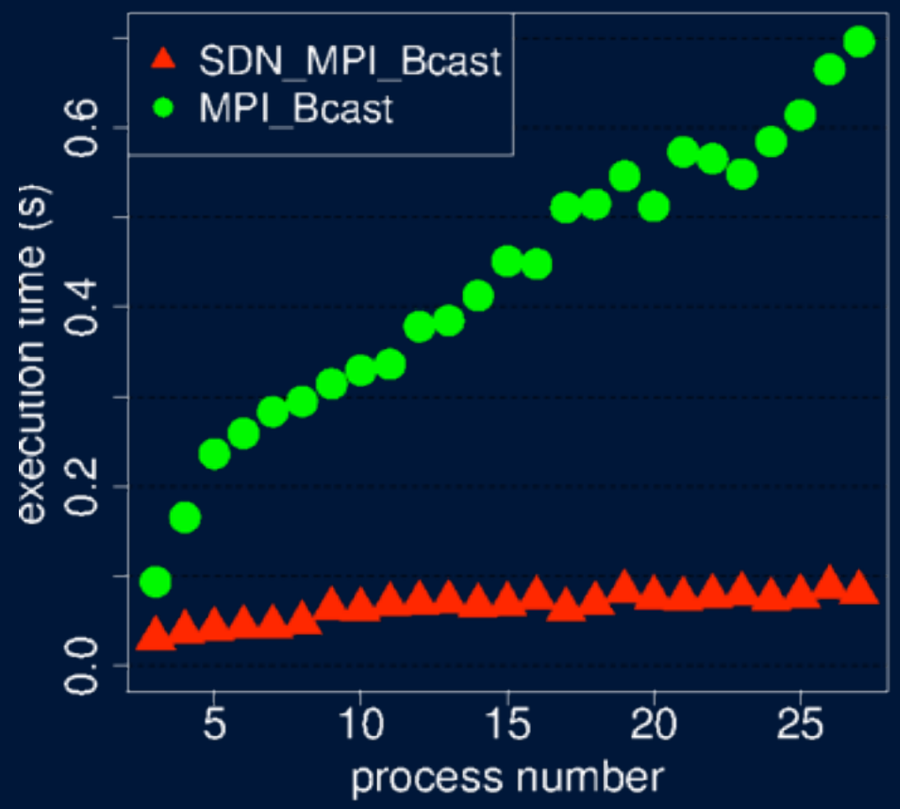

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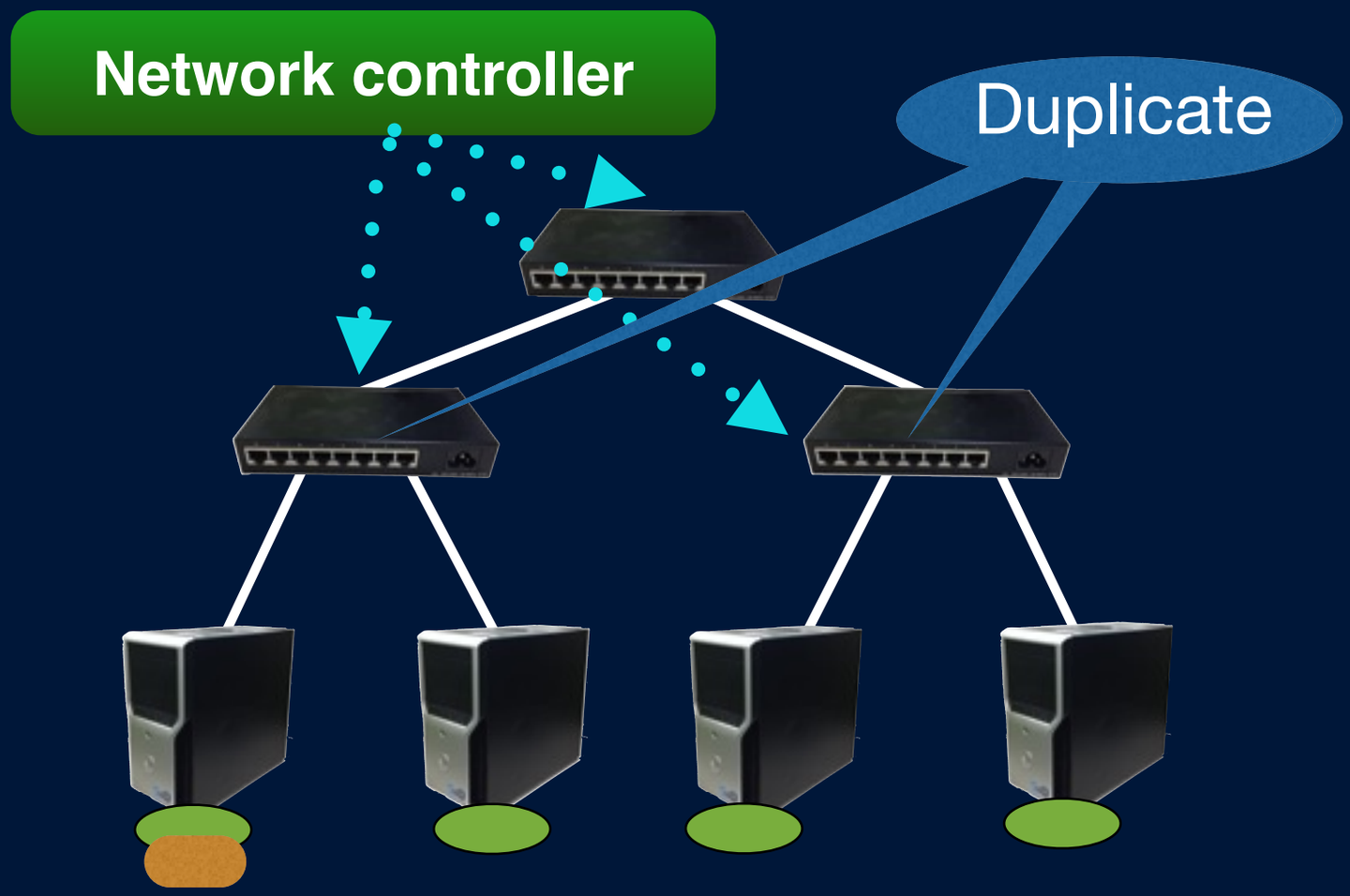

