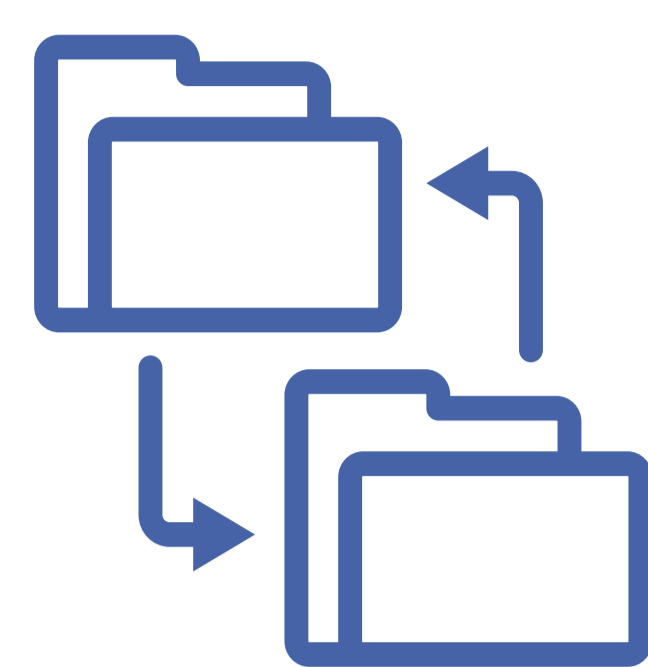


The Modern Research Data Portal: a design pattern for networked, data-intensive science

INTRODUCTION

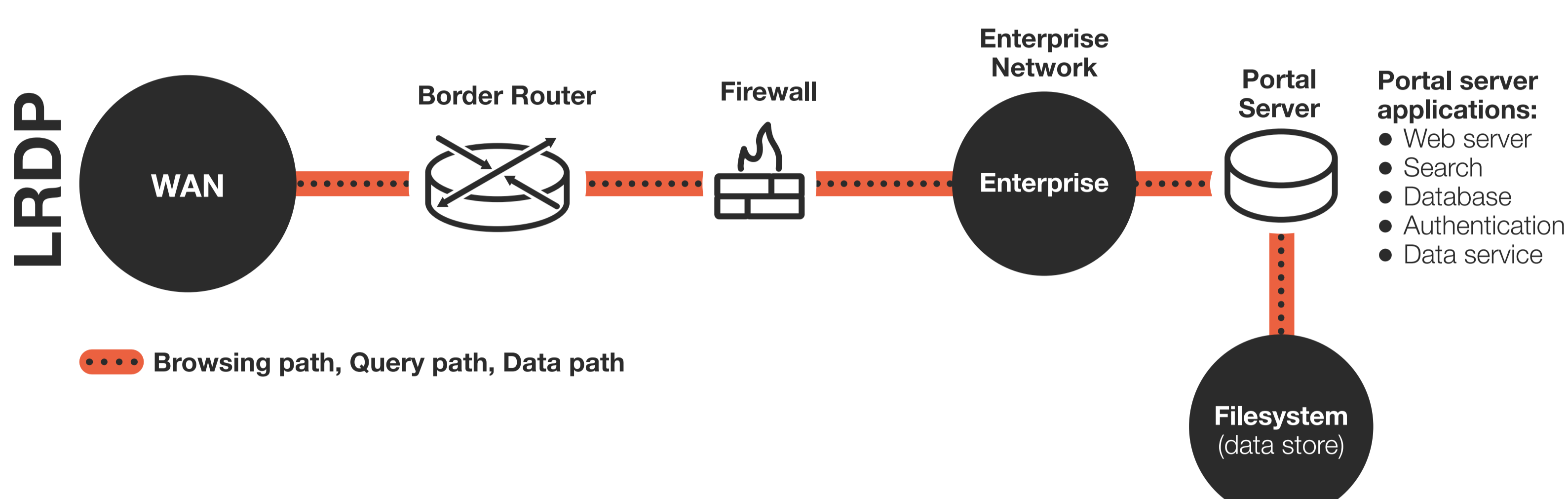
Data exchange is a hallmark of modern science, and research portals abound for the purpose of sharing data. But not all portals are created alike. Below we'll describe best practices for providing **fast, convenient, secure remote access to large data** by exploiting high-speed networks and outsourcing authentication and authorization decisions to the cloud-hosted Globus platform.



