CLAIMS

What is claimed is:

1. A method comprising:

determining, by one or more computer processors, a plurality of files stored within a tiered storage environment that are accessed by a set of executing applications;

determining, by one or more computer processors, that one or more files of the plurality of files are accessed utilizing two or more protocols;

identifying, by one or more computer processors, a group of two or more tiering policies utilized within the tiered storage environment;

determining, by one or more computer processors, protocol-based heat count values corresponding to the plurality of files; and

storing, by one or more computer processors, the plurality of files among tiers of the tiered storage environment based on the identified group of two or more tiering polices and the protocol-based heat count values corresponding to the plurality of files.

2. The method of claim 1, wherein identifying the group the of two or more tiering policies utilized within the tiered storage environment is based, at least in part, on information respectively associated the set of executing applications, and wherein a first application of the set of executing applications accesses a first file utilizing a first protocol.

3. The method of claim 2, wherein identifying the group the of two or more tiering policies utilized within the tiered storage environment is further based on one or more dictates related to a service level agreement (SLA) associated with an application of the set of executing applications.

4. The method of claim 1, wherein storing the plurality of files among tiers of the tiered storage environment based on the identified group of two or more tiering polices further comprises:

determining, by one or more computer processors, an analysis hierarchy among the group of two or more tiering polices;

analyzing, by one or more computer processors, the protocol-based heat count values corresponding to the plurality of files with respect to the analysis hierarchy among the group of two or more tiering polices; and

assigning, by one or more computer processors, the plurality of files among storage tiers based on determined set of heat count values respectively associated with the plurality of files and further based on the analysis hierarchy among the identified group of two or more tiering polices.

5. The method of claim 4, wherein a service level agreement (SLA) associated with at least one application of the set of executing applications dictates the analysis hierarchy among the identified set of two or more tiering policies, and wherein the SLA allows upgrading of a storage tier assignment of a file based on a subsequent tiering policy of the analysis hierarchy among tiering policies and prevents downgrading of the storage tier assignment of the file based on the subsequent tiering policy of the analysis hierarchy among the tiering policies.

6. The method of claim 1, wherein the identified set of two or more tiering policies further includes one or more multi-protocol tiering policies related to files accessed by two or more protocols, and wherein a set of heat count values associated with a multi-protocol tiering policy are based on a combination of two or more access protocols utilized to access a file and the number of executing applications that utilize the combination of two or more protocols to access the file.

7. The method of claim 4, wherein analyzing the protocol-based heat count values corresponding to the plurality of files further comprises:

responsive to determining that that a file of the plurality of files is accessed utilizing two or more protocols, determining, by one or more computer processors, a multi-protocol heat count value corresponding to the file and further associated with a combination of protocols, wherein the multi-protocol heat count value corresponding to the file is a value corresponding to a sum of the heat count values corresponding to each protocol of the combination of protocols; and

analyzing, by one or more computer processors, the protocol-based heat count values corresponding to the plurality of files and one or more multi-protocol heat count values corresponding to the file with respect to the analysis hierarchy among the group of two or more tiering polices.

8. A computer program product comprising:

one or more computer readable storage media and program instructions stored on the one or more computer readable storage media, the program instructions readable/executable by one or more computer processors:

program instructions to determine a plurality of files stored within a tiered storage environment that are accessed by a set of executing applications;

program instructions to determine that one or more files of the plurality of files are accessed utilizing two or more protocols;

program instructions to identify a group of two or more tiering policies utilized within the tiered storage environment;

program instructions to determine protocol-based heat count values corresponding to the plurality of files; and

program instructions to store the plurality of files among tiers of the tiered storage environment based on the identified group of two or more tiering polices and the protocol-based heat count values corresponding to the plurality of files.

9. The computer program product of claim 8, wherein program instructions to identify the group the of two or more tiering policies utilized within the tiered storage environment is based, at least in part, on information respectively associated the set of executing applications, and wherein a first application of the set of executing applications accesses a first file utilizing a first protocol.

10. The computer program product of claim 9, wherein program instructions to identify group the of two or more tiering policies utilized within the tiered storage environment is further based on one or more dictates related to a service level agreement (SLA) associated with an application of the set of executing applications.

11. The computer program product of claim 8, wherein program instructions to store the plurality of files among tiers of the tiered storage environment based on the identified group of two or more tiering polices further comprise:

program instructions to determine an analysis hierarchy among the group of two or more tiering polices;

program instructions to analyze the protocol-based heat count values corresponding to the plurality of files with respect to the analysis hierarchy among the group of two or more tiering polices; and

program instructions to assign the plurality of files among storage tiers based on determined set of heat count values respectively associated with the plurality of files and further based on the analysis hierarchy among the identified group of two or more tiering polices.