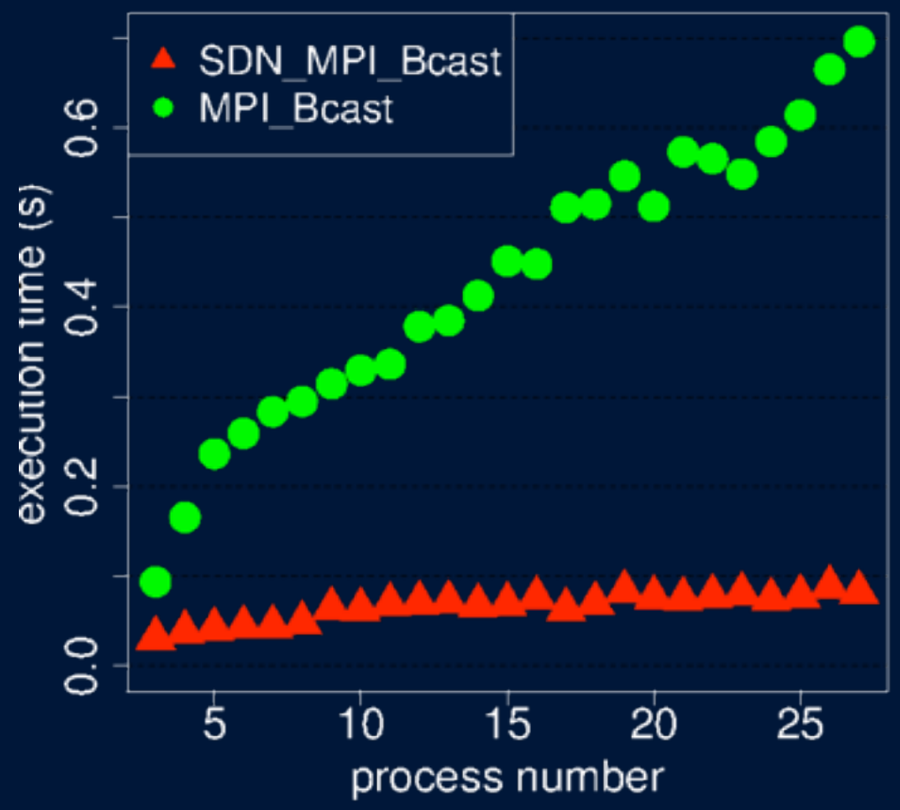

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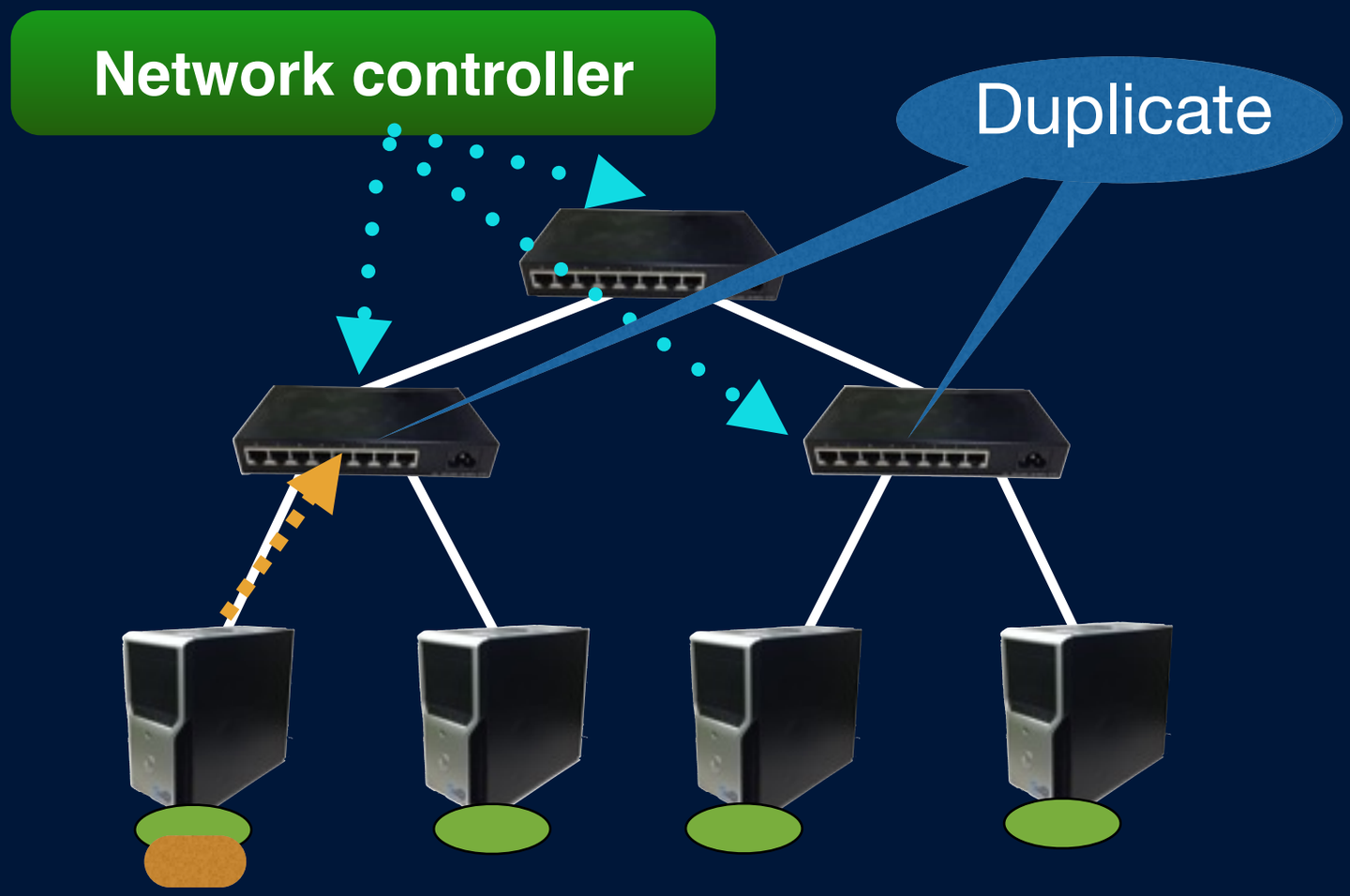

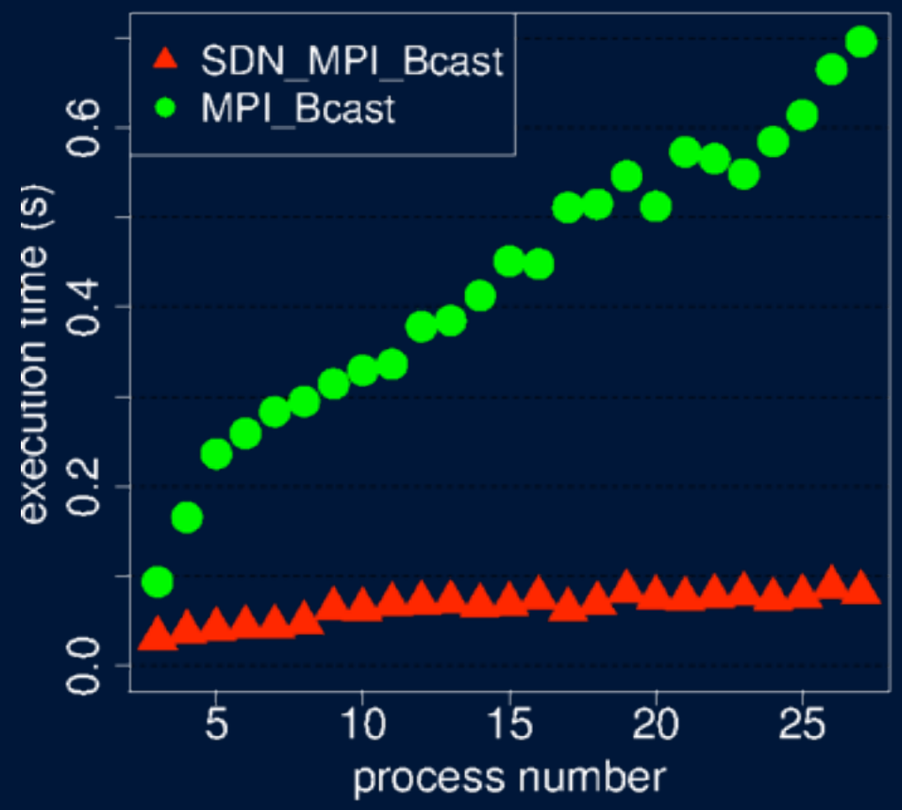

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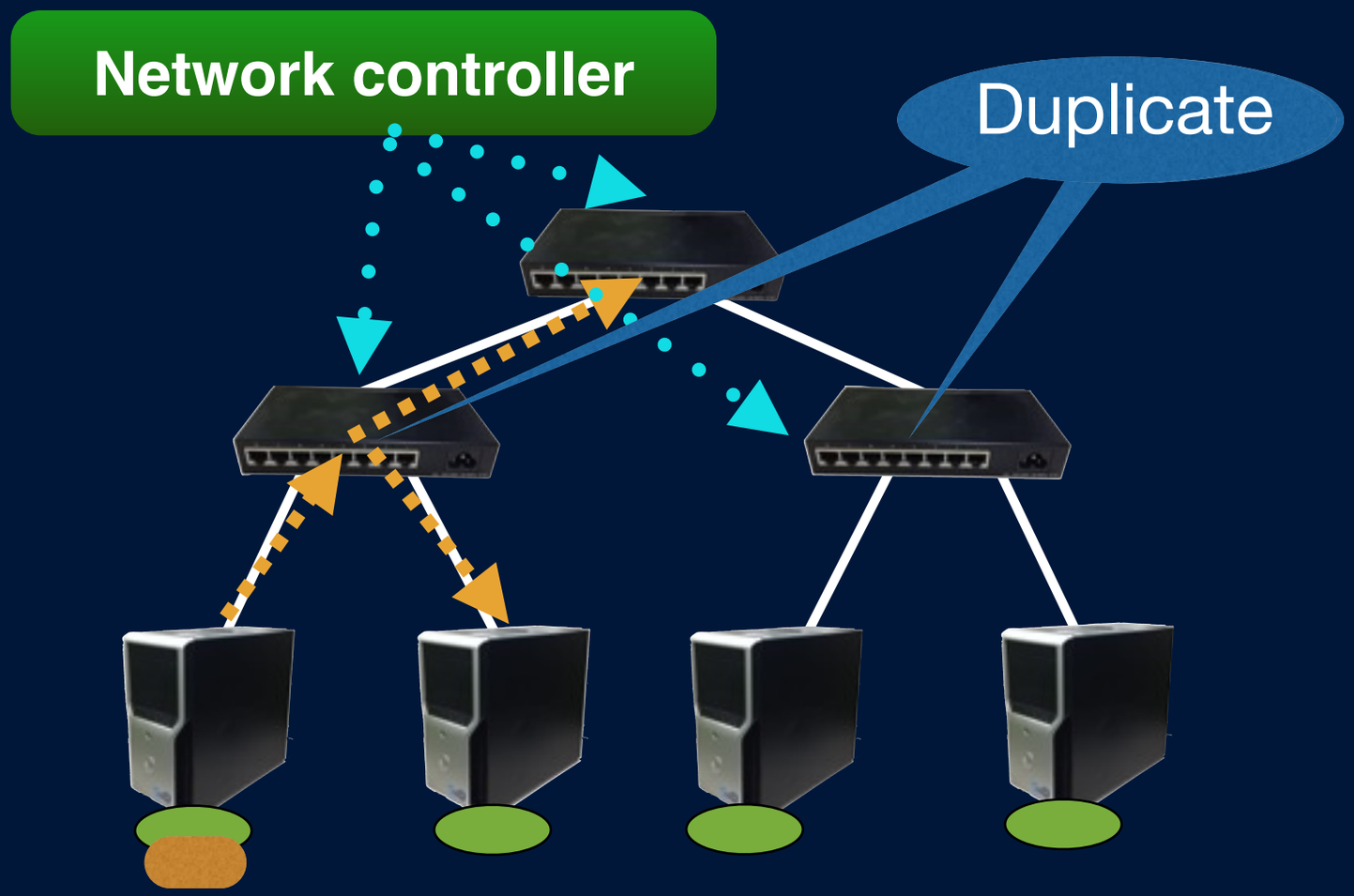

