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Abstract

This document outlines the WAN design for our companies’ network. It includes evidence of choices made, and configuration files for each device.

Phase 2 WAN Design and implementation

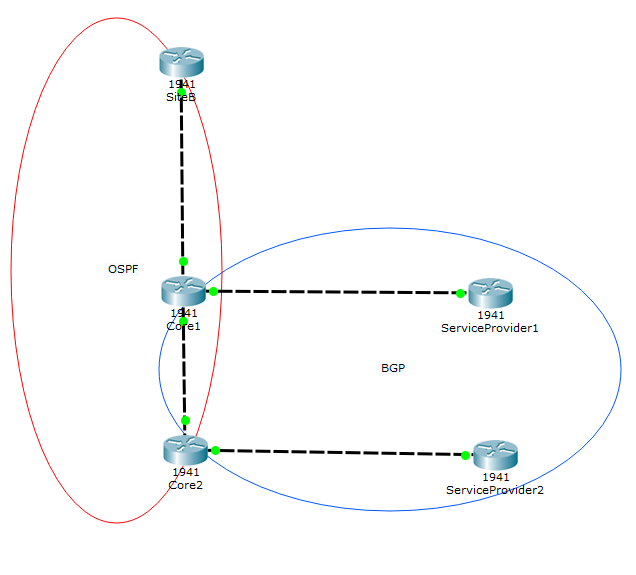
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# Overview

This document outlines the WAN design for our companies’ network. It includes evidence of choices made, and configuration files for each device.

Please refer to Phase One document for the LAN design of the head office.

# Head Office & Site B Physical Topology



# OSPF

Open Shortest Path First (OSPF) will be configured between the gateway routers, distribution switches, and the dark fibre link to Site B. OSPF offers faster convergence and scales to larger network implementations than the older protocol RIP. It is a link state routing protocol that was developed as a replacement for the distance vector routing protocol offered by RIP. RIP uses hop-count as the only metric, which can quickly become problematic, whereas OSPF looks at a number of factor when deciding the best route to take. These factors can be customised by the network administration for greater control over network paths.

We will implement multi-area OSPF between the head office and Site B. This will reduce the number of link state advertisements (LSA) flooding the network. Core 1 router will act as the Area Border Router (ABR). Splitting the Head Office and Site B into two different areas has the following benefits:

* Smaller routing table, as networks can be advertised as a summary.
* Smaller Link State Database (LSDB), as routers only need to know their area.
* Reduced SPF algorithm calculations, as an ABR only needs to run the SPF algorithm when there is a change an associated area.

Our Head Office site is going to act as our backbone area, or Area 0. Site B will be Area 1.

Using another router as the ABR was considered, however it was determined that due to a relatively low number of employees, a single router acting as the ABR, and part of the Head Office network, would easily meet our requirements.

OSPFv4 is being used in our network as we are using IPv4 as our IP protocol. A further advantage of OSPF is that MD5 can be implemented, to improve network security. This means that routers will only accept OSPF updates from peers with the same pre-shared password.