12. The computer program product of claim 11, wherein a service level agreement (SLA) associated with at least one application of the set of executing applications dictates the analysis hierarchy among the identified set of two or more tiering policies, and wherein the SLA allows upgrading of a storage tier assignment of a file based on a subsequent tiering policy of the analysis hierarchy among tiering policies and prevents downgrading of the storage tier assignment of the file based on the subsequent tiering policy of the analysis hierarchy among the tiering policies.

13. The computer program product of claim 8, wherein the identified set of two or more tiering policies further includes one or more multi-protocol tiering policies related to files accessed by two or more protocols, and wherein a set of heat count values associated with a multi-protocol tiering policy are based on a combination of two or more access protocols utilized to access a file and the number of executing applications that utilize the combination of two or more protocols to access the file.

14. The computer program product of claim 11, wherein program instructions to analyze the protocol-based heat count values corresponding to the plurality of files further comprises:

responsive to determining that that a file of the plurality of files is accessed utilizing two or more protocols, program instructions to determine a multi-protocol heat count value corresponding to the file and further associated with a combination of protocols, wherein the multi-protocol heat count value corresponding to the file is a value corresponding to a sum of the heat count values corresponding to each protocol of the combination of protocols; and

program instructions to analyze the protocol-based heat count values corresponding to the plurality of files and one or more multi-protocol heat count values corresponding to the file with respect to the analysis hierarchy among the group of two or more tiering polices.

15. A computer system comprising:

one or more computer processors;

one or more computer readable storage media; and

program instructions stored on the computer readable storage media for execution by at least one of the one or more computer processors, the program instructions comprising:

program instructions to determine a plurality of files stored within a tiered storage environment that are accessed by a set of executing applications;

program instructions to determine that one or more files of the plurality of files are accessed utilizing two or more protocols;

program instructions to identify a group of two or more tiering policies utilized within the tiered storage environment;

program instructions to determine protocol-based heat count values corresponding to the plurality of files; and

program instructions to store the plurality of files among tiers of the tiered storage environment based on the identified group of two or more tiering polices and the protocol-based heat count values corresponding to the plurality of files.

16. The computer system of claim 15, wherein program instructions to identify the group the of two or more tiering policies utilized within the tiered storage environment is based, at least in part, on information respectively associated the set of executing applications, and wherein a first application of the set of executing applications accesses a first file utilizing a first protocol.

17. The computer system of claim 16, wherein program instructions to identify group the of two or more tiering policies utilized within the tiered storage environment is further based on one or more dictates related to a service level agreement (SLA) associated with an application of the set of executing applications.

18. The computer system of claim 15, wherein program instructions to store the plurality of files among tiers of the tiered storage environment based on the identified group of two or more tiering polices further comprise:

program instructions to determine an analysis hierarchy among the group of two or more tiering polices;

program instructions to analyze the protocol-based heat count values corresponding to the plurality of files with respect to the analysis hierarchy among the group of two or more tiering polices; and

program instructions to assign the plurality of files among storage tiers based on determined set of heat count values respectively associated with the plurality of files and further based on the analysis hierarchy among the identified group of two or more tiering polices.

19. The computer system of claim 18, wherein a service level agreement (SLA) associated with at least one application of the set of executing applications dictates the analysis hierarchy among the identified set of two or more tiering policies, and wherein the SLA allows upgrading of a storage tier assignment of a file based on a subsequent tiering policy of the analysis hierarchy among tiering policies and prevents downgrading of the storage tier assignment of the file based on the subsequent tiering policy of the analysis hierarchy among the tiering policies.

20. The computer system of claim 18, wherein program instructions to analyze the protocol-based heat count values corresponding to the plurality of files further comprises:

responsive to determining that that a file of the plurality of files is accessed utilizing two or more protocols, program instructions to determine a multi-protocol heat count value corresponding to the file and further associated with a combination of protocols, wherein the multi-protocol heat count value corresponding to the file is a value corresponding to a sum of the heat count values corresponding to each protocol of the combination of protocols; and

program instructions to analyze the protocol-based heat count values corresponding to the plurality of files and one or more multi-protocol heat count values corresponding to the file with respect to the analysis hierarchy among the group of two or more tiering polices.