# POTENTIAL PROBLEM ANALYSIS

**Clear thinking for managing risks**
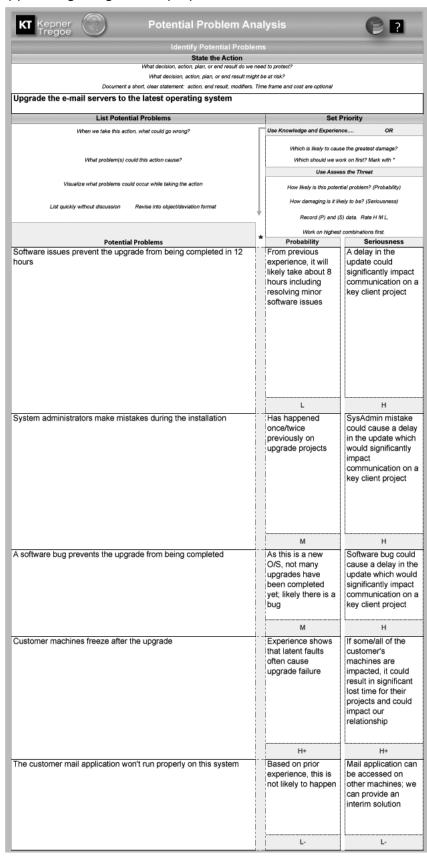
# REFERENCE

**KT** Kepner Tregoe

# Potential Problem Analysis

*Potential Problem Analysis Example* ────────────────

*Your customer wants to upgrade their e-mail servers to a new version of your operating system. The e-mail application software comes from a third-party supplier. The customer can only afford to have the system down for a maximum of twelve hours. You have asked your customer and the third-party supplier to get together to prepare for this task.*

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**Identify Potential Problems**

**State the Action**

*What decision, action, plan, or end result do we need to protect?*

*What decision, action, plan, or end result might be at risk?*

*Document a short, clear statement: action, end result, modifiers. Time frame and cost are optional*

**Upgrade the e-mail servers to the latest operating system**

| **List Potential Problems** | | **Set Priority** | |
|---|---|---|---|
| *When we take this action, what could go wrong?* | | *Use Knowledge and Experience....* | *OR* |
| | | *Which is likely to cause the greatest damage?* | |
| *What problem(s) could this action cause?* | | *Which should we work on first? Mark with ** | |
| | | *Use Assess the Threat* | |
| *Visualize what problems could occur while taking the action* | | *How likely is this potential problem? (Probability)* | |
| | | *How damaging is it likely to be? (Seriousness)* | |
| *List quickly without discussion     Revise into object/deviation format* | | *Record (P) and (S) data. Rate H M L.* | |
| | | *Work on highest combinations first.* | |
| **Potential Problems** | * | **Probability** | **Seriousness** |
| Software issues prevent the upgrade from being completed in 12 hours | | From previous experience, it will likely take about 8 hours including resolving minor software issues | A delay in the update could significantly impact communication on a key client project |
| | | L | H |
| System administrators make mistakes during the installation | | Has happened once/twice previously on upgrade projects | SysAdmin mistake could cause a delay in the update which would significantly impact communication on a key client project |
| | | M | H |
| A software bug prevents the upgrade from being completed | | As this is a new O/S, not many upgrades have been completed yet; likely there is a bug | Software bug could cause a delay in the update which would significantly impact communication on a key client project |
| | | M | H |
| Customer machines freeze after the upgrade | | Experience shows that latent faults often cause upgrade failure | If some/all of the customer's machines are impacted, it could result in significant lost time for their projects and could impact our relationship |
| | | H+ | H+ |
| The customer mail application won't run properly on this system | | Based on prior experience, this is not likely to happen | Mail application can be accessed on other machines; we can provide an interim solution |
| | | L- | L- |