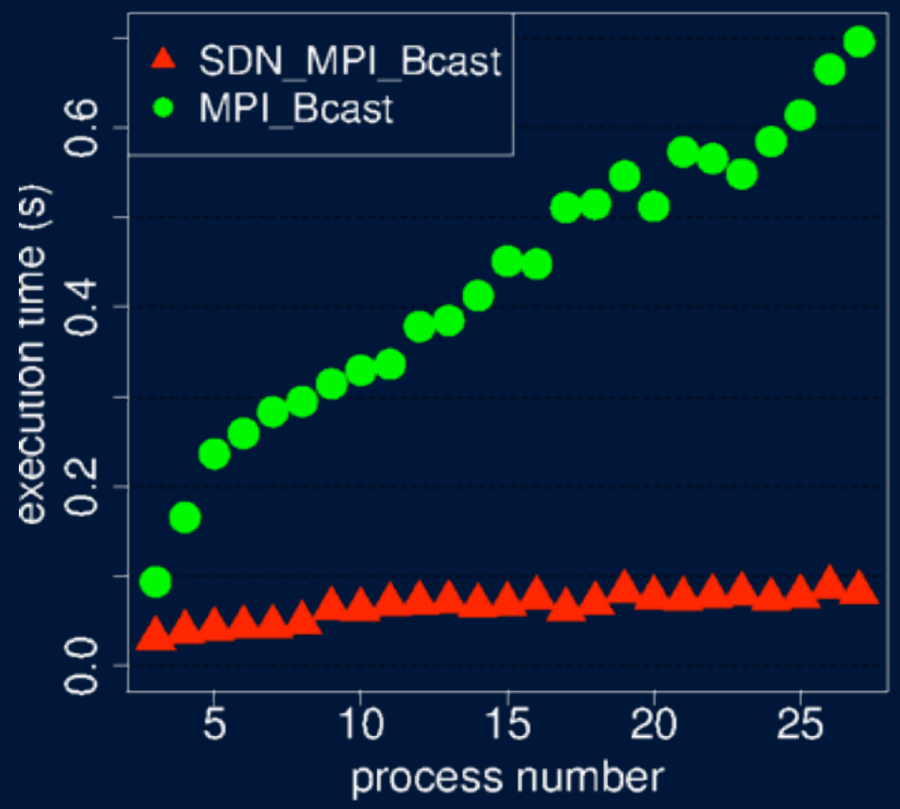

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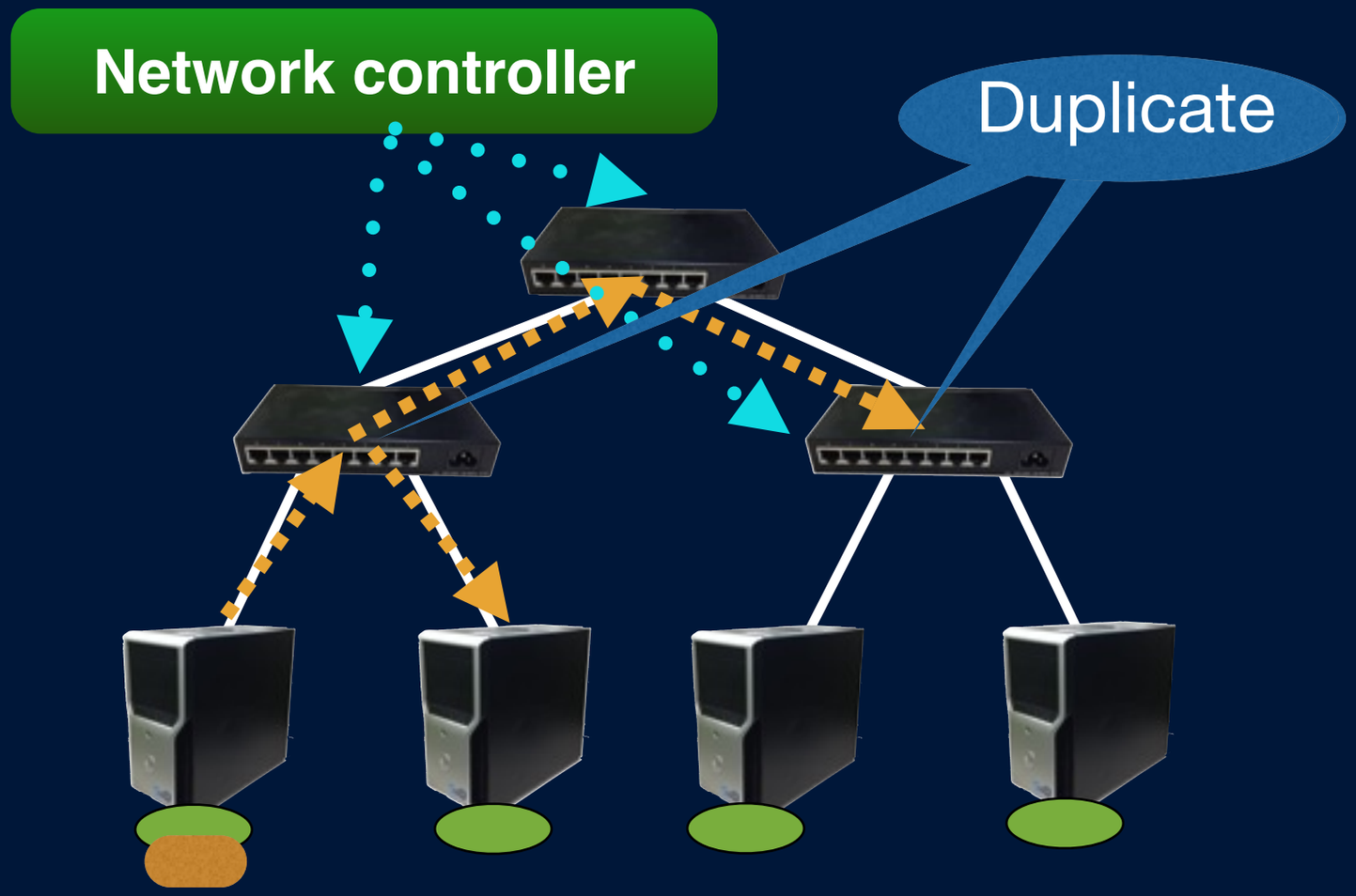

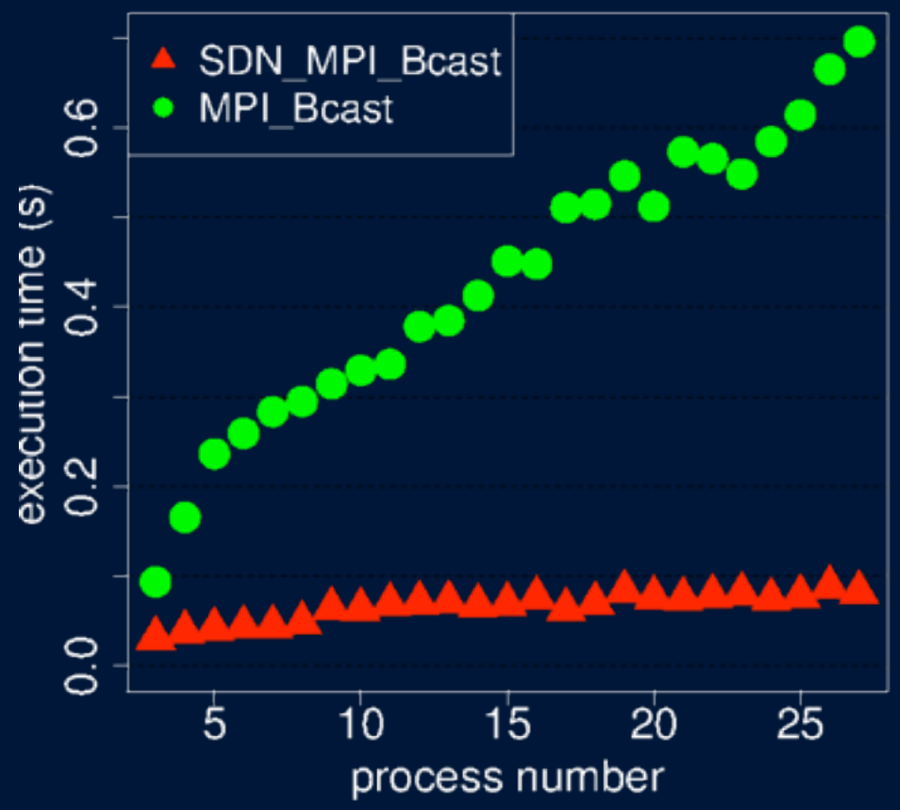

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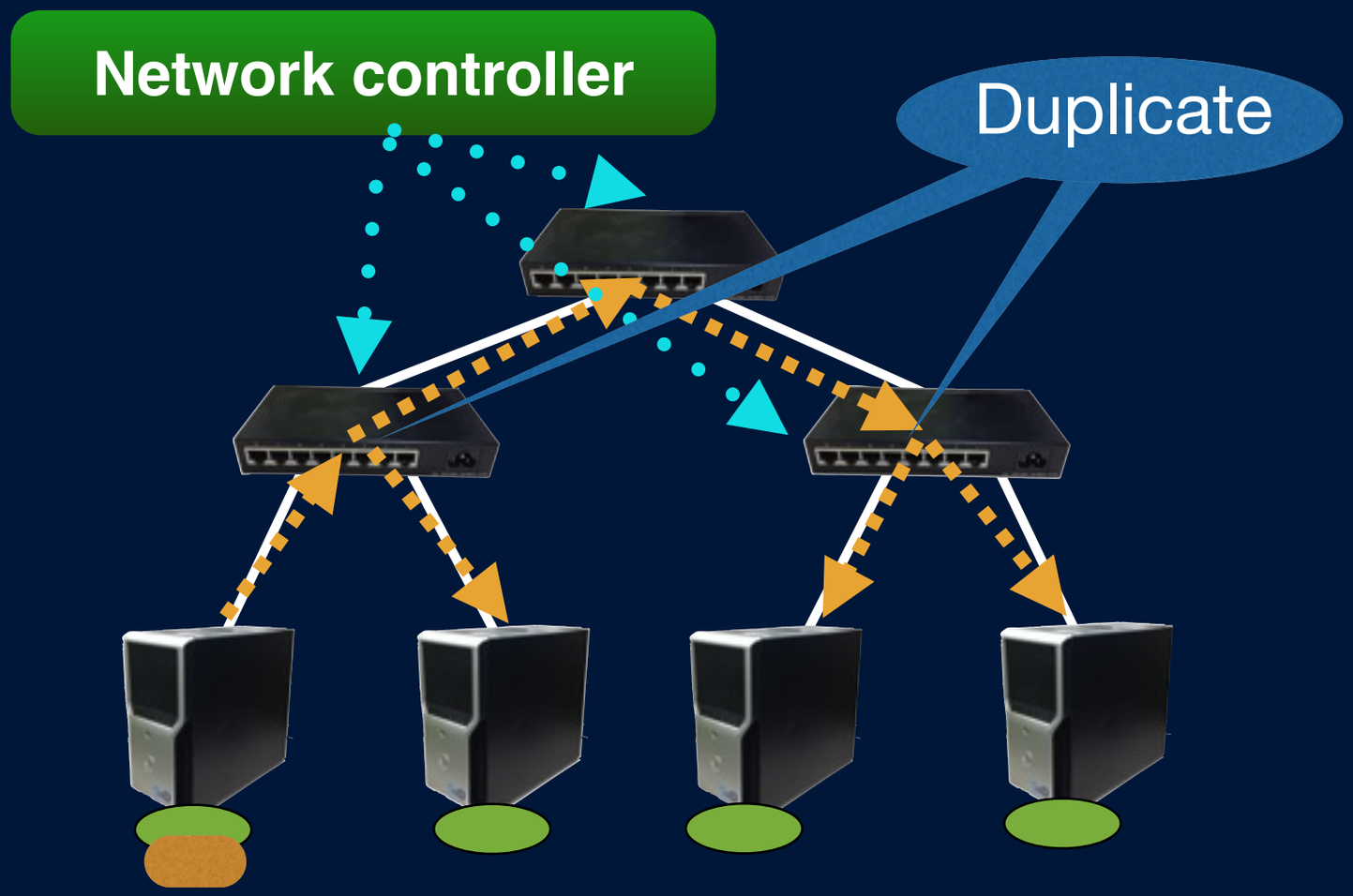

