

What is claimed is:

1. A method for processing data, the method including:
receiving a specification of one or more named units stored in a distributed filesystem of a distributed processing system;
receiving a specification for establishing data connections to a computation system separate from the distributed processing system;
invoking, by a manager of the distributed processing system, a first plurality of processes on the distributed processing system, each process of the first plurality of processes establishing a data connection with a storage element of the distributed filesystem for accessing a corresponding part of the named unit in the distributed filesystem;
using the specification for establishing the data connections to form a plurality of data connections between the distributed processing system and the computation system, at least one data connection being formed between each process of the first plurality of processes on the distributed processing system and a respective process of a second plurality of processes on the computation system, the first and second plurality of processes being separate from the manager of the distributed processing system; and
passing data concurrently over the plurality of data connections from the distributed processing system to the computation system.
2. The method of claim 1 wherein passing the data concurrently includes extracting the data from the filesystem by the processes of the first plurality of processes, and transmitting the extracted data from said processes to the computation system without further storage in the distributed file system.
3. The method of claim 1 wherein accepting the specification of the named units includes accepting a text filename of the named unit.

4. The method of claim 1 wherein the parts of the named units are unnamed.
5. The method of claim 1 wherein accepting the specification for establishing the data connections includes accepting a specification of a broker and forming the data connections includes each processes of the first plurality of processes communicating with the broker to determine a further specification for establishing a data connection with the computation system.
6. The method of claim 1 wherein accepting the specification for establishing the data connections includes accepting a specification for a broadcast to the computation system.
7. The method of claim 1 further including invoking the processes of the second plurality of processes of the computation system.
8. The method of claim 1 wherein at least some of the first plurality of processes and some of the second plurality of processes are executed on a common set of processors.
9. The method of claim 1 wherein the distributed processing system and the computation system use distinct computing resources coupled over a data network.
10. The method of claim 1 wherein the distributed processing system and the computation system share computing resources.
11. Software stored on a non-transitory computer-readable medium, for processing data, the software including instructions for causing a system to:
 - receive a specification of one or more named units stored in a distributed filesystem of a distributed processing system;
 - receive a specification for establishing data connections to a computation system separate from the distributed processing system;

invoke, by a manager of the distributed processing system, a first plurality of processes on the distributed processing system, each process of the first plurality of processes establishing a data connection with a storage element of the distributed filesystem for accessing a corresponding part of the named unit in the distributed filesystem;

use the specification for establishing the data connections to form a plurality of data connections between the distributed processing system and the computation system, at least one data connection being formed between each process of the first plurality of processes on the distributed processing system and a respective process of a second plurality of processes on the computation system, the first and second plurality of processes being separate from the manager of the distributed processing system; and

pass data concurrently over the plurality of data connections from the distributed processing system to the computation system.

12. A system for processing data, the system including:

a distributed processing system that includes a distributed filesystem; and

a computation system separate from the distributed processing system;

wherein the distributed processing system is configured to:

receive a specification of one or more named units stored in the distributed filesystem;

receive a specification for establishing data connections to the computation system;

invoke, by a manager of the distributed processing system, a first plurality of processes on the distributed processing system, each process of the first plurality of processes establishing a data connection with a storage element of the distributed filesystem for accessing a corresponding part of the named unit in the distributed filesystem;

use the specification for establishing the data connections to form a plurality of data connections between the distributed processing system and the computation system, at least one data connection being formed between each process of the first plurality of processes on the distributed processing system and a respective process of a second plurality of processes on the computation system, the first and second plurality of processes being separate from the manager of the distributed processing system; and

pass data concurrently over the plurality of data connections to the computation system.

13. A method for processing data, the method including:

providing a specification of one or more named units stored in a distributed filesystem;

providing a specification for establishing data connections with a computation system;

providing a specification for processes of a first plurality of processes for invocation on a distributed processing system by a manager of the distributed processing system, each process of the first plurality of processes being specified for establishing a data connection with a storage element of the distributed filesystem for accessing a corresponding part of the named unit in the distributed filesystem;

receiving requests to form a plurality of data connections between the distributed processing system and the computation system, and providing information for forming at least one data connection being between each process of the first plurality of processes on the distributed processing system and a respective process of a second plurality of processes on the computation system, the first and second plurality of processes being separate from the manager of the distributed processing system; and

receiving data concurrently over the plurality of data connections from the first plurality of processes at the computation system.

