Because this guy is talking about it.

Tony Hey. Professor **Anthony John Grenville Hey** CBE FREng FIET FInstP FBCS

STFC Chief Data Scientist.

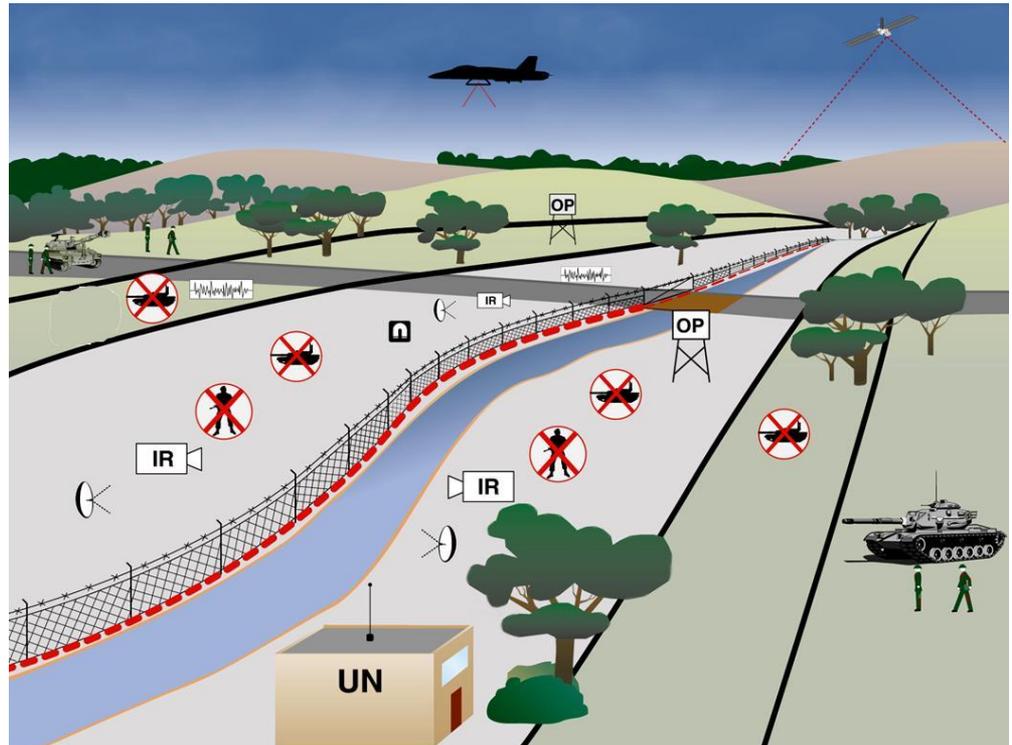Because GridPP sees an effective "low cost" network as strategic to its operation.

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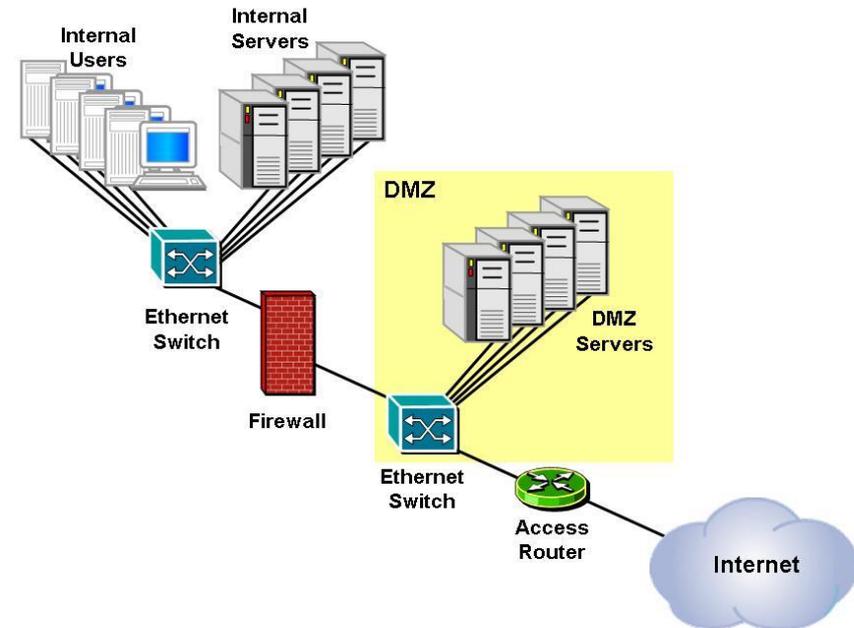"An area in which it is forbidden to station military forces or maintain military installations.