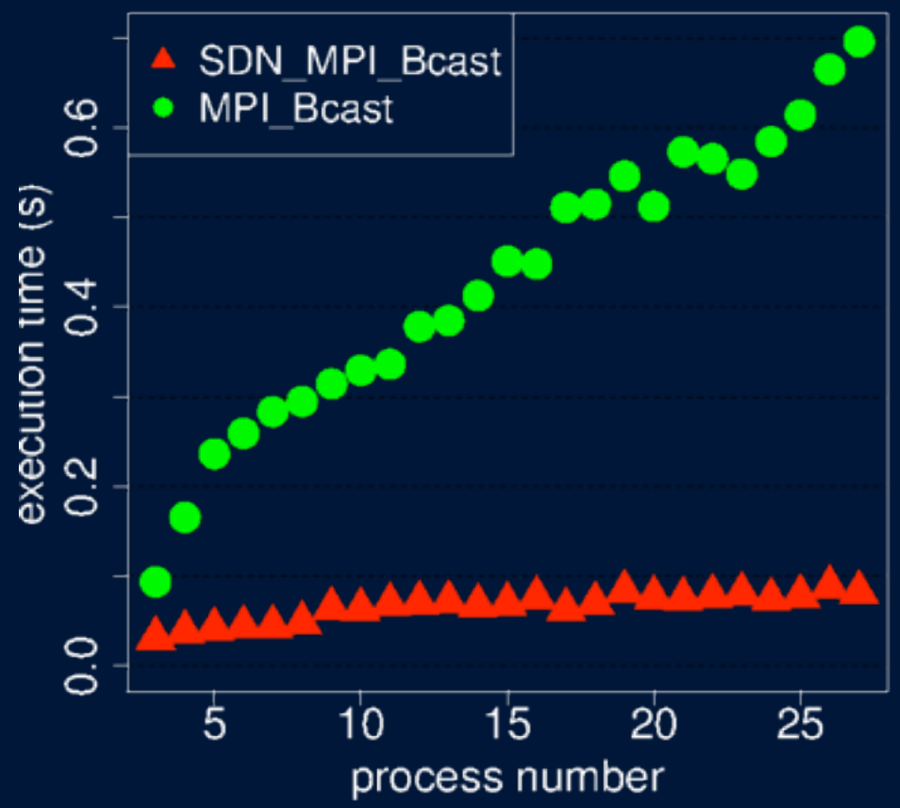

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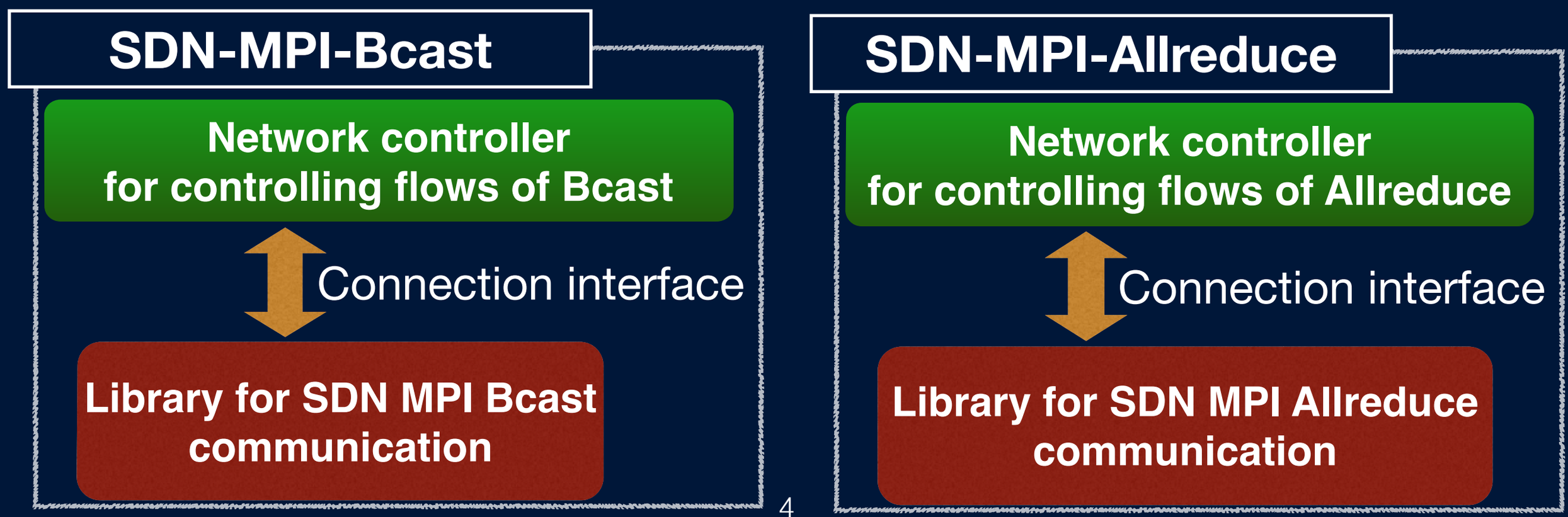
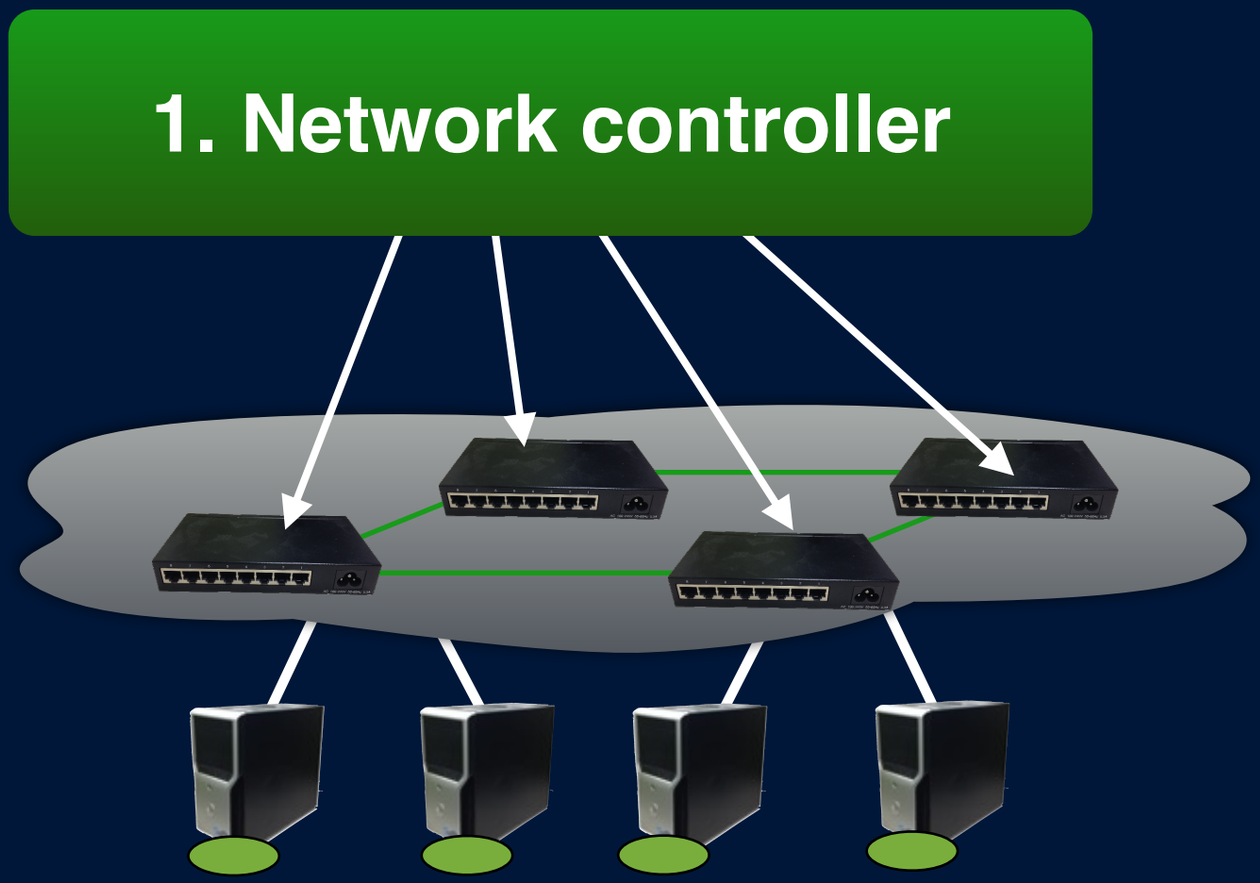
Problem of previous works

