Introduction - What redundancy solutions are there? Which should I use? What do I have to consider?

- 2023-11-24 - Redundancy Solutions

Like always there are several ways to the destination. Here now one order of questions to answer.

Selecting the best-suited redundancy for your application demands answers to following questions:

Which redundancy solution is supported by all products which should participate in it? - Usually products do not support all redundancy solutions available, but only a few, one or none of them.

You might now have the answer already to which solution to use. But will this solution support your topology? There might be some limitations and you might need to re-think everything, even to make some compromises.

You still have some solutions which you can choose? Ok, then let's get to the details:

Shall the redundancy be standardized or can it be proprietary?

Must the redundancy recover within a guaranteed time? This means that there should be a guaranteed maximum, i.e. worst case, time.

How fast shall your network recover? - This usually is related to the amount of money you have to spend.

Note: usually redundancy solutions demand managed devices.

Here now an overview of layer 2 redundancy solutions:

- STP - the oldest one, necessary only for backwards compatibility. Do not use it if you don't need it. It is slow, it has no guaranteed maximum recovery time.
- RSTP - the successor of STP. It still has no guaranteed maximum recovery time, but it is reasonably fast - usually. And it's standardized by IEEE 802.1D and thus supported by nearly all products of all manufacturers.
- MST - the extended version of RSTP.
- Link Aggregation - standardized by IEEE
- HIPER-Ring - very fast and reliable ring redundancy, proprietary from Hirschmann and Siemens
- MRP - very fast and reliable ring redundancy, standardized by IEC
- PRP - loss-less redundancy by parallel paths, standardized by IEC, demands special HW
- HSR - loss-less redundancy by using a ring in both directions parallel, standardized

by IEC, demands special HW

- DLR - loss-less redundancy by using a ring, standardized by IEC and pushed by Rockwell, demands special HW

Layer 3 redundancy solutions:

- VRRP - standardized by IETF (RFC)
- HiVRRP - faster than VRRP, proprietary by Hirschmann, based on VRRP, just speeded-up.