



Universidade
Federal do Piauí



PASID Lab
<https://pasid.info>

Analysis of the Impact of Energy Resources on a Smart Hospital System Availability

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Orientador: Francisco Airton da Silva

A origem desta proposta..

Elton Araujo, Paulo Pereira, Jamilson Dantas, Paulo Maciel.

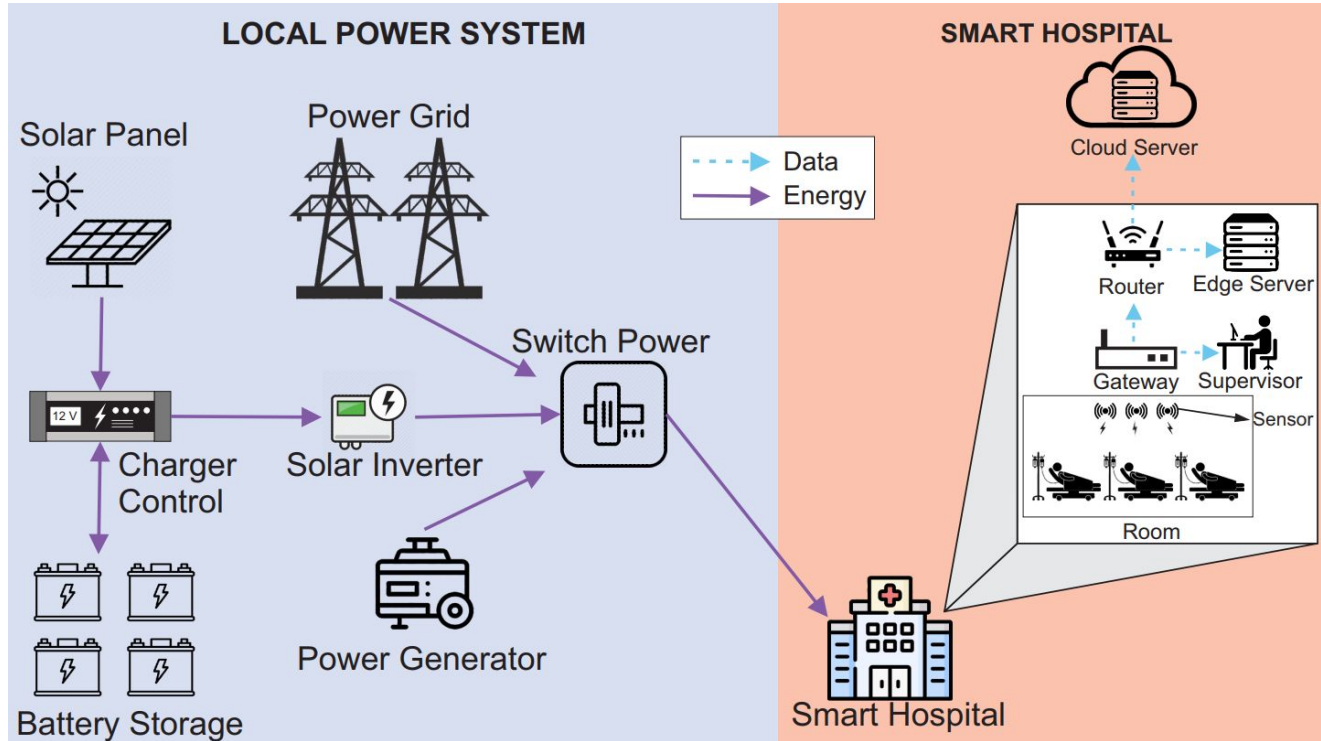
Dependability Impact in the Smart Solar Power Systems: An Analysis of Smart Buildings. *Energies*, 14(1), 124, (2021).

Laécio Rodrigues, Igor Gonçalves, Iure Fé, Patricia Endo, Francisco Airon Silva. **Performance and availability evaluation of an smart hospital architecture.** *Computing*, 1-35, (2021).