- **Efficient and extendable general SDN MPI framework does not exist.**
    - **Each boosting methods are developed individually.**
        - **Hard to include new boosting methods.**



SDN MPI framework

- **SDN MPI framework that includes previous work's methods and expendable for new boosting methods.**



SDN-MPI-Bcast
SDN-MPI-Allreduce
other flows

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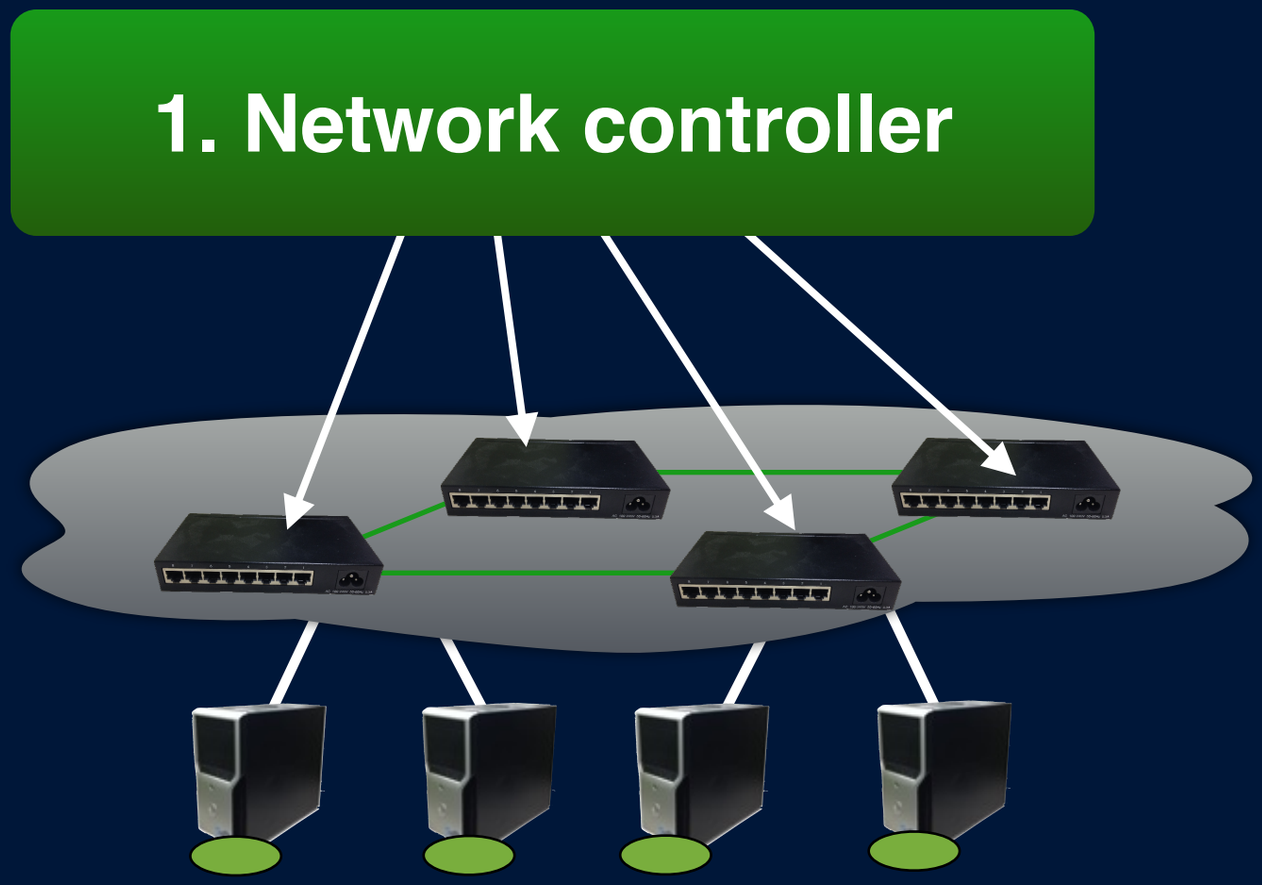

Bcast module

Allreduce module

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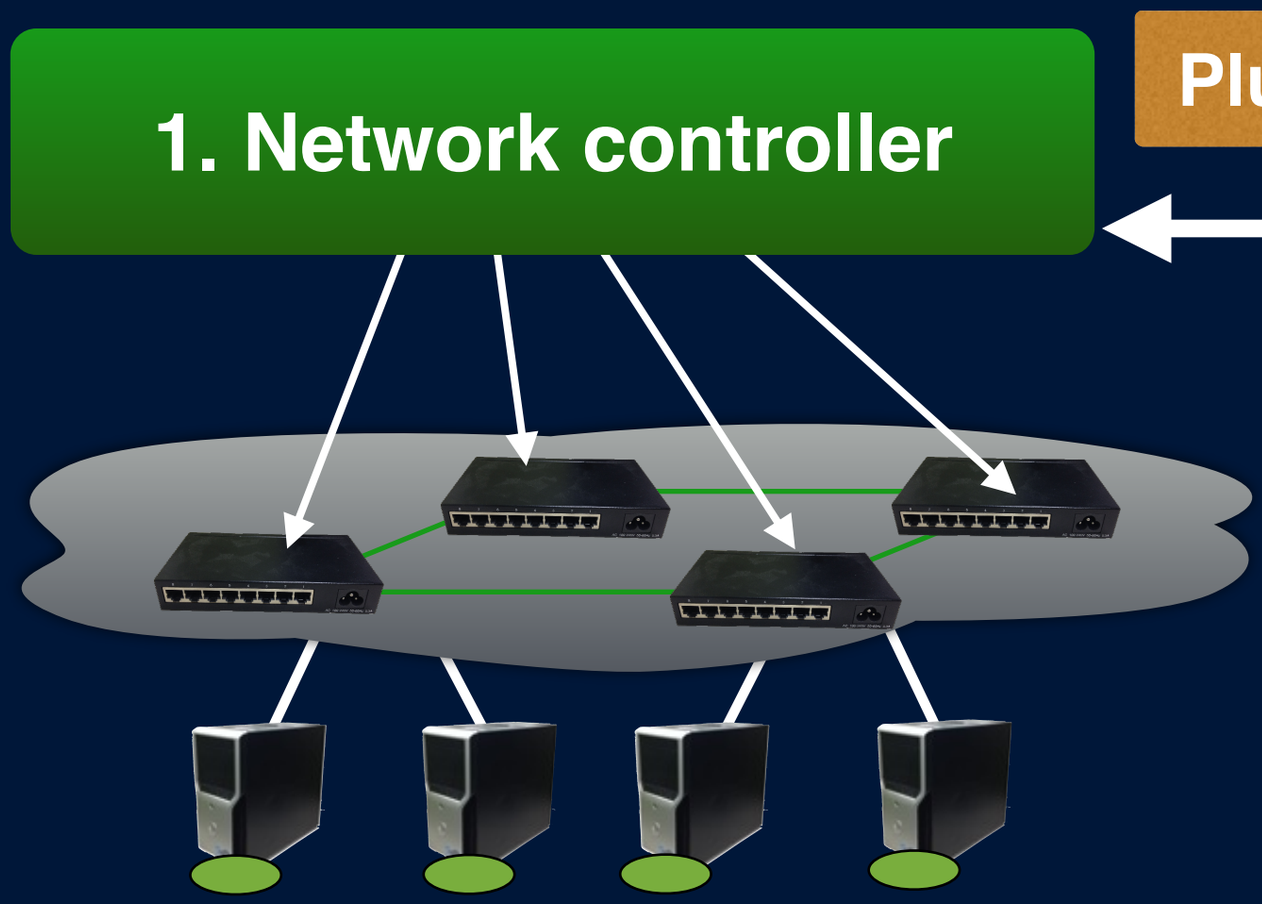

