SYSTEM AND METHOD FOR REMOTE FAX INTERCONNECT

FIELD

[0001] This technology relates to FAX (facsimile) communications and more particularly to methods, apparatus, and systems for remote aggregation of FAX communication interconnect technology employing both packet-switched and traditional telephone networking technologies. The technology in some of its aspects further relates to the aggregation of facsimile communications technology, and more particularly, to the enablement of remote access and operations.

BACKGROUND

[0002] Facsimile document imaging technology has been commercially available dating to the early 1980's. Scanning an image into a digital representation and communicating that point-to-point from one dedicated facsimile machine to another over the Public Switched Telephone Network (PSTN) is a well understood and widely used technology. While email, social media, Adobe Acrobat document format and other new technologies have supplanted many kinds of facsimile transmissions, facsimile remains a highly viable and important secure way to transmit certain kinds of information. Further improvements are possible.

SUMMARY

[0002a] According to an aspect, there is provided an enhanced communications environment in a federated computing architecture that enables the transfer of at least one of (a) a document, (b) an origination identifier, (c) data, and (d) policy attribute information between at least one of (1) at least two cooperating peer facsimile capable systems, (2) at least two non-cooperating peer facsimile capable systems, and (3) at least one cooperating peer facsimile capable system and at least one non-cooperating peer facsimile capable systems;

the environment comprising:

a first Distributed Facsimile Service Providers (DFSP) at least configured to communicate with a first peer facsimile capable system,

at least one other peer facsimile capable system is configured to be addressed by at least another DFSP;

the first DFSP being configured to receive routing information from the first peer facsimile capable system that identifies the at least one other peer facsimile capable system;

the environment being characterized by:

at least one Federated Facsimile Service Broker (FFSB) that is configured to register the availability of the plural DFSPs;

upon reception by the first DFSP of the routing information from the first peer facsimile capable system, the first DFSP is configured to communicate with the at least one FFSB to determine which of the at least one other DFSPs is capable of communicating the at least one of (a) document, (b) origination identifier, (c) data, and (d) policy attribute information to the at least one other peer facsimile capable system, the at least one FFSB is configured to receive the routing information from the first DFSP and is further configured to use the received routing information to query which of the at least one other DFSPs is capable of communicating with the at least one other peer facsimile capable system, the FFSB is configured to determine in response to a successful query that the at least one other DFSP is capable of communicating with the at least one other peer facsimile capable system;

based on such determination and upon reception of any policy attribute information about the at least one other peer facsimile capable system, the first DFSP is further configured to determine based on such received policy attribute information that the at least one of (a)

document, (b) origination identifier, and (c) data requires further processing; In an embodiment, there is an enhanced communications environment that enables the transfer of at least one of (a) a document, (b) an origination identifier, (c) data, and (d) policy attribute information between at least one of (1) at least two cooperating peer facsimile capable systems, (2) at least two non-cooperating peer facsimile capable systems, and (3) at least one cooperating peer facsimile system and at least one non-cooperating peer facsimile capable systems;

the environment characterized by:

a first Distributed Facsimile Service Providers (DFSP) that is at least able to communicate with a first peer facsimile capable system,

at least one other peer facsimile capable system that is addressable by the at least another DFSP;

the first DFSP being configured to receive routing information from the first peer facsimile capable system that identifies the at least one other peer facsimile capable system;

the environment being further characterized by:

upon reception by the first DFSP of the routing information from the first peer facsimile capable system, the first DFSP structured to determine which of the at least one other DFSPs is capable of communicating the at least one of (a) document, (b) origination identifier, (c) data, and (d) pertaining policy attribute information to the at least one other peer facsimile capable system;

based on such determination and upon reception of policy attribute information about the at least one other peer facsimile capable system, the first DFSP being structured to further determine based on such received policy attribute information that the at least one of (a) document, (b) origination identifier, and (c) data requires further processing;

based on such determination, the first DFSP transferring routing information and at least one of (a) the document, (b) the origination information, (c) data, and (d) the pertaining policy attribute information to the at least one other DFSP;

upon the successful transfer of routing information and the at least one of (a) the document, (b) the origination information, (c) the data, and (d) pertaining policy attribute information to the at least one other DFSP, the first DFSP delegating communications of the at least one of (a) the document, (b) the origination information, (c) data, and (d) pertaining policy attribute information destined to the at least one other peer facsimile capable system to the at least one other DFSP.

[0002b] According to an aspect there is an enhanced communications environment in a federated computing architecture that enables the transfer of at least one of (a) a document, (b) an origination identifier, (c) data, and (d) policy attribute information between at least one of (1) at least two cooperating peer facsimile capable systems, (2) at least two non-cooperating peer facsimile capable systems, and (3) at least one cooperating peer facsimile capable system and at least one non-cooperating peer facsimile capable systems;

the environment characterized by:

a first Distributed Facsimile Service Providers (DFSP) is at least able to communicate with a first peer facsimile capable system,

at least one other peer facsimile capable system is addressable by the at least another DFSP;

the first DFSP being configured to receive routing information from the first peer facsimile capable system that identifies the at least one other peer facsimile capable system;

the environment being further characterized by:

at least one Federated Facsimile Service Broker (FFSB) that registers availability of the plural DFSPs;

