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MIFARE Application and Infrastructure Evaluation Checklist

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Evaluation document
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Document information

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Abstract	This document is a guideline to check the currently available infrastructure and application of a specific PTO or different service provider. The questionnaire contains all relevant information for an overall system assessment.



Revision history

Rev	Date	Description
1.0	20190613	Initial version of the document.

Contact information

For more information, please visit: <http://www.nxp.com>

1. Introduction

This evaluation document is used as a basic information input for NXP Semiconductors to understand the specific characteristics of the infrastructure that the PTO or service provider is operating. Please fill it in as accurately as possible.

The filled document can be returned to your local NXP contact from the Sales or CAS team. It will help NXP to guide you through planned infrastructure upgrades or credential changes and provide NXP valuable information regarding your current system status. Your information will not be shared outside of NXP and will be used carefully by the CAS, Sales and Product Management teams inside NXP.

2. Application and Infrastructure Checklist

In order to evaluate an already existing infrastructure, please fill out the next sections as completely as possible.

2.1 Customer Details

Please specify the contact details of your company as well as technical contact persons who are responsible for the infrastructure and system setup.

Table 1. Customer Details

Requested Information	To be filled out by customer / service provider
Name of the organization	
Address of correspondence for the organization	
Principal contact in organization	
Technical contact in organization	
Telephone number	
Email address	
Date	

2.2 3rd Party Company Contact Details

In case you are working together with other parties like system integrators, backend providers, payment processor providers, please also specify their company contact details as well as technical contact persons. This will help us in case alignments between all involved providers need to be reached.

Table 2. 3rd Party Contact Details – Company 1

Requested Information	To be filled out by customer / service provider
Name of the organization	
Purpose of the organization (e.g. why is there a collaboration between the main customer and this 3 rd party company)	
Address of correspondence for the organization	
Principal contact in organization	
Technical contact in organization	
Telephone number	
Email address	

Table 3. 3rd Party Contact Details – Company 2

Requested Information	To be filled out by customer / service provider
Name of the organization	
Purpose of the organization (e.g. why is there a collaboration between the main customer and this 3 rd party company)	
Address of correspondence for the organization	
Principal contact in organization	
Technical contact in organization	
Telephone number	
Email address	

Table 4. 3rd Party Contact Details – Company 3

Requested Information	To be filled out by customer / service provider
Name of the organization	
Purpose of the organization (e.g. why is there a collaboration between the main customer and this 3 rd party company)	
Address of correspondence for the organization	
Principal contact in organization	
Technical contact in organization	
Telephone number	
Email address	

Table 5. 3rd Party Contact Details – Company 4

Requested Information	To be filled out by customer / service provider
Name of the organization	
Purpose of the organization (e.g. why is there a collaboration between the main customer and this 3 rd party company)	
Address of correspondence for the organization	
Principal contact in organization	
Technical contact in organization	
Telephone number	

Requested Information	To be filled out by customer / service provider
Email address	

2.3 System and Infrastructure Details

Please define the specifics of the system that you would like to upgrade or integrate within NXP service offerings.

Table 6. System and Infrastructure Details

Requested Information	To be filled out by customer / service provider
Name of the system	
Type of the system (e.g. public transportation, access control, loyalty, ...)	
Location of the system	
Size of the system (amount of reader devices)	Number of installed readers / terminals overall: _____ Used type of readers and their amount: <input type="checkbox"/> Vending machine: _____ <input type="checkbox"/> Self-service terminal: _____ <input type="checkbox"/> Personalization terminal: _____ <input type="checkbox"/> Standard terminal in system: _____ <input type="checkbox"/> Others: _____
Reader and terminal specification	Are different types of reader ICs used in the system? <input type="checkbox"/> Yes. Amount: _____ <input type="checkbox"/> No Are different types of reader IC versions used in the system (same reader IC type but different generations)? <input type="checkbox"/> Yes. Amount: _____ <input type="checkbox"/> No Are different types of firmware versions running on the terminals used in the system? <input type="checkbox"/> Yes. Amount: _____ <input type="checkbox"/> No
Used readers and reader ICs in the terminals (name, version and manufacturer)	For all available types of readers / reader ICs please fill out the below information. Mandatory – Reader type 1: Reader type: _____ Reader manufacturer: _____ Firmware version: _____