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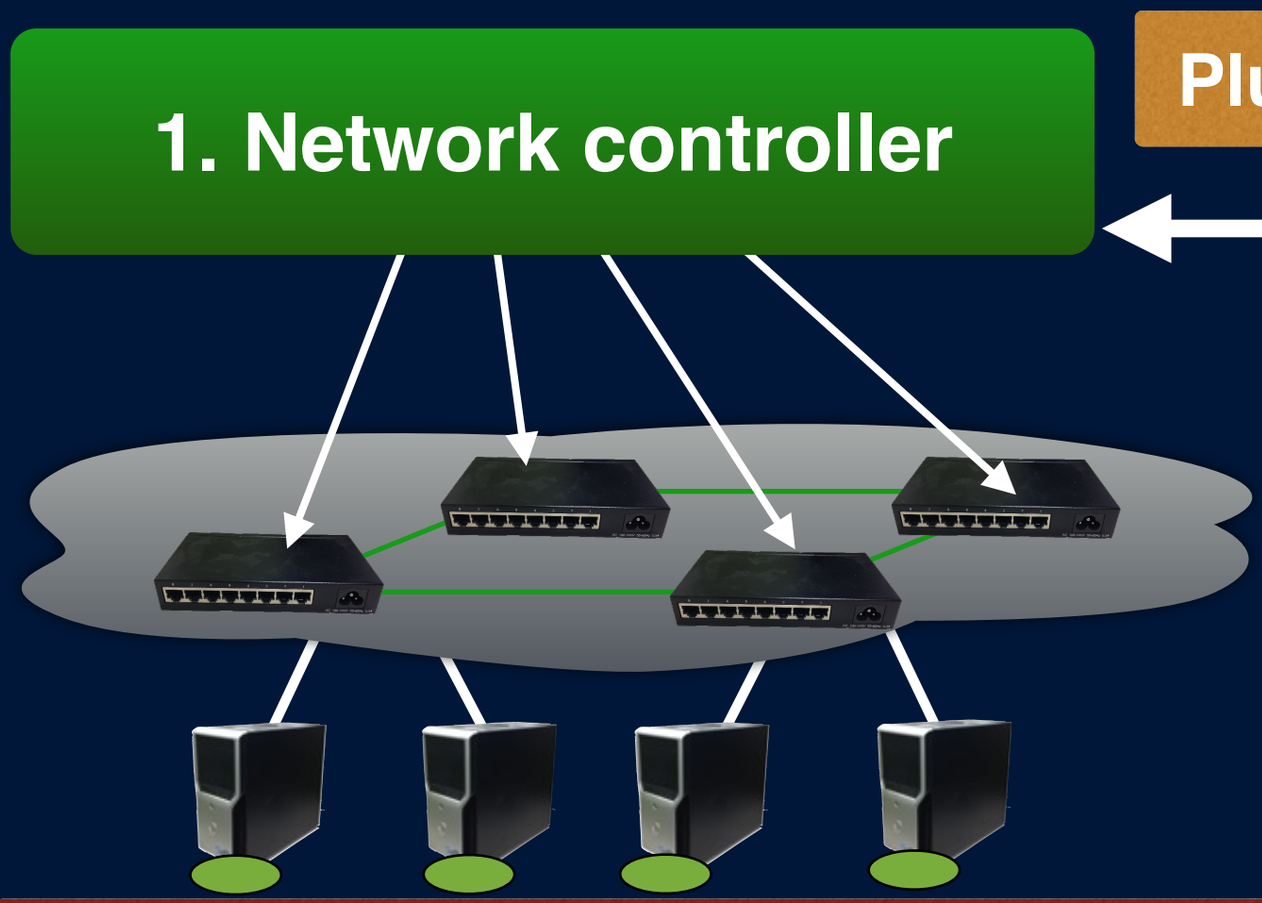

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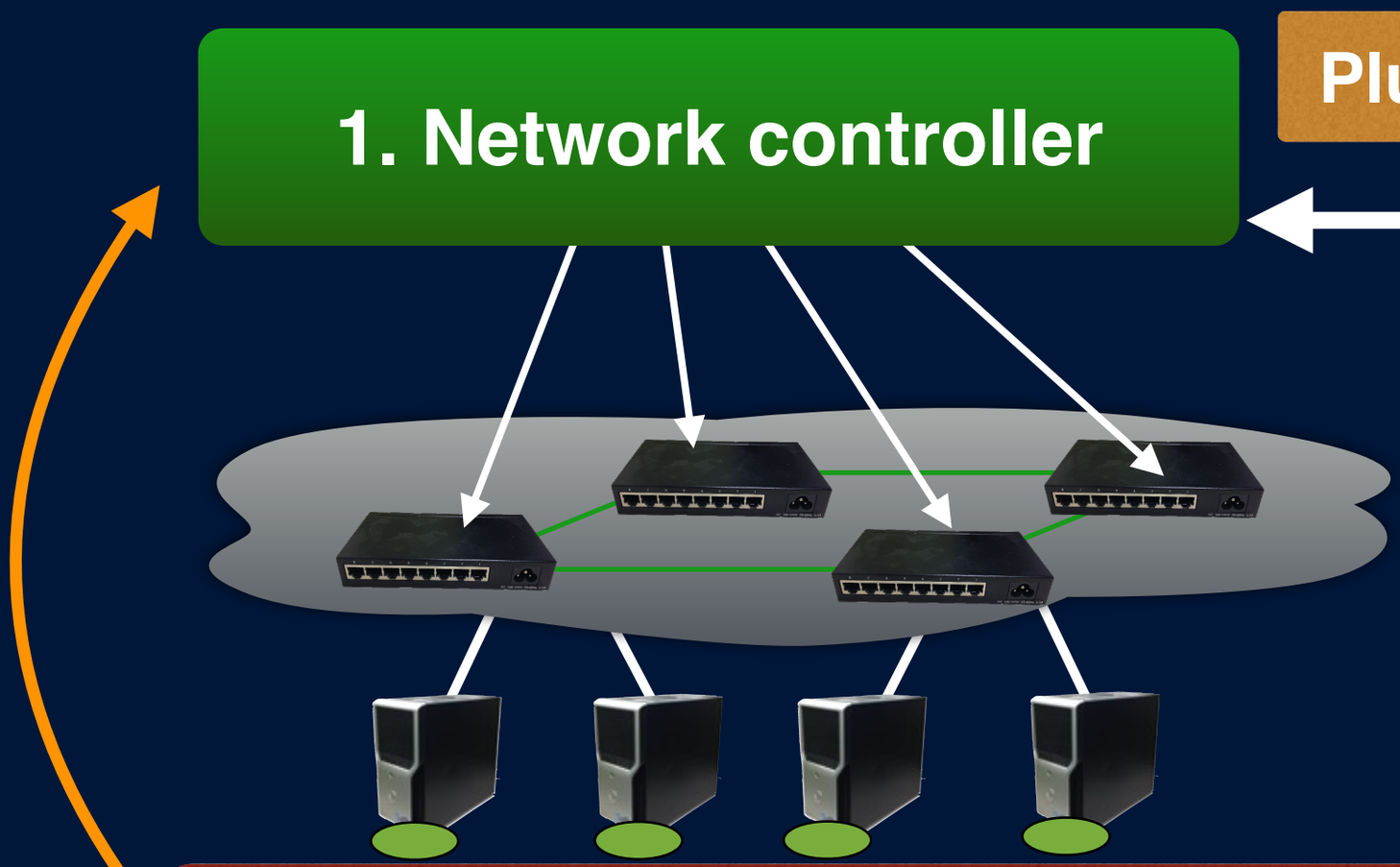

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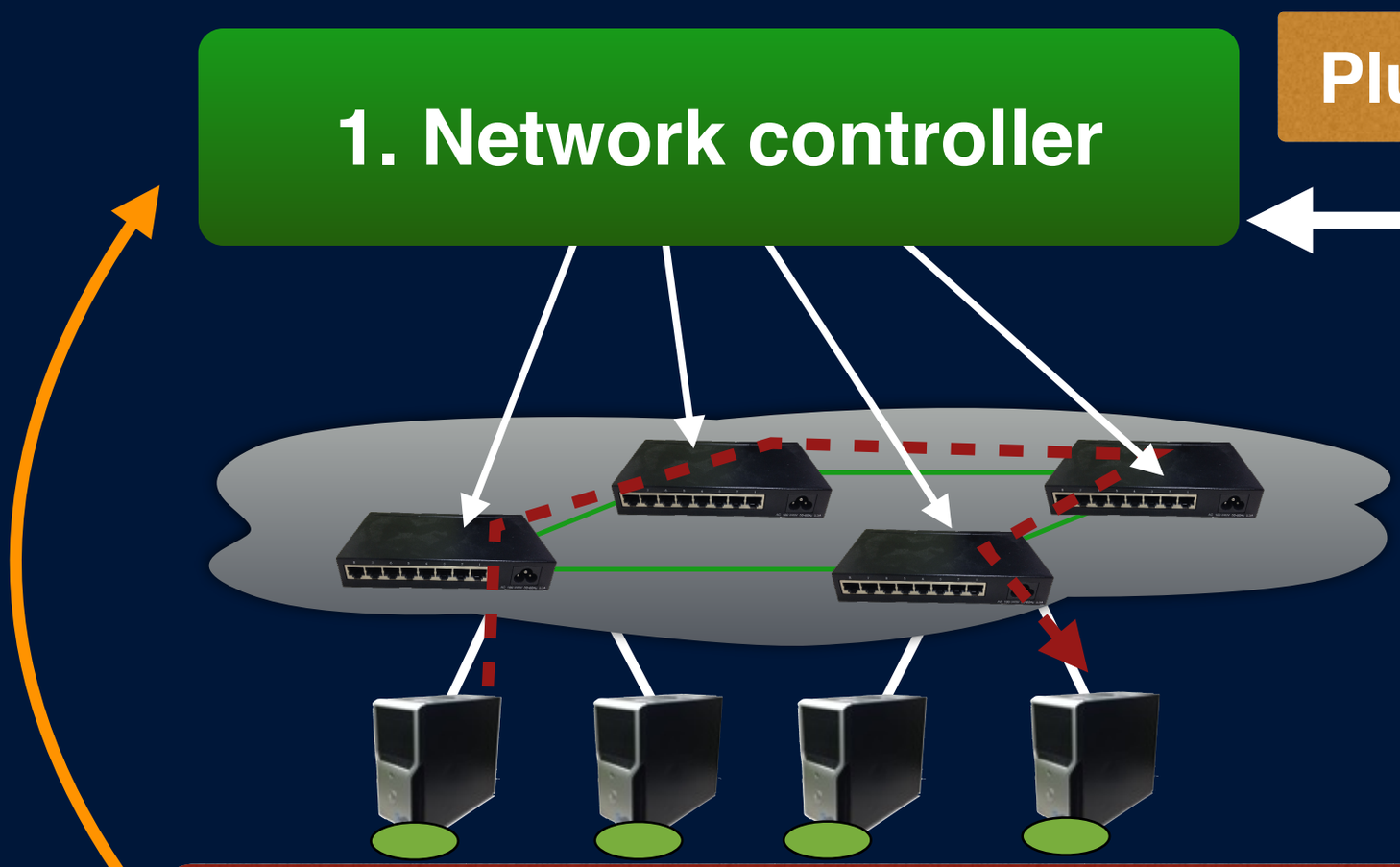

