

CASE STUDY: BACKUP SYSTEMS & REDUNDANCY

HOW MUCH IS ENOUGH?

Situation

In certain environments such as onboard the space shuttle, redundancy is critical and it is not uncommon to have two back-up systems. In most other circumstances, redundancy may cause more problems than it resolves. Myriad are the instances of a primary system which has been out of service for an extended time, “as a backup system is available.” Conversely, backup systems aren’t always exercised often enough and they may not function when required. A flat (or missing) spare tire won’t get you very far.

Action

Business continuity demands that an organization routinely complete a self examination to identify infrastructural and organizational weak points. These are items which would cause significant financial loss or precipitate a major incident (e.g. loss of cooling which might cause a nuclear reactor meltdown or an explosion). In these instances, reliable back-up power is essential and it should be sized sufficiently to ensure that a stable situation can be achieved. In many other cases, it might be preferable to develop a robust predictive and preventive maintenance program, including adequate spare parts and trained maintenance staff. Backup systems aren’t “free” so you need to compare the cost of an occasional outage vs. the lifecycle cost of the backup.

Projected Result

Critically examining backup requirements in conjunction with having a robust maintenance program can yield many different types of savings without negative impact on business continuity. Even for critical systems, you can consider mobile backup systems which can be quickly connected rather than permanent installations. You will avoid significant acquisition costs, save footprint, and reduce maintenance & operating expenses. Additional savings will be realized by eliminating the needs for manifolds, power transfer stations, and other “switching” infrastructure.

Not having backup will also tend to focus more attention on the primary system, improving operational continuity.



What people are saying....

- “Ed’s greatest strength is his ability to analyze complex situations and being a trusted advisor.”*
- “Ed engenders trust, respect and confidence from those that know him. His soft spoken and humble manner can conceal the great intellect and sharp wit that lies below the surface.”*
- “Analytical skills at managing projects” are one of my greatest strengths*
- “I could always be confident that his budgetary guidance and other strategic recommendations would balance the need for fiscal responsibility with appropriate support to ensure productive and effective scientific research.”*

Keys to success:

- It starts with critically evaluating the cost of a failure. If a cooling failure would terminate a multi-year study, then backup is required unless there is a sufficient window for corrective action. If a failure which might occur once every 5 years might cause termination of a two week study, then the backup rationale is not as clear.
- Most people can probably remember a tale of a backup system not functioning as intended. Remind participants that backup systems do not guarantee backup. They must be maintained as well or better than the primary system and routinely operated. Even then, occasional use can be more damaging than continuous operation.
- Establish robust maintenance programs, including predictive maintenance initiatives to improve operational continuity for all of your primary systems.
- Never tolerate extended outages for your primary systems. If redundancy is truly mission critical, then restoration of service must be undertaken with a sense of urgency.

* Comments offered by colleagues and managers in an anonymous online survey.