Any area, place, or circumstance in which conflicts or hostilities are held in abeyance." Dictionary.com

13 May 2016

Tier-1 Status

Internal firewall

Server-side firewall

Private resources

Public resources

Internet

Demilitarized Zone (DMZ)

Internal Users

Internal Servers

DMZ

Ethernet Switch

Firewall

DMZ Servers

Ethernet Switch

Access Router

Internet

Tie
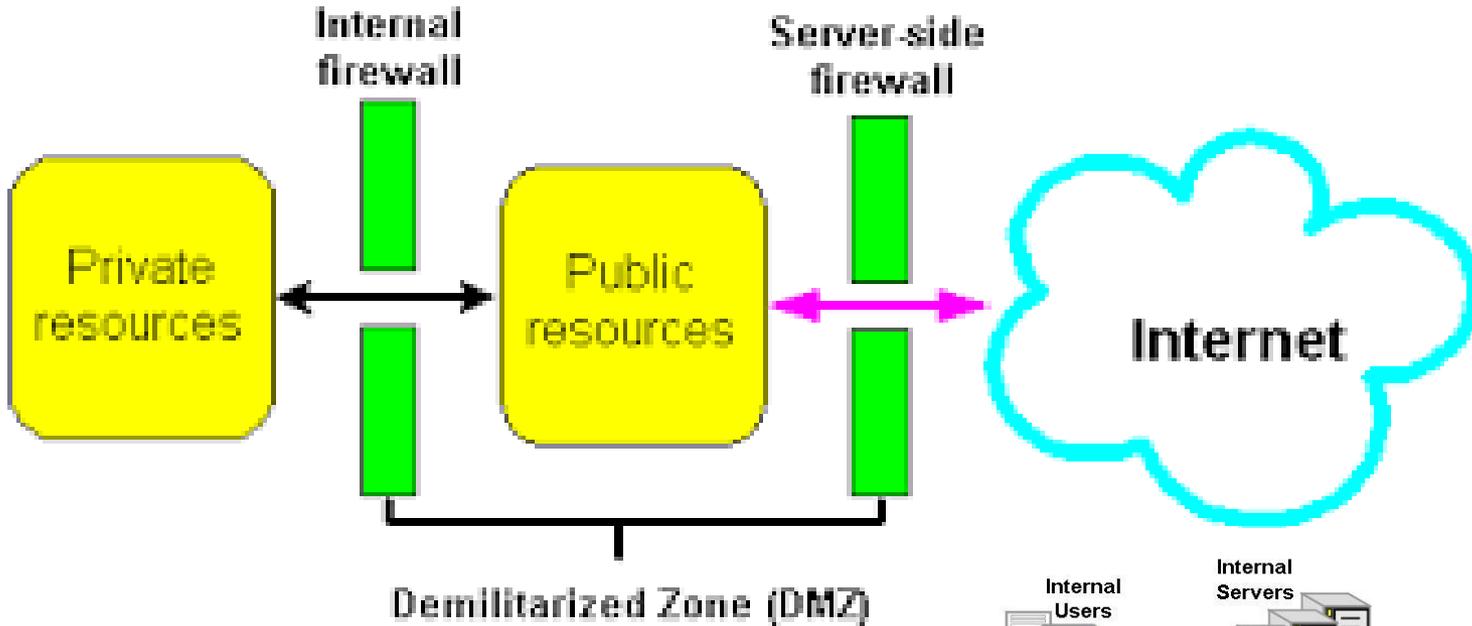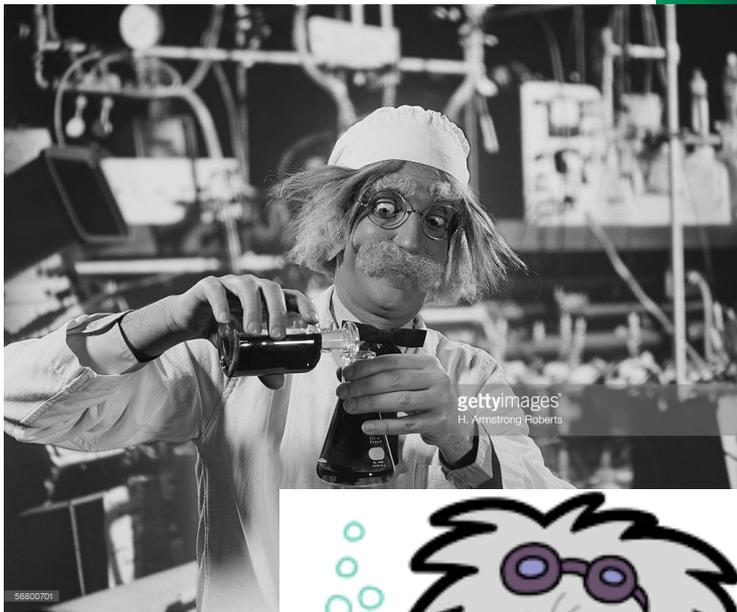
The Science DMZ: A Network Design Pattern for Data-Intensive Science. E. Dart. 2013. SuperComputing 2013.
https://fasterdata.es.net/science-dmz/

