



*University of the Aegean*

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*Laboratory of Information &  
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<http://www.aegean.gr/Info-Sec-Lab>

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# *Towards Effective SIP load Balancing*

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# Outline

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- ❑ Load Balancing Schemes
- ❑ The proposed Load Balancing solution
- ❑ Load Balancing within SNO CER
- ❑ Future Work



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# Load Balancing Schemes

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- Web Server Balancing

- Non-Adaptive

- Non-Adaptive
  - Round Robin

- Adaptive

- Adaptive
  - Asynchronous Alarms
  - lbnamed
  - TENBIN
  - etc

- Known open source SIP Balancer implementation

- Vovida ([www.vovida.org](http://www.vovida.org))



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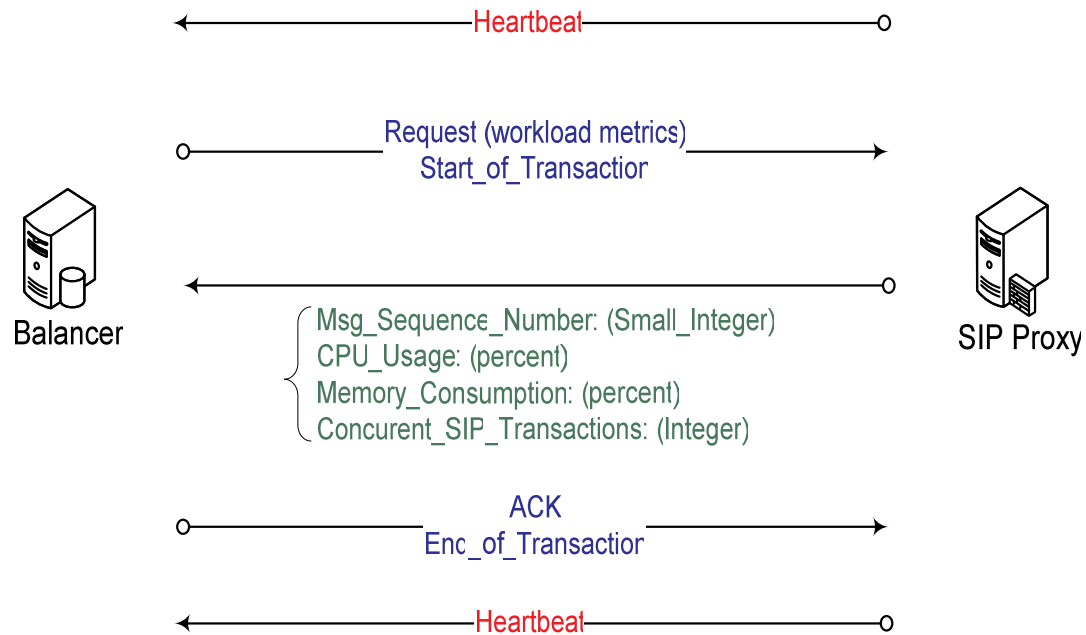
# Proposed Load Balancer Architecture

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- ❑ “Discover” available SIP Servers
- ❑ Request workload metrics from the SIP Server
- ❑ Select the most appropriate SIP Server to process an incoming request