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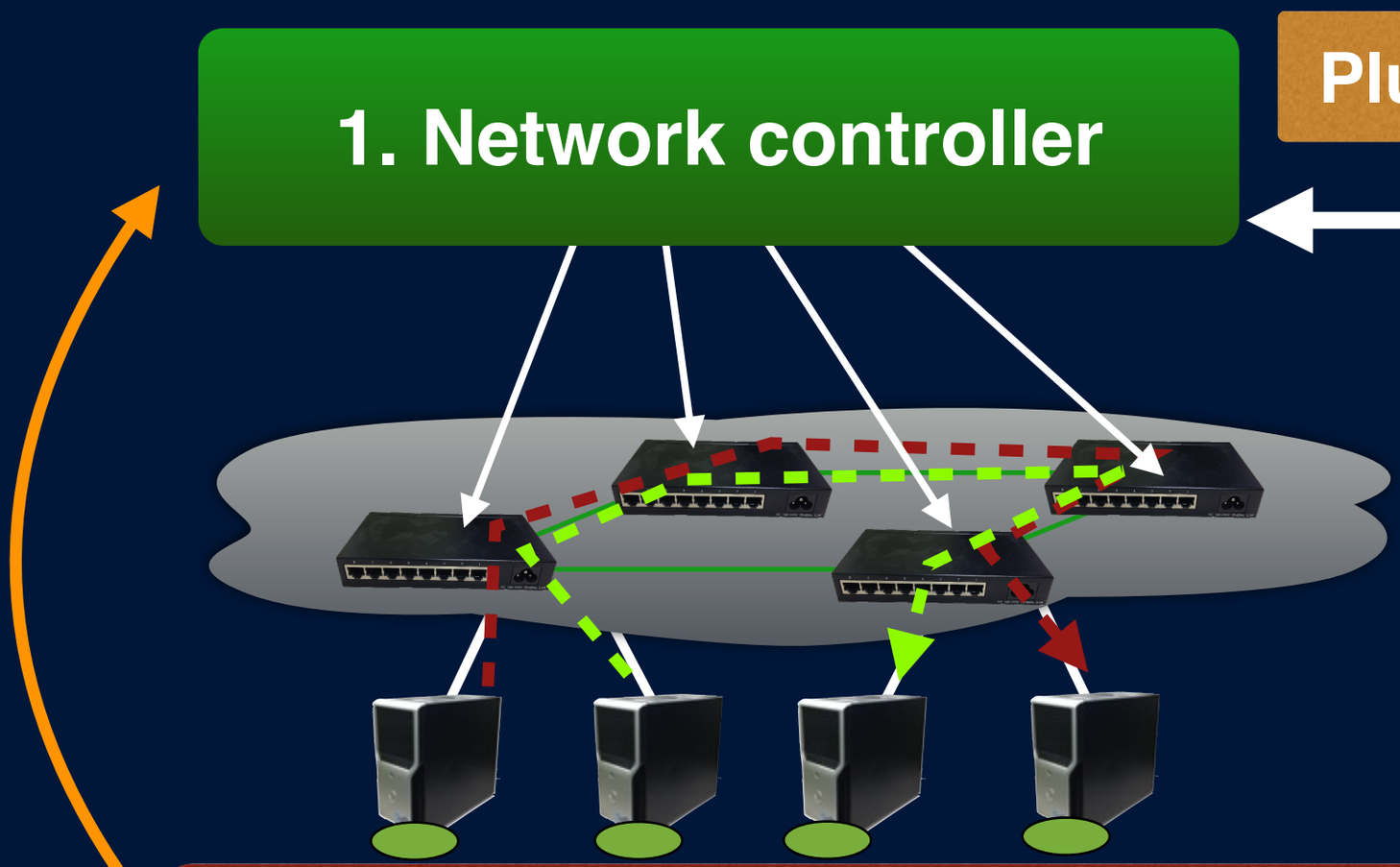

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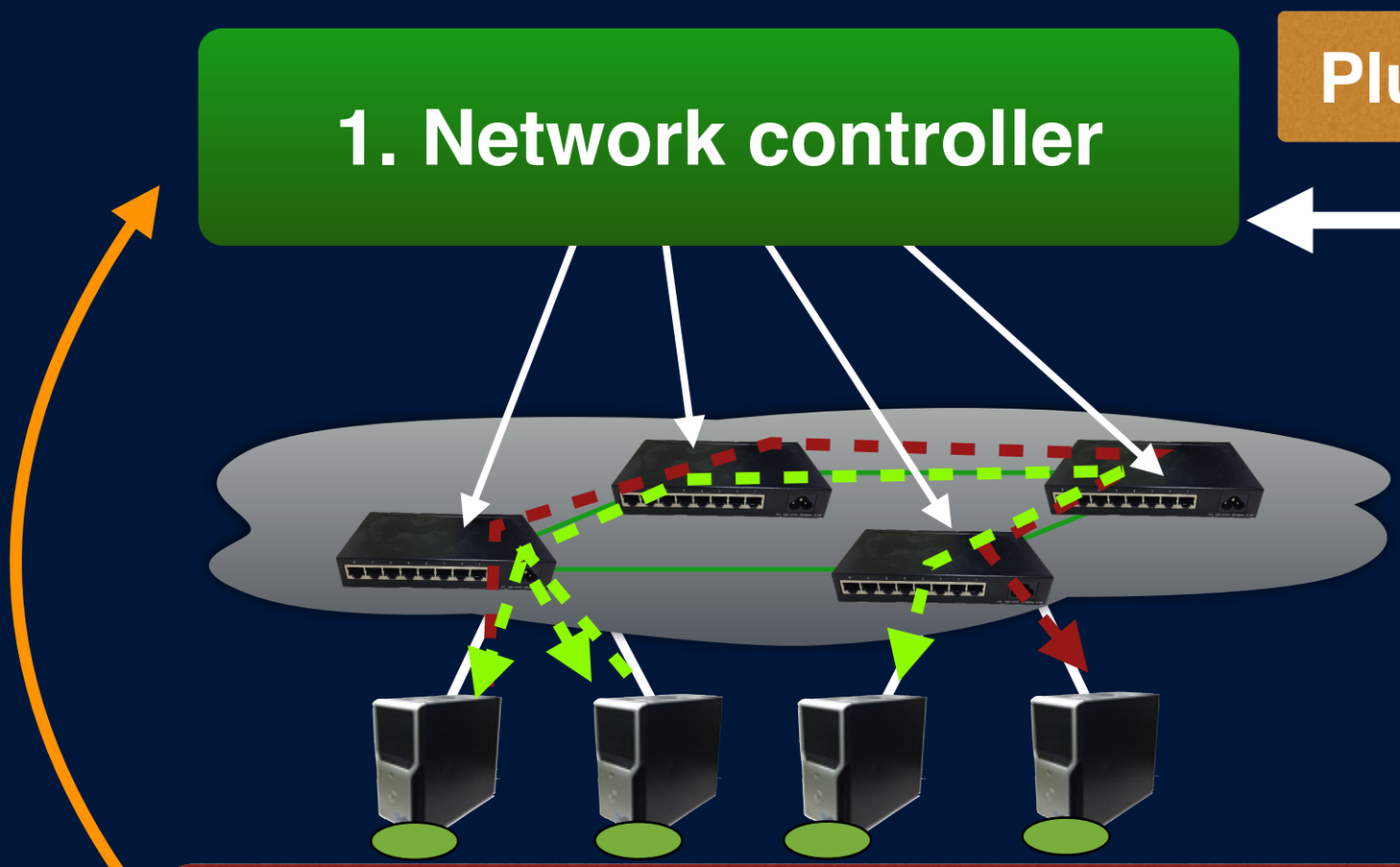