Should also be put into the context of: Esnet Strategic Plan FY2014-FY2023: March 2013

Both interesting reads – however there is a risk that the detailed analysis/discussion provided by ESnet is lost and people latch onto the "DMZ" terminology and implement a solely network topology solution.

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GridPF
UK Computing for Particle Physic

<u>ESnet's Mission</u>

To enable and accelerate scientific discovery by delivering unparalleled network Infrastructure, capabilities, and tools.

<u>ESnet's Vision</u>

1. Scientific progress will be completely unconstrained by the physical location!of Instruments, people, computational resources, or data.
2. Collaborations at every scale, in every domain, will have the information and tools they need to achieve maximum benefit from scientific facilities, global networks and emerging network capabilities.
3. Esnet will foster the partnerships and pioneer the technologies necessary to ensure that these transformations occur.

Tier-1 Status

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The Science DMZ is:

A portion of the network, <u>built at or near the campus or laboratory's local network perimeter</u> that is designed such that the equipment, configuration, and security policies are <u>optimized for high-performance scientific applications</u> rather than for general-purpose business systems or "enterprise" computing.

A network architecture <u>explicitly designed for</u> <u>high-performance applications</u>, where the <u>science</u> <u>network is distinct</u> from the general-purpose network

Monitoring
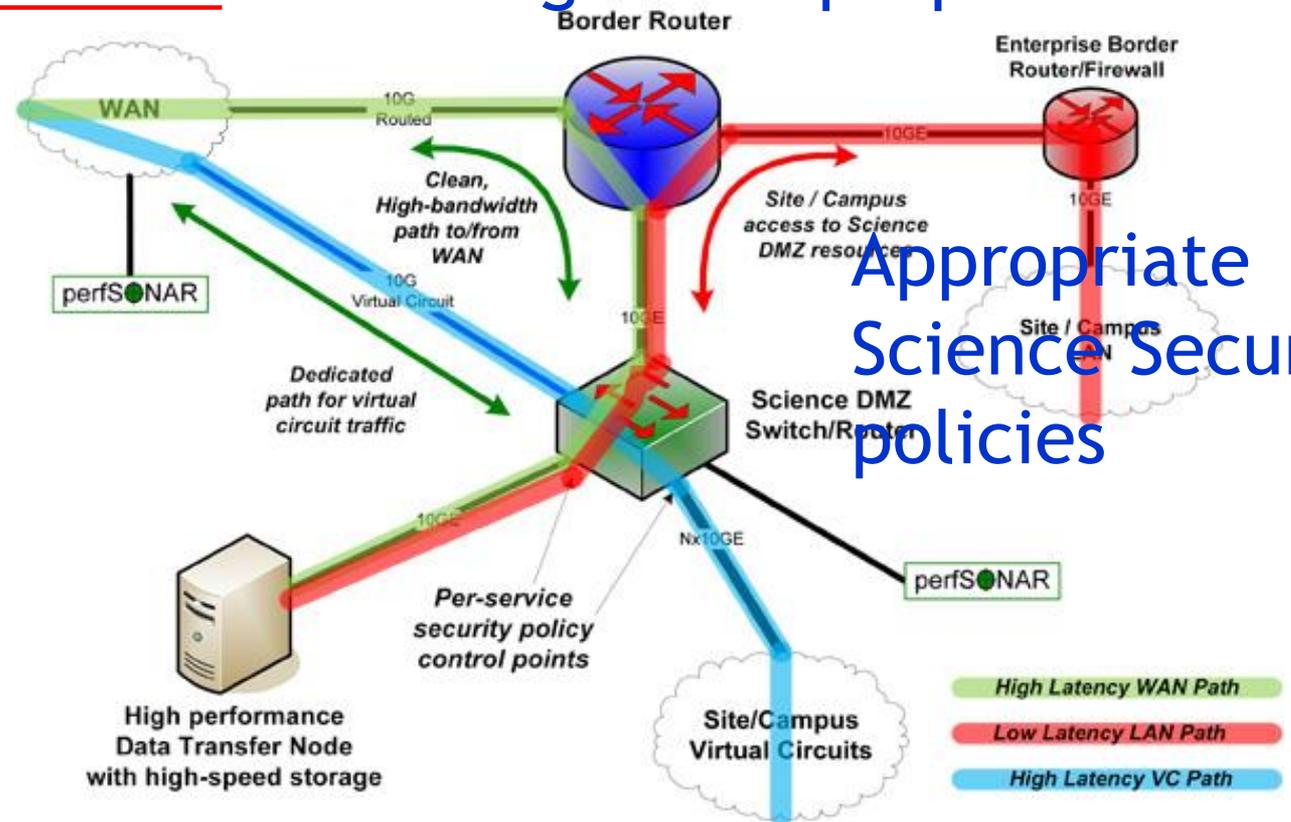
Appropriate Science Security policies

Border Router

WAN

10G Routed

Clean, High-bandwidth path to/from WAN

perfS●NAR

10G Virtual Circuit

Dedicated path for virtual circuit traffic

Enterprise Border Router/Firewall

10GE

10GE

Site / Campus access to Science DMZ resources

Site / Campus LAN

10GE

Science DMZ Switch/Router

10GE

Per-service security policy control points

Nx10GE

perfS●NAR

High performance Data Transfer Node with high-speed storage