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Requested Information	To be filled out by customer / service provider
	<p>Reader IC manufacturer: _____</p> <p>Reader IC name / type: _____</p> <p>Reader IC version: _____</p> <p>Optional, only if available – Reader type 2:</p> <p>Reader type: _____</p> <p>Reader manufacturer: _____</p> <p>Firmware version: _____</p> <p>Reader IC manufacturer: _____</p> <p>Reader IC name / type: _____</p> <p>Reader IC version: _____</p> <p>Optional, only if available – Reader type 3:</p> <p>Reader type: _____</p> <p>Reader manufacturer: _____</p> <p>Firmware version: _____</p> <p>Reader IC manufacturer: _____</p> <p>Reader IC name / type: _____</p> <p>Reader IC version: _____</p> <p>Optional, only if available – Reader type 4:</p> <p>Reader type: _____</p> <p>Reader manufacturer: _____</p> <p>Firmware version: _____</p> <p>Reader IC manufacturer: _____</p> <p>Reader IC name / type: _____</p> <p>Reader IC version: _____</p>
System specification	<p>Is the system an online or an offline system?</p> <p><input type="checkbox"/> Online</p> <p><input type="checkbox"/> Offline</p> <p><input type="checkbox"/> Semi-Online</p> <p>Do you have possibilities to update the reader system (e.g. the firmware running on the system, or the settings which can be configured in the software / firmware)?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If yes, please specify how it can be updated:</p> <p><input type="checkbox"/> Update via remote access</p> <p><input type="checkbox"/> Update only possible on-site of the infrastructure (e.g. from a central office or lab)</p> <p><input type="checkbox"/> Other: _____</p>

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Requested Information	To be filled out by customer / service provider
Secure Access Module support	<p>Are Secure Access Modules (SAMs) or other types of secure hardware keystore modules used in the reader terminals?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If yes, please specify: SAM / HW keystore name: _____ SAM / HW keystore manufacturer: _____ SAM / HW keystore version: _____</p>
Supported system functionalities	<p>Are you offering any special features?</p> <p><input type="checkbox"/> Over-The-Air-Topup</p> <p><input type="checkbox"/> Card sharing (e.g. for a family)</p> <p><input type="checkbox"/> Bonus systems (e.g. bonus point collection, ...)</p> <p><input type="checkbox"/> Local payment scheme (e.g. grocery stores, vending machines...)</p> <p><input type="checkbox"/> Negative credit (allowing a card to go into red numbers)</p> <p><input type="checkbox"/> Integration with other municipal or government cards (e.g. social security, ...)</p> <p>For public transport systems: Which kind of fare collection type has your system implemented (multiple choice)?</p> <p><input type="checkbox"/> Stored value based system</p> <p><input type="checkbox"/> Account based system</p> <p><input type="checkbox"/> Contract based system (e.g. accessible for a set time)</p> <p><input type="checkbox"/> Other: _____</p> <p>For public transport systems: Which kind of tarification are you using:</p> <p><input type="checkbox"/> Zone based system</p> <p><input type="checkbox"/> Station based system</p> <p><input type="checkbox"/> Time based system</p> <p><input type="checkbox"/> Flat fare</p> <p><input type="checkbox"/> Other: _____</p> <p>For public transport systems: Are multiple transit tickets supported on one IC media?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
Supported medias	<p>Please specify all IC medias which are supported in the system.</p> <p><input type="checkbox"/> MIFARE Classic</p>

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Requested Information	To be filled out by customer / service provider
	<p>Type: <input type="checkbox"/> EV1 Memory Size: <input type="checkbox"/> 1KB <input type="checkbox"/> 4KB</p> <p><input type="checkbox"/> MIFARE Ultralight Type: <input type="checkbox"/> C <input type="checkbox"/> EV1 <input type="checkbox"/> Nano Memory Size: <input type="checkbox"/> 40B <input type="checkbox"/> 48B <input type="checkbox"/> 128B <input type="checkbox"/> 164B <input type="checkbox"/> 192B</p> <p><input type="checkbox"/> MIFARE Plus Type: <input type="checkbox"/> S <input type="checkbox"/> X <input type="checkbox"/> SE <input type="checkbox"/> EV1 Memory Size: <input type="checkbox"/> 2KB <input type="checkbox"/> 4KB</p> <p><input type="checkbox"/> MIFARE DESFire Type: <input type="checkbox"/> EV0 <input type="checkbox"/> EV1 <input type="checkbox"/> EV2 <input type="checkbox"/> Light Memory Size: <input type="checkbox"/> 2KB <input type="checkbox"/> 4KB <input type="checkbox"/> 8KB</p> <p><input type="checkbox"/> Other: _____</p>
Supported media types (form factors)	<p>Please specify all IC medias types / form factors which are supported in the system.</p> <p><input type="checkbox"/> Plastic card <input type="checkbox"/> Personalized plastic cards <input type="checkbox"/> Paper card <input type="checkbox"/> Keyfob <input type="checkbox"/> Token <input type="checkbox"/> Wristband <input type="checkbox"/> Banking convergence (bank cards supporting additional MIFARE functionality) <input type="checkbox"/> Other: _____</p>

An online system indicates that all transactions performed in the readers are checked during the transaction against a backend. An offline system indicates that transaction validation is taking place as a batch job with a certain regularity.

A semi-online system indicates that it can run both online or offline, depending on the network connection.

Over-the-air-Topup indicates that there's the possibility of using a mobile phone application to increment the credit in the transportation card; check remaining credit...

Public transport fare collection:

- Stored value: A certain credit is loaded in the card that is spent when traveling.