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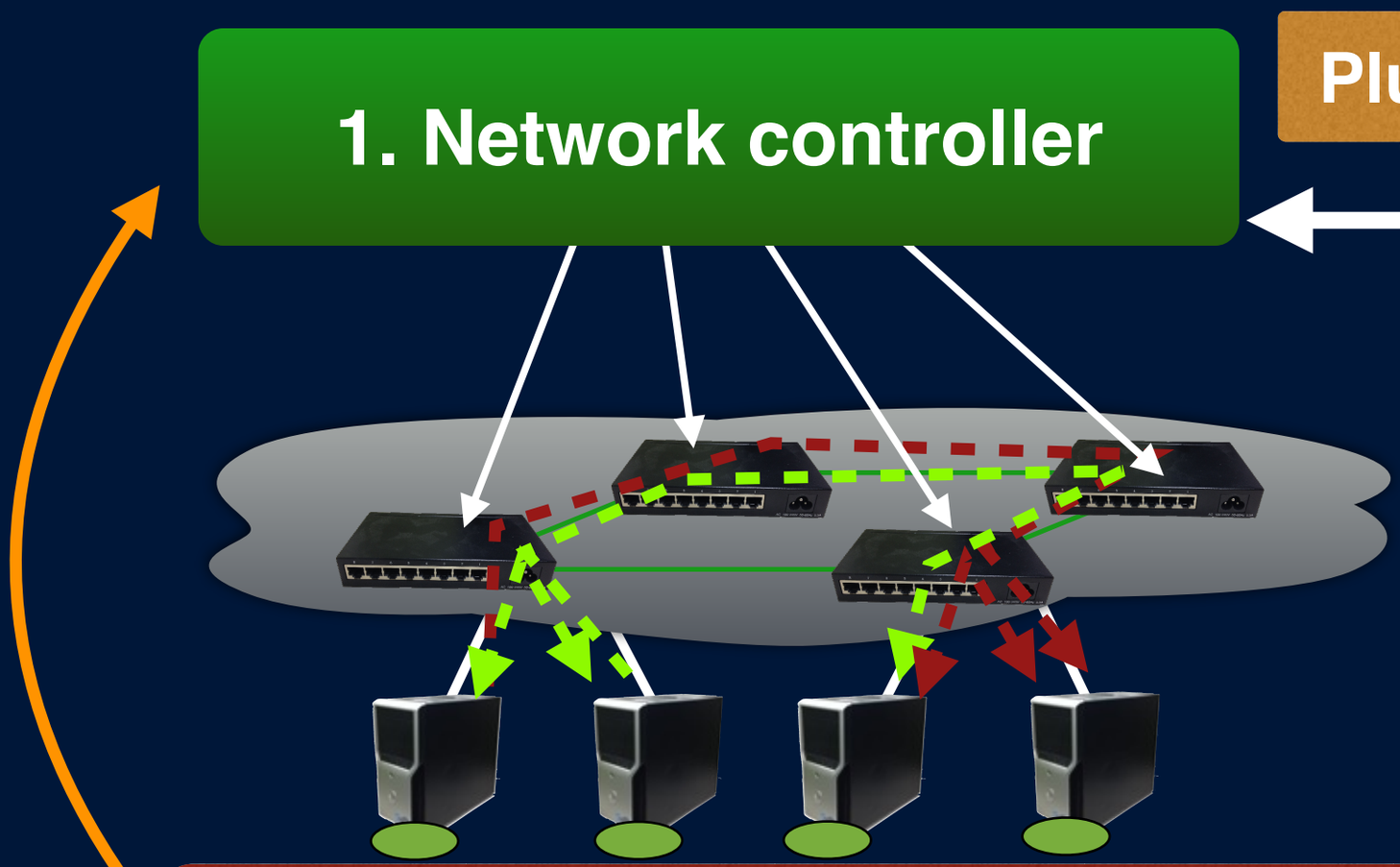

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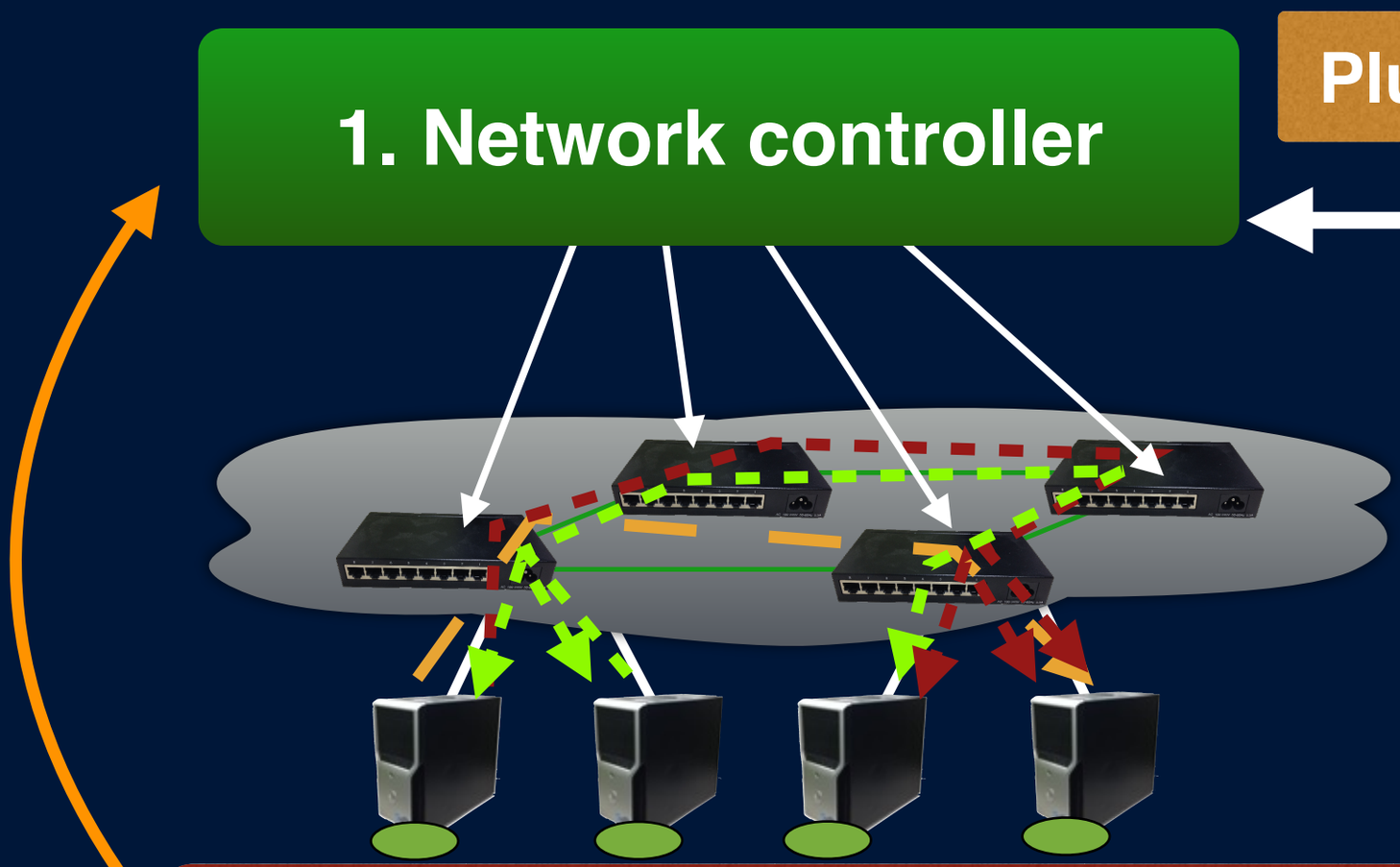

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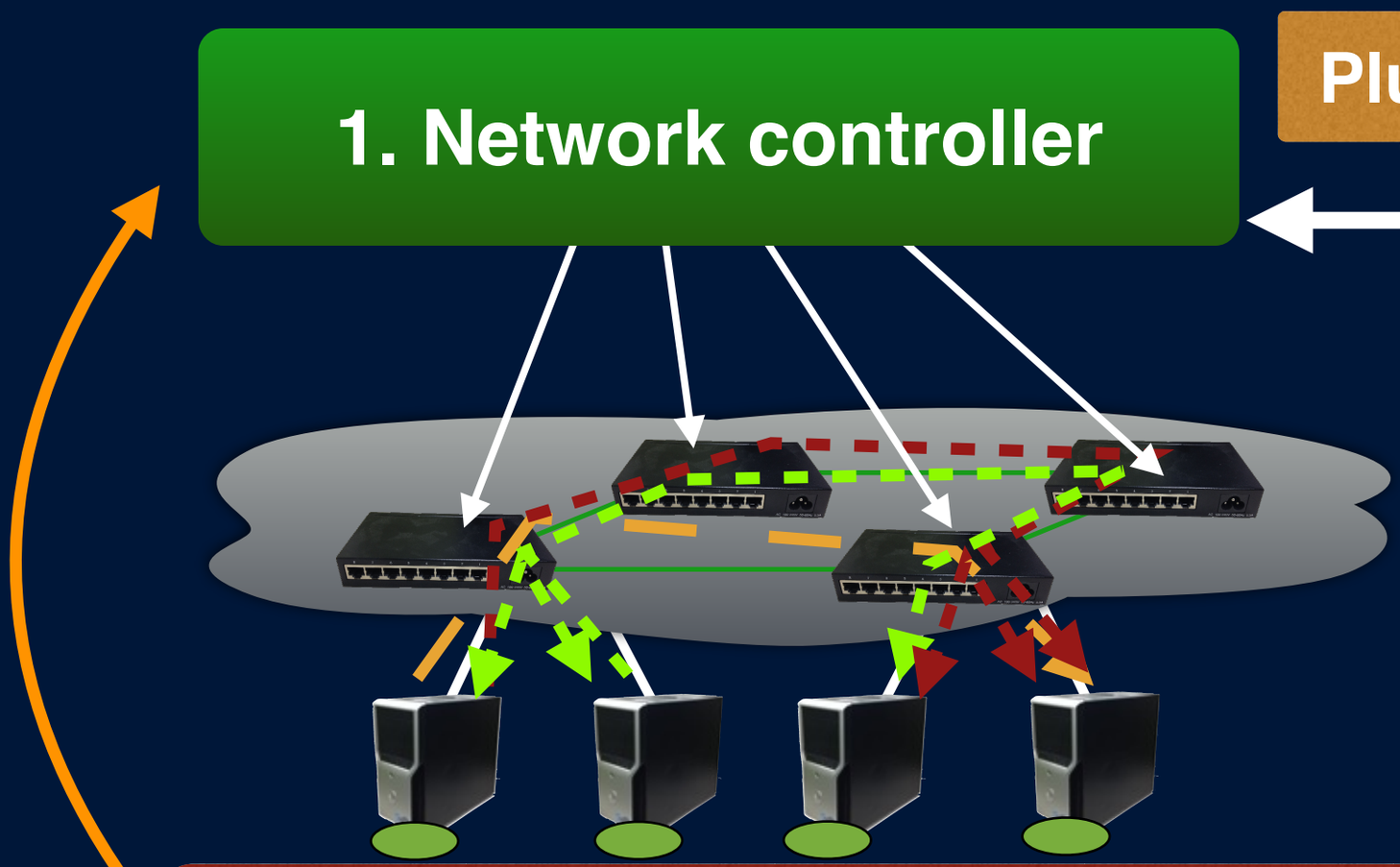

Conclusion

- **Introduced general SDN MPI framework which is able to include previous works easily.**

Please come to our poster for more detailed information