14. The method of claim 13 wherein invoking the second plurality of processes includes invoking at least some of said processes on processors hosting the first plurality of processes, and wherein at least some of the data connections are local said processors.

15. The method of claim 13 wherein providing the information for forming a data connection includes selecting an endpoint for the data connection from a plurality of available endpoints according to a location of a requesting process and locations of the available endpoints.

16. Software stored on a non-transitory computer-readable medium, for processing data, the software including instructions for causing a system to:

provide a specification of one or more named units stored in a distributed filesystem;

provide a specification for establishing data connections with a computation system;

provide a specification for processes of a first plurality of processes for invocation on a distributed processing system by a manager of the distributed processing system, each process of the first plurality of processes being specified for establishing a data connection with a storage element of the distributed filesystem for accessing a corresponding part of the named unit in the distributed filesystem;

receive requests to form a plurality of data connections between the distributed processing system and the computation system, and provide information for forming at least one data connection being between each process of the first plurality of processes on the distributed processing system and a respective process of a second plurality of processes on the computation system, the first and second plurality of processes being separate from the manager of the distributed processing system; and

receive data concurrently over the plurality of data connections from the first plurality of processes at the computation system.

17. A system for processing data, the system including:

a distributed filesystem;

a distributed processing system;

a computation system; and

a client of the distributed processing system configured to:

provide a specification of one or more named units stored in the distributed filesystem;

provide a specification for establishing data connections with the computation system;

provide a specification for processes of a first plurality of processes for invocation on the distributed processing system by a manager of the distributed processing system, each process of the first plurality of processes being specified for establishing a data connection with a storage element of the distributed filesystem for accessing a corresponding part of the named unit in the distributed filesystem;

receive requests to form a plurality of data connections between the distributed processing system and the computation system, and provide information for forming at least one data connection being between each process of the first plurality of processes on the distributed processing system and a respective process of a second plurality of processes on the computation system, the first and second plurality of processes being separate from the manager of the distributed processing system; and

receive data concurrently over the plurality of data connections from the first plurality of processes at the computation system.

18. A method for processing data, the data being provided from a distributed processing system implementing a map-reduce data processing framework, the method including:

providing to the distributed processing system a specification for a map procedure for invocation on the distributed processing system by a manager of the distributed processing system, the specification for the map procedure identifying one or more named units in a distributed filesystem for processing and including a specification for establishing data connections with a computation system separate from the distributed processing system;

causing execution of a plurality of instances of the map procedure on the distributed processing system;

receiving requests to form a plurality of data flow connections between executing instances of the map procedure and the computation system, and providing information for forming at least one data flow connection being between each executing instance of the map procedure and a respective process executing on the computation system; and

receiving data concurrently over the plurality of data flow connections and processing the received data in the computation system.

19. The method of claim 18 where the distributed processing system includes an Apache Hadoop ® system.

20. The method of claim 18 where the data flow connections include transport layer data network communication connections.

21. Software stored on a non-transitory computer-readable medium, for processing data, the data being provided from a distributed processing system implementing a map-reduce data processing framework, the software including instructions for causing a system to:

provide to the distributed processing system a specification for a map procedure for invocation on the distributed processing system by a manager of the distributed processing system, the specification for the map procedure identifying one or more named units in a distributed filesystem for processing and including a specification for establishing data connections with a computation system separate from the distributed processing system;

cause execution of a plurality of instances of the map procedure on the distributed processing system;

receive requests to form a plurality of data flow connections between executing instances of the map procedure and the computation system, and provide information for forming at least one data flow connection being between each executing instance of the map procedure and a respective process executing on the computation system; and

receive data concurrently over the plurality of data flow connections and process the received data in the computation system.

22. A system for processing data, the system including:

a distributed filesystem;

a distributed processing system;

a computation system separate from the distributed processing system; and

a client of the distributed processing system configured to:

provide to the distributed processing system a specification for a map procedure for invocation on the distributed processing system by a manager of the distributed processing system, the specification for the map procedure identifying one or more named units in the distributed filesystem for processing and including a specification for establishing data connections with the computation system;

cause execution of a plurality of instances of the map procedure on the distributed processing system;

receive requests to form a plurality of data flow connections between executing instances of the map procedure and the computation system, and provide information for forming at least one data flow connection being between each executing instance of the map procedure and a respective process executing on the computation system; and

receive data concurrently over the plurality of data flow connections and processing the received data in the computation system.