- Account based system: Card is personalized and this tariff can only be used by a specific person or group (e.g. family)
- Zone based system: Tariff is calculated per zone. Prices are calculated by traveling either within the zone or across zones
- Station based system: Fare price is calculated by the number of stations traveled through.
- Contract based system: The traveler can buy and store different contracts in the card and the most beneficial one is applied. For instance, day/week passes, event specific passes, student passes...

Supported medias indicates which MIFARE product types is the system ready to work with, not which ones are currently being used.

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Requested Information	To be filled out by customer / service provider
	<input type="checkbox"/> MIFARE DESFire Type: <input type="checkbox"/> EV0 <input type="checkbox"/> EV1 <input type="checkbox"/> EV2 <input type="checkbox"/> Light Memory Size: <input type="checkbox"/> 2KB <input type="checkbox"/> 4KB <input type="checkbox"/> 8KB <input type="checkbox"/> JCOP with MIFARE implementation JCOP version: _____ Type: <input type="checkbox"/> DESFire <input type="checkbox"/> Plus Memory Size: _____ <input type="checkbox"/> Other: _____
Application ID (AID)	Please name the AID if applicable. AID: _____ Is the AID registered in the NXP MIFARE application directory (MAD)? <input type="checkbox"/> Yes <input type="checkbox"/> No
Key diversification of application specific keys	Is key diversification used to enhance security? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please specify the input for the diversification algorithm: <input type="checkbox"/> UID <input type="checkbox"/> UID + constant value <input type="checkbox"/> Other
Anti-Tearing protection	Is anti-tearing protection being used? <input type="checkbox"/> Yes, managed by the card <input type="checkbox"/> Yes, managed by the reader <input type="checkbox"/> No
Section only to be filled out for the MIFARE Plus IC type	
Security level	The card is operated in the field in the following security level: <input type="checkbox"/> Security Level 1 <input type="checkbox"/> Security Level 2 <input type="checkbox"/> Security Level 1-3-Mixed <input type="checkbox"/> Security Level 3
Sectors in use	Number of sectors that are used for this specific application: _____
Blocks in use	Number of blocks that are used for this specific application: _____
Value blocks	Are value blocks being used in your application? <input type="checkbox"/> Yes

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Requested Information	To be filled out by customer / service provider
	<input type="checkbox"/> No
Keys and cryptography	Used cryptography type: <input type="checkbox"/> CRYPTO 1 <input type="checkbox"/> AES
ISO/IEC 7816 support	Are ISO/IEC 7816 specifics configured for the card? <input type="checkbox"/> ISO File ID <input type="checkbox"/> ISO DF Name
Section only to be filled out for the MIFARE DESFire IC type	
Usage of the UID	Please tick the applicable points: <input type="checkbox"/> Random UID is enabled on the IC media <input type="checkbox"/> UID from the ISO/IEC 14443-4 Anticollision is required on the reader side <input type="checkbox"/> UID from the MIFARE DESFire specific Cmd.GetCardUID command is required on the reader side
File types	Which kind of files are used in the application? <input type="checkbox"/> Standard Data File. Amount: _____ <input type="checkbox"/> Backup Data File. Amount: _____ <input type="checkbox"/> Value File. Amount: _____ <input type="checkbox"/> Cyclic Record File. Amount: _____ <input type="checkbox"/> Linear Record File. Amount: _____ <input type="checkbox"/> Transaction MAC File. Amount: _____
Keys and cryptography	Please specify key relevant settings: Number of application keys: _____ Used cryptography type: <input type="checkbox"/> 2K3DES <input type="checkbox"/> 3K3DES <input type="checkbox"/> AES
ISO/IEC 7816 support	Are ISO/IEC 7816 specifics configured for the card? <input type="checkbox"/> ISO File ID <input type="checkbox"/> ISO DF Name Is the ISOSelect command used for selecting the application on the reader? <input type="checkbox"/> Yes <input type="checkbox"/> No
APDU Format	Which kind of APDU format is currently supported in the infrastructure? <input type="checkbox"/> Native commandset only <input type="checkbox"/> Native commandset wrapped into the ISO/IEC 7816 command format (wrapped native APDUs)

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Requested Information	To be filled out by customer / service provider
	<input type="checkbox"/> Standardized ISO/IEC 7816 inter-industry commands
File Control Information	Is the file with File ID 0x31 currently used for storing the File Control Information (FCI) or for any other purpose? <input type="checkbox"/> Yes, this file is in use for the FCI. <input type="checkbox"/> Yes, this file is in use to store other application specific data. <input type="checkbox"/> No, this file is not in use.
Usage of special advanced Features	Are any of these advanced features used by your cards / infrastructure? <input type="checkbox"/> Virtual Card (VC) <input type="checkbox"/> Proximity Check (PC) <input type="checkbox"/> File sharing between two applications <input type="checkbox"/> Multiple keysets in the application <input type="checkbox"/> Multiple access rights per file <input type="checkbox"/> NDEF formatting of the application (NFC Tag Type 4) <input type="checkbox"/> Transaction MAC (TMAC)

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