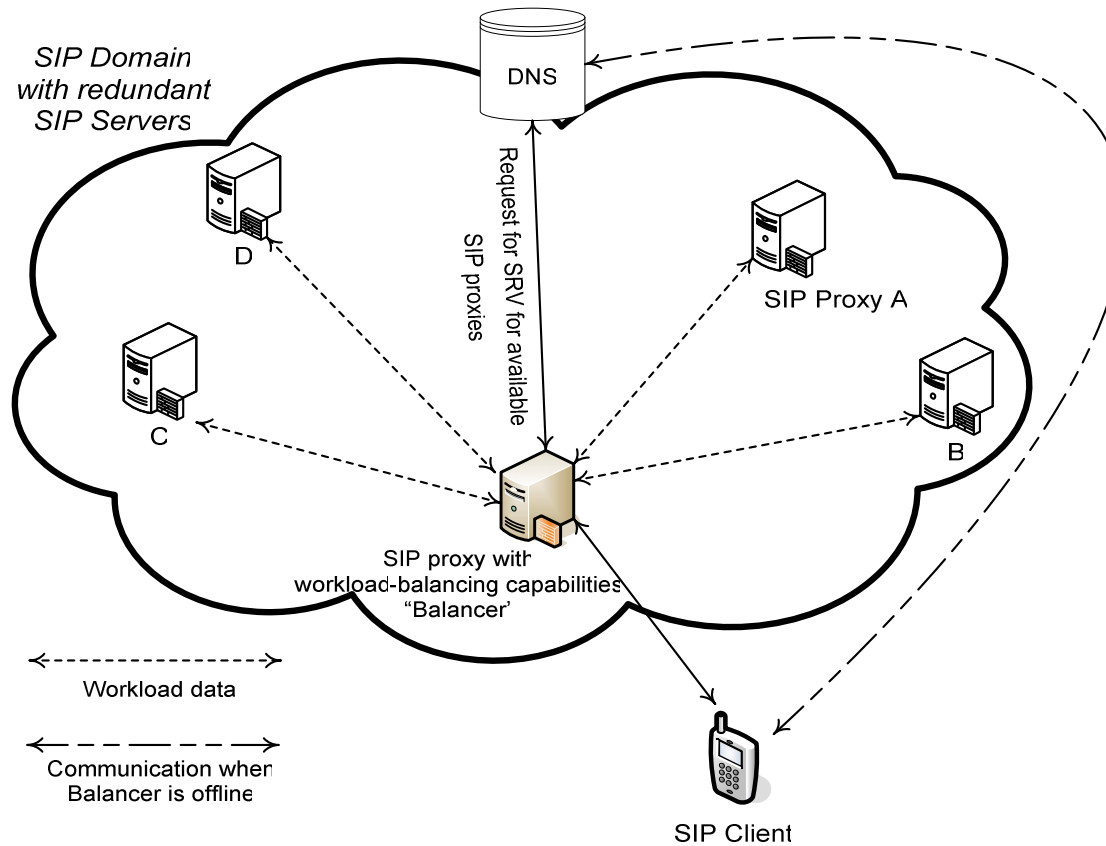


# Proposed Heartbeat Communication Protocol





# SIP Load Balancing Architecture





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# Load Balancer & Possible Transparency Problems

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- ❑ SIP Proxies insert a VIA header in all the incoming SIP requests
  - ❑ So...
    - In case the LB is implemented as another proxy
    - all SIP responses will pass through that proxy
- ❑ Request that belong to a specific dialog should not pass through LB



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# Possible Solutions in Transparency Problem

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- ❑ Transparency for responses
  - ❑ Prevent Load Balancer from inserting a VIA header
    - E.g. in SER utilizing the SEND core command
  - ❑ Modify the SIP's Proxy core to ignore the VIA-header added by the Load Balancer
- ❑ Transparency for request belonging to the same dialog
  - ❑ Serving SIP Proxies insert a *Record-Route* header



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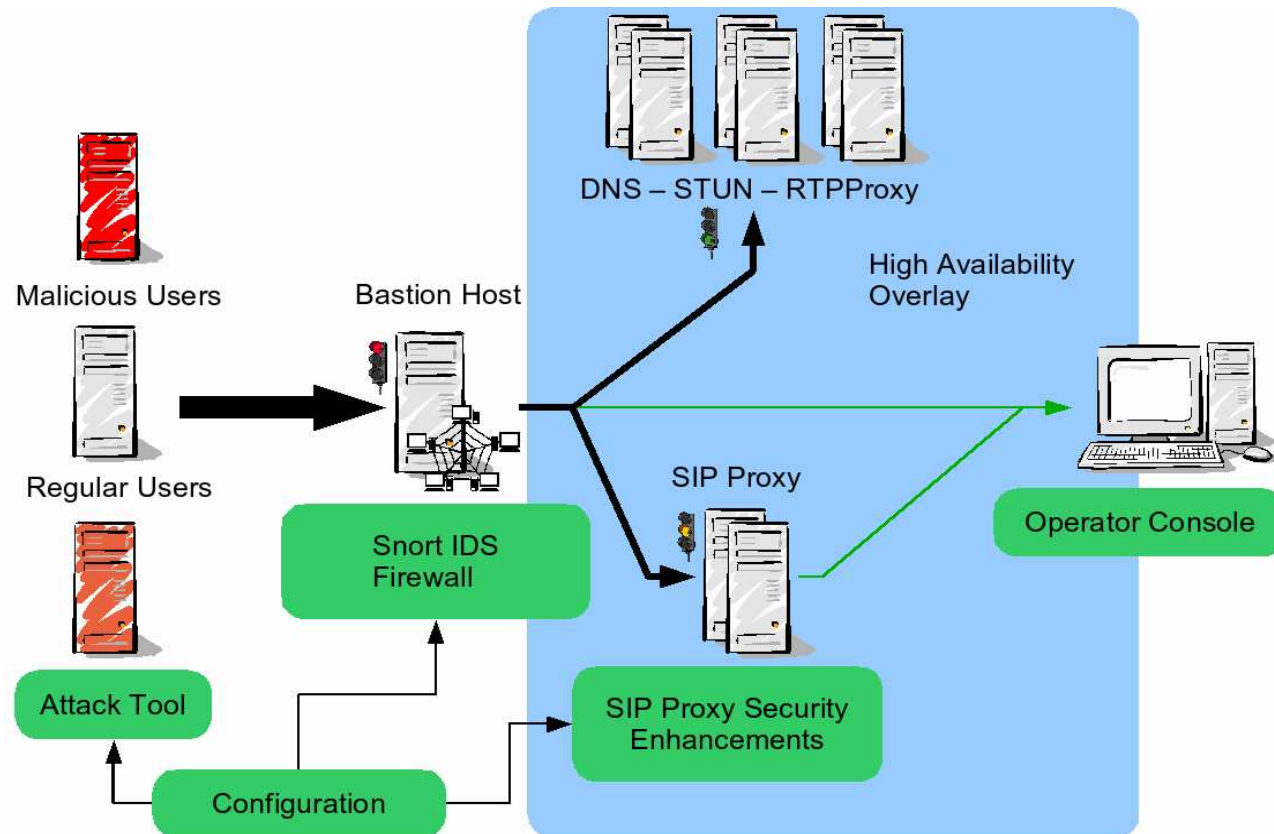
# SNOCER Architecture