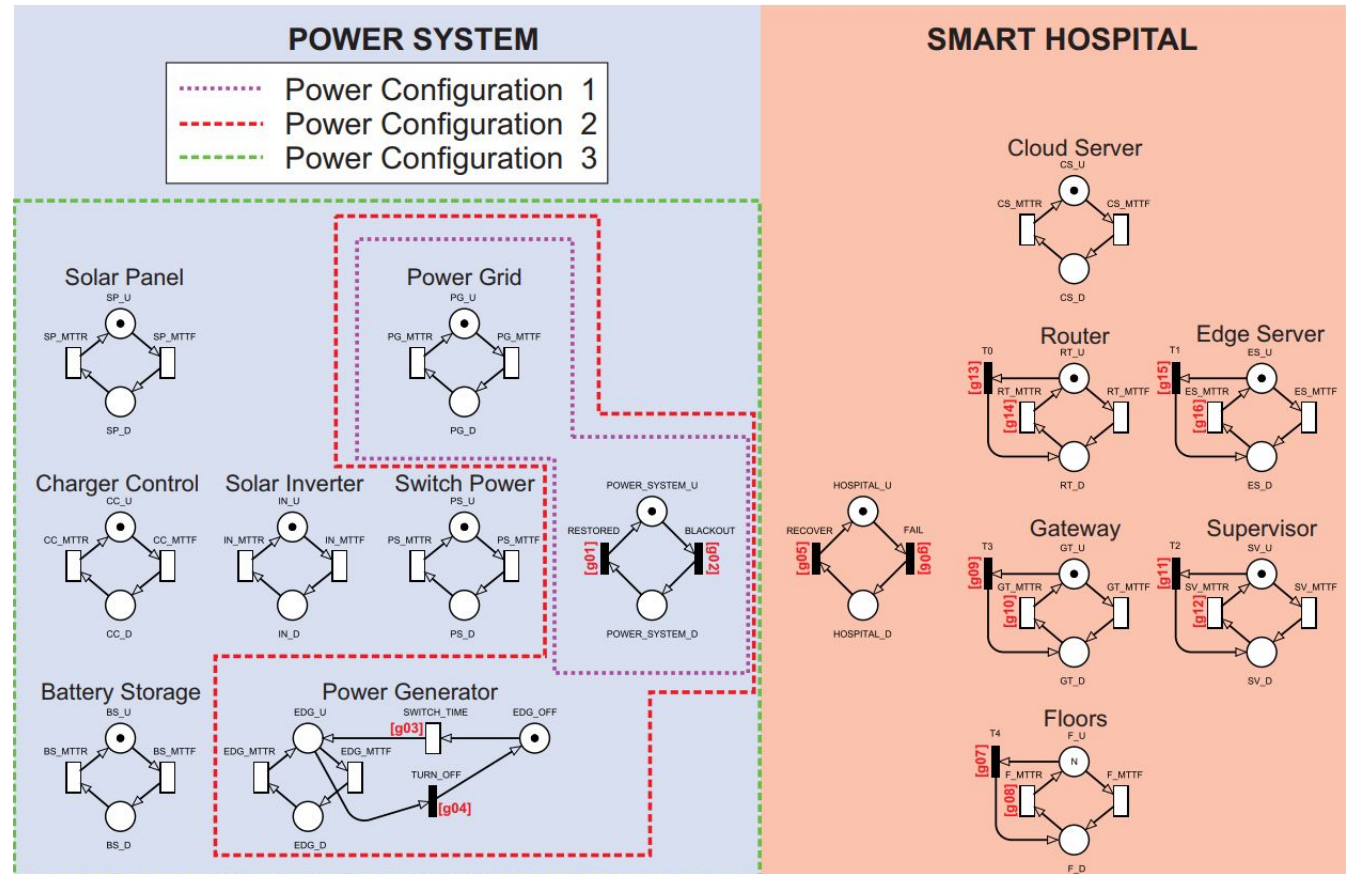
Problemas

- A **disponibilidade** dos sistemas IoMT é algo crítico que deve ser avaliado.
- A **confiabilidade** dos sistemas IoMT também deve ser garantida ao longo do tempo.
- O fornecimento de **energia elétrica** sem interrupção à IoMT é essencial.
- Ações de **rejuvenescimento** podem mitigar problemas de falhas em tais sistemas?
- **Avaliação prática de dependabilidade em sistemas e-health pode custar caro.**