Site/Campus Virtual Circuits

High Latency WAN Path
Low Latency LAN Path
High Latency VC Path

Data Transfer Nodes

Tier-1 Status

15 May 2015

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GridPP
UK Computing for Particle Physics

"We're overwhelmed with data" - interview with Digifest speaker Tony Hey JISC Interview 22nd Feb 2016

"I see <u>Jisc as capable of playing a leadership role in providing a high performance research network</u>."

"What you need is what they call in the US a 'Science DMZ' - a science demilitarised zone. This architecture means that when the data gets to the firewall, it doesn't go through the firewall but goes straight to where you need it. In this way, you <u>solve the 'last mile' problem</u> and can have sustained high end-to-end bandwidth."

"Traditionally, Jisc's responsibility has stopped at the university firewall so there is a worrying gap in our UK e-infrastructure. To address the needs of the new generation of data-intensive scientists, <u>I think that Jisc needs to partner with universities to implement high speed end-to-end data links</u>."

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- Of course many GridPP sites have addressed the "last mile problem. Ral first implemented a "firewall bypass" around 2005.

- JANET have previously been active in this area. Eg:
    - March 2015 JANET End to End Performance Initiative
    - October 2015 JANET End to End Performance Workshop

- GridPP has been represented at this event. Brian Davies presented at the workshop.

What should be GridPP's response ?

- **We should see this as a positive initiative.**
  - May help new communities we wish to engage with
  - May generate new (appropriate) investment in university infrastructure
  - May support the case for JANET to prioritise effort to support Science High Throughput.

- **GridPP Should**
  - Engage positively – avoid appearing defensive.
  - Be humble – don't explain that we solved this 10 years ago
  - Use our expertise where feasible to support (eg presentations)
  - Draw on our experience to avoid bad outcomes (eg inappropriate network structures/investment).