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- ❑ **SNOCER=Low Cost Tools for Secure and Highly Available VoIP Communication Services**
- ❑ **Basic Components**
  - ❑ Bastion Host
  - ❑ Enhanced SIP Proxy
  - ❑ High Availability Network
  - ❑ Operator's Console
- ❑ Details [www.snocer.org](http://www.snocer.org)

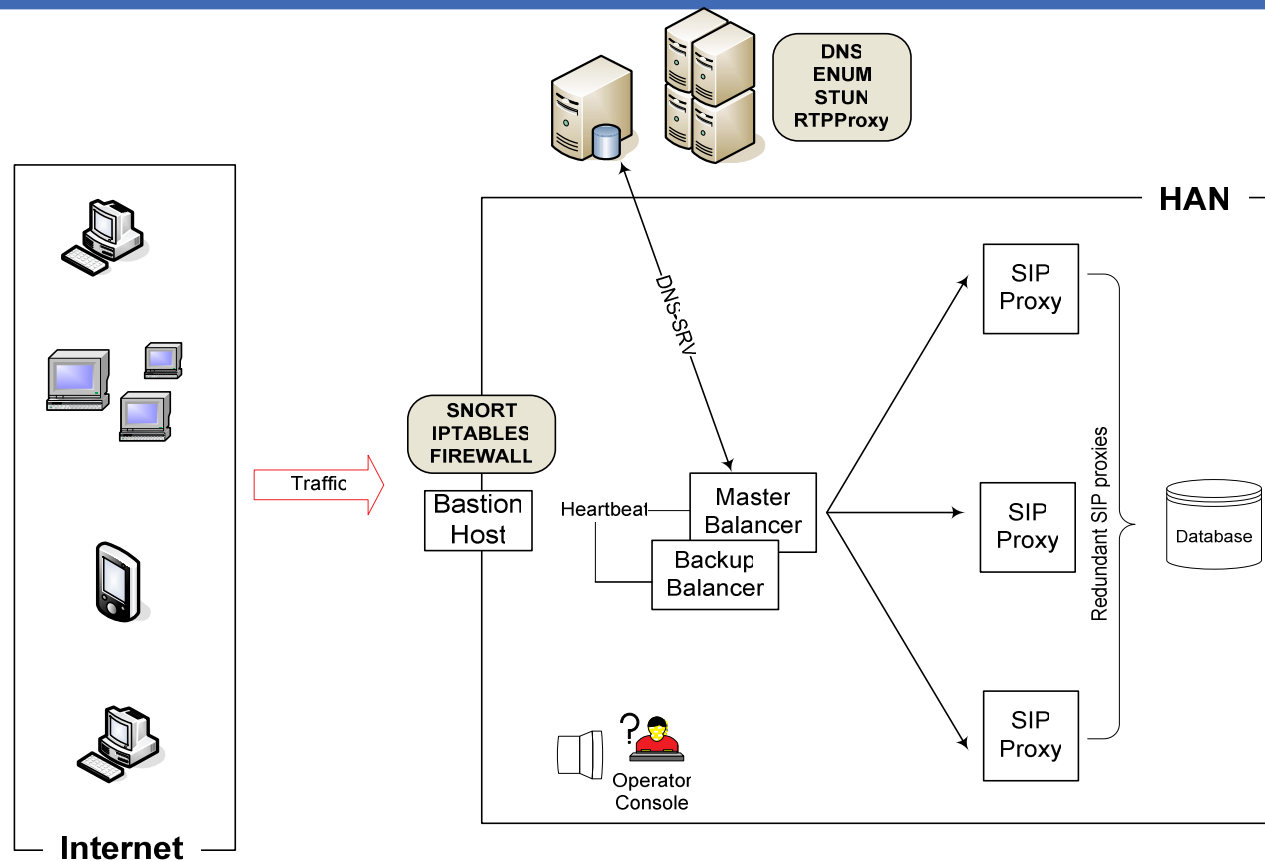


# SNOCER Architecture





# Load Balancing in SNO CER Architecture





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# Future Work

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- Load balancer algorithm definition
- Performance Evaluation
  - CPU
  - Memory Consumption
  - Delay
- Enhance Load Balancer's Robustness



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# Comments-Questions

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# Contact Information

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Thank You