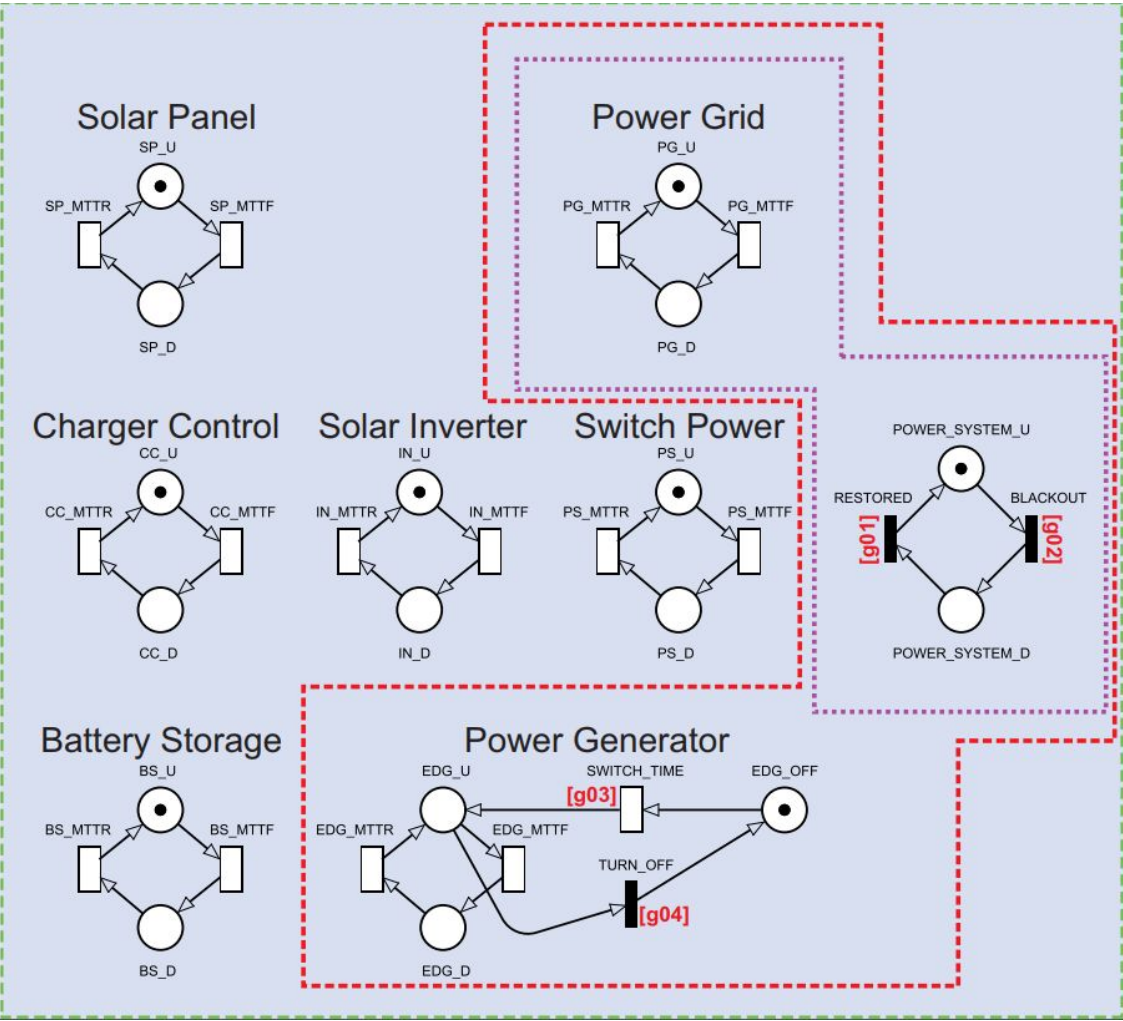
Arquitetura



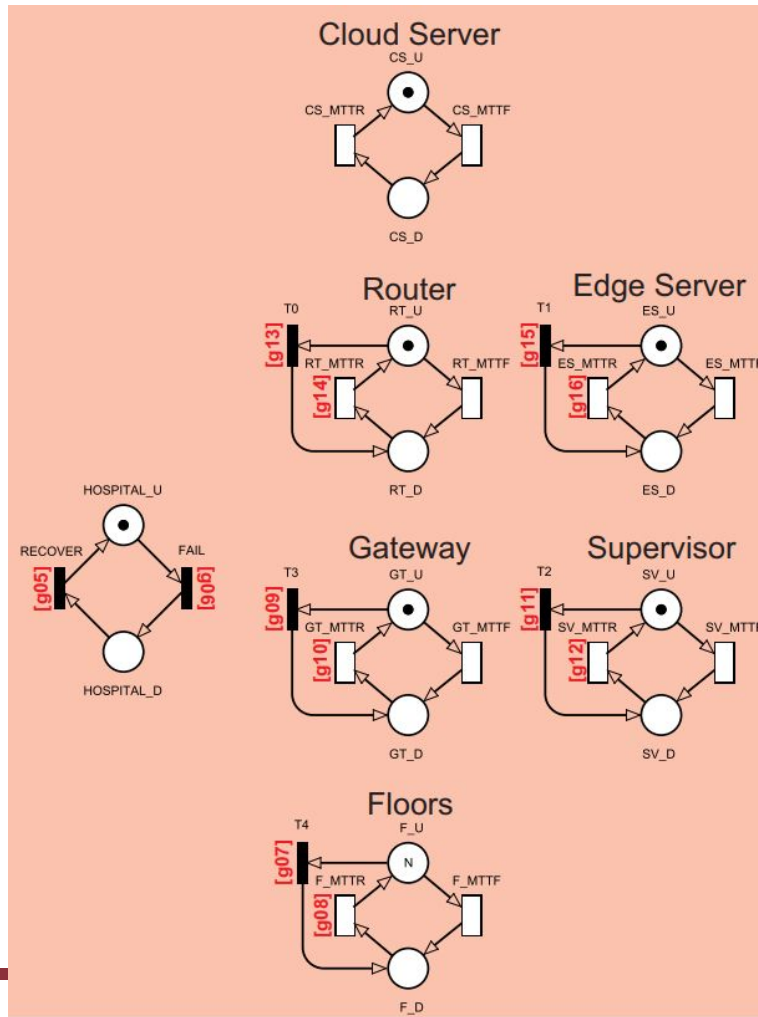
