



# Towards an open and green public data center infrastructure with a Swedish GovCloud



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# Who am I?

- Daniel Melin
- IT >30 years
- Open source >20 years
- Public procurement >10 years
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# A Swedish GovCloud?

- Pre-study phase finished
- Sept '16 – jan '17
- The report is public
- <http://bit.ly/2nFWZZQ>



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# Today's infrastructure

- 206 data centers owned and maintained by the governmental agencies (not including the defense sector, municipalities, regions, health care, governmental companies or the parliament)
- 42% of these are located within Stockholm county
- The data centers are of varying size, quality and age
- Hardware is usually dimensioned for peak load



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# Today's infrastructure

- More than 17 500 servers
- More than 64 PB of raw storage
- Maintained by 800 FTE's
- + all outsourced infrastructure:
- More than 7 000 servers
- More than 11 PB of raw storage



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# What does this boil down to?



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# What does this boil down to?

- Highly vulnerable



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# What does this boil down to?

- Highly vulnerable
- Costly





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- Inefficient use of resources



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- Inefficient use of resources
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- High degree of capital tied up in hardware and software



# What does this boil down to?

- Highly vulnerable
- Costly
- Inefficient use of resources
- High electricity bills
- High degree of capital tied up in hardware and software
- Some unnecessary hardware and software



# Did you say lock-in?

- Each agency buys whatever they find best
- Quite common to buy from very few vendors
- Lock-in effects in both hardware and software
- Low demand for open standards
- Customers want “insurance” from their vendors



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# Is it possible to move?



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# Is it possible to move?

- From locked-in to free?



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- From proprietary software to open source?



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- From proprietary software to open source?
- From proprietary hardware to open hardware?
- From pets to cattle?



# Is it possible to move?

- From locked-in to free?
- From proprietary software to open source?
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- From small scale redundancy to full scale redundancy?



# Is it possible to move?

- From locked-in to free?
- From proprietary software to open source?
- From proprietary hardware to open hardware?
- From pets to cattle?
- From small scale redundancy to full scale redundancy?
- From your own hardware to shared hardware?



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- From locked-in to free?
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- From your own hardware to shared hardware?
- From vulnerable to secure?



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- From small scale redundancy to full scale redundancy?
- From your own hardware to shared hardware?
- From vulnerable to secure?
- From the public procurement process to ease of use?



# Is it possible to move?

- From locked-in to free?
- From proprietary software to open source?
- From proprietary hardware to open hardware?
- From pets to cattle?
- From small scale redundancy to full scale redundancy?
- From your own hardware to shared hardware?
- From vulnerable to secure?
- From the public procurement process to ease of use?
- ...and from grey to green?



# Is it possible to move?



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# Is it possible to move?

- Sure! Why not?



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# Is it possible to move?

- Sure! Why not?
- All the pieces are there



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# Is it possible to move?

- Sure! Why not?
- All the pieces are there
- Technical and legal



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# The idea proposed for the GovCloud



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# The idea proposed for the GovCloud

- Only open source (Linux, KVM, OpenStack, Ceph etc.)
- Only open standards
- Only hardware from multiple vendors
- OCP-hardware whenever possible



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# The idea proposed for the GovCloud

- Only open source (Linux, KVM, OpenStack, Ceph etc.)
- Only open standards
- Only hardware from multiple vendors
- OCP-hardware whenever possible
  
- = No lock-in



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# The idea proposed for the GovCloud



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# The idea proposed for the GovCloud

- Highly redundant on all levels
- Fully owned and maintained by the government
- Fully encrypted communications
- Part of the Swedish civil defense
- Highly scalable



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# The idea proposed for the GovCloud

- Highly redundant on all levels
- Fully owned and maintained by the government
- Fully encrypted communications
- Part of the Swedish civil defense
- Highly scalable
  
- = Safe and sound



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# The idea proposed for the GovCloud



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# The idea proposed for the GovCloud

- Public procurement only needed for buying the building blocks for the GovCloud
- NOT needed for the governmental agencies when using it



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# The idea proposed for the GovCloud

- Public procurement only needed for buying the building blocks for the GovCloud
- NOT needed for the governmental agencies when using it
- = Faster digitalization of the public sector



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# The idea proposed for the GovCloud



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# The idea proposed for the GovCloud

- Fewer servers
- Fewer data centers
- Higher utilization
- OCP
- No centralized UPS
- Less cooling



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# The idea proposed for the GovCloud

- Fewer servers
- Fewer data centers
- Higher utilization
- OCP
- No centralized UPS
- Less cooling
  
- = Going green



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# Questions?





# Thank you for your attention!



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