THE LEGACY APPROACH

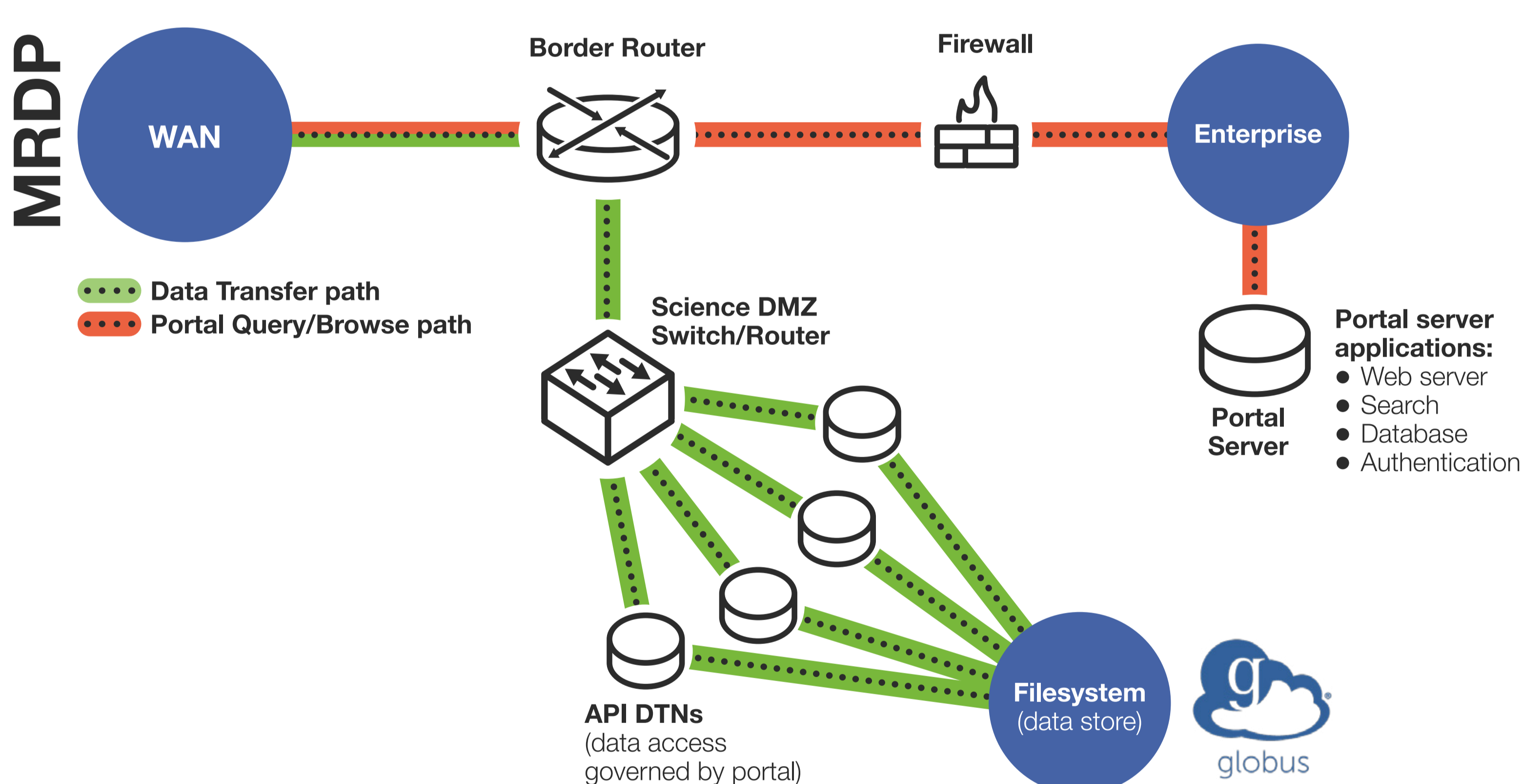
The Legacy Research Data Portal (LRDP) design pattern is simple and monolithic in its architecture, with a single server that handles request processing, data access, authentication, and other functions. But there are several concerns:

1. **Performance** decreases as demands grow
2. There is an **increasing demand for high data transfer reliability**
3. **Operational complexity** makes it difficult to ensure best practices are followed



THE MODERN APPROACH

The Modern Research Data Portal (MRDP) pattern separates the control logic used to decide **who** can access data from the **how** by which access occurs, that is, the storage and transfer infrastructure used to deliver data to users.



WHY IS THIS BETTER?

By outsourcing authentication and authorization and data management functionality to the Globus platform service, it **makes developing new data portals trivial**. By integrating with high speed network architectures (e.g., Science DMZ and Data Transfer Nodes) it **can deliver data at orders-of-magnitude greater speeds than is common today**, allowing for the delivery of gigabytes in seconds, terabytes in minutes, and petabytes in hours.

CONCLUSION

- > Globus and MRDPs can be used to make computers (of any size) into **data portals**
- > Separation of data from control increases **performance** while preserving **security**
- > High performance networks plus MRDP enable **data-driven science**

Visit docs.globus.org/mrdp for:

- > Sample portal
- > Github repository
- > Documentation
- > Jupyter notebook