Modelo



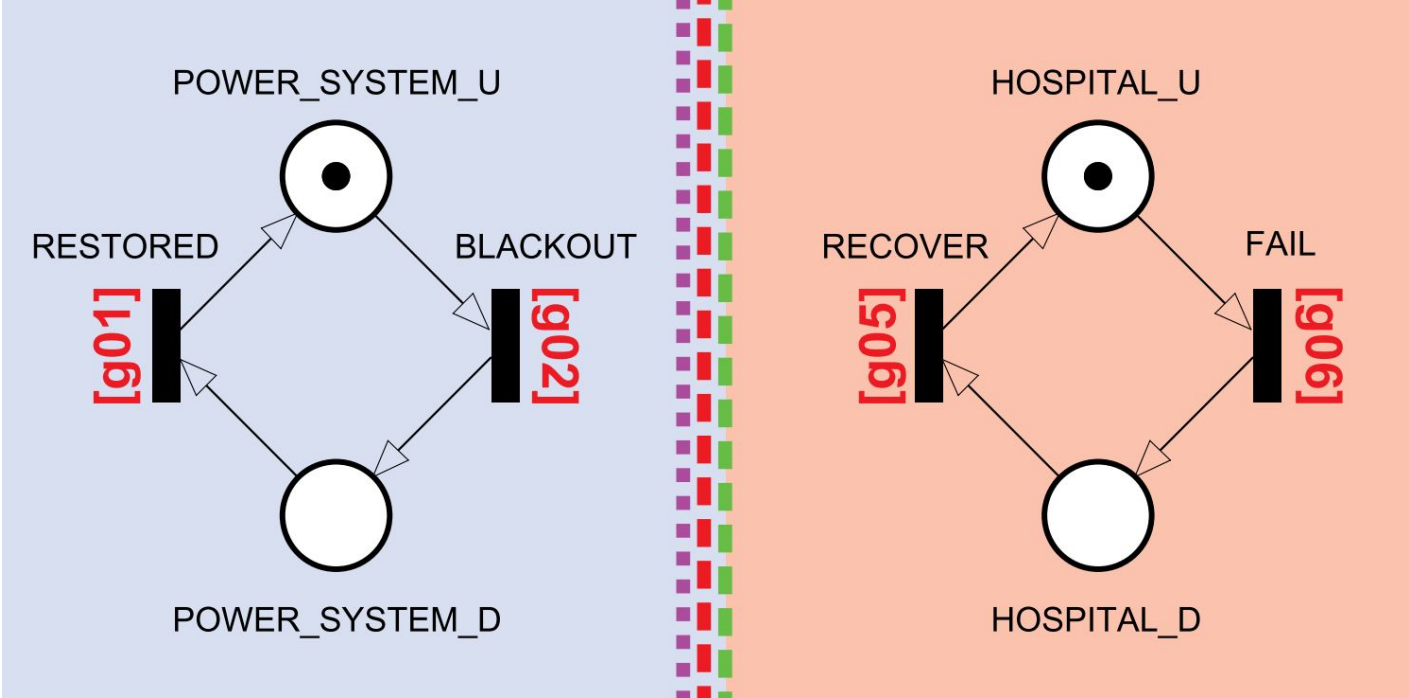
ZOOM AT THE POWER SYSTEM



