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Filtering Existing Data Interfaces to Meet Privacy Needs

Abstract: To more readily meet changing data privacy requirements, data source devices include a filtering layer, on top of the data generation layer. Data filters, which specify which data can be exchanged with external devices, are dynamically applied to the data source to ensure compliance.

This disclosure relates to the field of printing.

A technique is disclosed that filters the data exchanged in existing interfaces of data sources rather than redesigning the interfaces each time privacy requirements change.

The privacy landscape is frequently changing, which in turn determines which data can or cannot be collected from data sources (e.g. printers, drivers, smart apps, etc.). There is a problem in dynamically changing the data that is collected from these data sources, down to the individual data element, without having to constantly change the existing code in the data source that generates that data. It is difficult, expensive, and time-consuming to develop, test, and issue new releases of code for the various data source devices in order to change what is transmitted so as to comply with the latest privacy requirements.

According to the present disclosure, generation of data in a data source is performed in one layer, and a filtering layer is applied on top of the generating layer to exchange the proper data with external devices and networks/clouds. The filters are capable of either excluding unwanted/impermissible data, or including desired data. The filters are dynamic in nature, capable of being changed at any time. The filters are dynamically communicated and applied without having to change the complicated business logic of the source's data generation itself. A dynamic filter is capable of reaching the entire installed base of printers that support it, whereas releasing new code through either a firmware update, or a new app or driver release, may not be taken up by all users and/or sources.

Consider a printer as an example implementation of a data source device using the disclosed technique. A printer registers itself with a cloud to inform the cloud of which the interfaces which require a filter to be applied to them. The content of the filter itself is applied on an interface-by-interface level by specifying either a set of data elements that should be removed from the interface before a response is generated, or the exact set of data elements that should be included in the response. Allowing either inclusion or exclusion on the filter list allows us the maximum length of the filter itself to be capped at half of the total data elements contained in an interface. Once the filter is created and applied to the interface, all future communication on that interface is governed by it until the filter is removed or changed. Filters can be updated dynamically by either changing the content of the existing filters, or by creating new ones.

The disclosed dynamic filtering technique advantageously frees the data source device from having to guess which data may or may not be considered private in the future. It allows updated privacy requirements to more easily be distributed to, and implemented by, data source devices to ensure compliance with the latest privacy requirements.

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