Master's Thesis

Privacy-preserving Smart Metering Using DC-Nets

Gregor Garten

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TU Dresden
Faculty of Computer Science
Institute of Systems Architecture
Chair of Privacy and Data Security

Betreuender Hochschullehrer:	Dr. Stefan Köpsell
	Dr. Elke Franz
Betreuender Mitarbeiter:	Dipl.-Inf. Tim Lackorzynski

Lorem Ipsum

Selbständigkeitserklärung

Hiermit erkläre ich, dass ich diese Arbeit selbstständig erstellt und keine anderen als die angegebenen Hilfsmittel benutzt habe.

Dresden, den **?today?**

Gregor Garten

Abstract

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write abstract

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1 Introduction

adopt title page

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write introduction

1.1 A Section

Referencing other chapters: 2 3 4 5 6 7

Name	Y	Z
Foo	20,614	23 %
Bar	9,914	11 %
Foo + Bar	30,528	34 %
total	88,215	100 %

Table 1.1: Various very important looking numbers and sums.

More text referencing Table 1.1.

1.2 Another Section

Citing [**bellard2005qfa**] other documents [**bellard2005qfa**; **boileau06**] and Figure 1.1. Something with umlauts and a year/month date: [**becher04:˙feurig˙hacken˙mit˙firew**]. And some online resources: [**green04**], [**patent:4819234**]

1.3 Yet Another Section

add content

1.4 Test commands

DROPS L^{4}LinuxNOVA QEMU `memcpy` A sentence about BASIC. And a correctly formatted one about ECC.

Figure 1.1: A long description of this squirrel figure. Image taken from `http://commons.wikimedia.org/wiki/File:Sciurus-vulgaris_hernandeangelis_stockholm_2008-06-04.jpg`

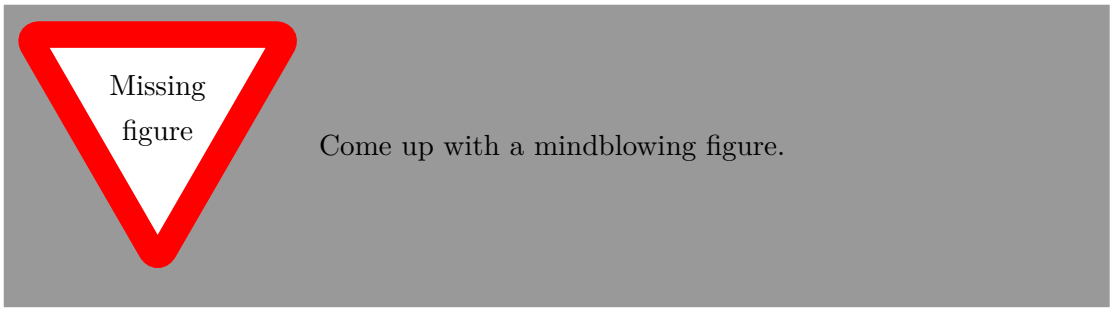

Figure 1.2: A mindblowing figure

2 Technical Background

This section introduces an overview of the basic concepts for this work. Therefore, the key components of the smart grid are explained, what structural changes and what challenges the smart grid will bring. In addition, this chapter discusses the current state of research.

2.1 Smart Grid

The original energy network was mainly considered as a transmission system to send electricity from the generators via a elongated network of cables and transformers to the consumers. Instead of a few electricity producers (e.g. nuclear power plants, coal-fired power plants), which were responsible for a large part of the electricity generation, there are now many smaller producers (e.g. wind turbines). However, renewable power generation is often dependent on external environmental factors. In order for the smart grid to be stable despite fluctuations in power generation, smart meters have been introduced. This enables the electricity provider to receive the electricity consumption of a household every 15 minutes. It offers the possibility to get more easily the current electricity demand from the consumers. Previously, the current electricity demand was simulated from load forecasting models. If the demand should increase spontaneously, peaker plants, mainly consisting of coal-fired power plants, would be turned on to quickly meet this demand. This is costly and environmentally unfriendly. Since then, structural changes have been made to optimize the energy grid and make it more intelligent by exchanging information in near-real-time. This allows the demand to be matched to the available supply. The fundamental component of the smart grid are the smart meters, which were already mentioned. They which will be discussed in more detail in the next section.(Quelle:Smart Grid Communications)(Privacy Survey2013)

2.2 Smart Meter

Smart meters are the key component in a smart grid. A smart meter is an electricity meter that has an interface to the Internet. This enables two-way communication between the control center and the meter. This is also called Advanced Metering Infrastructure (AMI). Two-way communication improves the quality of the power grid and makes it possible to offer services that would not be possible without a smart meter. It's now possible to detect power outages. As a result, the power grid operator can detect power failures on its own. Previously, the operator was dependent on customer calls to detect power outages. Depending on the setting, it can send electricity consumption to

the electricity provider at least every 15 minutes. hi
hi
hi
hi

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3 Design

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4 Implementation

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5 Evaluation

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6 Future Work

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7 Conclusion And Outlook

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