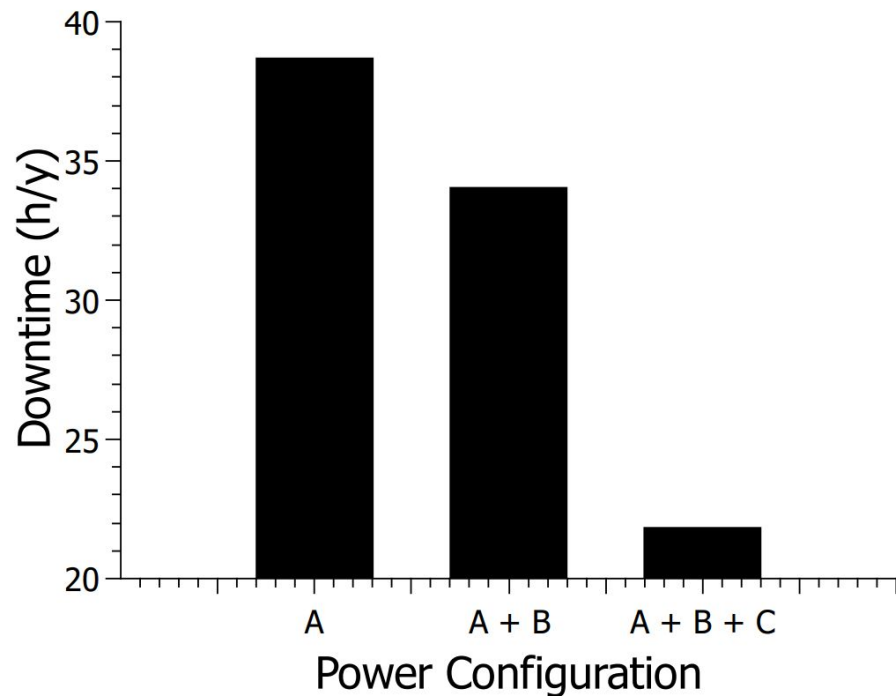
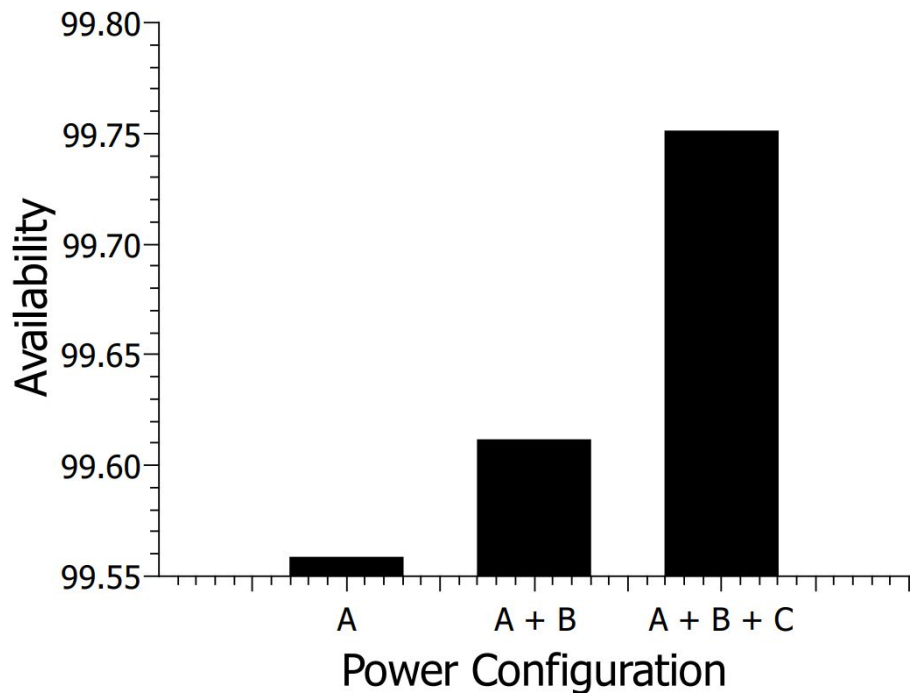
ZOOM AT THE SMART HOSPITAL