## Potential Problem Analysis

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| Identify Likely Causes | Take Preventive Action |
|---|---|
| **Consider causes for the potential problem** | **Take Actions to Address Likely Causes** |
| *What could cause the potential problem to occur?* | *What can we do to prevent or reduce the chances of this likely cause?* |
| *What else could cause …?* | *How can we keep this likely cause from creating the potential problem?* |
| *Review similar experiences* | *List many preventive actions.* |
| *List many likely causes for each potential problem* | *Assign responsibility, resources, and time frame for each* |
| *Explain how each cause could create the potential problem* | |

| Likely Causes | Preventive Actions |
|---|---|
| Root file systems are too small | |
| Existing patches cannot be backed out | Practice the upgrade in advance to understand the issues and how to resolve them<br>Who: Senior System Administrator<br>By when: March 10 (a few days before the update) |
| Patch files have latent corruption | |
| System administrators are distracted by other competing priorities | Assign a dedicated system administrator to handle their priorities and inform that person of their role and the other system administrators who will be covering for them<br>Who: IS Manager<br>By when: March 9 |
| System administrators have no procedure to follow | Create and test an upgrade procedure and have the system administrators use/improve it during the practice upgrade<br>Who: Senior System Administrator<br>By when: March 10 (a few days before the update) |
| Upgrade script contains a bug | Search our support database and other sources for known problems; fix/test any that are discovered<br><br>Who: Senior System Administrator<br>By when: March 10 (a few days before the update) |
| System administrators react to ad-hoc events causing an uncontrolled environment | Check the machines in advance for latent faults; use a copy of the customer environment when performing the test; make the machines identical in disk layout, partition sizes, and so on; use the same architecture; verify that the application will run on the latest version of the operating system<br><br>Who: System Administrators<br>By when: March 10 |
| Application is corrupted during the upgrade | Verify that the application will run on the latest version of the operating system; test the mail application on a few machines before rolling out across all customer machines<br><br>Who: System Administrators<br>By when: March 11 |

# Potential Problem Analysis

**Plan Contingent Action and Set Triggers**

| Prepare Actions to Reduce Likely Impact | Set Triggers for Contingent Actions |
|---|---|
| *What action will we take if the potential problem happens?* | *How will we know the potential problem has occurred?* |
| *What action will minimize the impact if this happens?* | *What will cause the contingent action to start?* |
| *What can we do to recover as quickly, cheaply, and effectively as possible?* | *Set a trigger for each contingent action* <br> *One trigger can initiate more than one contingent action* <br> *Identify the system or person that will initiate the contingent action* |
| *Brainstorm a list of contingent actions* <br> *Involve others who will complete or judge the action or plan* | *Automatic triggers are preferable—they do not require judgment* |
| *Prepare contingent actions in advance* <br> *Assign responsibility, resources, and time frame for each* | *Use manual triggers when there is a choice of contingent actions* <br> *or when the need for action has to be assessed* |

| Contingent Actions | Triggers |
|---|---|
| Abandon the upgrade and reload the original operating system. Test for full functionality <br> Who: Senior System Administrator <br> By when: March 12 (day of update) | 3 hours left, and things are not working as expected <br><br> Who: IS Manager monitors progress <br> By when: March 12 (day of update) |
| Assess the gravity of the mistake, and abandon the upgrade if it cannot be brought back on track in time. Reload the original operating system and test for full functionality <br> Who: Senior System Administrator; System Administrators <br> By when: March 12 (day of update) | A mistake is made and cannot be rectified in the remaining time <br><br> Who: IS Manager monitors progress <br> By when: March 12 (day of update) |
| Gather as much relevant data about the upgrade failure in a reasonable time, and restore original O/S. Log call for further analysis. Schedule future downtime event <br> Who: Senior System Administrator <br> By when: March 12 (day of update) | The upgrade script causes a previously undocumented error <br><br> Who: IS Manager monitors progress <br> By when: March 12 (day of update) |
| Gather information about the upgrade failure <br> Look in support database and other sources for further details <br> Attempt to fix the problem or abandon the upgrade and restore original O/S <br><br> Who: Senior System Administrator <br> By when: March 12 (day of update) | Official upgrade error message <br><br><br><br> Who: Customer System Administrator reports error <br> By when: March 12 (day of update) |
| Reinstall the mail application <br> Roll back to the previous version of the operating system <br><br> Who: System Administrators <br> By when: March 12 (day of update) | Upgrade complete, operating system booted, but mail application not working <br><br> Who: Customer System Administrator monitors to make sure the application works <br> By when: March 12 (day of update) |