upon reception by the first DFSP of the routing information from the first peer facsimile capable system, the first DFSP communicating with the at least one FFSB to determine which of the at least one other DFSPs is capable of communicating the at least one of (a) document, (b) origination identifier, (c) data, and (d) pertaining policy information to the at least one other peer facsimile capable system;

based on such determination and upon reception of any policy attribute information about the at least one other peer facsimile capable system, the first DFSP further determining based on such received policy information that the at least one of (a) document, (b) origination identifier, and (c) data requires further processing;

based on such determination, the first DFSP transferring routing information and at least one of (a) the document, (b) the origination information, (c) the data, and (d) the pertaining policy attribute information to the at least one other DFSP;

upon the successful transfer of routing information and the at least one of (a) the document, (b) the origination information, (c) the data, and (d) pertaining policy attribute information to the at least one other DFSP, the first DFSP delegates communications of the at least one of (a) the document, (b) the origination information, (c) data, and (d) pertaining policy attribute information destined to the at least one other peer facsimile capable system to the at least one other DFSP.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] The technology can be more fully understood by reading the following detailed description of example non-limiting embodiments with the accompanying drawings, in which like reference indicators are used to designate like elements, and in which:

[0004] Figures 1-5 are drawings from U.S. Patent No. 8,897,432, the corresponding descriptions of which are incorporated herein by reference;

We Claim:

1. An enhanced communications environment in a federated computing architecture that enables the transfer of at least one of (a) a document, (b) an origination identifier, (c) data, and (d) policy attribute information between at least one of (1) at least two cooperating peer facsimile capable systems, (2) at least two non-cooperating peer facsimile capable systems, and (3) at least one cooperating peer facsimile capable system and at least one non-cooperating peer facsimile capable systems;

the environment comprising:

a first Distributed Facsimile Service Providers (DFSP) at least configured to communicate with a first peer facsimile capable system,

at least one other peer facsimile capable system is configured to be addressed by at least another DFSP;

the first DFSP being configured to receive routing information from the first peer facsimile capable system that identifies the at least one other peer facsimile capable system;

the environment being characterized by:

at least one Federated Facsimile Service Broker (FFSB) that is configured to register the availability of the plural DFSPs;

upon reception by the first DFSP of the routing information from the first peer facsimile capable system, the first DFSP is configured to communicate with the at least one FFSB to determine which of the at least one other DFSPs is capable of communicating the at least one of (a) document, (b) origination identifier, (c) data, and

(d) policy attribute information to the at least one other peer facsimile capable system, the at least one FFSB is configured to receive the routing information from the first DFSP and is further configured to use the received routing information to query which of the at least one other DFSPs is capable of communicating with the at least one other peer facsimile capable system, the FFSB is configured to determine in response to a successful query that the at least one other DFSP is capable of communicating with the at least one other peer facsimile capable system;

based on such determination and upon reception of any policy attribute information about the at least one other peer facsimile capable system, the first DFSP is further configured to determine based on such received policy attribute information that the at least one of (a) document, (b) origination identifier, and (c) data requires further processing;

based on such determination, the first DFSP is configured to transfer routing information and at least one of (a) the document, (b) the origination information, (c) the data, and (d) the policy attribute information to the at least one other DFSP;

upon the successful transfer of routing information and the at least one of (a) the document, (b) the origination information, (c) the data, and (d) pertaining policy attribute information to the at least one other DFSP, the first DFSP is configured to delegate communications to the at least one other DFSP of the at least one of (a) the document, (b) the origination information, (c) data, and (d) policy attribute information destined to the at least one other peer facsimile capable.

2. The enhanced communications environment of claim 1, further characterized in that the second Distributed Facsimile Service Provider is configured to provide status information of the delegated communications of the at least one of (a) the document, (b) the origination information, (c) data, and (d) pertaining policy attribute information to the first DFSP.

3. The enhanced communications environment of any of claims 1-2, further characterized in that the at least one other Distributed Facsimile Service Provider is configured to determine if the at least one peer facsimile capable system is addressable by the at least one other DFSP, the at least one other DFSP communicates the at least one of (a) document, (b) origination information, (c) data, and (d) policy attribute information to the at least one peer facsimile capable system.

4. The enhanced communications environment of any of claims 1-3, further characterized in that if the at least one other Distributed Facsimile Service Provider is configured to determine that the at least one peer facsimile capable peer system is not addressable, the at least one other DFSP is configured to determine if the at least one peer facsimile capable peer system is addressable by at least another DFSP.

5. The enhanced communications environment of any of claims 1-4, further characterized in that if the first Distributed Facsimile Service Provider determines that the at least one peer facsimile capable system is configured to be addressed by the second

DFSP, the first DFSP is configured to transfer the routing information and at least one of (a) document, (b) origination information, and (c) data to the second DFSP,

upon the successful transfer of the routing information and the at least one of (a) the document, (b) the origination information, and (c) the data to the second DFSP, the first DFSP is configured to delegate the communications of the at least one of (a) the document, (b) the origination information, (c) data, and (d) policy attribute information to the second DFSP.

6. The enhanced communications environment of any of claims 1-5, further characterized in that the communications between the first Distributed Facsimile Service Provider and the at least one other DFSP is transferred via the at least one Federated Facsimile Service Broker.

7. The enhanced environment of any one of claims 1-6, further characterized in that the at least one Federated Facsimile Service Broker communicates the at least one of (a) document, (b) origination identifier, (c) data and (d) pertaining policy information between the DFSP and the at least one other DFSP.