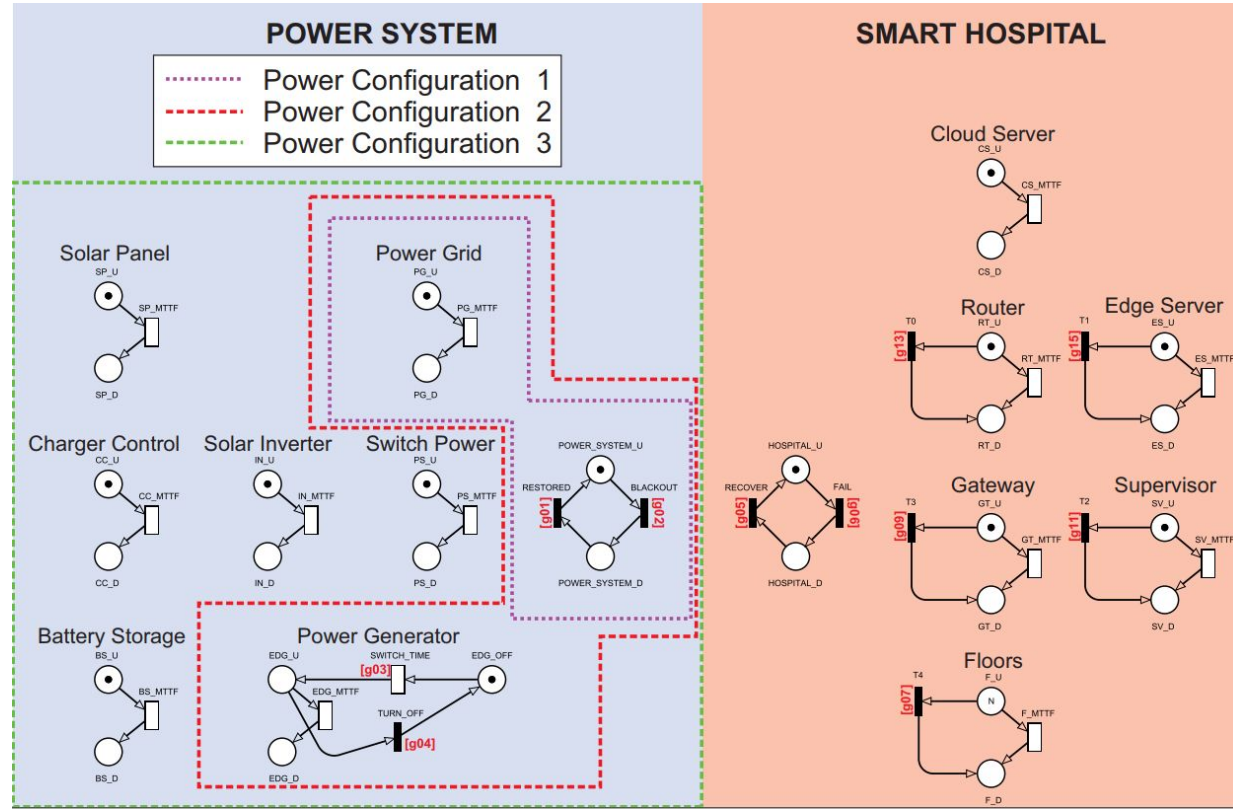
ZOOM AT THE ENERGY AND HOSPITAL AVAILABILITY CONTROL



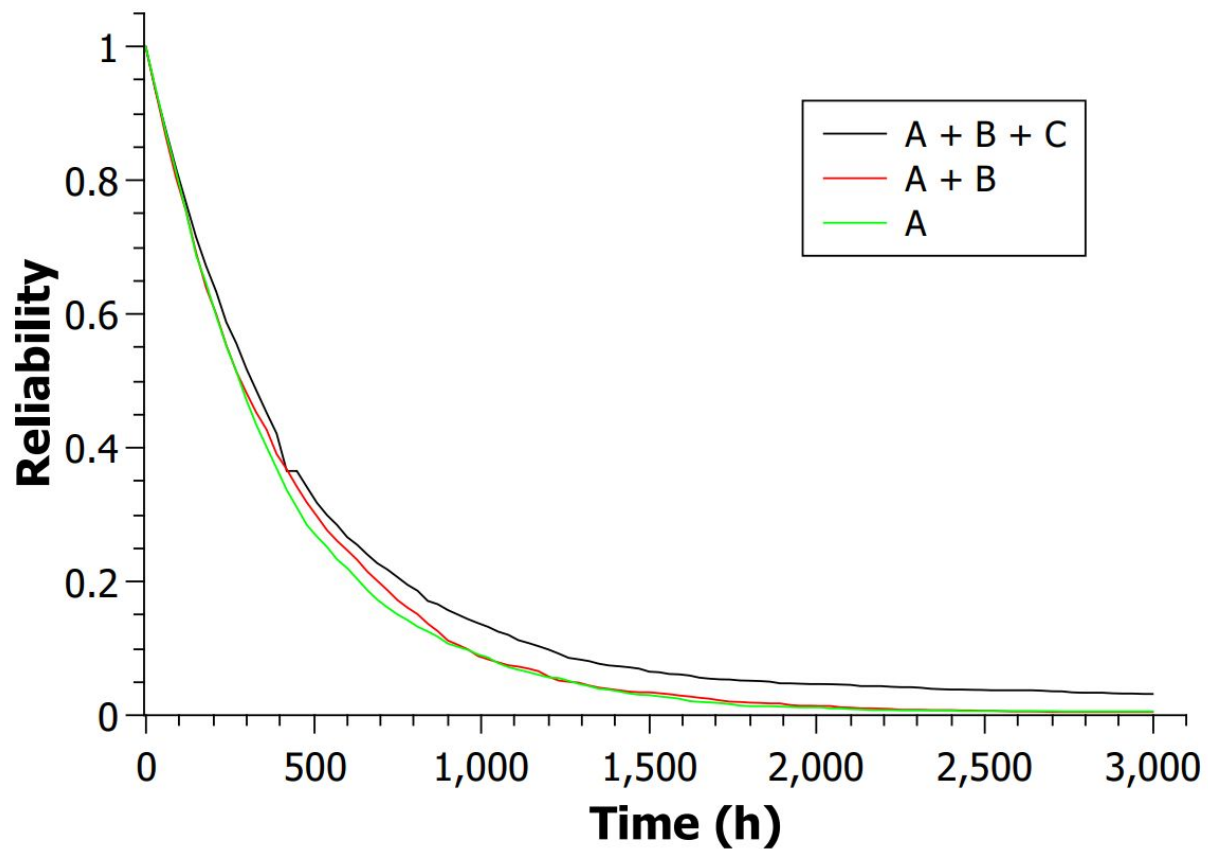
Resultados



Confiabilidade



Resultados



Análise de sensibilidade



Power Grid



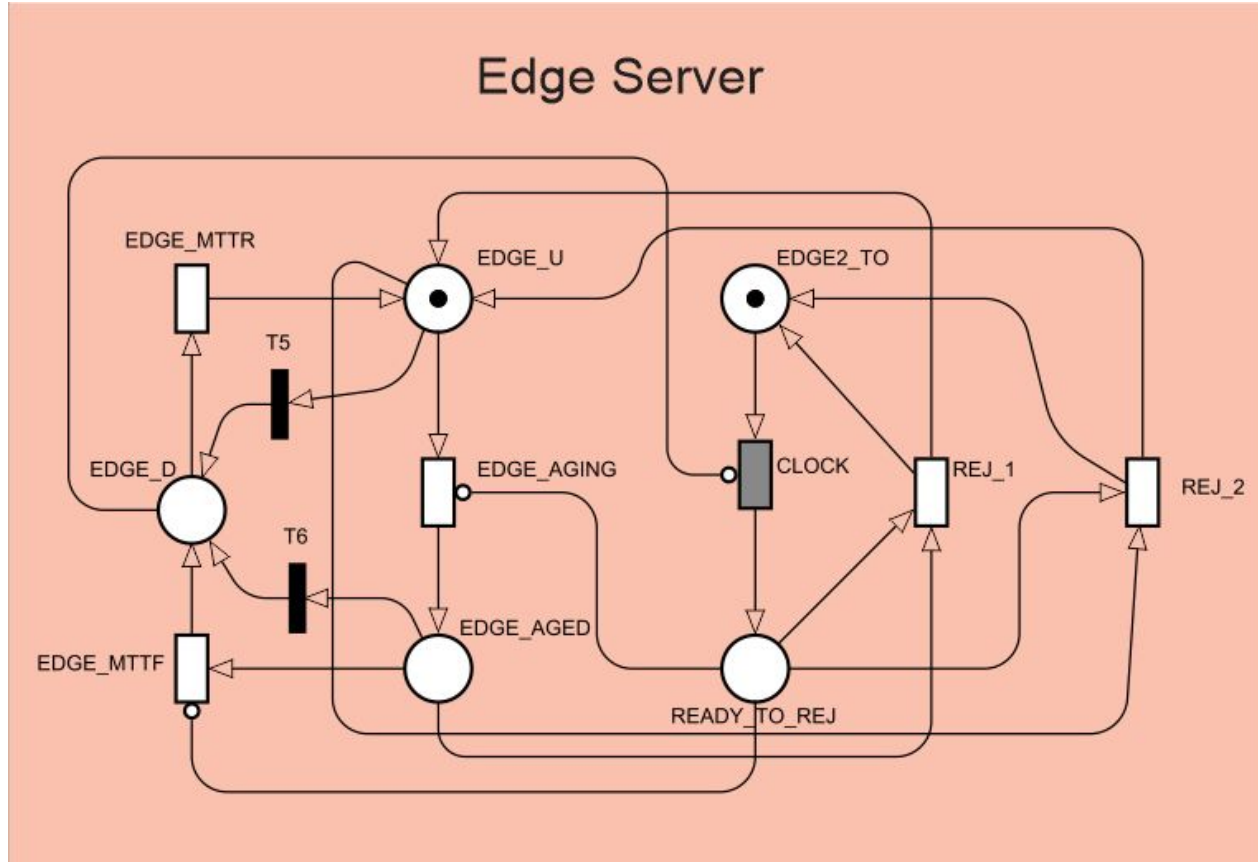
Edge Server



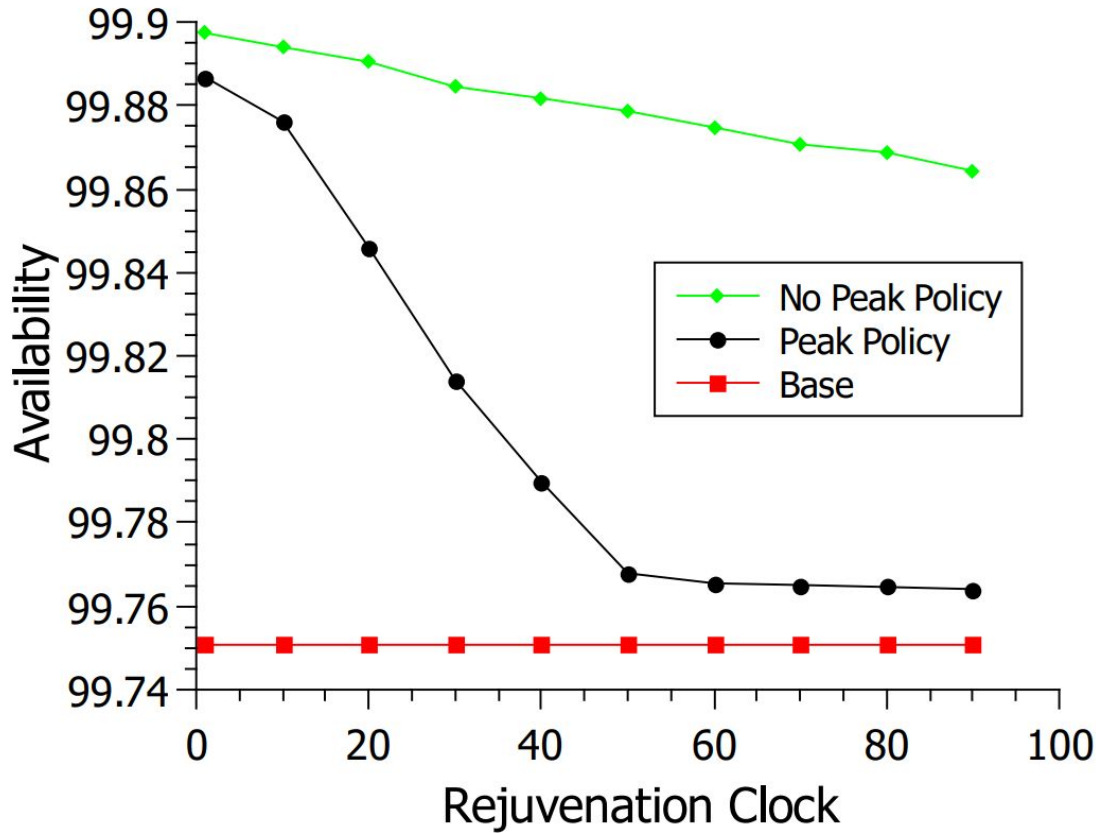
Edge Server

Modelo 1		Modelo 2		Modelo 3	
PG_MTTF	0.0025719563969	ES_MTTF	0.0019375898445	ES_MTTF	0.0009688111600
ES_MTTF	0.0019375904013	PG_MTTF	0.0018628825584	CS_MTTF	0.0004861374958
ES_MTTR	0.0014672173623	ES_MTTR	0.0014672486360	SV_MTTF	0.0000111214492
CS_MTTF	0.0012957223642	CS_MTTF	0.0012957219557	GT_MTTF	0.0000083197789
CS_MTTR	0.0009722640631	CS_MTTR	0.0009722644926	RT_MTTF	0.0000057287525
GT_MTTR	0.0006724147840	GT_MTTR	0.0006727971892	PG_MTTF	0.0000007459568
RT_MTTR	0.0006672449626	RT_MTTR	0.0006676278262	IN_MTTF	0.0000004763060
PG_MTTR	0.0005484806377	SE_MTTR	0.0000331157985	CC_MTTF	0.0000001687633

Modelo de Rejuvenescimento



Resultados



Conclusão

- **Questões energéticas** influenciam bastante a disponibilidade dos sistemas IoMT.
- Ação de **rejuvenescimento** no sistemas IoMT mostrou impacto benéfico sobre a disponibilidade do sistema.
- Como trabalho futuro pretende-se checar questões de energia em **trabalhos publicados previamente**.